
SKILL-BASED LEADERSHIP IN AVIATION INDUSTRY: A LEADERSHIP EFFECTIVENESS

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Abstract

This article aims to assess the effectiveness of leadership practices in enhancing organizational outcomes. Grounded in the principles of the skill approach framework, this study systematically identifies, synthesizes, and analyzes existing literature to unravel the intricate dynamics of leadership effectiveness in aviation contexts. The literature on leadership, aviation, and the skill approach is comprehensively reviewed through a rigorous search strategy encompassing academic databases, journals, and relevant sources. The Systematic Literature Review (SLR) methodology involves screening studies based on predefined inclusion criteria, followed by data extraction, synthesis, and quality assessment. Findings from the synthesized literature are analyzed to identify key themes, patterns, and relationships pertinent to skill-based leadership and its impact on organizational performance, safety culture, and crew dynamics within the aviation industry. By providing a structured and comprehensive synthesis of existing research, this review contributes valuable insights and evidence-based recommendations for leadership development initiatives and future research directions in the aviation sector.

Keywords: skill-based leadership, skill approach, aviation, literature



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Introduction

In aviation's dynamic and safety-critical domain, effective leadership is a linch-pin for organizational success, safety culture, and operational excellence. As explained by (Kable et al., 2022), skill-based leadership has emerged as a fundamental framework for understanding and enhancing leadership effectiveness within this context. This introduction sets the stage for a systematic exploration of skill-based leadership within the aviation industry, guided by the principles of the skill approach framework. Grounded in Katz's seminal work and its subsequent refinements, this study thoroughly examines leadership practices and their impact on organizational outcomes in aviation settings (Laghari et al., 2024).

As aviation operations become increasingly complex and interconnected, the role of leadership in guiding and managing diverse teams of professionals becomes ever more crucial. Skill-based leadership, as conceptualized within the skill approach framework, posits that leadership effectiveness is contingent upon the possession and application of key competencies, technical, human, and conceptual, in navigating complex operational landscapes. In aviation, where safety, precision, and adaptability are paramount, understanding how leadership competencies intersect with organizational performance metrics, safety culture, and crew dynamics is paramount (Megheirkouni et al., 2018).

This SLR aims to synthesize existing research findings to unravel the intricate dynamics of skill-based leadership within the aviation industry. By systematically reviewing and analyzing relevant literature, this study seeks to elucidate the impact of leadership practices on safety outcomes, organizational resilience, and operational efficiency in aviation settings. Through a structured approach to a literature review, this study endeavors to provide valuable insights and evidence-based recommendations for leadership development initiatives, training-programs, and future research directions in the field of aviation leadership.

Understanding and enhancing leadership effectiveness remains a pressing concern for aviation organizations worldwide, against rapid technological advancements, evolving regulatory landscapes, and emerging challenges within the aviation industry. By synthesizing and critically analyzing existing research literature, this SLR aims to contribute to a deeper understanding of skill-based leadership and its implications for organizational performance and safety outcomes within the aviation sector. Ultimately, this study seeks to inform and guide scholars and practitioners toward fostering a culture of excellence, safety, and resilience in aviation operations grounded in the principles of skill-based leadership (Latifah & Ritonga, 2020). The skills-based leadership approach highlights the importance of developing technical, human, and conceptual skills to improve leadership effectiveness (Hendriani et al., 2024). In the aviation industry, where operational complexity and safety concerns are high, leaders must demonstrate deep technical expertise, the ability to manage interpersonal relationships, and strategic decision-making skills (Supardam, 2024).

With an emphasis on developing these skills, the study aims to uncover how leaders in the aviation sector can face challenges and build an organizational culture that prioritizes safety, efficiency, and innovation. The skills-based approach also provides insight into how continuous training and development can prepare leaders for increasingly complex demands (Gaol & Siahaan, 2021). Leaders must keep their skills current in an ever-changing environment due to technological advancements and stringent safety policies (Mawa, 2020). As aviation operations become increasingly complex and interconnected, the role of leadership in guiding and managing diverse teams of professionals becomes ever more crucial. Skill-based leadership, as conceptualized within the skill approach framework, posits that leadership effectiveness is contingent upon the possession and application of key competencies technical, human, and conceptual in navigating complex operational landscapes. In aviation, where

safety, precision, and adaptability are paramount, understanding how leadership competencies intersect with organizational performance metrics, safety culture, and crew dynamics is paramount (Megheirkouni et al., 2018).

