Involvement International Journal of Business Vol. 3 No. 2, 2026
eISSN: 3032-485X
DOI: https://doi.org/10.62569/iijb.v3i2.219
Received: October 2025/ Revised: April 2026/ Accepted: April 2026

Involvement International Journal of Business
https://ejournal.agungmediapublisher.com/index.php/iijb

Maintenance Training as a Dynamic Capability Explaining Safety Performance in Kenya's Aviation Industry

Paul Ombati Onchonga[1]*, Tonny Lukose[2], Gloria Muthoni[3]

[1,2,3]*Moi University, Eldoret, Rift Valley, 30107, Kenya*

Abstract. Safety performance remains a critical outcome in the aviation industry, where maintenance errors are frequently associated with incidents, delays, and operational disruptions. While prior studies emphasize technical training, limited attention has been given to maintenance training as an organizational capability that enhances safety outcomes, particularly in developing aviation environments. This study investigates how maintenance training dimensions influence safety performance in Kenya's aviation industry. Guided by Dynamic Capabilities Theory and Human Factors Theory, the study adopted an explanatory research design using structured questionnaires administered to maintenance engineers working in 26 Approved Aircraft Maintenance Organizations and 9 domestic airlines operating at Wilson Airport, Kenya. A census approach produced 142 valid responses. Data were analyzed using descriptive statistics, Pearson correlation, and multiple regression analysis. The findings show that maintenance training significantly predicts safety performance, with the regression model explaining 73.6% of the variance ($R^2 = 0.736$). The model was statistically significant ($F = 102.621$; $p < 0.001$). All training dimensions positively influenced safety performance: training simulators ($\beta = 0.316$), training capacity ($\beta = 0.278$), leadership support ($\beta = 0.263$), and training frequency ($\beta = 0.226$). These results indicate that both technological resources and organizational support systems are essential in improving aviation safety outcomes. The study concludes that maintenance training operates as a dynamic organizational capability rather than a routine operational function. Continuous investment in simulators, instructor capacity, leadership commitment, and recurrent training strengthens competence renewal, reduces human error risk, and improves safety performance. The findings provide practical implications for regulators, airline managers, and maintenance organizations seeking to enhance safety through capability-driven training systems in developing aviation contexts.

Keywords: Dynamic Capabilities; Maintenance Training; Safety Performance; Leadership Support; Training Capacity; Aviation Industry

1. Introduction

Aviation is widely recognized as a high-reliability industry where organizational survival depends on the consistent achievement of superior safety performance (Abu

*Corresponding author's email: paul.ombati2000@gmail.com, Telp.: -

Talib et al., 2025; Cabrera & Melo de Sousa, 2022; Song et al., 2024; Wang et al., 2024). Safety is not merely a regulatory requirement but a strategic outcome shaped by how organizations mobilize knowledge, routines, and competencies to prevent failure in complex socio-technical systems. Scholars such as Teece (2007) argue that firms operating in turbulent and technology-intensive environments must continuously reconfigure their internal capabilities to sustain performance. In aviation, this reconfiguration is evident in how maintenance organizations update skills, procedures, and learning systems to cope with evolving aircraft technologies. Similarly, Sameera et al. (2021) and She et al. (2024) emphasizes that accidents are rarely isolated events but outcomes of latent organizational weaknesses, particularly in training, supervision, and procedural compliance. Ideally, therefore, aviation organizations should treat maintenance training not as a routine activity but as a dynamic capability that systematically strengthens safety performance.

Existing literature has long acknowledged the relationship between maintenance practices and safety outcomes. Studies in aircraft engineering and safety management show that maintenance errors account for a significant proportion of aviation incidents, often linked to inadequate competence, outdated procedures, or human factors (Clare & Kourousis, 2021; Decelles & Norton, 2016; Xing et al., 2023). Research on simulation-based training further demonstrates that practical, scenario-driven learning reduces error rates among maintenance technicians (Lu & Meng, 2023; Ostroumov & Kuzmenko, 2021). Other scholars highlight that instructor quality, training resources, and structured curricula are central determinants of maintenance effectiveness (Wang et al., 2025). Despite this growing body of knowledge, much of the literature treats training as a technical intervention rather than as an organizational system embedded in broader strategic processes.

