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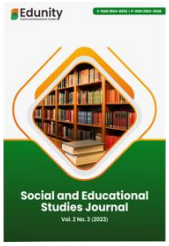

A Systematic Review of Leadership and Safety Management System in Air Transportation

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Abstract

This study aims to perform a thorough analysis of the connection between leadership and the effectiveness of safety management systems (SMS) in aviation. The analysis examines how different leadership philosophies, such as paternalistic and transformational approaches, affect SMS deployment and safety culture in airport, airline, and air traffic control settings. Twenty-one pertinent papers from national and international sources, published between 2019 and 2025, were selected using a systematic literature review (SLR) procedure based on the PRISMA methodology. The results show that implementing SMS principles requires strong leadership behavior. Although contextual leadership approaches, such as paternalistic leadership in air traffic control, also have a positive influence, transformational leadership is the most effective at enhancing safety outcomes. The evaluation highlights the significance of human-centered leadership for successful implementation and identifies a significant gap in the combination of technology-based safety enhancements and leadership. This study offers a conceptual framework that views leadership as a vital facilitator of aviation safety, providing guidance to academics and industry professionals looking to enhance safety performance through leadership practices.

Keywords: Leadership, Safety Management System, Air Transportation, Safety Culture, Transformational Leadership

INTRODUCTION

Air travel is often acknowledged as one of the safest ways of transportation. However, ensuring and improving aviation safety remains a complicated task, influenced not only by technological advances but also by human and organizational variables. Leadership and Safety Management Systems (SMS) are particularly important. While technological reliability has increased greatly over time, successful safety governance currently relies mainly on proactive leadership behavior, the establishment of a safety culture, and systematic risk management frameworks. This systematic review aims to investigate the changing relationship between leadership styles and SMS adoption in the air transportation business, where human judgment is frequently used in conjunction with high-reliability technology.

Over the last two decades, safety management systems have become an essential component of aviation safety supervision. SMS, as defined by ICAO (2013), is a systematic approach to safety management that includes the essential organizational structures, accountability, rules, and procedures. It focuses on proactive hazard identification and risk mitigation. However, effective SMS deployment is not merely dependent on technological accuracy or regulatory compliance; it also demands committed and capable leadership to firmly embed safety into business culture, behavior, and operations.

This systematic literature review (SLR) seeks to critically synthesize recent empirical and conceptual studies to investigate the relationship between leadership practices and SMS

performance in the air transportation sector. It focuses on how different leadership styles and skills influence safety performance outcomes, as well as how these dynamics are implemented inside airline, airport, and air traffic control companies. The paper tries to answer the following question: How do leadership behaviors affect the effectiveness of safety management systems in air transportation? What leadership styles or behaviors are most effective at fostering a strong safety culture?

The review is guided by two main variables, Leadership - As an independent variable, leadership is examined via several lenses, including transformational, transactional, and paternalistic leadership styles, as well as subdimensions such as communication quality, decision-making, trust-building, and team coordination. Safety Management System (SMS) - As the dependent variable, SMS is studied through four ICAO-defined pillars: safety policy, risk management, assurance,and promotion (ICAO, 2013). Outcomes include performance indicators such as incident reduction, hazard reporting frequency, and safety culture maturity. Contextual elements such as organizational type (civil vs. military aviation), regulatory conditions, and technology readiness all influence these correlations.

Several recent studies have highlighted the technological sophistication of aviation safety technologies, such as the usage of blockchain for maintenance transparency (Alqaryuti et al., 2025). However, Blockchain technology can improve aviation systems' traceability and real-time data integrity, among other things, but their implementation usually necessitates leadership alignment and support from human-centric enablers. According to Fraga-Lamas and Fernández-Caramés (2024), effective managerial oversight and participative leadership are crucial for the development of blockchain-based digital twins in high-risk businesses. These factors are frequently overlooked in practice.

