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AI-Augmented Creativity in Airline Crisis Management: Balancing Novelty and Strategic Feasibility

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Abstract

This study investigates the integration of generative AI into airline crisis management, with a primary focus on how AI-augmented creativity can be harnessed to generate practically viable recovery solutions. The research addresses the critical balance between creative novelty and strategic feasibility, aiming to delineate effective human–AI team compositions as well as communication strategies that enhance passenger trust during operational disruptions. A mixed-methods approach was utilized, combining quantitative data from controlled experiments and simulation studies with qualitative insights gathered through semi-structured interviews and document analysis. Findings reveal that while human-AI collaborations tend to yield outputs with lower raw novelty, these solutions demonstrate substantially higher financial, environmental, and operational value than human-only outputs. Moreover, evidence indicates that mixed teams achieving an optimal human-to-AI ratio and leveraging diverse expertise significantly improve decision-making and situational responsiveness. Transparent and empathetic communication emerges as vital to restoring and maintaining passenger trust in AI-driven responses. The study contributes to digital transformation and human–AI collaboration theories, offering actionable recommendations for airline managers and policymakers to optimize crisis management protocols. In particular,

strategic investments in training, robust KPI dashboards, and phased AI deployments are advised to foster both innovation and long-term operational excellence.

Keywords: Digital Transformation; Airline Crisis Management; AI-Augmented Creativity; Strategic Feasibility; Human–AI Collaboration

Introduction

The integration of Artificial Intelligence (AI) in airline crisis management represents a pivotal evolution in managing complex operational disruptions. Recent digital transformation trends in aviation are shifting traditional crisis response paradigms by leveraging advanced AI methodologies such as machine learning, deep learning, and optimization algorithms to enhance real-time decision-making and support novel problem-solving strategies. Empirical studies and conceptual reviews indicate that generative AI can produce innovative recovery solutions in turbulent scenarios (e.g., during pandemics or crew strikes) by augmenting human creativity while grounding innovations in strategic feasibility. Notably, decentralized multi-agent systems and AI-supported collaborative decision-making frameworks have been demonstrated to outperform conventional approaches in handling passenger-centric disruptions (Cadarso & Vaze, 2022; Ogunsina & DeLaurentis, 2021;). This integration also emphasizes interactive explanations that aim to bolster both operational efficiency and stakeholder engagement, although challenges remain in quantifying trust metrics among affected passengers.

Despite promising advancements, airlines continue to face significant challenges in embedding AI solutions within established operational frameworks. A core issue is delineating the boundary between creative novelty and strategic viability when utilizing AI to generate crisis management solutions. Moreover, optimal human–AI team configurations such as determining the ideal human-AI ratio and ensuring diverse expertise are critical yet underexplored components. This study addresses the central problem of balancing innovation with pragmatic, implementable strategies in airline crisis management, alongside investigating how these approaches affect stakeholder trust during periods of operational disruption.

Research Questions/Objectives

To tackle these challenges, this research is guided by the following objectives:

1. Enhancement of Creative Problem-Solving: Determine how generative AI elevates creative problem-solving in airline crises and identify the thresholds that separate “novelty” from “strategic viability.”
2. Optimization of Human-AI Team Composition: Examine the impact of team composition factors such as the human-AI ratio and diversity of expertise on crisis response effectiveness and escalation risk minimization.
3. Passenger Trust and Communication Strategies: Assess the shifts in passenger trust when AI-generated solutions are deployed during operational disruptions and evaluate communication strategies that can mitigate skepticism.

Significance of the Study

This study makes both scholarly and practical contributions. Academically, it deepens the discourse on digital transformation in high-stakes operational environments by linking AI-driven innovation with proven decision-making frameworks. Practically, the insights derived can inform airline managers, policymakers, and technology developers by outlining best practices that enhance operational efficiency,

uphold regulatory compliance, and improve passenger trust during crises. The research also provides a strategic basis for aligning emerging digital tools with long-established operational protocols, thereby fostering sustainable crisis management.

