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Research Article

## Human–AI Service Co-Management for Airlines: Reducing Digital Friction in AirAsia’s AskBo

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### Keywords:

*AirAsia virtual assistants*

*Digital friction*

*Airasia’s AskBo*

*Human-AI*

*AI avatar*

**Abstract:** *Virtual assistants are integral to digital customer service; however, users often experience emotional, cognitive, and interactional challenges during AI-mediated interactions. This study introduces Perceived Digital Friction as a framework to explain psychological discomfort in human–AI service communication. Using a qualitative approach, real-time interactions with AirAsia’s virtual assistant, AskBo, were analysed through thematic analysis. Three dimensions of digital friction were identified: i) emotional frustration, ii) cognitive overload, and iii) contextual disruption. Based on these findings, the study proposes Human–AI Service Co-Management Guidelines integrating AI avatar video interfaces with human oversight. This innovation enhances service accessibility by enabling audio-based support for blind users and visual avatar communication for deaf users, while ensuring seamless escalation to human agents.*



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## 1. INTRODUCTION

The advancements in technology in recent years have enabled people to work at a faster pace, especially in tasks that involve serving customers virtually. Most companies embrace digitalisation to support their customer system effectively. Today with the era of digital technologies, virtual assistants corporate in customer service systems with diverse industries, including e-commerce, healthcare, banking, and aviation. According to Jones and Smith (2019), a virtual assistant can be defined as a software that provides personalised assistance to users, such as driving a variety of tasks like handling customer service, providing technical support, and offering personalised recommendations (Shumanov & Johnson, 2021). Virtual assistants to continuous improvement mechanisms ensure that these virtual intelligences refine their capabilities based on real-world usage, providing users with increasingly personalised and efficient experiences (Nwabekee et al., 2025).

The first kind of chatbot uses Natural Language Processing (NLP) to understand human language; the second uses pre-designed formula, which provides a more structured conversational flow similar to a decision tree (Raj et al., 2024). The integration of Artificial Intelligence (AI) benefits virtual assistants in resolving issues and addressing customer problems, as well as in interacting with customers (Nwabekee et al., 2025). A virtual assistant can be defined as a software that provides personalised assistance to users. In addition, the virtual assistants have various applications, like customer service platforms to smart home devices, and business operations (Hiltunen, 2022; Vaananen, 2023). This study aims to identify key sources of user discomfort in AI-based airline services, discuss a new conceptual innovation on Perceived Digital Friction, and propose Human–AI Service Co-Management Guidelines as a practical industry solution.

In 2023, AirAsia reaffirmed its commitment to transparent communication and enhanced customer experience as part of its strategic vision to become a highly communicative, responsive, and accountable airline brand in the region. Recognising the limitations of its earlier AI chatbot, AVA, which did not fully meet user expectations, AirAsia acknowledged that human agents alone were insufficient to manage the growing volume and complexity of customer inquiries. Based on the experience from the AVA chatbot, Air Asia has further enhanced its Artificial Intelligence application to provide faster and more accurate responses to customers. As a result, AirAsia has launched AskBo, which is inspired by Group Chief Executive Officer Bo Lingam, with the aim of optimizing travel and improving customer accessibility. The AskBo chatbot provides various services including live flight updates and offers support in multiple languages such as Bahasa Malaysia, English, Thai, Japanese, and more (AirAsia News, 2023).

Virtual assistance plays a very important role by improving customer experience and operational efficiency in the airline industry. AI-based systems constantly support real-time updates by allowing passengers to obtain information about flight reservations, schedules and passenger rights without the delays usually associated with traditional customer service methods (Sakmar, 2025; Alla et al., 2024; Arreza, 2022).

## 2. LITERATURE REVIEW

Chatbot technology has developed in various industries including library services, healthcare, online businesses, education and the aviation industry. This is very important in improving the quality of service and user satisfaction. In the field of education, chatbots provide fast and accurate responses to student inquiries such as class schedules and academic information. Despite the 24/7 chatbot service, chatbots also face challenges in handling complex or unclear inquiries, for which human assistance is still required (Damayanti & Nuzuli, 2023). This shows that although chatbots are very suitable for daily tasks, their functionality is still limited in handling human interactions with complex inquiries.