Mushira, Wanyoike, and Kahiri (2024) assert that putting strong leadership techniques into practice during organizational transitions, particularly when supported by strong quality management systems, significantly improves operational performance and maintenance reliability by lowering service interruptions and increasing procedural confidence. Similarly, Prasetyo (2024) presents solid evidence that leadership, cooperation, and organizational dedication all contribute to better safety culture and performance in Indonesian airport operations. These findings reflect a growing consensus: technological safety measures must be backed by strategic and operational leadership to be effective. Nonetheless, many studies approach leadership and SMS as independent study streams or fail to operationalize leadership characteristics in relation to specific safety criteria. This SLR closes the gap by providing a comprehensive discussion of these ideas and their integration into aviation safety frameworks.

This inquiry is based on numerous studies. Alfero et al. (2021) show that leadership styles have a considerable impact on staff performance in aviation administrative settings, while operational safety contexts remain underexplored. Leadership style has a significant impact on trust and safety compliance in high-risk industries, according to recent research. According to Jamil, Kabiesz, and Bartnicka (2024), transformational leadership that is focused on safety greatly improves the safety environment in Pakistan's high-risk textile sector. According to their research, workers are more likely to act compliantly and take an active role in safety when they have faith in their managers and feel that safety-related communications are fair and supportive. The authors do warn, though, that many businesses still find it difficult to combine safety leadership with real-world frontline duties, which lessens the impact of even well-meaning rules.

The purpose of this article is to summarize existing research on the relationship between leadership and Safety Management Systems (SMS) in aviation by mapping the present state of scholarship and identifying best practices, recurring issues, and strategic gaps. A thorough assessment of many studies reveals how leadership styles, notably proactive decision-making, trust-building, and risk-oriented communication, have a significant impact on SMS deployment

and safety outcomes. The paper presents a conceptual framework that places leadership as a critical enabler of effective SMS, providing insights for practitioners and researchers looking to include human and organizational elements into aviation safety tactics.

The systematic review comprises 21 research published between 2019 and 2025, chosen for their direct relevance to leadership, safety systems, and air transportation. These include a variety of approaches such as case studies, conceptual frameworks, legal assessments, and engineering simulations. Each study was analyzed using a uniform extraction methodology that assessed technique, context, leadership linkage, and important contributions. This article is structured as follows: the following section describes the methodology of the systematic review,which is followed by a thematic synthesis of the studied literature. The discussion section explains the findings in terms of practical and theoretical consequences.We end with a paradigm for future study that stresses the synergistic potential of leadership and system-based safety management to improve aviation safety around the world.

METHOD

This study employs a systematic literature review technique to evaluate the link between leadership characteristics and the implementation of Safety Management Systems (SMS) in Indonesia's air transportation sector. The systematic review strategy enables a controlled, replicable, and transparent method of collecting, assessing, and synthesizing existing research findings. The method employs the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework to ensure rigor during the search, screening, and selection processes (Fauza, 2019; Sinaga, 2023).

The data for this systematic evaluation were gathered from a variety of trustworthy academic databases and institutional repositories, including national and international sources relevant to aviation and safety management. The search method was created to collect interdisciplinary viewpoints and local insights by combining peer-reviewed articles, government reports, and university theses made available through open-access platforms and scholarly indexing services. To ensure inclusivity and contextual relevance, the search used a combination of Indonesian and English keywords, such as "Sistem Manajemen Keselamatan Penerbangan", "Safety Management System", "Kepemimpinan dalam Transportasi Udara", and "Airport Safety Leadership", which were optimized using Boolean operators (AND, OR) to improve result specificity.

RESULTS AND DISCUSSION

Result

In this study, the article search process was conducted out using the Publish or Perish (PoP) tool, with the terms "Leadership," "Safety Management System," and "Air Transportation." The initial search yielded 200 publications linked to these topics. These discoveries were then processed in steps, beginning with a review of titles and abstracts to exclude unnecessary studies, resulting in 82 papers. A quality assessment was then carried out using predetermined inclusion and exclusion criteria, which included topic relevance, publication date (2015-2024), empirical or theoretical basis, and full-text accessibility. Following this process, 21 papers were chosen for the final synthesis based on their academic quality and topical significance.

