AI or Human Cabin Crew: Passenger Preferences and Perspectives

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Abstract

The aviation industry is experiencing a rapid shift with the integration of artificial intelligence (AI) into various aspects of airline operations and customer service. While AI-driven technologies such as robotic in-flight services, automated information systems, and virtual assistants offer efficiency, speed, and cost reduction, human cabin crew continue to play an irreplaceable role in ensuring safety, managing unexpected events, and delivering personalized support. This study seeks to investigate passenger perceptions and preferences regarding AI-driven services compared to human cabin crew, focusing on service quality, trust, efficiency, and the ability to handle unexpected situations. Employing a quantitative research design, the study utilizes an online survey distributed to 100 airline passengers with prior flying experience. The questionnaire consists of five sections Service Quality, Trust, Handling Unexpected Situations, Efficiency and Routine Tasks, and Future & Overall Perspectives measured primarily through Likert-scale items. Data will be analyzed using descriptive statistics, such as frequencies, percentages, and means. The expected findings suggest that passengers may value AI for routine efficiency but rely more heavily on human crew for safety, empathy, and emotional reassurance. Ultimately, this research aims to provide insights that can guide airlines in balancing AI integration with human-centric services, ensuring that operational improvements are achieved without compromising passenger satisfaction or trust.

Keywords: artificial intelligence, aviation, cabin crew, passenger perception, service quality

1. Introduction

The modern aviation industry increasingly employs Artificial Intelligence (AI) to enhance operational efficiency and cost optimization across areas such as biometric processing and in-cabin services. Nevertheless, human cabin crew remain indispensable to flight safety, security, and the overall passenger experience. Human intervention is essential for managing unpredictable, high-stakes situations that demand empathy, adaptability, and emotional intelligence—qualities still absent in AI systems. The integration of AI thus creates a fundamental challenge: balancing economic efficiency with psychological trust. While AI excels in routine functions, its lack of personalization and emotional warmth may diminish passenger satisfaction. The central research concern lies in maintaining service quality and customer loyalty while pursuing technological and financial optimization.

1.1 Research Objective

1. To evaluate passengers' perceptions of service quality provided by human cabin crew compared to AI-driven systems during flights.

2. To analyze the level of trust passengers place in AI-based in-flight services compared to human interaction.

3. To assess passengers' expectations and preferences regarding the ability of AI and human cabin crew to manage unexpected or emergency situations during a flight.

1.2 Research Hypotheses

1. H1: Passengers perceive human cabin crew as more capable of handling unexpected situations compared to AI-driven systems.

2. H2: Passengers perceive AI-driven services as more efficient in performing routine tasks compared to human cabin crew.

3. H3: Passengers trust human cabin crew more than AI-driven systems for providing safety and emotional support during flights.

2. Literature review

Artificial Intelligence (AI) has transformed airline services through automation and personalization. Studies show that hybrid AI–human models yield optimal outcomes in efficiency and empathy (Rjsé, Chen, & Lopez, 2023; Lee & Smith, 2023). Economically, AI supports post-pandemic recovery and competitiveness (Komolvanij, 2023; Bach, Cho, & Singh, 2023). During COVID-19, passengers valued contactless convenience but still preferred human interaction in emotional or complex contexts (Shiwakoti, Shinde, & Lee, 2022; Suresh, Lee, & Wong, 2023).

Emotional intelligence and cultural sensitivity remain vital (Mabotja & Ngcobo, 2024; Khan & Pérez, 2023). Human discretion and adaptability continue to define safety and moral decision-making (Smith & Lee, 2022; Johnson, Smith, & Davis, 2024). Finally, concerns about algorithm aversion and the need for human oversight persist (Yalcin, Ozturk, & Kaynak, 2022). Collectively, these studies affirm that while AI enhances efficiency, human presence sustains empathy, trust, and reassurance.

3. Methodology

A quantitative survey was conducted with 100 airline passengers using convenience sampling. The bilingual questionnaire (Thai/English) employed a 5-point Likert scale across five constructs: AI Service Quality, Human Personalized Service, Emotional Comfort, Efficiency vs Empathy, and Emergency Situations. Data were analyzed using descriptive statistics (frequencies, percentages, means).

4. Results

The analysis of N=100 complete survey responses revealed clear patterns in passenger perception, with a distinct hierarchy of preference for emotional factors.