Scope of the Study

Focusing on the commercial aviation sector, this study investigates the application of generative AI to manage various crisis scenarios—ranging from operational disruptions to large-scale events like pandemics. Although the research draws from global examples, it pays particular attention to challenges relevant to the Iranian aviation context, such as localized regulatory frameworks and operational nuances. The analysis incorporates both quantitative performance metrics (e.g., decision accuracy and operational turnaround) and qualitative assessments of stakeholder response, ensuring a comprehensive evaluation of current AI-driven interventions.

Outline of Article Structure

The remainder of the paper is organized as follows:

- The Literature Review section synthesizes existing research on AI applications in crisis management, outlining theoretical foundations and empirical findings.
- The Methodology section details the mixed-methods research design, describing data collection methods and analytical strategies employed to assess both technical performance and human–AI collaboration.
- Findings and Results present the empirical data and interpretative analyses regarding the innovation–feasibility tradeoffs, team composition dynamics, and passenger trust metrics.
- The Discussion section contextualizes these findings within broader industry practices and theoretical models, highlighting implications for airline management and digital transformation strategies.
- The article concludes with a Conclusion that summarizes key insights, offers strategic recommendations for practitioners, and identifies directions for future research.

Literature Review

The foundation for this study is built upon several established theories and models that underscore the digital transformation in airline crisis management and the dynamics of human-AI collaboration. First, the advent of digital transformation frameworks such as the Digital Maturity Model and McKinsey's Digital Quotient has provided a structured means to assess the readiness of organizations, including airlines, to integrate advanced technologies into their operational processes. This framework is augmented by classical performance measurement systems like the Balanced Scorecard and Porter's Five Forces, which together offer a strategic lens to evaluate how AI-driven initiatives can enhance both innovation and efficiency. Concurrently, theories in human-AI collaboration emphasize the cybernetic perspective, where human intuition is synergized with AI's analytical capacity to address complex, high-stakes scenarios. Research on AI-augmented creativity suggests that while generative AI expands the repertoire of innovative ideas, the true strategic value is achieved only when creative outputs are anchored by human judgment and domain-specific tailoring. This duality balancing creative novelty with pragmatic feasibility is central to the present study's exploration of crisis management in the airline industry.

Critical Analysis of Existing Literature

A wide array of studies has explored the integration of AI in crisis management within aviation, yet they reveal contrasting perspectives on the innovative yet feasible use of AI:

- Enhancement of Creativity and Strategic Feasibility: Boussioux et al. (2024) demonstrate that human-AI collaboration leads to solutions with higher strategic viability, despite exhibiting lower novelty when compared with purely human-generated ideas. In parallel, Doshi and Hauser (2024) find that while generative AI can boost individual creativity, it tends to narrow collective idea diversity, underscoring an inherent trade-off between groundbreaking creativity and strategic

consistency. Mukherjee and Chang (2023) further articulate this tension by emphasizing that without domain-specific customization and iterative refinement, excessively novel outputs can devolve into "hallucinations" that are impractical for implementation.

- Team Composition and Decision Dynamics: Several studies have addressed the importance of optimal team configurations. Research by Korentsides et al. (2024) argues for a balanced human-AI team where AI systems are tasked with real-time data processing and monitoring while human experts concentrate on final decision-making. Liu et al. (2021) contribute to this discussion by showing that interactive AI explanations can enhance decision quality; however, they also caution that such mechanisms might inadvertently reinforce human biases if not properly managed. Empirical evidence from McNeese et al. (2021) highlights that mixed human-AI teams outperform human-only teams in crisis simulations, yet they also indicate that smaller teams may struggle with trust and cohesion, pointing to the nuanced role of expertise diversity and human-AI ratios.
- Passenger Trust and Communication Strategies: In the realm of stakeholder perception, studies such as those by Chakraborty et al. (2021) and Sesliokuyucu and Sesliokuyucu (2020) illustrate how AI and IoT-driven improvements in safety and efficiency can boost passenger confidence. However, research by Winter et al. (2021) draws attention to the fragility of trust, noting that a single AI error can compromise stakeholder confidence across multiple systems. The literature emphasizes that transparent communication strategies particularly those that frame AI-generated responses in empathetic terms are essential to maintaining and building trust during disruptions.
- Implementation Frameworks: A number of studies have proposed comprehensive frameworks to guide AI integration in crisis scenarios. These frameworks typically revolve around core success criteria such as real-time data integration, seamless system compatibility, and regulatory adherence, while also detailing mitigation strategies for challenges like data quality issues and computational resource limitations. Although these frameworks provide a robust starting point, they often lack specificity regarding the critical balance between creative novelty and operational feasibility, a gap that this study seeks to address.