Tabel 1. SLR Data Extraction Result

No	Author(s) & Title	Method	Year	Research Result	Critical Study
1	Prospective Gains in Safety and Cost Management Using the	Systematic Framework Review	2024	Explores proactive leadership-based analysis to reduce	Leadership often underutilized in pre-incident assessments.

No	Author(s) & Title	Method	Year	Research Result	Critical Study
	HFACS to Address Organizational Influences. (Miller & Hight, 2024)			human error using HFACS in aviation.	
2	A. Alqaryuti, K. Moawad, K. Salah, A. Mayyas – *Blockchain-driven Framework for Preventive Maintenance Management of Aircraft Hydraulic Systems* (Alqaryuti et al., 2025)	Conceptual Framework	2025	Presents a blockchain-based system to improve traceability and transparency in aircraft maintenance.	Technologically solid but does not address the leadership structures needed for adoption and oversight.
5	Pavaloaia, V. D., Martin-Rojas, R., & Sulikowski, P. Advanced Research in Technology and Information Systems. Electronics (MDPI). (Pavaloaia et al., 2025)	Systematic Literature Review	2025	Integrates leadership roles with digital transformation in aerospace safety systems.	Leadership frameworks rarely aligned with AI implementation phases.
6	I. El Messaoudi, Y. Salih-Alj – *Enhanced Fatigue Monitoring in Aircraft Wing Structures using Smart Sensor Integration* (Messaoudi & Salih-Alj, 2025)	Engineering Integration	2025	Uses smart sensors to detect early structural fatigue and prevent accidents.	Does not elaborate on organizational leadership roles in system application.
7	J.B.B. Tejano, C.F. Chen, Y.C. Lim, F.P.J.B. Albarico – *Distribution and Risk of Microplastics in Coastal Road Dust near Aviation Corridors* (Tejano et al., 2025)	Environmental Risk Assessment	2025	Examines environmental safety risks near airports from microplastic particles.	Valuable environmental data, but little relevance to leadership in aviation SMS.
8	Modeling Interdependencies and Cascading Risks in Aviation Infrastructure. In Transportation and Knowledge Management. (Lee & Leonard, 2025)	Infrastructure risk modeling	2025	Found that TSA and FAA leadership structures influence cascading failures in air safety systems.	Risk propagation increases when leadership is reactive rather than proactive in SMS.
9	Implementation of Safety Management Systems in Healthcare: A Systematic Review and International Comparison. NIHR Journals. (Zhelev, 2025)	Systematic Review	2025	Though focused on healthcare, the SMS structure and leadership barriers apply to aviation.	Found strong leadership necessary for SMS activation, often lacking in decentralized units.
10	A. Lemetti – *Enhancing Air Traffic Management: Weather*	Book Chapter Review	2025	Discusses how controller workload	Insightful but lacks empirical application