Empirical findings across aviation contexts reinforce the importance of structured training systems. Moesl et al. (2022) found that frequent and comprehensive training significantly improved technician proficiency in handling new aircraft systems. Auer et al. (2023) and Ryffel et al. (2019) demonstrated that simulator training enhanced maintenance decision-making accuracy. Leadership scholars such as Lyu et al. (2018) argue that safety outcomes are strongly influenced by top management commitment to learning and skill development. These studies collectively show that training, leadership, and organizational resources are intertwined in producing safety performance. However, they often examine these elements in isolation without integrating them into a unified capability framework.

Theoretical advancements in strategic management offer a useful lens for reconceptualizing maintenance training. Dynamic Capabilities Theory proposed by Teece et al. (1997) and later elaborated by Teece (2007) posits that organizations achieve sustained performance by sensing environmental changes, seizing opportunities, and transforming internal competencies. In aviation maintenance, these processes manifest through continuous training, updating of technical knowledge, and alignment with regulatory standards. Complementing this view, the Human Factors Theory developed byPérez-Sánchez et al. (2025) and Mohammad et al. (2022) explains how inadequate training and organizational oversight contribute to accident chains. Together, these theories suggest that maintenance training can be interpreted as a dynamic organizational capability that interrupts error pathways and enhances safety performance.

Despite rich theoretical and empirical insights, notable research gaps remain. First, most studies are conducted in developed aviation markets such as Europe, North America, and the Middle East, where technological infrastructure and regulatory enforcement differ significantly from developing countries. Second, prior research tends to focus on single dimensions of training such as simulators or instructor quality without examining how multiple training elements collectively shape safety outcomes. Third, limited attention has been given to African aviation contexts, where resource constraints, leadership challenges, and training capacity limitations may alter the effectiveness of maintenance training systems (Serfontein & Govender, 2021; Zormelo & Gyebi-Garbrah, 2025). Kenyan studies (Owino et al., 2004; Wameyo et al., 2023) primarily address safety management systems and capacity building but do not explicitly connect maintenance training strategies to safety performance through a theoretical capability lens.

The Kenyan aviation sector presents a compelling context for this investigation. As a regional hub for air transport in East Africa, Kenya experiences increasing air traffic, technological adoption, and regulatory scrutiny. Reports from the Kenya Civil Aviation Authority by Odula & Chege (2023) and accident investigations reveal recurring maintenance-related occurrences linked to procedural lapses, documentation errors, and insufficient technical preparedness. These realities suggest that existing training practices may not adequately function as organizational capabilities capable of sustaining safety performance. Understanding how training simulators, training capacity, leadership support, and training frequency jointly influence safety outcomes is therefore both practically urgent and theoretically relevant.

This study addresses these gaps by conceptualizing maintenance training as a dynamic capability and empirically examining its effect on safety performance within Kenya's aviation industry. Specifically, the study investigates how training simulators, training capacity, top leadership support, and training frequency influence safety outcomes among aircraft maintenance organizations and domestic airlines. By integrating Dynamic Capabilities Theory and Human Factors Theory, the research contributes to strategic management, safety management, and aviation studies while offering actionable insights for regulators, airline managers, and maintenance organizations seeking to enhance safety performance through capability-driven training systems.

2. Methods

This study adopted an explanatory research design to establish causal relationships between maintenance training capability and safety performance in the aviation industry. An explanatory design is appropriate where the objective is to test theoretically grounded relationships using empirical data and statistical modeling (Dzwigol, 2022; Haro-Sarango, 2026). Guided by Dynamic Capabilities Theory and Human Factors Theory, the design enabled the study to examine how specific dimensions of maintenance training operate as organizational capabilities that influence safety outcomes. The quantitative approach allowed objective measurement of perceptions, practices, and performance indicators across multiple aviation organizations.

The target population comprised maintenance engineers working in 26 Approved Aircraft Maintenance Organizations and 9 domestic airlines operating at Wilson Airport. These organizations were selected because aircraft maintenance activities are primarily conducted within these entities, making them appropriate contexts for assessing maintenance training practices. The unit of observation was licensed maintenance engineers and technicians directly involved in aircraft inspection, repair, and servicing.

Given that the total accessible population was below 200, a census approach was employed to include all eligible respondents, ensuring comprehensive coverage and minimizing sampling error (Dubey & Kothari, 2022).