Additional Self-Referenced Literature and Research Continuity

My research agenda has evolved steadily from the early development of robust KPI frameworks for customer service and management to the integration of advanced digital technologies in airline logistics, predictive maintenance, and specialized tourism. In Excellence in the Air (Moghadasnian, 2011; Moghadasnian, 2014), I established a systematic approach that linked customer service metrics to overall operational efficiency. This work was further extended in Flight to Excellence (Moghadasnian, 2022), wherein I unified various operational metrics to form a cohesive digital benchmarking framework. Subsequently, Strategica Aeronautica (Moghadasnian, 2023) enhanced these models by incorporating sustainability considerations, regulatory compliance, and cross-departmental coordination into executive leadership paradigms within the airline–tourism ecosystem. More recent investigations, such as AI-Driven Inventory Optimization in Airline Logistics (Moghadasnian, 2025) and AI-Powered Predictive Maintenance in Aviation Operations (Moghadasnian, 2025), have empirically demonstrated that integrating AI, IoT, and blockchain technologies not only boosts operational efficiency and cost-effectiveness but also addresses ethical and sustainability challenges. Further extending these insights, my work on Tourism 4.0 in Iran (Moghadasnian, 2024), as well as studies on strategic digital innovations in global aviation (Moghadasnian & Manafi, 2024), the paradigm shift in airline business management driven by AI (Moghadasnian & Rajol, 2024), and research on redefining tourism through smart technology (Moghadasnian & Mohammadi, 2024), underscores the versatility of KPI-driven digital paradigms across various service domains. Moreover, investigations into strategic leadership in AI-enhanced aviation (Moghadasnian & Karimi, 2025) and generative AI applications for personalized airline tourism (MoghadasNian, MoghadasNian, & MoghadasNian, 2025) collectively construct a cohesive research trajectory. Together, these studies mark an evolution from customer-centric performance measurement

toward a holistic digital transformation strategy that integrates operational efficiency, sustainability, and equitable AI integration. This continuity forms the backbone of the present study's goal to develop an equity-focused, data-driven digital transformation framework for airline tourism that builds on established theoretical models and validated empirical evidence.

Synthesis of External Sources with Self-Referenced Research

External literature further substantiates and extends the findings from my previous work. For example, studies by Tee et al. (2024), Aggarwal (2024), and Semwal et al. (2024) have underscored the necessity for transparent AI algorithms and the integration of diverse data sources to mitigate bias a premise that resonates with the data-driven, KPI-centric approaches established in Flight to Excellence and Strategica Aeronautica. Whereas these external contributions focus on addressing the technical and ethical pitfalls of AI personalization in digital contexts, my prior research extends this dialogue by explicitly incorporating equity and cultural fairness dimensions, particularly within the niche domains of airline health, pilgrimage, and tourism services. The convergence of external insights with my self-referenced literature strengthens the argument for a comprehensive framework that merges operational metrics with strategic imperatives. This synthesis highlights that while robust KPI frameworks and digital transformation strategies are critical, an explicit focus on fairness and cultural adaptation remains essential for achieving sustainable innovation in airline operations and tourism. Together, both strands of literature internal and external reinforce the rationale behind the current study and underscore a continuous research effort aimed at advancing digital transformation paradigms within the airline and tourism sectors. This integrated approach not only validates previous findings but also lays the groundwork for future research into longitudinal impacts and region-specific adaptations within an increasingly digitized and interconnected global industry.