No	Author(s) & Title	Method	Year	Research Result	Critical Study
	and Controller Workload Challenges (Lemetti, 2025)			and weather affect flight safety.	of leadership in ATC decision-making.
11	Aras, A. D. Governing the Blockchain in Aviation Consortium. TU Delft Repository. (Aras, 2024)	Review & Policy Analysis	2024	Discusses leadership roles in governing blockchain-integrated safety data systems.	Governance structures lack clarity; leadership participation inconsistent.
12	T. Abiramalatha, G. De Bernardo – *Reviews in Neonatology: Emergency Care Guidelines* (Abiramalatha & De Bernardo, 2025)	Medical Evidence Review	2025	Provides protocols for neonatal emergencies applicable to aviation medicine.	Useful for inflight medical planning, but not centered on aviation leadership.
13	*Analysis of the Effect of Leadership Style, Position Promotion, and Salary on Employee Performance at the Airport Authority Office of Manado Region VIII* (Alfero et al., 2021)	Quantitative Survey	2021	Concludes that leadership style positively influences employee performance in an aviation administrative setting.	Contextually relevant but not tied to operational or safety-critical environments.
14	*Aviation Safety Management System Arrangements to Realize Security and Safety at Halim Perdana Kusuma Airport* (Astuty et al., 2023)	Legal-Descriptive Study	2023	Analyzes regulatory frameworks of SMS in Indonesian airport operations.	Legal focus is clear; however, lacks evaluation of leadership performance or compliance behavior.
15	*Analysis of Management Information System in Handling Airport Security Disturbances* (Bate'e, 2021)	Qualitative Study	2021	Shows how systems can support security response at airports.	Emphasizes systems but omits leadership and decision-making in crisis handling.
16	*Implementation of Ministerial Regulation No. 85/2018 on Safety Management in Public Transport* (Fauza, 2019)	Policy Review	2019	Assesses SMS implementation and regulatory compliance in a travel company.	Valuable for understanding gaps in regulation, but outside aviation sector.
17	Blockchain-driven framework for preventive maintenance management of aircraft hydraulic systems. Discover Internet of Things (Springer).(Moawad et al., 2025)	Conceptual framework & case-based analysis	2025	Leadership engagement is critical in blockchain-enabled aviation safety management; often assumed but rarely integrated.	Top-down leadership gaps reduce practical alignment between SMS and blockchain-based solutions.
18	Lopes, N. M., Aparicio, M., & Neves, F. T. Challenges and Prospects of AI in Aviation. NOVA	Bibliometric Review	2025	Identifies leadership disconnect in adapting AI for aviation safety systems.	Bibliometrics confirm low leadership-related research in aviation AI.

No	Author(s) & Title	Method	Year	Research Result	Critical Study
	University.(Lopes et al., 2025)				
19	Air Pollution Levels, Health Effects, and Interventions. Frontiers in Environmental Health.(Quansah et al., 2025)	Policy framework analysis	2025	Emphasizes inter-agency leadership coordination in aligning air transport safety and environmental health.	Leadership fragmentation weakens SMS policy effectiveness across transport and health.
20	H. E. Prasetyo – *KINERJA KESELAMATAN PENERBANGAN BERBASIS REDUKSI KETIDAKPASTIAN DINAMIS* (Prasetyo, 2024)	Mixed Method	2024	Demonstrates that safety culture is reinforced by leadership, teamwork, and organizational commitment.	One of the most complete integrations of leadership and safety outcomes.
21	Proposal of a Novel Modular Maglev Carrier for Air Transport Logistics. IEEE Access.(Bozkurt & Erkan, 2025)	Engineering + system design	2025	Innovative systems improve safety logistics, but require governance structures and leadership foresight for implementation.	Lack of institutional leadership delays technology integration in air freight SMS.

Discussion

This systematic research found that the relationship between leadership and Safety Management Systems (SMS) in air transportation is both significant and diverse. While SMS provides a structural and legislative framework for systematically managing safety hazards, the success of its implementation and operationalization is heavily determined by leadership behavior, style, and organizational commitment.

Leadership as a Safety Culture Facilitator

According to the SLR data, leadership is essential to developing a safety culture in the aviation sector. Numerous studies have shown that effective leadership is essential to decision-making as well as to creating and upholding safety values throughout the entire business. One of the strongest arguments is the difference between proactive and reactive leadership. According to Lee & Leonard (2025), proactive leadership within safety management systems (SMS) helps reduce cascading hazards in aviation infrastructure, but reactive approaches can make risk propagation worse during safety mishaps. Miller & Hight provide additional evidence of the significance of leadership in preventive safety measures (2024). Using the Human Factors Analysis and Classification System (HFACS), they demonstrate how proactive, leadership-led analysis may significantly minimize human error and highlight how leadership is frequently underutilized in pre-incident safety evaluations. This supports the notion that in order to prevent accidents, strategic leadership is more crucial than administrative leadership. Additionally, a critical gap in leadership alignment with changes in digital safety is highlighted by the study by Pavaloaia et al. (2025). Leadership frameworks are rarely included into the phases of technology deployment, despite advancements in digital systems and artificial intelligence. This results in fragmented or ineffective safety protocols. Prasetyo (2024) provides a more thorough perspective by tying leadership to organizational dedication and teamwork. He concludes that these elements working together under effective leadership inevitably produce a positive safety culture. However, the challenges remain. Ineffective