In the research conducted by Fathara in 2021, which has the goal of examining entrepreneurial leadership and determining the skills essential for entrepreneurial leadership in achieving success in a growing economic environment. the results of this study in terms of theory will provide a clear picture of entrepreneurial leadership that can be used as a reference in making skills-based empirical models based on phenomena in developing economies. The above theory is based on economic development and this research focuses on leadership in the aviation industry, both theories use a skills-based approach to improve skills in leadership.

This SLR aims to synthesize existing research findings to unravel the intricate dynamics of skill-based leadership within the aviation industry (Ahmed & Harrison, 2023). By systematically reviewing and analyzing relevant literature, this study seeks to elucidate the impact of leadership practices on safety outcomes, organizational resilience, and operational efficiency in aviation settings. Through a structured approach to literature review, this study endeavors to provide valuable insights and evidence-based recommendations for leadership development initiatives, training- programs, and future research directions in the field of aviation leadership.

Against the backdrop of rapid technological advancements, evolving regulatory landscapes, and emerging challenges within the aviation industry, understanding and enhancing leadership effectiveness remains a pressing concern for aviation organizations worldwide. By synthesizing and critically analyzing existing research literature, this SLR aims to contribute to a deeper understanding of skill-based leadership and its implications for organizational performance and safety outcomes within the aviation sector. Ultimately, this study seeks to inform and guide both scholars and practitioners toward

fostering a culture of excellence, safety, and resilience in aviation operations, grounded in the principles of skill-based leadership (Khalili et al., 2022).

Not only skill approach, the significance of servant leadership (SL) as a leadership style that can yield substantial behavioral and attitudinal outcomes compared to other leadership approaches. Empirical evidence suggests that servant leaders are particularly well-suited to navigate turbulent circumstances, thereby reducing employee distress and enhancing overall organizational performance. This study specifically aims to explore the impact of servant leadership on job performance among service employees in Jordanian airline companies, a sector critical to the country's economy. The concept of servant leadership remains relatively underexplored in the Jordanian context. Therefore, this research seeks to uncover its value as a leadership strategy to enhance employee performance and create a competent workforce. Additionally, the study addresses a crucial question regarding the adoption of servant leadership across different cultural contexts, which has not been extensively investigated in prior research. The main objective is to analyze how various dimensions of servant leadership—such as conceptualization, emotional healing, prioritizing employees, ethical behavior, empowerment, and community value creation—affect job performance within these organizations (Melhem et al., 2023).

This research aims to provide insights into their perceptions and attitudes regarding servant leadership and job performance by employing a self-administered questionnaire to gather data from service employees. Ultimately, the findings are expected to contribute significantly to both academic literature and practical applications within the airline industry in Jordan (Melhem et al., 2023). Also, Empowering leadership has emerged as a significant factor influencing employee engagement and performance within organizations. This leadership style fosters an environment where employees feel valued and motivated to contribute to safety initiatives actively. The study posits that empowering leadership can enhance safety culture—a shared commitment to safety among

employees—and improve the safety climate, which reflects employees' perceptions of the organization's commitment to safety.

Mindful organizing, defined as the collective awareness and proactive behavior of employees in managing safety risks, is a crucial outcome of these interactions. The research aims to explore how empowering leadership influences both safety culture and climate, ultimately predicting mindful organizing within an air traffic management context. By examining these relationships, the study seeks to provide insights into how organizations can cultivate a safety-oriented mindset among their workforce (Mezentseva et al., 2023).

Methods

This research uses the Systematic Literature Review (SLR) method to systematically identify, select, and synthesize relevant literature pertaining to leadership within the aviation industry, specifically focusing on the skill approach paradigm. According to (Cabrera & Cabrera, 2023) SLR is a methodical and structured approach used to identify, select, analyze, and synthesize existing research literature relevant to a specific research question or topic of interest. It involves systematically searching multiple databases and sources to ensure comprehensive coverage of relevant studies, followed by a rigorous screening process to identify high-quality and relevant literature for inclusion in the review. The SLR methodology aims to minimize bias by employing transparent and replicable procedures at each stage of the review process (Sudrajat et al., 2024).