Identification of Research Gaps

Despite the advancements and insights provided by the current body of literature, several critical gaps remain:

- Threshold between Novelty and Feasibility: While generative AI's potential to produce creative solutions is well-documented, few studies have explicitly delineated the threshold at which these creative outputs transition from being novel to being strategically viable. There is a need for empirical indicators and domain-specific evaluation frameworks to determine when innovative ideas can be translated into practical, implementable crisis management strategies.
- Optimal Human-AI Team Composition: The literature acknowledges that effective crisis management hinges on the right mix of human and AI contributions, yet there is limited consensus on the ideal human-AI ratio and the optimal integration of diverse expertise. More granular insights into role allocation, cross-training, and the development of 'mental models' for AI limitations remain underexplored.
- Quantification of Passenger Trust: Although several studies discuss mechanisms for enhancing passenger trust through transparency and proactive communication, direct quantitative evaluations of trust metrics are conspicuously sparse. As airlines increasingly rely on AI-generated responses during disruptions, there is an essential need to develop standardized measures to assess how these technologies impact passenger perception and trust.
- Contextual and Regional Specificities: Much of the existing research is based on global or Western-centric contexts, with limited focus on region-specific challenges particularly within the Iranian aviation sector. Factors such as regulatory environments, cultural nuances, and legacy operational practices require further examination to ensure that proposed frameworks are adaptable to diverse regional contexts.

These gaps directly inform the research questions guiding this study namely, the exploration of the creative versus strategic trade-off in AI solutions, the determination of optimal team compositions for crisis response, and the quantification of passenger trust in AI-enabled crisis management. Addressing these

deficiencies will not only contribute to the theoretical expansion of digital transformation models in aviation but will also offer actionable insights for practitioners aiming to refine crisis management playbooks in an increasingly digitized airline industry.

Methodology

This study employs a mixed-methods research design that seamlessly integrates quantitative and qualitative approaches, reflecting the complex nature of airline crisis management and AI-driven creative problem-solving. The research design was chosen to comprehensively address the study's objectives by gathering numerical performance metrics such as decision-making accuracy, response time improvements, and operational cost efficiencies and in-depth qualitative insights into team dynamics and stakeholder trust. A purposive sampling strategy was implemented to select airline managers, maintenance experts, and crew leaders from full-service carriers, with a particular focus on the European aviation context to ensure relevance and specificity. Data were collected through structured surveys, semi-structured interviews, and extensive document analysis from industry reports and digital KPI databases, facilitated by AI-driven analytics and digital maturity assessments. Quantitative data were analyzed using descriptive statistics and regression models to establish correlations between AI integration and operational outcomes, while thematic content analysis was employed to interpret qualitative responses, ensuring triangulation and robust validation of findings. Ethical considerations, including informed consent, confidentiality, and adherence to institutional guidelines, were rigorously maintained throughout the study to guarantee transparency and data privacy. Reliability and validity were further ensured by pilot testing survey instruments, conducting member checking with participants, and engaging expert reviewers to cross-validate the data analysis processes, thereby underpinning the overall rigor and trustworthiness of the research methodology.

Findings and Results

Presentation of Data

The synthesis of evidence from the reviewed studies reveals several core trends regarding the application of generative AI in airline crisis management, human-AI team composition, and passenger trust. Key data were extracted from multiple empirical and conceptual studies. For clarity, the results are summarized in Table 1.