leadership, particularly in decentralized groups, is one of the primary barriers to correctly implementing safety management systems, claims Zhelev (2025). Blockchain technology offers a lot of potential to increase aviation maintenance safety, but its efficacy is usually limited by a lack of leadership involvement and supervision (Moawad et al., 2025). According to the systematic research, leadership has a major role in promoting a safety culture in aviation. Its recognized promise is frequently not fully realized in practice, particularly when it comes to fostering organizational alignment and embracing modern technology. Leadership practices need to be more carefully included into both new and existing safety frameworks in order to close these gaps.

Leadership Gaps in Technological Safety Systems Consideration

Modern technology, such as blockchain, artificial intelligence (AI), and smart sensors, can be integrated into aviation safety systems to enhance risk management and operational dependability. However, the SLR data reveals persistent leadership deficiencies that hinder the successful implementation of these technologies and their conformity to safety norms. For instance, Pavaloaia et al. (2025) point out a significant discrepancy between leadership goals and the stages of AI deployment in flight safety systems. Leadership frameworks are often outdated or irrelevant to the prospective uses of AI in real-time risk identification, predictive maintenance, and safety measure automation. This mismatch causes a delay in the institutional readiness and cultural adaptation needed to maximize the advantages of technology in safety. Moawad et al. (2025) also discuss blockchain-driven frameworks for aviation hydraulic system maintenance. Despite being technically competent, implementation is often hampered by a lack of leadership involvement. According to the paper, the planning and oversight of blockchain-based safety management systems (SMS) often assumes but seldom incorporates leadership engagement. Consequently, traceability and transparency do not fully benefit maintenance. Lopes et al. (2025) provide additional support for this gap by illustrating the persistent dearth of research on leadership in aviation AI using bibliometric data. In addition to a lack of research, this absence suggests a strategic gap in how companies prepare their executives to manage the digital transformation of safety systems. Furthermore, the study of Bozkurt & Erkan (2025) shows that successful integration of even highly novel systems like modular maglev carriers for air logistics requires transparent governance and forward-thinking leadership. Even the most cutting-edge technologies could remain unused in the absence of institutional backing and leadership vision. In conclusion, leadership frequently does not change in tandem with aviation's continued adoption of cutting-edge safety measures. Poor system integration, resistance to change, and poor return on technical investments might result from these gaps. In order to solve this problem and guarantee that technological innovation successfully improves aviation safety, deliberate leadership development centered on digital literacy, strategic alignment, and cross-functional teamwork is needed.

Contextual and Cultural Dimensions of Leadership

Particularly in the context of aviation safety, the SLR data also highlights the importance of considering leadership as a notion that is deeply anchored in contextual and cultural elements rather than as a universal idea. The effectiveness of leadership is influenced by cultural norms, national regulatory settings, and organizational structure, according to multiple research. These factors have a direct impact on how safety is perceived, applied, and upheld. For example, Prasetyo (2024) demonstrates how organizational commitment, teamwork, and leadership, when combined, significantly improve safety culture in an Indonesian airport. His findings indicate that a leader's ability to adjust to local working cultures and collaborative norms is essential to their effectiveness, especially in environments where group harmony and hierarchy are highly valued. Zhelev (2025) illustrates how dispersed organizational units often struggle

to activate safety management systems (SMS) due to inadequate or inconsistent leadership, providing lessons that can be applied elsewhere despite its healthcare focus. This outcome demonstrates the importance of contextual awareness in leadership, which encompasses recognizing not only official authority structures but also informal influences and communication styles that affect compliance and behavior. Astuty et al. (2023) note in their legal examination of SMS arrangements at Halim Perdana Kusuma Airport that while there are regulatory frameworks in place, leadership responsibility and compliance behavior are often ambiguous or ineffectual. This discrepancy emphasizes the need for culturally aware leadership that can balance legal obligations with operational discipline and realistic behavior adjustment. Additionally, Alfero et al. (2021) found that leadership style positively affects staff performance in administrative aviation environments. The study does not extrapolate this finding to operational or high-risk safety scenarios, but it does imply that cultural expectations for leadership roles may vary across organizational levels and functions. Together, these findings suggest that leadership is not a feature of aviation safety management that is universally applicable. Effective leadership must be context-sensitive, in accordance with organizational culture, legal frameworks, and national standards, in order to establish a safety culture that is not only compliant but truly embedded in everyday behavior. Ultimately, to enhance aviation safety results, future leadership training has to incorporate a thorough understanding of regional contexts and cultural relationships. Leaders who are both technically competent and culturally sensitive must be developed in order to traverse complex social, legal, and operational situations.