Primary data were collected using a structured questionnaire consisting of closed-ended items measured on a five-point Likert scale. The instrument was developed from validated constructs in aviation safety, training systems, and organizational capability literature, covering four independent variables namely training simulators, training capacity, leadership support, and training frequency and one dependent variable, safety performance. Prior to the main survey, the questionnaire was pilot-tested to assess clarity, reliability, and content validity. Necessary revisions were made to ensure that the items accurately reflected maintenance training practices and safety indicators within the aviation context.

Data collection was conducted through the drop-and-pick method with the assistance of trained research assistants to ensure high response rates and proper administration of the instrument. Out of 175 distributed questionnaires, 142 were returned duly completed, representing a response rate of 81.2 percent. Ethical considerations were observed by assuring respondents of confidentiality, voluntary participation, and anonymity. Permission to conduct the study was obtained from relevant organizational authorities within the participating aviation entities.

The collected data were analyzed using the Statistical Package for the Social Sciences. Descriptive statistics including means and standard deviations were used to summarize respondents' perceptions of maintenance training practices. Inferential analysis involved Pearson correlation to examine relationships among variables and multiple regression analysis to determine the predictive effect of maintenance training dimensions on safety performance. The regression model tested the extent to which training simulators, training capacity, leadership support, and training frequency jointly explained variations in safety outcomes, thereby validating the conceptualization of maintenance training as a dynamic organizational capability.

3. Results and Discussion

3.1. Maintenance Training as a Core Organizational Capability

Maintenance training functions as a central organizational capability that significantly determines safety performance in aviation organizations. The regression model shows that the four dimensions of maintenance training jointly explain 73.6% of the variance in safety performance (R^2 = 0.736). In organizational and management research, such a high coefficient of determination is rare and indicates that the independent variables are not marginal contributors but dominant predictors of performance outcomes. This statistical evidence positions maintenance training beyond an operational routine and reframes it as a strategic capability embedded within organizational systems.

The strength of this relationship becomes clearer when considering the complex and technology-intensive nature of aviation operations. Aircraft maintenance requires continuous updates in technical knowledge, adherence to strict procedures, and adaptation to evolving aircraft systems. The finding aligns with the argument of Teece (2007) that firms operating in dynamic environments must constantly reconfigure internal competencies to sustain performance. Maintenance training, therefore, acts as the mechanism through which aviation organizations sense technological change, seize learning opportunities, and transform their human resource capabilities into safety outcomes.

The statistical significance of all four training dimensions ($p < 0.05$) further indicates that safety performance is influenced by a system of interrelated training practices rather than a single intervention. Training simulators provide experiential learning, training capacity ensures availability of instructional resources, leadership support facilitates resource commitment, and training frequency sustains competence renewal. The combined influence of these elements demonstrates that maintenance training operates as an integrated organizational system rather than isolated training events.

From a safety management perspective, this finding suggests that incidents and procedural lapses are less likely to occur in organizations where training systems are institutionalized. When maintenance engineers are continuously exposed to structured learning environments, the probability of diagnostic errors, improper installations, and documentation mistakes reduces significantly. This supports the Human Factors view of Mohammad et al. (2022) that organizational safeguards such as training interrupt potential error chains before they translate into accidents.

The magnitude of the explanatory power also highlights that safety performance is more dependent on internal capability development than on external regulatory enforcement alone. While aviation regulations mandate compliance, this study shows that the real determinant of safety lies in how organizations internalize training as a capability that sustains compliance. In other words, regulation sets the standard, but maintenance training enables organizations to consistently meet that standard.

This finding reframes maintenance training from a cost center into a value-creating organizational investment. Aviation firms that view training as a dynamic capability are better positioned to maintain operational reliability, reduce incident rates, and strengthen safety performance over time. This conceptual shift is critical for aviation managers and regulators in developing contexts where training is often underprioritized due to resource constraints.

Table 1 Regression Model Summary Showing the Influence of Maintenance Training on Safety Performance

Model Indicator	**Value**	**Interpretation**
R	0.858	Strong overall correlation between variables
R Square (R^2)	0.736	73.6% of safety performance explained by training variables
Adjusted R^2	0.719	High model stability after adjustment
F-value	102.621	Model is statistically significant
Significance (p)	0.000	Relationship is highly significant

Source: Research findings (2026)

Table 1 shows that the regression model possesses strong explanatory power, with an R^2 of 0.736 indicating that maintenance training dimensions account for most of the variation in safety performance. The high F-value and significant p-value confirm that the model is statistically robust, validating the interpretation of maintenance training as a core organizational capability rather than a peripheral operational practice.