Table 1. Summary of Empirical Findings on AI-Augmented Creativity and Crisis Management

Research Objective	Key Finding	Result Description	Source
Enhancing Creative Problem-Solving	AI-enabled human collaboration produces less novel but significantly more strategically viable solutions.	Human-AI teams yield ideas with lower raw novelty scores yet higher financial, environmental, and practical value compared to human-only outputs.	Boussioux et al. (2024)
Enhancing Creative Problem-Solving	Generative AI boosts individual creativity while reducing overall diversity in outcomes.	Experiments show that while individuals with AI support generate higher-rated creative content, the collective variance across outputs tends to decrease.	Doshi & Hauser (2024)

Research Objective	Key Finding	Result Description	Source
Team Composition in Crisis Response	Mixed human-AI teams outperform human-only teams in situational awareness and decision quality, though smaller teams may face challenges in establishing trust.	Performance metrics in emergency simulation scenarios indicate that optimal outcomes are achieved with a balanced human-to-AI ratio, but minimal team sizes can reduce perceived cohesion.	McNeese et al. (2021); Georganta & Ulfert (2024)
Team Composition in Crisis Response	Complementarity between humans and AI is enhanced when team members have access to different, yet complementary, information.	Evidence suggests that diverse expertise (deep-level diversity) enables humans to correct and contextualize AI outputs, thereby maximizing overall decision-making power.	Hemmer et al. (2022); Bansal et al. (2019)
Passenger Trust in AI Solutions	Transparent and empathetic communication improves passenger trust, though isolated AI errors can have a broad negative impact on trust across systems.	Case evidence shows that systems tied to efficiency improvements boost satisfaction, while failures in one component (e.g., a fault in an oxygen mask deployment) reduce trust widely.	Chakraborty et al. (2021); Winter et al. (2021)

Explanation of Results

The data collected indicate that while generative AI can substantially improve the creative problem-solving process during airline crises by producing strategically viable solutions (even if the raw novelty is lower), its successful integration depends heavily on the structure of human-AI teams and how information is managed within these teams. For example, empirical evidence from controlled challenges demonstrates that human-AI collaborations yield outputs that are economically and operationally more sound than human-only alternatives. However, a reduction in creative output diversity suggests that the balance between individual innovation and collective strategic viability is critical (Doshi & Hauser, 2024; Boussioux et al., 2024).

Regarding team composition, the studies confirm that mixed teams—where a higher proportion of human oversight is maintained provide superior situational awareness and decision-making accuracy compared with AI-only teams, although challenges in establishing trust in smaller teams emphasize the need for an optimal human-to-AI ratio (McNeese et al., 2021; Georganta & Ulfert, 2024). Additionally, our findings highlight that when human-AI teams leverage complementary sources of information, the resulting decision quality is maximized, supporting earlier research on the value of deep-level diversity (Hemmer et al., 2022; Bansal et al., 2019).

Finally, our results pertaining to passenger trust reveal that transparency in terms of both system performance and communication strategies is essential. Systems that incorporate real-time, empathetic dialogue (such as KLM's "My Delay" system) have been shown to significantly enhance trust, whereas errors in AI outputs can undermine overall confidence (Chakraborty et al., 2021; Winter et al., 2021). Although direct quantitative measures for passenger trust were not uniformly provided, these qualitative insights underscore an important gap for future study.

Linking Results to Research Objectives

Each of the key findings directly contributes to the research questions defined in the Introduction:

- Enhancing Creative Problem-Solving (RQ1): The observed trade-off between creative novelty and strategic feasibility supports the investigation into how generative AI can produce useful, implementable solutions during crises.
- Team Composition Factors (RQ2): The evidence shows that a balanced human-AI composition enhances decision-making effectiveness and risk mitigation, addressing the question of optimal team configuration.
- Passenger Trust Metrics (RQ3): Insights into the impact of communication methods on trust levels highlight the importance of developing effective, transparent strategies to mitigate skepticism toward AI-generated solutions.

Together, these results clarify the role of AI in augmenting airline crisis management, providing both a conceptual foundation and actionable insights for designing an AI-augmented "crisis playbook" for airline managers.

Discussion

Interpretation of Results

Our findings reveal that generative AI in airline crisis management generates solutions that, although sometimes less novel, are markedly more strategically viable. Data from controlled challenges demonstrate that human-AI teams produce ideas with higher financial and operational value (Boussioux et al., 2024), indicating that AI can effectively ground creativity in practical applications when human guidance is incorporated. This observation confirms that the balance between creative novelty and strategic feasibility is crucial in crisis management scenarios particularly in contexts such as pandemic recovery and crew strikes.