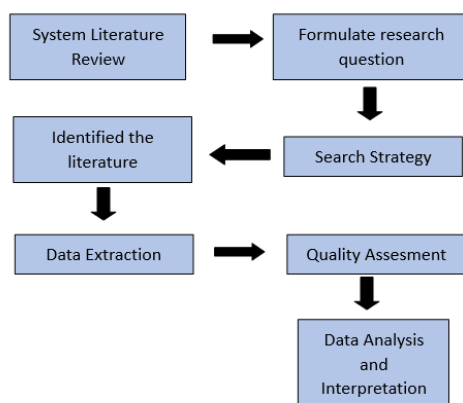


Figure 1. Diagram of Analysis

The first step in the analysis is conducting a systematic literature review to comprehensively skill-based leadership within the aviation industry. In this SLR, a total of 50 articles and then chose the 10 most related articles. These 10 journals have been identified that specifically explore the role of leadership skills within the aviation world. This process involves identifying and reviewing relevant studies to establish the context and foundation for the research. A systematic approach ensures that all relevant literature is considered, reducing selection bias and increasing the validity of the findings. This step aims to collect enough background information to understand previous research and identify gaps or unanswered questions that can guide further investigation (Van Dinter et al., 2021).

Once a foundational understanding of the topic is established, the next step is to formulate a clear and specific research question. The research question acts as a guiding framework for the entire analysis, ensuring focus and relevance throughout the process. For example, questions such as “How does skill-based leadership influence organizational performance in the aviation industry?” and “What is the relationship between skill-based leadership, safety culture, and crew dynamics?” are crafted to address specific aspects of the topic. These questions are carefully designed to align with the data available in the literature and to produce actionable and evidence-based insights.

A well-defined search strategy is critical for systematically identifying all relevant literature. This involves developing a plan to identify keywords, select appropriate databases, and apply inclusion and exclusion criteria. Keywords such as “skill-based leadership,” “safety culture,” “crew dynamics,” and “aviation industry” are used to conduct searches in databases like Scopus, PubMed, Web of Science, or Google Scholar. Inclusion criteria ensure that only relevant studies are considered, such as those focusing on skill-based leadership, written in English and peer-reviewed with empirical data. Exclusion criteria filter out irrelevant studies, including opinion pieces, editorials, or publications without sufficient data access.

This approach makes the search comprehensive and focused, ensuring that only high-quality and relevant materials are included in the review.

The literature identified through the search strategy is then systematically selected in three stages to ensure relevance and quality. The first stage is the initial screening, where titles and abstracts are reviewed to quickly determine if an article is relevant to the research topic. Articles that fail to meet the inclusion criteria are excluded at this point. In the second stage, the full texts of articles that pass the initial screening are thoroughly reviewed to confirm their relevance and alignment with the research objectives. Finally, in the third stage, the selected articles undergo a quality assessment using tools such as the Critical Appraisal Skills Programme (CASP). This step ensures that only studies with valid methodologies, reliable data, and significant findings are included for analysis, providing a solid foundation for the research (Memon et al., 2020).

After identifying and selecting relevant articles, key information is extracted in a structured manner using a standardized form. This form captures essential details such as the identity of the article (author, year, title), the research methods used, the key variables analyzed (e.g., skill-based leadership, organizational performance, safety culture, and crew dynamics), and the main findings relevant to the research questions. By systematically extracting this data, the process ensures consistency and creates a comprehensive dataset. This data set is the basis for the subsequent analysis, allowing the researchers to organize and synthesize findings effectively.

Following data extraction, a thorough quality assessment is conducted to ensure the articles in the analysis meet rigorous scientific standards. This step evaluates the validity of the research methodologies, the relevance of the findings to the research questions, and the reliability of the data. Only articles demonstrating intense methodological rigor and meaningful contributions to the topic are retained for further analysis. This process is essential for maintaining the credibility and reliability of the overall research findings,

ensuring that the conclusions drawn are based on high-quality evidence.

Once the data is collected and verified, it is analyzed to answer the research questions. The analysis involves both descriptive and thematic approaches. Descriptive analysis presents the data clearly and organized through numerical summaries or narrative descriptions of key findings. The thematic analysis identifies patterns and significant themes that emerge from the literature, such as the role of skill-based leadership in enhancing safety culture or improving organizational performance. The goal is to identify the contribution of skill-based leadership to various aspects of aviation, including organizational performance, safety culture, and crew dynamics. By synthesizing the findings, the research provides a deeper understanding of how skill-based leadership influences these critical elements.