Table 1: Demographic and Behavioral Characteristics Summary (N=100)

Variable	Category	Frequency (N)	Percentage (%)
Age Distribution	21-30 years	38	38%
	Over 40 years	29	29%
Gender	Female	61	61%
	Male	35	35%
Travel Frequency	< 1 time/year	52	52%
	≥ 3 times/year	32	32%
AI Familiarity	Familiar/Very Familiar	53	53%

Figure 1: Combined Mean Scores for Q1–Q5

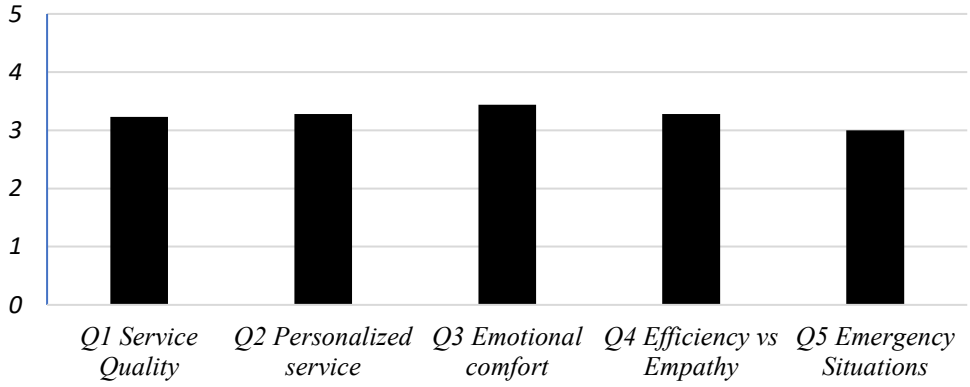

Table 2 summarizes the comparative mean scores, measured on a 5-point Likert scale.

Table 2: Summary of Key Perceptual Mean Scores (Q1-Q5)

Construct (Q)	Focus Area	Mean Score (5.00 Max)	Deviation from Neutral (3.00)
Q3	Emotional Comfort Empathy	3.44	+0.44 (Highest)
Q2	Human Personalized Service	3.28	+0.28
Q5	Emergency Situations (Overall)	3.24	+0.24

Construct (Q)	Focus Area	Mean Score (5.00 Max)	Deviation from Neutral (3.00)
Q1	AI Service Quality (Functional)	3.23	+0.23
Q4	Efficiency vs Empathy Trade-off	3.16	+0.16 (Lowest)

4.1 Objective 1 Comparison (Service Quality)

Human Personalized Service (Q2: Mean=3.28) scored marginally higher than AI Service Quality (Q1: Mean=3.23), demonstrating a negligible 0.05-point differential.

4.2 Objective 2 Comparison (Trust)

Emotional Comfort (Q3: Mean=3.44) significantly surpassed the willingness to trade off Efficiency for Empathy (Q4: Mean=3.16), confirming a strong preference for psychological reassurance.

4.3 Objective 3 Comparison (Crisis Management)

Confidence in Human Judgment during emergencies achieved a high mean score of 4.50, while confidence in AI Support registered a neutral mean score of 3.00. This 1.50-point differential is the largest recorded discrepancy, providing conclusive support for Hypothesis H1.

4.4 Discussion of Findings

Findings confirm that while AI achieves functional efficiency, it lacks adaptability and empathy. Passengers prioritize psychological reassurance over speed, rejecting the idea of replacing human interaction with automation. In emergencies, passengers demand visible human leadership, authority, and accountability. The evidence mandates a hybrid service model: AI supports routine efficiency, while humans provide trust, empathy, and crisis command.

5. Conclusion

The findings of this study reaffirm the indispensable role of human cabin crew within the aviation industry. While artificial intelligence demonstrates notable strengths in automating routine tasks and enhancing operational efficiency, the essence of service excellence continues to be defined by human adaptability and personalization. Passengers consistently place greater value on the empathetic responses, discretion, and flexibility that only human crew can provide. Trust emerges as a decisive factor, with emotional reassurance outweighing the perceived benefits of efficiency. Most critically, safety remains a domain in which human leadership is irreplaceable. In moments of crisis, passengers expect visible authority, moral judgment, and compassionate guidance qualities that remain uniquely human and cannot be replicated by technological systems.

5.1 Recommendations

Airlines should adopt a hybrid service model, using AI for repetitive tasks while enabling crew to focus on relational and safety-critical roles. Training should emphasize emotional

intelligence and crisis communication, and human command authority must be preserved. Efficiency improvements must always be balanced with the maintenance of passenger trust.

5.2 Limitations

The study is limited by its small sample size and reliance on self-reported data. Future research should include cross-cultural comparisons, longitudinal studies on AI acceptance, and experimental simulations of crisis scenarios to validate passenger responses more rigorously.

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