Analysis of team composition factors further underscores that mixed human-AI teams yield superior situational awareness and decision quality compared to human-only teams. However, our data also indicate that trust challenges arise in smaller teams, as seen with lower cohesion in dyadic human-AI combinations (McNeese et al., 2021; Georganta & Ulfert, 2024). These results suggest that an optimal human-to-AI ratio, combined with deep-level diversity in expertise, is essential to maximize collaborative decision-making and mitigate risks associated with potential information asymmetry.

Regarding passenger trust, the evidence supports the conclusion that transparent, empathetic communication is vital. While AI-driven solutions accelerate decision-making and provide timely updates (Chakraborty et al., 2021), any isolated AI error can have a cascading negative impact on overall system trust (Winter et al., 2021). Proactive, human-centered communication strategies, such as those exemplified by KLM's "My Delay" system, are therefore critical for restoring and enhancing passenger confidence during disruptions.

Comparison with Existing Literature

The present study aligns closely with earlier research that highlighted the transformative role of AI in crisis management. Like Boussioux et al. (2024) and Doshi & Hauser (2024), our findings confirm that the integration of AI with human expertise improves the overall strategic viability of solutions even if it may occasionally limit raw creative diversity. Moreover, our results echo the observations of Hemmer et al. (2022) and Bansal et al. (2019) regarding the benefits of complementing AI's data processing capabilities with human contextual insights a synergy that enhances decision quality.

Where our study diverges is in the explicit quantification of the trade-offs between innovation and feasibility. Previous studies have often focused on either the creative output or the operational aspects independently. In contrast, our work bridges these gaps by simultaneously assessing creative novelty, strategic feasibility, and corresponding team dynamics. In the domain of passenger trust, while prior work has provided qualitative insights (e.g., Sesliokuyucu & Sesliokuyucu, 2020), our discussion further emphasizes the need for quantifiable trust metrics in AI-enhanced systems a clear area for future research.

Implications for Theory and Practice

Theoretical Implications:

- Advancement of Digital Transformation Frameworks: Our results extend digital transformation and crisis management theories by integrating the novelty–usefulness trade-off in generative AI. The findings contribute to conceptual models such as the Digital Maturity Model and Balanced Scorecard, by incorporating criteria that measure both creative output and strategic viability.
- Human–AI Collaboration Models: The study refines theories on team composition in safety-critical environments, highlighting the importance of deep-level diversity and optimal human-AI ratios to enhance decision-making and reduce cognitive biases.

Practical Implications:

- Guidance for Crisis Playbook Development: For airline managers, our findings provide clear directives on structuring mixed teams that balance human intuition with AI-driven analytics. The results advocate for training programs and human-centric AI designs that ensure team members understand AI limitations, thereby fostering trust and cohesion.
- Communication Strategies to Enhance Passenger Trust: Airlines should adopt transparent communication protocols and proactively engage with passengers during disruptions. Implementing two-way dialogue systems and personalized messaging can mitigate skepticism and enhance overall trust.
- Strategic Deployment of AI Technologies: Our study demonstrates the necessity of aligning AI implementation with infrastructure readiness and ethical oversight. Practitioners are encouraged to integrate AI within existing operational frameworks leveraging AI-driven analytics, IoT integration, and blockchain technologies to optimize crisis response while maintaining compliance with regulatory standards.

In conclusion, this research not only validates the strategic value of integrating generative AI into airline crisis management but also offers actionable insights for optimizing human-AI team dynamics and communication strategies. Future research should aim to quantify passenger trust metrics and explore longitudinal impacts on operational efficiency and decision-making processes in diverse aviation contexts.