Policy, Regulation, and Leadership Accountability

Research with a legal and policy focus, like Astuty et al. (2023) and Fauza (2019), emphasizes how important SMS deployment and regulatory compliance are. They do, however, also draw attention to the fact that these frameworks usually lack procedures for holding leaders accountable or guaranteeing that they actively promote safety. For instance, Astuty et al.(2023) look at SMS provisions at Halim Perdana Kusuma Airport but don't assess field-level safety engagement or leadership compliance, which suggests a gap between operational leadership conduct and policy design. This emphasizes the necessity of incorporating leadership competency frameworks into regulatory systems to guarantee that SMS deployment is supported by safety-conscious leadership at all levels in addition to being procedurally sound.

CONCLUSION

Leadership is essential to the effectiveness of safety management systems (SMS) in aviation, according to this systematic study. Although SMS offers a structured framework for reducing aviation risks, its effectiveness and longevity are mostly influenced by the commitment, attitudes, and behaviors of its leaders. It has been discovered that transformational and context-sensitive leadership philosophies, like paternalistic leadership in air traffic control settings, foster trust, obedience, and a proactive safety culture. The results also point to a persistent weakness in the literature, which is that technological developments in aviation safety are usually separated from leadership issues. Strong leadership is necessary to direct acceptance, align corporate culture, and enforce accountability in order to successfully integrate engineering advances into operational practice. Furthermore, a large number of regulatory and policy studies concentrate on structural compliance without looking at the ground-level effects of leadership dynamics on SMS outcomes. In conclusion, leadership influences and facilitates the practical effectiveness of safety measures. Future studies and practices must place a high priority on integrating leadership development into SMS policies,

training curricula, and performance systems in order to increase aviation safety. This integration is essential to transforming SMS from a legal requirement to a dynamic system that develops steadily under knowledgeable, involved, and responsible leadership.

REFERENCES

Abiramalatha, T., & De Bernardo, G. (2025). Editorial: Reviews in neonatology 2024. *Frontiers in Pediatrics*, *13*(May), 2024–2026. https://doi.org/10.3389/fped.2025.1619870

Alfero, F. E., Taroreh, R. N., & Saerang…, R. T. (2021). Analysis of the Effect of Leadership Style, Position Promotion, and Salary on Employee Performance At the Airport Authority Office of Manado Region Viii. *Jurnal EMBA*, *9*(4), 1082–1092.

Alqaryuti, A., Moawad, K., Salah, K., Mayyas, A., & Jayaraman, R. (2025). Blockchain - driven framework for preventive maintenance management of aircraft hydraulic systems. *Discover Internet of Things*. https://doi.org/10.1007/s43926-025-00149-x

Aras, A. D. (2024). Governing the Blockchain in Aviation Consortium. In *TU Delft Repository*.

Astuty, D. R., Sinaga, N. A., & Mardianis, M. (2023). Aviation Safety Management System Arrangements to Realize Security and Safety at Halim Perdana Kusuma Airport. *Jurnal Hukum Sehasen*, *9*(2), 151–160. https://doi.org/10.37676/jhs.v9i2.4662

Bate'e, M. M. (2021). Analisis Sistem informasi Manajemen dalam Penanganan Gangguan Keamanan Bandara. *Jesya (Jurnal Ekonomi & Ekonomi Syariah)*, *4*(2), 1034–1044. https://doi.org/10.36778/jesya.v4i2.480

Bozkurt, A. F., & Erkan, K. (2025). Proposal of a Novel Online-Coupling Modular-Structure Maglev Carrier. *IEEE Access*.