Past studies have consistently shown significant improvements in service efficiency and user satisfaction with the implementation of chatbots. Dominguez et al. (2024) explained that chatbot adoption increases customer service quality by 64.4% and user satisfaction by 69.9%. This clearly shows the role of AI in increasing trust and accessibility of services in a field. This opinion is similar to Sakmar (2025) showing that the LibraX library chatbot was accepted by users with the highest number of 94.67% of users rating the chatbot as user-friendly. However, there were positive findings by users identifying future system improvements, such as better integration with existing service platforms, which highlighted the need to design a more adaptive and user-centered chatbot.

For the aviation sector, chatbot systems offer real-time flight information through natural language interaction, improving communication and customer satisfaction (Sakmar, 2025). Alla et al. (2024) found that aviation chatbots can reduce passenger waiting times by effectively handling routine flight inquiries and reducing reliance on human agents. Despite the many benefits, such studies have

focused on automation efficiency and minimal human involvement. At the same time, such studies show how there is insufficient discussion about how human agents can strategically collaborate with AI systems during complex or emotionally charged service interactions.

There are several previous studies that have focused on user perceptions, revealing significant gaps in current chatbot implementation. Arreza (2022) explained that there is a strong relationship between chatbot service quality and user satisfaction in the airline industry. At the same time, he emphasized the need for improved chatbot functionality to improve service outcomes. However, existing studies tend to evaluate chatbot performance using efficiency and satisfaction metrics, with limited consideration given to the user's emotional experience, cognitive load, and digital discomfort experienced during AI-mediated service interactions.

In 2024, a study by Taranukhin et al. highlighted a new chatbot design that could interpret passenger queries with complex queries and retrieve more accurate information from official Canadian flight records. The system was designed to educate Canadian travelers about their rights as passengers, flight delays, and cancellations. A study comparing chatbot usage with Google search found that chatbots were perceived as more useful and easier to use by users. This study highlighted the usability of conversations with information accuracy in airline chatbot systems.

Overall, this literature shows that chatbots are highly effective in handling routine service interactions, but are still limited in addressing several challenges, particularly those related to emotion, contextualization, and accessibility. This reveals a clear research gap in understanding how Human-AI Service Co-Management can reduce digital friction by balancing AI automation with human oversight. To fill this gap, this study advances existing chatbot research by proposing a Human-AI Service Co-Management Guideline that strategically integrates AI avatar interfaces with human agents to improve service effectiveness, inclusiveness, and user experience in airline customer service.

### 3. METHODOLOGY

This study used a qualitative methodology approach by conducting in-depth via online interviews with 15 informants that known as AskBo users across 14 states in Malaysia. The interview session was hosted using Google Meet, and all sessions were recorded with the informants' consent to protect their privacy and confidentiality. Each interview session takes around 40 minutes and one hour to complete, and the interview time was set by the informants according to their convenience time. This research used purposive sampling, where informants are selected based on the following criteria: (i) an informant having experiences used the AskBo service at least three times; (ii) an informant accessing AskBo via the website or mobile application; and (iii) an informant is a Malaysian citizen.

Before the interview session started, a short briefing was held to explain the research protocol, the informants' rights, privacy, and confidentiality. If the informant was aware of all the terms informants were asked to sign an informed consent form and they are voluntary participation in the study. Eight semi-structured questions guided the interviews, with two additional probing questions asked when necessary. Data were analysed using thematic analysis following Braun and Clarke's (2010) framework to identify key themes and subthemes. Data saturation was achieved after 15 interviews, as no new themes emerged during the coding process.

#### 3.1 *Perceived Digital Friction Concept*

The dimensions of Perceived Digital Friction were derived from established theories addressing cognitive effort (Sweller, 1988), interaction resistance (Cooper, 1999), and emotional-psychological evaluation processes (Oliver, 1980). This is all the combination is a grounded theory form

of Perceived Digital Friction that covers three important elements, namely: i) Emotional- Feelings triggered during the interaction, ii) Cognitive- Mental effort or overload required to use the system, and iii) Psychological- Broader perception of the interaction, including trust, control, and satisfaction.