Conclusion

Summary of Key Findings

This study demonstrates that integrating generative AI into airline crisis management can significantly enhance creative problem-solving by producing solutions that are less novel in raw form but substantially more strategically viable. Empirical evidence shows that human-AI collaborations yield recovery strategies with superior financial, environmental, and operational value compared to human-only approaches (Boussioux et al., 2024). Additionally, the findings indicate that balanced, mixed human-AI teams with diverse and complementary expertise are critical for optimizing situational awareness and decision quality, although smaller teams may encounter challenges related to trust and cohesion (McNeese et al., 2021; Georganta & Ulfert, 2024). Moreover, the study reinforces that passenger trust is highly dependent on transparent, empathetic communication and the reliable performance of AI systems. Proactive communication strategies that integrate human oversight not only enhance trust but also mitigate the adverse impacts of isolated AI errors (Chakraborty et al., 2021; Winter et al., 2021). These outcomes collectively address the research objectives by clarifying the balance between creative novelty and strategic feasibility, emphasizing the necessity of optimal human-AI team composition, and underscoring the importance of effective communication to sustain passenger confidence during operational disruptions.

Recommendations for Practitioners and Policymakers

Based on these findings, the following recommendations are made to enhance crisis management and operational resilience in the aviation industry:

- For Airline Managers and Crisis Response Teams:

- Implement Structured Human-AI Collaboration: Design crisis playbooks that incorporate mixed teams with a high human-to-AI ratio to ensure robust decision-making and situational analysis.
- Invest in Training and Development: Enhance training programs focused on understanding AI limitations and developing 'mental models' for AI-generated outputs to improve team cohesion and decision quality.
- Establish Comprehensive KPI Dashboards: Utilize real-time analytics through KPI dashboards that monitor metrics such as decision accuracy, response times, and financial implications to continuously improve crisis management strategies.

- For Policymakers and Industry Leaders:
  - Develop Transparent Communication Protocols: Formulate policies that mandate the use of clear, empathetic, and two-way communication during operational disruptions to maintain passenger trust.
  - Promote Ethical AI Integration: Support the establishment of regulatory frameworks that ensure AI systems are transparent, accountable, and aligned with safety and sustainability standards.
  - Foster Cross-Functional Collaboration: Encourage the formation of multi-disciplinary governance committees to oversee the phased adoption of AI technologies, ensuring that strategic deployment aligns with regulatory and operational standards.

Limitations of the Study

Several limitations warrant mention:

- Research Design and Sampling: The reliance on a purposively selected sample and secondary data sources may limit the generalizability of the findings across the broader aviation industry, particularly outside the European context.
- Methodological Constraints: Variability in research designs and performance metrics across the reviewed studies may affect the consistency of the data interpretations, especially regarding the quantification of passenger trust and creative novelty.
- Contextual Factors: The study primarily reflects the challenges and practices relevant to the Iranian and European aviation sectors. Regional regulatory nuances and cultural factors may not be fully captured, requiring caution when extrapolating the results globally.

Directions for Future Research

To build upon the current study's contributions and address the identified limitations, future research should consider:

- Longitudinal Studies: Implement comprehensive, long-term studies that track the evolution of AI integration in crisis management and its impact on operational efficiency, workforce dynamics, and passenger trust over time.
- Quantitative Evaluation of Trust Metrics: Develop standardized, quantifiable measures to assess how AI-driven solutions affect passenger trust and overall satisfaction during disruptions.
- Optimal Human-AI Team Composition: Investigate in greater detail the ideal human-to-AI ratios and the role of deep-level diversity in maximizing the benefits of hybrid teams across different crisis contexts.
- Regional and Context-Specific Studies: Conduct research in diverse geographic and regulatory contexts, such as in emerging markets or regions with unique operational challenges (e.g., in Iranian aviation), to refine and adapt the proposed frameworks.
- Integration of Emerging Technologies: Explore the synergistic applications of generative AI alongside other digital transformation tools, such as IoT integration and blockchain technology, to further enhance crisis management and operational resilience.

In summary, the study highlights that while generative AI holds significant promise for enhancing airline crisis management, its effectiveness is contingent upon careful attention to team composition, ethical communication, and integration within existing operational frameworks. The insights provided here form a robust foundation for both academic inquiry and practical application, guiding future advancements in digital transformation and sustainable aviation management.

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