

Human Factors in Aviation and Aerospace

Book Review | Kitap Değerlendirmesi

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Review of "Aircraft Accident Investigation: Learning from Human and Organizational Factors" by Bilal Kılıç

Bilal Kılıç'ın "Uçak Kaza Araştırması: İnsan ve Organizasyonel Faktörlerden Öğrenmek" adlı eserinin değerlendirmesi



Kilic, Bilal (2024) *Aircraft Accident Investigation: Learning from Human and Organizational Factors* AMAZON KDP, 3.baskı. 232 s. ISBN: 978-625-00-2421-8

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Review of "Aircraft Accident Investigation: Learning from Human and Organizational Factors" by Bilal Kılıç

This review examines the third edition of *Aircraft Accident Investigation: Learning from Human and Organizational Factors* by Bilal Kılıç, a comprehensive work that bridges theoretical foundations with practical applications in aviation safety. Structured into twelve chapters, the book introduces core concepts of accident investigation and human factors, each reinforced by the detailed analysis of a major airline accident case study from *British Airways Flight 38* to the *Air Canada Flight 143 (Gimli Glider)*. The integration of case-based learning with theoretical discussion provides readers with both scholarly depth and operational relevance. Of particular note are the dedicated sections at the end of each chapter designed for ab-initio pilots, which distill key lessons into practical takeaways for pilot training. The book's dual function as a reference for aviation professionals and as a textbook for flight training organizations underscores its significance. This review highlights the book's strengths, including its accessibility, structured pedagogy, and applied perspective, while also noting areas for further scholarly integration. Overall, the book makes a timely and valuable contribution to the literature on human and organizational factors in aviation safety.

In its third edition, *Aircraft Accident Investigation: Learning from Human and Organizational Factors* by Bilal Kılıç provides a timely and comprehensive contribution to the field of aviation safety (Bilal Kılıç, 2024). The book explores how human performance, organizational structures, and cultural influences intersect to shape the outcomes of aviation accidents and investigations (Bilal Kılıç, 2019) (Bilal Kılıç & Gumus, 2020) (Havle & Kılıç, 2019) (Ceken, 2024). Written from the dual perspective of an airline captain and academic researcher, the work bridges theory and practice, making it accessible to both professionals and scholars.

Structured into twelve chapters, the book follows a consistent approach: each chapter introduces a central theoretical concept in aircraft accident investigation and human factors, and complements it with the detailed review of a selected airline accident case. This dual perspective enriches the reader's understanding of how abstract principles manifest in real-world aviation scenarios. Furthermore, each chapter concludes with a dedicated section aimed at ab-initio pilots, highlighting the most critical lessons and key factors that should be carried forward into their professional development.

The importance of human factors in aviation accidents cannot be overstated, as the majority of modern incidents are shaped less by mechanical failures than by human and organizational dynamics (Bilal Kılıç, 2021a)(Bilal Kılıç, 2020)(Bilal Kılıç & Soran, 2020) (Bilal Kılıç, 2022). Scenario-based learning (SBL) has therefore emerged as a vital tool for both airline and ab-initio pilots, enabling them to engage with realistic operational challenges in a structured manner (Kara Arseven et al., 2025) . By linking theoretical frameworks with accident case studies and drawing practical lessons, the book supports greater awareness of human performance limitations, decision-making pressures, and error management strategies (Bilal Kılıç & Soran, 2019) (Bilal Kılıç & Buyuksoy, 2022). In doing so, it provides not only a reference for accident investigators and safety professionals but also a practical educational resource for enhancing pilot preparedness and resilience. Importantly, it also acknowledges the specific vulnerabilities of ab-initio pilots such as limited operational experience, susceptibility to cognitive overload, and the need for stronger grounding in human factors which makes these end-of-chapter lessons especially valuable for early career training (Bilal Kılıç, 2021c) (B. Kılıç & Ucler, 2019) (Bilal Kılıç & Tabak, 2022a) (Bilal Kılıç & Tabak, 2022b) (Tunç & Kılıç, 2024) (Bilal Kılıç, 2021b).

Given this structure, the book holds dual value: it can serve as a reference book for experienced aviators and safety practitioners, while also functioning as a textbook for ab-initio pilots in flight training organiza-

tions. This pedagogical design ensures that the work not only contributes to academic literature, but also provides direct practical benefit in pilot education and professional training.

Content Summary

The book is organized into twelve chapters, each combining theoretical foundations of aircraft accident investigation and human factors with the detailed analysis of a major airline accident. This approach creates a strong bridge between abstract principles and real-world applications.