Perceived Digital Friction refers to the psychological, emotional, and cognitive discomfort that users experience when interacting with AI virtual assistants. It allows airlines or other industries to identify friction and design human–AI co-managed interventions.

#### 4. FINDINGS

As a result of the thematic analysis with 15 informants, this study formed three main themes, namely: i) Emotional Disconnection and Frustration, ii) Cognitive Overload and Navigation Difficulty, and iii) Conditions Influencing Perceived Helpfulness. Then, three sub-themes were formed representing the main themes, namely: i) Lack of Empathic, ii) Information Overload, and iii) Human–AI Handover Mechanisms.

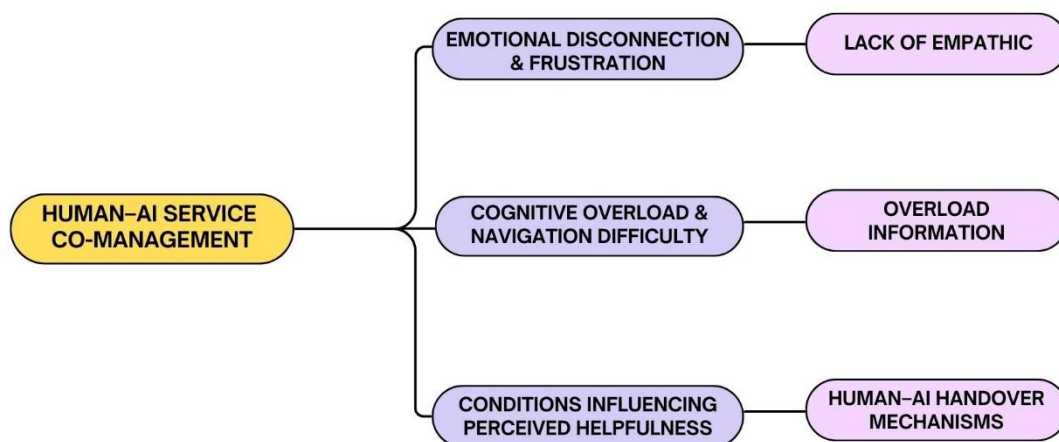


Figure 2. Data analysis for Human-AI Service Co-management

##### 4.1 Emotional Disconnection and Frustration

The first main theme is Emotional Disconnection, and Frustration refers to situations where the interaction between a user and an AI chatbot service fails to meet the user's emotional and communication expectations. This disconnection occurs when the user expects empathetic, contextual, and helpful responses, but the AI chatbot provides answers that are mechanical, repetitive, or insensitive to the user's situation.

The subtopic is a lack of empathy, which refers to users often experiencing negative emotions when interacting with AI systems, including feelings of frustration, anger, and alienation, especially when the interaction fails to meet their emotional and communication expectations. Based on interview data, informants found that AI chatbots often provide repetitive responses and AI chatbots are also seen as lacking empathy, which often causes users to feel that their concerns are not understood or taken seriously, creating an emotional gap between the user and the system. This phenomenon is known as emotional friction, where the experience of digital interaction causes psychological stress and emotional discomfort to the user. Continuous emotional friction not only reduces user satisfaction with AI services but also indirectly increases the likelihood that users will abandon the AI system and choose to interact with human agents, especially in situations that require contextual understanding and emotional support. Informants argued:

*"I had a bad experience when my flight was suddenly delayed for about 2 hours from Kedah to Kuala Lumpur. So I used the chatbot to change the flight, but the chatbot kept repeating the same answer, I also don't know if there was a system problem or if I was wrong in giving the answer requested. I really felt stressed at that time, because I had a connecting flight after that from Kuala Lumpur to Kota Kinabalu," (IM2).*

*"I was very disappointed at the time, but this chatbot seemed to have no feelings, it could give us many options to choose from, and then there would be an error, it would buffer, it wouldn't understand, so we would have to enter information over and over again. The nature of the chatbot itself is what made me angry; it didn't look very nice chatbot, it wasn't looking good also...haha.. (laugh), then there was no empathy anymore, there was no guarantee that my flight would be refunded or rescheduled," (IF5).*