3.2. Leadership and Training Capacity as Dominant Drivers of Safety

Training capacity (β = 0.278) and leadership support (β = 0.263) exert stronger practical effects on safety performance than the availability of training simulators when examined within the integrated regression model. Although simulators are statistically significant, the data indicate that the organizational enablers surrounding training have a more decisive influence on safety outcomes. This demonstrates that safety performance is shaped more by how training is organized, supported, and sustained than by the presence of training technology alone.

The standardized beta values reveal that training capacity and leadership support contribute nearly as much as simulator-based training to safety performance, despite requiring fewer technological investments. This indicates that aviation organizations can achieve substantial safety improvements through strengthening instructional resources, trainer competence, and leadership commitment even before acquiring advanced simulation technologies. Organizational readiness, therefore, determines the effectiveness of training tools.

Training capacity reflects the availability of qualified instructors, structured curricula, training materials, and sufficient time allocated for learning. Where these elements are inadequate, even well-equipped simulators remain underutilized. The finding suggests that safety performance depends on whether maintenance engineers have consistent access to knowledgeable trainers and well-designed learning frameworks. In practical terms, insufficient trainers or poorly structured programs weaken the potential benefits of technical training devices.

Leadership support emerges as equally influential because it determines how resources are allocated to training activities. When top management prioritizes training, budgets are approved, external courses are facilitated, and employees are encouraged to engage in continuous learning. This finding extends the safety leadership by showing that leadership influences safety indirectly through strengthening training capability rather than only through promoting safety culture narratives.

The combined effect of leadership and training capacity indicates that maintenance training is fundamentally an organizational system rather than a technological intervention. Aviation organizations that invest in human instructional resources and managerial support create an environment where learning becomes continuous and embedded in daily operations. This reduces procedural lapses, improves fault diagnosis, and strengthens compliance with maintenance standards.

This finding highlights that aviation sectors operating under resource constraints can significantly enhance safety performance by first strengthening organizational training foundations. Before investing heavily in expensive simulators, firms may realize greater safety gains by building instructor competence, structured training programs, and strong leadership involvement in training decisions.

Table 2 Standardized Beta Coefficients Showing Relative Influence on Safety Performance

Training Dimension	Standardized Beta (β)	Significance (p)	Relative Influence on Safety
Training Simulators	0.316	0.000	High but technology-dependent
Training Capacity	0.278	0.000	Very high organizational driver
Leadership Support	0.263	0.000	Very high managerial driver

Training Frequency	0.226	0.001	Moderate but essential driver

Source: Research findings (2026)

Table 2 illustrates that although all training dimensions significantly influence safety performance, training capacity and leadership support exhibit nearly comparable and practically dominant effects relative to simulator availability. This confirms that organizational and managerial factors surrounding training are more decisive in enhancing safety performance than reliance on technological tools alone.

3.3. Training Frequency as a Critical Safety Determinant

Training frequency is a critical determinant of safety performance within aviation maintenance organizations. The regression results indicate that training frequency has a positive and statistically significant effect on safety performance ($\beta = 0.226$; $p < 0.05$), confirming that organizations conducting training more regularly tend to experience better safety outcomes. This means that the challenge in many aviation organizations is not necessarily the absence of training programs, but rather the inconsistency, irregular scheduling, and uneven implementation of those programs. In highly regulated and technologically complex industries such as aviation, competence must be continuously refreshed rather than assumed to remain stable over time.

This finding strongly aligns with the Human Factors Theory proposed by Corlett (1972), particularly the Swiss Cheese Model, which explains that accidents occur when multiple layers of organizational defenses weaken simultaneously. In maintenance environments, infrequent training creates hidden gaps in knowledge, procedural awareness, and decision-making readiness. When these weaknesses combine with operational pressure, fatigue, or communication breakdowns, the probability of maintenance error increases. Regular training therefore functions as a protective barrier that closes these gaps before they develop into incidents or technical failures.

From a learning perspective, the result is also supported by the forgetting curve developed by Otgaar et al. (2023), which demonstrates that human memory deteriorates when knowledge is not reinforced periodically. Maintenance engineers work with complex manuals, inspection standards, torque procedures, digital diagnostics, and safety documentation that require constant recall accuracy. Without recurrent learning exposure, previously mastered competencies may decline. Frequent refresher training helps retain procedural memory, sharpen technical judgment, and reduce the risk of skill decay in day-to-day maintenance operations.