The final step is to present the analysis results clearly and structured. This may involve narrative summaries, tables, or thematic maps illustrating key variables' relationships and highlighting significant findings. The presentation is designed to answer the research questions comprehensively while offering new insights into the role of skill-based leadership in the aviation industry. By providing an apparent synthesis of the findings, this step ensures that the research contributes to developing theories or practices that can improve leadership effectiveness, organizational performance, and safety culture in the aviation sector. This detailed explanation provides a structured and comprehensive process for analyzing literature on skill-based leadership in the aviation industry (Thomé et al., 2016). By systematically applying these methodological steps, an SLR provides a robust and comprehensive synthesis of existing research literature, offering valuable insights and informing decision-making in academic and practical contexts.

Results And Discussions

The search strategy employed in a Systematic Literature Review (SLR) is a highly structured and systematic process to identify, collect, and evaluate literature relevant to the specified research topic. This involves

meticulous steps in designing appropriate search criteria, which include key terms, time constraints, and sources of information to be utilized. Hence, an effective search strategy is a crucial initial step in an SLR, ensuring that all pertinent literature is considered in the research analysis. The search is developed as follows: first, researchers identify the most relevant terms associated with the research topic to be searched in the literature. These key terms are then used to formulate an effective search string, consisting of one or more phrases or keywords related to the research topic. And to enhance search relevance and accuracy, “Boolean” operators such as “AND”, “OR”, and “NOT” can be utilized to combine key terms in specific ways. Afterward, researchers select the most suitable sources of information to search, such as academic databases, online libraries, or specialized search platforms. The last one is developed search strings are then tested and validated to ensure that they yield relevant and accurate search results about the specified research topic (Thomé et al., 2016).

During the literature search process, databases are searched based on titles, keywords, and abstracts. This allows researchers to filter literature based on relevance to the specified research topic. Additionally, the search is confined by publication year, with the specified time range starting from 2019. This limitation ensures that the retrieved literature is relevant to the current research in the investigated field (Erbara & Takdir, 2022) and (Istiharoh, 2017). In this SLR, a total of 50 articles and then chose the 10 most related articles. These 10 journals have been identified that specifically explore the role of leadership skills within the aviation world. These journal publications are the primary data sources analyzed comprehensively in this literature review. By examining the selected journals, researchers can gain in-depth insights into various aspects related to leadership skills' role in the aviation world, such as recent trends, effective training methods, and evaluation frameworks used. These significant journal publications are crucial in understanding the researched topic comprehensively and ensuring that the resulting literature review is

based on strong and relevant evidence (Istiharoh, 2017).

Drawing from the 10 studies outlined in Table 1, research delving into leadership skills' role in the aviation world emerges as profoundly impactful. These investigations shed light on the pivotal influence of leadership on organizational performance and dynamics. Identification seeks to discern various facets of leadership skills crucial for organizational success, including communication proficiency, transformational leadership, and visionary aptitude. The exploration entails scrutinizing the most prevalent challenges organizations confront regarding leadership, ranging from diminished employee motivation to the incapacity to meet evolving market demands. Root Cause Analysis delves into unearthing the underlying factors contributing to previously identified issues, necessitating an in-depth exploration of organizational dynamics, workplace culture, and various internal and external variables (Kusumawati & Anik, 2023). Solution selection aims to pinpoint effective and practical remedies to mitigate organizational challenges, potentially involving tailored training programs, policy adjustments, or the implementation of innovative strategies. Comprehensive Conclusion formulation synthesizes insights gleaned from prior research endeavors to present robust, all-encompassing solutions aimed at enhancing the role of leadership in steering organizations toward their objectives.