#### 4.2 Cognitive Overload and Navigation Difficulty

The second main theme is Cognitive Load and Navigation Difficulty, which refers to the level of mental effort required by users to understand, navigate, and complete tasks through AI-based interactions. This occurs when chatbots display overly complex menus, unclear instructions, use technical aviation terminology, and repetitive responses that do not meet the user's needs. Such interaction designs force users to think more deeply, especially in urgent or emotional travel situations. As a result, task completion becomes slower, errors increase, and the perceived effectiveness of the service decreases, creating digital friction and a less than satisfactory user experience.

The Information Load subtheme refers to situations where users experience confusion and mental stress when interacting with AI services that involve too many options, confusing instructions, and multi-step processes. This causes users to invest excessive mental effort to complete tasks that should be easy and quick. As a result, task completion slows down, error rates increase, and the effectiveness and helpfulness of AI services decrease from the user's perspective. In this context, the use of AI avatars has the potential to reduce cognitive friction by providing step-by-step visual guidance, thus supporting more intuitive and user-oriented information processing. Most of informant's opinion:

*"The chatbot gives me too much information to click on, sometimes it will give me a link later when I click on all the long and dense information. So I'm not even sure which one I should choose, so confuse," (IF9).*

*"I have to read the instructions given repeatedly, to better understand. But even that sometimes I don't understand. I also feel mentally tired because I want to change my order. If it is given in the form of pictures, videos it is a little easier," (IF13).*

#### 4.3 Conditions Influencing Perceived Helpfulness

The third theme is Conditions Influencing Perceived Helpfulness, refers to contextual factors that determine how helpful a user feels AI is. Key factors include the user's situation (such as a flight delay or cancellation), the complexity of the query, the clarity and appropriateness of the AI's response, the ability to escalate to a human agent, and the user's emotional state. When a chatbot fails to adapt its response to the user's context and emotions, the perceived helpfulness decreases.

The sub-topic here is Human-AI Handover Mechanisms, refers to user perceptions of AI's usefulness depend on the context and specific needs of a task. AI may not be seen as helpful even if it is technically accurate if it fails to handle complex or high-risk situations. In other hands AI's

effectiveness increases when its role is aligned with humans, taking into account the level of urgency and complexity of the task. These findings highlight that effective AI integration requires technical accuracy as well as coordination with humans to increase user satisfaction. Most of informant’s opinion:

*“The chatbot actually works well for simple things or questions like checking flight times, checking flight status and more. However, if I have a complex problem, the chatbot cannot help. Then it connects me to a human agent, but I have to wait a long time for the agent to respond to the chat and I have to fill in the information again and again, (IM6).*

*“When the problem I’m facing becomes complicated, I prefer to talk to a human agent because the chatbot doesn’t understand my situation properly. Sometimes the chatbot can’t give us what we want.”*

#### 4.4 Human–AI Service Co-Management Guidelines

This study proposes a Human–AI Co-Management model of Human Services, in which AI and human agents operate collaboratively based on the level of digital friction detected in user interactions. In this model, AI handles routine and informational queries through interactive video avatars that provide visual and step-by-step guidance. AI avatars are designed to convey information with consistent tone and emotional expression, thus acting as the initial interface between the user and the human agent. Human agents are only involved in complex, urgent or emotionally charged situations, without having to repeat information already provided by the AI. They complement AI interactions through empathy, contextual understanding, and responses that are more tailored to the user’s needs. Human intervention is triggered when the AI system detects signs of emotional distress or user confusion, for example by analysing the tone of text messages. In situations where the AI menu or instructions are difficult to understand, the human agent will guide the user step by step or provide a faster solution.