The significance of training frequency also reflects the realities of rapid technological change in modern aviation systems. Contemporary aircraft integrate advanced avionics, automated diagnostics, composite materials, and software-based maintenance interfaces. According to Teece (2007), organizations in dynamic environments sustain performance through continuous capability renewal. In this context, frequent training becomes a mechanism of dynamic capability because it enables maintenance personnel to adapt quickly to new technologies, revised manufacturer standards, and changing regulatory requirements. Safety performance improves when learning cycles move at the same pace as technological change.

This result is consistent with prior empirical aviation studies. Salas et al. (2012) argued that training effectiveness depends not only on quality but also on repetition and reinforcement over time. Similarly, Wilson et al. (2023) found that recurrent technical training significantly improved technician proficiency in handling new-generation aircraft systems. These studies support the present finding that one-off training events provide limited long-term benefit, whereas sustained and scheduled learning interventions produce stronger operational competence and safer work behavior.

Another important implication concerns organizational culture. Frequent training sends a symbolic message that safety is an ongoing priority rather than an occasional compliance exercise. When employees repeatedly participate in toolbox training, procedural refreshers, hazard briefings, and scenario simulations, safety becomes embedded in everyday routines. Dauber (2024) explains that organizational culture is reinforced through repeated managerial practices and shared learning experiences. Thus, regular training not only upgrades competence but also institutionalizes a culture of vigilance, discipline, and professional accountability.

From a managerial standpoint, the finding suggests that aviation organizations should shift their focus from counting training attendance to designing continuous learning systems. Many firms invest in annual or irregular training merely to satisfy audit requirements, yet such episodic approaches may fail to sustain competence. Instead, organizations should implement quarterly refreshers, monthly technical briefings, post-incident learning sessions, and recurring simulator drills. As Goldstein & Ford (2002) note, effective training systems depend on continuity, transfer of learning, and workplace reinforcement rather than isolated classroom delivery.