Table 1. Journal Outcome

Journal	Main Findings	Outcome Measured
Impact of Leadership Skill Approach on School Effectiveness at Secondary Level (Raza et al., 2023)	All three leadership skills (human, technical, and conceptual) significantly impact school effectiveness. Human skills of school leaders have a significant positive impact on school effectiveness. Technical skills of school heads	Impact of human, technical, and conceptual leadership skills on school effectiveness

	positively influence school effectiveness.		Systemic Leadership Development: Impact on Organizational Effectiveness (Douglas et al., 2022)	strategies, social capital development, and collective leadership capability, all contributing to organizational effectiveness.	development, and capacity
Developing Critical Thinking and Effective Communication Skills	Critical thinking and effective communication skills are crucial for the future professional workforce, especially in fields like aviation and security.	Development and improvement of critical thinking and effective communication skills in the future aviation workforce		Nine leadership styles were identified as influencing safety performance in high-risk industries, including transformational, transactional, LMX, authentic, empowering, ethical, paternalistic, charismatic, and passive leadership.	
Developing Critical Thinking and Effective Communication Skills in the Future Aviation Workforce in the Future Aviation Workforce (Aydiner et al., 2023)	Higher education plays a significant role in developing these skills to support workforce development.			Except for passive leadership, all the leadership styles were found to have a positive influence on safety performance by reducing incidents/accidents, improving safety climate, and enhancing safety compliance and participation.	Safety compliance, Safety participation, Safety climate
	Red teaming techniques and asking well-chosen questions are effective strategies to improve critical thinking and effective communication in educational and professional settings.		Leadership styles and safety performance in high-risk industries: a systematic review (Ta et al., 2022)		
The Role of Leadership in Aviation Safety and Aircraft Airworthiness (Ayiei et al., 2020)	Leadership is crucial for maintaining aviation safety and aircraft airworthiness, with leaders responsible for setting vision, objectives, and monitoring their achievement, as well as fostering workplace culture and risk management systems.	Role of leadership in maintaining aviation safety and aircraft airworthiness		However, the lack of clear boundaries between leadership style constructs and inconsistent conceptualization and measurement of safety performance hindered the ability to draw definitive conclusions about the influence of leadership on safety.	
Systemic Leadership Development: Impact on Organizational	The LDP was found to support human capital management	Internal impact, external impact, skill			
			Analysis of Competency,	There is an influence of	The primary outcome

<p>Discipline, and Self-Efficacy on The Performance of Aviation Security Staff: Literature Review (Susanto et al., 2024)</p>	<p>competency, discipline, and self-efficacy on the performance of aviation security staff.</p> <p>Improving competency, discipline, and self-efficacy of aviation security staff can lead to better work performance and achievements.</p> <p>This is a new finding in qualitative research on aviation security performance.</p>	<p>measured in this study is the performance of aviation security (AVSEC) staff.</p>	<p>(Gökalp & Soran, 2022)</p>	<p>environmental factors.</p> <p>Collectivism partially mediates the relationship between inspirational leadership, contingent reward, and student pilot performance.</p> <p>Tightness-looseness partially mediates the relationship between idealized influence, inspirational leadership, contingent reward, and student pilot performance.</p>
<p>Modeling the influence of paternalistic leadership and personality characteristics on alienation and organizational culture in the aviation industry of Pakistan: The mediating role of cohesiveness (Shahzad et al., 2022)</p>	<p>Paternalistic leadership and personality characteristics significantly and positively impact alienation and organizational climate.</p> <p>Cohesiveness mediates the relationships between paternalistic leadership, personality characteristics, alienation, and organizational climate.</p> <p>Cohesiveness has a positive and significant impact on alienation and organizational climate.</p>	<p>The primary outcomes measured in this study are alienation, organizational climate, and cohesiveness.</p>	<p>Leading in the paradoxical world of crises: how leaders navigate through crises (Förster et al., 2022)</p>	<p>Leaders in crisis situations apply paradoxical behaviors to cope effectively with the situation and navigate their organizations through the crisis.</p> <p>These paradoxical behaviors are derived from the leaders' mindset of "conscious recognition" of the contradictory demands of the crisis, as well as their "compressed situational leadership" actions.</p>
<p>The impact of leadership styles on performance and mediating effect of organizational culture: A study in flight schools</p>	<p>Flight crew leadership cannot be analyzed without considering organizational culture, as behavior is influenced by both individual and</p>	<p>Student pilots flight performance</p>		<p>The paradoxical behaviors exhibited by leaders include strategic vs. operational thinking, optimism vs. realism, rationality vs. intuitiveness, tight vs. loose</p>