- **Chapter 1: Introduction to the Aircraft Accident Investigation** outlines the history, responsibilities, and processes of accident inquiry, illustrated through the case of *British Airways Flight 38*.
- **Chapter 2: Fundamentals of Aircraft Accident Investigation** introduces core investigative domains such as wreckage, operations, performance, and human factors, paired with the tragic *Birgenair Flight 301* accident.
- **Chapter 3: Regulatory Requirements – ICAO Annex 13** explains the international and regional legal framework, contextualized with *Korean Air Flight 801*.
- **Chapter 4: Human Factors** explores error prevention, human performance, and organizational influences, analyzed through *Helios Airways Flight 522*.
- **Chapter 5: Accident Analysis Models** surveys theoretical frameworks such as Reason's Swiss Cheese Model, HFACS, STAMP, and MORT, applied to *Avianca Flight 052*.
- **Chapter 6: Human Factors Analysis and Classification System (HFACS)** provides detailed discussion of unsafe acts, supervision, and organizational influences, with insights drawn from *Asiana Airlines Flight 214*.
- **Chapter 7: Mechanical Failures and Maintenance Errors** examines technical breakdowns and maintenance-related human errors, supported by *Qantas Flight 32*.
- **Chapter 8: Environmentally Induced Factors** addresses internal and external environmental conditions influencing safety, exemplified by the investigation of *Air France Flight 447*.
- **Chapter 9: Weather-Related Contributing Factors** provides a thorough review of meteorological conditions such as icing, turbulence, and wind shear, linked to *Air Florida Flight 90*.
- **Chapter 10: Human Perception and Situational Awareness** analyzes perception, decision-making, and the role of situational awareness, with lessons drawn from *Air France Flight 358*.
- **Chapter 11: The Effect of the Level of Automation** highlights both the benefits and vulnerabilities of cockpit automation, with the case study of *Colgan Air Flight 3407*.
- **Chapter 12: Threat and Error Management (TEM) and Crew Resource Management (CRM)** discusses modern tools for improving safety, concluding with the classic case of *Air Canada Flight 143 (the "Gimli Glider")*.

Each chapter concludes with a dedicated section that highlights key lessons and practical applications for ab-initio pilots, reinforcing the educational design of the book. This structure ensures that the text functions as both a reference work for professionals and a textbook for pilot training organizations.

Critical Evaluation

One of the greatest strengths of *Aircraft Accident Investigation: Learning from Human and Organizational Factors* lies in its ability to balance theoretical depth with operational relevance. The author succeeds in translating abstract human factors concepts into practical insights by linking each to a real-world airline accident. This structure ensures that readers not only learn about theoretical models such as decision-

making under stress, situational awareness, or organizational culture but also witness their direct influence on accident outcomes. The inclusion of dedicated sections for ab-initio pilots at the end of every chapter further enhances the pedagogical value, bridging the gap between academic theory and early-stage pilot training.

Another significant contribution of the book is its accessibility. Despite addressing complex human factors and organizational theories, the writing style is clear and engaging, making it equally useful for researchers, flight safety officers, and training captains. The dual professional–academic perspective of the author adds credibility, allowing the book to resonate with both practitioners in the cockpit and scholars in human factors research.

Nevertheless, the book is not without limitations. Some readers from a strictly academic background may wish for more extensive integration of empirical studies or statistical data to complement the accident case analyses. Similarly, while the focus on airline accidents is highly relevant, expanding the scope to include incidents or near-misses could have provided additional learning opportunities. Despite these limitations, the book's applied approach—combining theory, accident case studies, and pilot-focused lessons—represents a distinctive and practical contribution to aviation safety literature.

Overall, the book offers both depth and usability, striking a rare balance that makes it valuable to multiple audiences. It enhances understanding of human and organizational factors while simultaneously supporting the educational needs of flight training organizations.

Audience and Usefulness

This book is particularly well-suited for three overlapping readership groups. First, **aviation professionals and safety practitioners** will find it a valuable reference, as it translates human factors theory into practical insights that can be applied to flight operations, safety management, and accident prevention strategies. Second, **researchers and academics** in the field of human factors and aviation psychology will appreciate its structured case-based approach, which illustrates how organizational and human elements contribute to accident causation. Finally, **ab-initio pilots and flight training organizations** will benefit from the book's dedicated instructional design. The concluding sections of each chapter distill key lessons into practical takeaways, making the text a potential core or supplementary textbook in pilot education.

By catering to these diverse audiences, the book contributes not only to scholarly knowledge but also to operational practice and pilot training, aligning closely with the mission of *Human Factors in Aviation and Aerospace*.

Conclusion

Aircraft Accident Investigation: Learning from Human and Organizational Factors (3rd edition) stands out as both a scholarly and practical contribution to the field of aviation safety. By combining theoretical foundations with detailed accident case analyses and structured lessons for ab-initio pilots, the book bridges the gap between academic research and operational practice. While some readers may desire deeper engagement with empirical data, the book's strength lies in its accessibility, relevance, and educational design.

For aviators, it offers a reliable reference that underscores the vital role of human and organizational factors in preventing accidents. For flight training organizations, it provides a structured resource that can serve as a textbook for developing the next generation of pilots. For researchers and practitioners alike, it reinforces the importance of integrating human factors into every dimension of aviation safety.

Overall, this book is a timely and valuable addition to the literature, and its review in *Human Factors in Aviation and Aerospace* ensures that the journal's readership is made aware of its practical and academic significance.



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