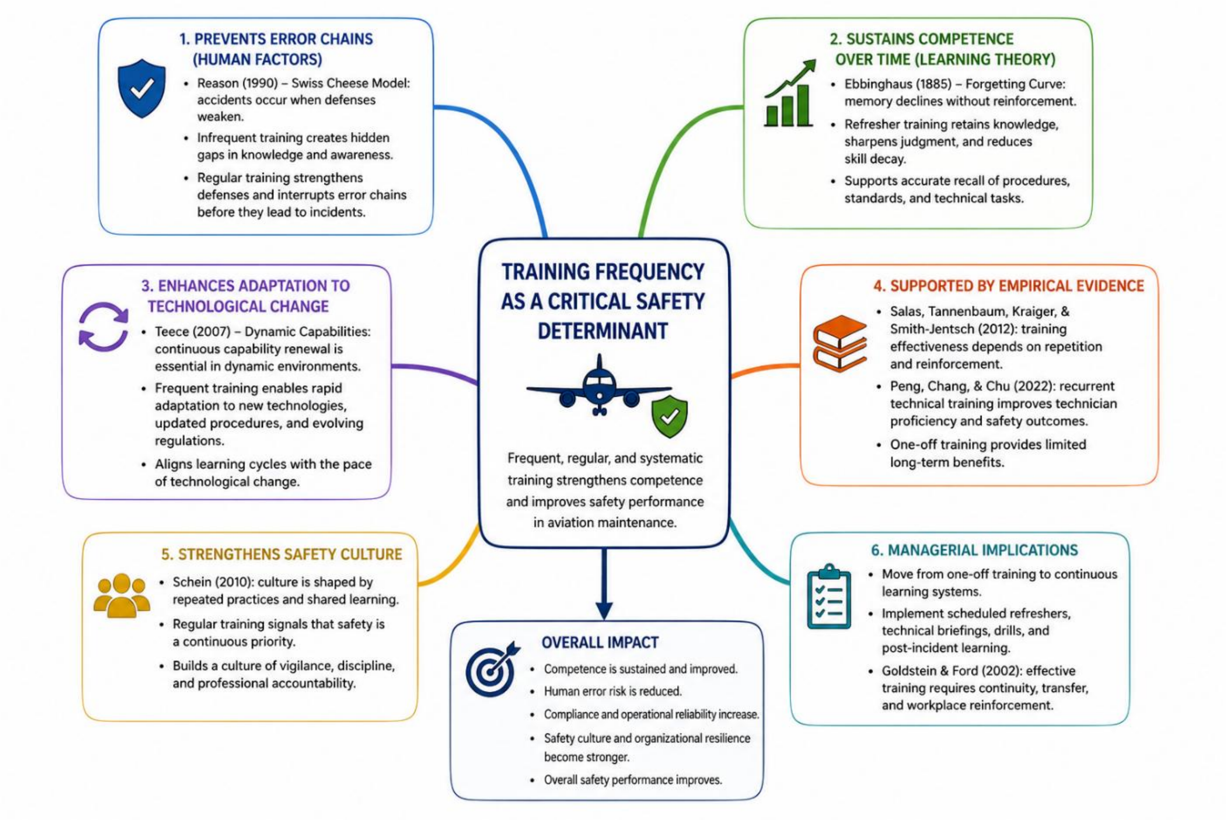

Figure 3 Training Frequency as a Critical Determinant of Safety Performance in Aviation Maintenance Organizations

Figure 3 illustrates that training frequency functions as a critical determinant of safety performance in aviation maintenance organizations. At the center of the model, regular, systematic, and continuous training is presented as the main mechanism for strengthening employee competence and improving operational safety. The surrounding branches explain that frequent training helps prevent error chains by reinforcing organizational defenses, sustains technical knowledge over time by reducing skill decay, and enables faster adaptation to technological changes and updated regulations. The diagram also highlights empirical evidence showing that repeated training is more effective than one-off programs because it improves proficiency and long-term learning retention. In addition, regular training contributes to a stronger safety culture by promoting vigilance, discipline, and accountability among maintenance personnel. Overall, the figure demonstrates that organizations implementing continuous training systems are more likely to achieve lower human error risk, higher compliance, stronger reliability, and improved overall safety performance.

This study demonstrates that training frequency is not a peripheral administrative variable but a strategic safety mechanism. Frequent training sustains competence, strengthens organizational defenses, supports adaptation to technological change, and reinforces safety culture. In practical terms, aviation organizations seeking to improve safety performance should prioritize structured recurrent training schedules as seriously as they prioritize equipment maintenance itself. In high-risk industries, machines require periodic servicing, and human expertise requires the same discipline.

4. Conclusions

This study confirms that maintenance training functions as a significant organizational capability in explaining safety performance within Kenya's aviation industry. The regression model demonstrates strong explanatory power, with R = 0.858, R^2 = 0.736, and Adjusted R^2 = 0.719, indicating that 73.6% of the variation in safety performance is explained by training simulators, training capacity, leadership support, and training frequency. The overall model is statistically significant (F = 102.621; p = 0.000). Individually, all dimensions exert positive and significant effects on safety performance, with training simulators showing the strongest standardized effect (β = 0.316), followed by training capacity (β = 0.278), leadership support (β = 0.263), and training frequency (β = 0.226). These findings indicate that both technological and organizational dimensions of training are central predictors of safer maintenance operations.

The discussion reveals that maintenance training should be understood not as a routine administrative activity but as a dynamic capability that enables aviation organizations to continuously renew competencies, adapt to technological complexity, and sustain compliance with safety standards. Training simulators improve experiential learning and decision accuracy, while training capacity ensures the availability of qualified instructors, learning resources, and structured curricula. Leadership support strengthens safety outcomes through strategic commitment and resource allocation, whereas training frequency preserves competence and prevents skill decay through continuous reinforcement. Collectively, these findings integrate Dynamic Capabilities Theory and Human Factors Theory by demonstrating that safety performance emerges when organizations institutionalize learning systems capable of interrupting human error pathways and responding to environmental change.

Despite its contributions, this study has several limitations. First, the research was conducted within Approved Aircraft Maintenance Organizations and domestic airlines operating at Wilson Airport, which may limit generalizability to broader African or global aviation contexts. Second, the cross-sectional design captures relationships at one point in time and cannot fully explain long-term causal dynamics. Third, the study relies on self-reported questionnaire data, which may involve perceptual bias. Future research should employ longitudinal designs, comparative cross-country studies, and mixed-method approaches to capture deeper organizational processes. Further studies may also examine additional variables such as safety culture, digital maintenance systems, regulatory enforcement, employee motivation, and organizational learning as mediating or moderating factors in the relationship between training capability and safety performance.