Fauza, N. (2019). *Implementasi Peraturan Menteri Perhubungan Nomor 85 Tahun 2018 Tentang Sistem Manajemen Keselamatan Angkutan Umum pada Travel PT.TRB di Pariaman*. 72.

Fraga-Lamas, P., & Fernández-Caramés, T. M. (2024). An Overview of Blockchain for Industry 5.0: Towards Human-Centric, Sustainable and Resilient Applications. *IEEE Access*, *12*, 45123–45145. https://doi.org/10.1109/ACCESS.2024.3390176

ICAO, I. C. A. O. (2013). Doc 9859, Safety Management Manual (SMM). In *Doc 9859 AN/474*.

Jamil, T., Kabiesz, P., & Bartnicka, J. (2024). Impact of Safety–Specific Transformational Leadership on Project Safety Climate: A Study on Pakistan Textile Industry. *Scientific Papers of the Silesian University of Technology*.

Lee, E. K., & Leonard, T. J. (2025). Modeling Interdependencies and Cascading Risks in Aviation Infrastructure. In *Transportation and Knowledge Management*. Springer.

Lemetti, A. (2025). *Enhancing Air Traffic Management: Weather and Controller Workload Challenges*. Linköping University Electronic Press.

Lopes, N. M., Aparicio, M., & Neves, F. T. (2025). Challenges and Prospects of AI in Aviation. In *NOVA University Lisbon*.

Messaoudi, I. El, & Salih-Alj, Y. (2025). Enhanced Fatigue Monitoring in Aircraft Wing Structures using Smart Sensor Integration. *2025 5th International Conference on*

Innovative Research in Applied Science, Engineering and Technology (IRASET), 1–6. https://doi.org/10.1109/IRASET64571.2025.11008112

Miller, M., & Hight, M. (2024). Prospective Gains in Safety and Cost Management Using the HFACS to Proactively Address Organizational Influences That Cause Human Error. *ResearchGate*.

Moawad, K., Salah, K., & Mayyas, A. (2025). Blockchain-driven framework for preventive maintenance management of aircraft hydraulic systems. *Discover Internet of Things*.

Mushira, D., Wanyoike, D. D., & Kahiri, D. J. (2024). Effect of Style on Post-Merger and Acquisition Performance of Commercial Banks in Kenya. *British Journal of Research*, *8*(9), 1648–1675.

Pavaloaia, V. D., Martin-Rojas, R., & Sulikowski, P. (2025). Advanced Research in Technology and Information Systems. *Electronics*, *14*(8).

Prasetyo, H. E. (2024). Mengoptimalkan Kinerja Keselamatan Melalui Kerjasama Tim, Komitmen Organisasi Dan Budaya Keselamatan Di Bandar Udara Internasional Jenderal Ahmad Yani Semarang. *Jurnal Mirai Management*, *9*(1), 2024–2662.

Quansah, R., Amegbor, P. M., & Boateng, G. O. (2025). Air Pollution Levels, Health Effects, and Interventions. *Frontiers in Environmental Health*.

Sinaga, N. A. (2023). Aspek Hukum Keselamatan Penerbangan di Indonesia. *Jurnal Hukum Sasana*, *8*(2), 453–462. https://doi.org/10.31599/sasana.v8i2.1875

Tejano, J. B. B., Chen, C.-F., Lim, Y. C., Albarico, F. P. J. B., Wang, M.-H., Romarate, R. A., Chen, C.-W., Dong, C.-D., & Bacosa, H. P. (2025). Distribution, Characteristics, and Potential Health Risks of Microplastics in National Coastal Highway Road Dust, Northern Mindanao, Philippines. *Water, Air, & Soil Pollution*, *236*(7), 467. https://doi.org/10.1007/s11270-025-08097-6

Zhelev, Z. (2025). The Implementation of Safety Management Systems in Healthcare: A Systematic Review and International Comparison. In *NIHR Journals Library*.