	leadership, emotional distance vs. empathy, and mobilizing support vs. providing support.		(Wu et al., 2023)	between SSTL and safety behavior.	
	Constructive leadership behaviors (change-oriented, relational-oriented, and task-oriented) were positively associated with workplace safety, while negative leadership behaviors (passive and destructive) undermined workplace safety.			Developing HSP in pilots is an effective way to promote safety behavior, as it leads to autonomous internalization of safety practices.	
A meta-analysis of leadership and workplace safety: Examining relative importance, contextual contingencies, and methodological moderators. (Lyubykh et al., 2022)	Task-oriented leadership was the largest contributor to the majority of examined workplace safety constructs. The effectiveness of leadership behaviors on workplace safety varied across different contextual factors such as national culture, industry risk, workforce age, and whether the leadership was safety-specific or generalized.	The primary outcomes measured in this paper are the various workplace safety constructs, including safety outcomes, safety compliance, safety participation, safety knowledge, safety motivation, safety climate, and safety attitudes.		The paper identified overlapping leadership competencies between digital leadership (DL) and crisis leadership (CL), as well as competencies unique to each domain.	
			Leadership in a digitalized and crisis-ridden world: towards a comprehensive overview of relevant competencies for leaders (Vay & Steinherr, 2023)	Overlapping competencies include agility, self-regulation, and learning, while competencies unique to DL include health awareness, open mindset, problem-solving, social media use, and technical skills, and competencies unique to CL include situational awareness.	the identification of overlapping leadership competencies between digital leadership (DL) and crisis leadership (CL), which encompass agility, self-regulation, and learning.
The influence of safety-specific transformational leadership on safety behavior among Chinese airline pilots: The role of harmonious safety passion and organizational identification	SSTL has a direct positive effect on pilots' safety behavior and an indirect positive effect through increasing harmonious safety passion (HSP). Organizational identification strengthens the positive relationship	Safety behavior, harmonious safety passion (HSP), and organizational identification		The paper provides a comprehensive overview of leadership competencies required in a digitalized and crisis-ridden world by integrating the previously separate research streams of DL and CL.	

The table above analysis highlights the significance of various leadership skills in enhancing effectiveness in different contexts. The studies by (Raza et al., 2023) and (Aydiner et al., 2023) emphasize the importance of human, technical, and conceptual skills in school leadership and the aviation industry, respectively. These findings can be applied to this research by highlighting the importance of a comprehensive skill set in aviation industry leaders. This includes technical skills related to aviation operations and human and conceptual skills that enable effective communication, strategic thinking, and problem-solving. By emphasizing the development of these skills, the aviation industry can better prepare its leaders to navigate the complexities and ensure effective leadership in the face of technological advancements and environmental concerns.

The studies by (Ayiei et al., 2020) and (Douglas et al., 2022) further underscore the critical role of leadership in maintaining aviation safety and aircraft airworthiness and the importance of leadership development programs in enhancing organizational effectiveness. These findings suggest that effective leadership is crucial for setting vision and objectives, monitoring their achievement, and fostering workplace culture and risk management systems. The Leadership Development Program (LDP) was found to support human capital management strategies, social capital development, and collective leadership capability, all contributing to organizational effectiveness (Schopf et al., 2021). Furthermore, the studies demonstrate that effective leadership in the aviation industry requires a deep understanding of the industry's unique challenges and the ability to adapt to changing circumstances. This includes staying up-to-date with the latest technological advancements, managing complex operations, and ensuring compliance with regulatory requirements. By developing a comprehensive skill set that includes technical, human, and conceptual skills, aviation industry leaders can better address these challenges and ensure the continued safety and efficiency of the industry (Thapa et al., 2023).

In addition, the studies highlight the importance of leadership development

programs in enhancing organizational effectiveness. These programs can help aviation industry leaders develop the skills and competencies necessary to navigate the industry's complexities and ensure effective leadership. By emphasizing the development of these skills, the aviation industry can better prepare its leaders to navigate the industry's challenges and ensure effective leadership in the face of challenges (Haetami et al., 2023). The interplay between leadership styles and safety performance is vital in high-risk industries, where effective leadership can significantly mitigate risks and enhance safety outcomes. This research paper synthesizes findings from multiple studies to explore the influence of various leadership styles on safety performance, focusing on key constructs such as safety compliance, safety participation, and safety climate.