Declaration of conflicting interests

All authors declare that they have no conflicts of interest.

References

Abu Talib, M., Nasir, Q., Dakalbab, F., & Saud, H. (2025). Future aviation jobs: The role of technology in shaping skills and competencies. In *Journal of Open Innovation: Technology, Market, and Complexity* (Vol. 11, Number 2). https://doi.org/10.1016/j.joitmc.2025.100517

Auer, S., Anthes, C., Reiterer, H., & Jetter, H. C. (2023). Aircraft Cockpit Interaction in Virtual Reality with Visual, Auditive, and Vibrotactile Feedback. *Proceedings of the ACM on Human-Computer Interaction*, *7*(ISS). https://doi.org/10.1145/3626481

Cabrera, E., & Melo de Sousa, J. M. (2022). Use of Sustainable Fuels in Aviation—A Review. In *Energies* (Vol. 15, Number 7). https://doi.org/10.3390/en15072440

Clare, J., & Kourousis, K. I. (2021). Learning from incidents: A qualitative study in the continuing airworthiness sector. *Aerospace*, *8*(2). https://doi.org/10.3390/aerospace8020027

Corlett, E. N. (1972). Human factors: theory and practice. *Applied Ergonomics*, *3*(1). https://doi.org/10.1016/0003-6870(72)90046-4

Dauber, D. (2024). Organisational culture. In *Elgar Encyclopedia of Cross-Cultural Management*. https://doi.org/10.4337/9781803928180.ch65

Decelles, K. A., & Norton, M. I. (2016). Physical and situational inequality on airplanes predicts air rage. *Proceedings of the National Academy of Sciences of the United States of America*, *113*(20). https://doi.org/10.1073/pnas.1521727113

Dubey, U. K. B., & Kothari, D. P. (2022). Research Methodology: Techniques and Trends. In *Sustainability (Switzerland)* (Vol. 11, Number 1).

Dzwigol, H. (2022). RESEARCH METHODOLOGY IN MANAGEMENT SCIENCE: TRIANGULATION. *Virtual Economics*, *5*(1). https://doi.org/10.34021/ve.2022.05.01(5)

Goldstein, I. L., & Ford, J. K. (2002). Training in organizations: Needs assessment, development, and evaluation, 4th ed. In *Training in organizations: Needs assessment, development, and evaluation, 4th ed.*

Haro-Sarango, A. (2026). Research methods for business students. *Multidisciplinary Latin American Journal (MLAJ)*, *4*(1). https://doi.org/10.62131/mlaj-v4-n1-editorial

Lu, N., & Meng, B. (2023). Risk Analysis of Airplane Upsets in Flight: An Integrated System Framework and Analysis Methodology. *Aerospace*, *10*(5). https://doi.org/10.3390/aerospace10050446

Lyu, S., Hon, C. K. H., Chan, A. P. C., Wong, F. K. W., & Javed, A. A. (2018). Relationships among safety climate, safety behavior, and safety outcomes for ethnic minority

construction workers. *International Journal of Environmental Research and Public Health*, *15*(3). https://doi.org/10.3390/ijerph15030484
Moesl, B., Schaffernak, H., Vorraber, W., Holy, M., Herrele, T., Braunstingl, R., & Koglbauer, I. V. (2022). Towards a More Socially Sustainable Advanced Pilot Training by Integrating Wearable Augmented Reality Devices. *Sustainability (Switzerland)*, *14*(4). https://doi.org/10.3390/su14042220
Mohammad, T., Mohamed Hussin, N. A., & Husin, M. H. (2022). Online safety awareness and human factors: An application of the theory of human ecology. *Technology in Society*, *68*. https://doi.org/10.1016/j.techsoc.2021.101823
Odula, L. A., & Chege, P. (2023). Data Analytics and Organizational Performance of Kenya Civil Aviation Authority. *International Journal of Social Science and Humanities Research (IJSSHR) ISSN 2959-7056 (o); 2959-7048 (p)*, *1*(1). https://doi.org/10.61108/ijsshr.v1i1.50
Ostroumov, I., & Kuzmenko, N. (2021). Incident Detection Systems, Airplanes. In *International Encyclopedia of Transportation: Volume 1-7* (Vol. 2). https://doi.org/10.1016/B978-0-08-102671-7.10150-2
Otgaar, H., Howe, M. L., & Dodier, O. (2023). Realistic guidelines on expert witness work concerning memory. In *Forensic Science International: Mind and Law* (Vol. 4). https://doi.org/10.1016/j.fsiml.2023.100117
Owino, A., Biwott, N., & Amutete, G. (2004). Bird strike incidents involving Kenya Airways flights at three Kenyan airports, 1991-2001. *African Journal of Ecology*, *42*(2). https://doi.org/10.1111/j.1365-2028.2004.00507.x
Pérez-Sánchez, J., Rafi, S., Carrillo de Gea, J. M., Nicolás Ros, J., & Fernández Alemán, J. L. (2025). A theory on human factors in DevOps adoption. In *Computer Standards and Interfaces* (Vol. 92). https://doi.org/10.1016/j.csi.2024.103907
Ryffel, C. P., Muehlethaler, C. M., Huber, S. M., & Elfering, A. (2019). Eye tracking as a debriefing tool in upset prevention and recovery training (UPRT) for general aviation pilots. *Ergonomics*, *62*(2). https://doi.org/10.1080/00140139.2018.1501093
Salas, E., Tannenbaum, S. I., Kraiger, K., & Smith-Jentsch, K. A. (2012). The Science of Training and Development in Organizations: What Matters in Practice. *Psychological Science in the Public Interest, Supplement*, *13*(2). https://doi.org/10.1177/1529100612436661
Sameera, V., Bindra, A., & Rath, G. (2021). Human errors and their prevention in healthcare. In *Journal of Anaesthesiology Clinical Pharmacology* (Vol. 37, Number 3). https://doi.org/10.4103/joacp.JOACP_364_19
Serfontein, E., & Govender, K. K. (2021). The relationship between resilience and organisational control systems in the south african aviation industry. *Journal of Transport and Supply Chain Management*, *15*. https://doi.org/10.4102/jtscm.v15i0.598
She, M., Yin, Z., & Li, Z. (2024). Human Error. In *Foundations and Fundamentals in Human-Computer Interaction*. https://doi.org/10.1201/9781003495109-6
Song, Z., Li, Z., & Liu, Z. (2024). Comparison of Emission Properties of Sustainable Aviation Fuels and Conventional Aviation Fuels: A Review. In *Applied Sciences (Switzerland)* (Vol. 14, Number 13). https://doi.org/10.3390/app14135484
Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*(13). https://doi.org/10.1002/smj.640

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7). https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z

Wameyo, E. S., Kiambigi, M., & Okaka, J. (2023). A Strategy for Effective Safety Management in Construction Sites in Kenya. *East African Journal of Engineering*, *6*(1). https://doi.org/10.37284/eaje.6.1.1626

Wang, B., Ting, Z. J., & Zhao, M. (2024). Sustainable aviation fuels: Key opportunities and challenges in lowering carbon emissions for aviation industry. *Carbon Capture Science and Technology*, *13*. https://doi.org/10.1016/j.ccst.2024.100263

Wang, B., Wang, C., & Osipychev, D. (2025). Deep Reinforcement Learning for Airplane Components Failure Prognostics Full Cycle Automation. *Proceedings of the Annual Conference of the Prognostics and Health Management Society, PHM*, *17*(1). https://doi.org/10.36001/phmconf.2025.v17i1.4397

Wilson, N., Guthridge, R., Lents, M., Archer, L., & Roesler, J. (2023). Technical and Regulatory Factors of Adopting Electric Training Aircraft in a Collegiate Aviation Setting. *Collegiate Aviation Review*, *41*(1). https://doi.org/10.22488/okstate.23.100232

Xing, G., Sun, Y., He, F., Wei, P., Wu, S., Ren, H., & Chen, Z. (2023). Analysis of Human Factors in Typical Accident Tests of Certain Type Flight Simulator. *Sustainability (Switzerland)*, *15*(3). https://doi.org/10.3390/su15032791

Zormelo, S., & Gyebi-Garbrah, T. F. (2025). Clan Culture, Corporate Governance and Sustainable Performance in African Aviation Authorities. *International Journal of Applied Research in Business and Management*, *6*(5). https://doi.org/10.51137/wrp.ijarbm.376