A systematic review identified nine leadership styles that impact safety performance: transformational leadership, transactional leadership, leader-member exchange (LMX), authentic leadership, empowering leadership, ethical leadership, paternalistic leadership, charismatic leadership, and passive leadership. Transformational leadership encourages proactive engagement and innovation in safety practices, while transactional leadership emphasizes structured rewards and compliance with safety regulations. LMX enhances communication and trust regarding safety issues, whereas authentic leadership builds a culture of transparency and ethical behavior in safety practices. Empowering leadership motivates employees to take ownership of their safety responsibilities, and ethical leadership models ethical decision-making, influencing organizational safety norms. Paternalistic leadership balances authority with care, impacting employee perceptions of safety, while charismatic leadership inspires adherence to safety protocols through personal influence. In contrast, passive leadership generally correlates with adverse safety outcomes due to lacking engagement.

All leadership styles except passive leadership positively influence safety performance through various mechanisms.

These include enhancing safety compliance by promoting adherence to regulations, fostering safety participation by encouraging employee involvement in initiatives and contributing to a positive safety climate that prioritizes organizational safety. Despite these positive associations, challenges persist in measuring the effectiveness of these leadership styles due to inconsistent conceptualization across studies and unclear boundaries between constructs related to different styles.

Several contextual factors also influence the effectiveness of leadership styles on safety performance. National culture can affect how leadership behaviors are perceived and enacted within organizations. Additionally, the inherent risks associated with different industries necessitate tailored approaches to leadership. Workforce characteristics such as age and experience can further shape the effectiveness of various leadership behaviors in promoting workplace safety. A comparative analysis of several studies provides valuable insights into this relationship. The systematic review (Ta et al., 2022) identified nine leadership styles affecting safety performance while highlighting measurement inconsistencies across studies and emphasizing more explicit boundaries between constructs related to these styles. The meta-analysis by (Lyubykh et al., 2022) found that constructive and destructive leadership behaviors significantly impact workplace safety outcomes, with contextual factors playing a crucial role in determining their effectiveness. This study highlighted the importance of understanding how different leadership styles contribute to various aspects of workplace safety, including knowledge, motivation, and attitudes.

(Shahzad et al., 2022) investigated how paternalistic leadership influences organizational culture and cohesiveness within the aviation sector, demonstrating positive impacts on employee alienation and climate. (Wu et al., 2023) focused on the effects of safety-specific transformational leadership among airline pilots, finding that this style directly enhances pilots' safety behavior through increased harmonious safety passion. Furthermore, (Gökalp & Soran, 2022) examined the impact of organizational culture

in flight schools and found that positive leader behaviors significantly improve student pilots flight performance when supported by a conducive organizational environment. The implications for practice are significant. The findings underscore the importance of adaptive leadership approaches tailored to specific organizational contexts to enhance workplace safety effectively. Training programs should focus on developing leaders' competencies and fostering a robust safety culture through visible commitment and engagement.

In conclusion, the analysis of the provided table emphasizes the importance of a broad range of leadership skills in enhancing effectiveness in different contexts. The studies highlight the significance of human, technical, and conceptual skills in school leadership and the aviation industry, as well as the critical role of leadership in maintaining aviation safety and aircraft airworthiness. By applying these findings to this research, the aviation industry can better prepare its leaders to navigate the complexities and ensure effective leadership in the face of challenges (Moldoveanu & Narayandas, 2019). Also, understanding the intricate relationship between leadership styles and safety performance is essential for developing effective strategies in high-risk industries. While transformational and transactional leadership are often highlighted for their positive impacts on safety outcomes, it is crucial to consider the context in which these styles operate. Future research should clarify the boundaries between different leadership constructs and establish standardized measures for assessing their impact on safety outcomes. This synthesis emphasizes that effective leadership is not merely a function of style but involves understanding each organization's environment's unique dynamics to promote a safety culture.

Conclusion

This study found that leadership skills are crucial in enhancing leadership effectiveness in the aviation industry. Previous research emphasizes the importance of human, technical, and conceptual skills. For aviation industry leaders, possessing a comprehensive skill set is essential. This includes not only

technical skills related to aviation operations but also human and conceptual skills. Effective communication, strategic thinking, and problem-solving are key components of effective leadership. Additionally, the research highlights the critical role of leadership in maintaining aviation safety and aircraft airworthiness. The Leadership Development Program (LDP) has been shown to support human capital management and collective leadership capability, contributing to organizational effectiveness. By understanding the unique challenges of the aviation industry and developing relevant skills, leaders can better navigate industry complexities and ensure sustained safety and efficiency.

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