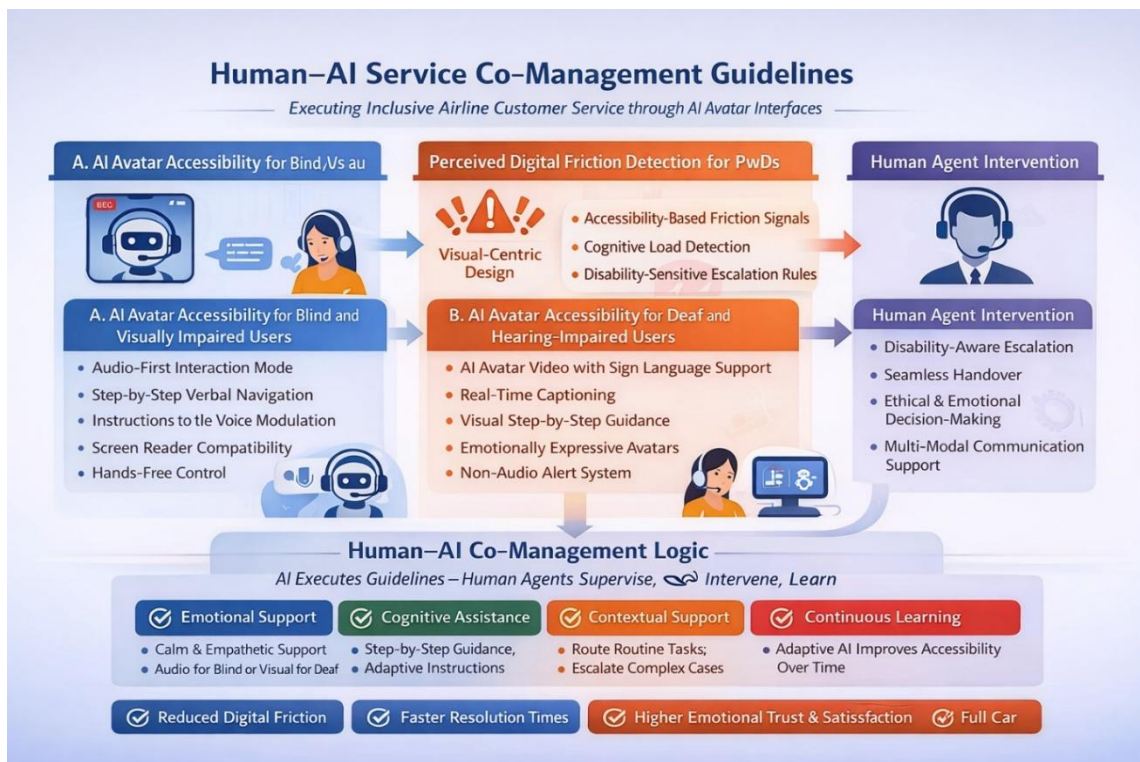


Figure 2. Guidelines for airlines

To ensure the effectiveness of this approach, the guidelines emphasise specific training for human agents on the capabilities and limitations of AI and effective communication strategies. A clear division of labor should be established, with the AI handling routine queries and the human agent handling complex issues. The transition between AI and humans should be seamless so that the user experience remains consistent. User interaction data is also used continuously to improve the AI's performance and improve the system's effectiveness in the future.

## 5. DISCUSSION

AI systems that communicate in an emotionally neutral manner often fail to meet users' affective needs, especially in high-pressure service contexts such as aviation. During travel disruptions, users not only need accurate information, but also emotional support such as empathy, understanding, and a reassuring tone of communication. When AI provides mechanical, repetitive, or overly procedural responses without considering the user's emotional state, the interaction can be interpreted as uncaring. This creates an emotional gap between the user and the AI system, reducing trust, satisfaction, and perceived service effectiveness, and prompting users to switch to human agents.

In addition, study participants reported cognitive overload when AI delivered complex instructions without a clear and adaptive structure. Cognitive overload occurs when the information processing requirements exceed the user's mental capacity, making comprehension difficult, especially among users with different levels of digital literacy. These findings highlight the importance of step-by-step guidance and simple navigation design to reduce digital friction and enhance the interaction experience. In this regard, the use of AI avatars with visual guidance can help reduce cognitive load and make it easier for users to understand instructions.

Users' perceptions of AI usefulness also depend heavily on the suitability of AI functions to their situational needs. While AI is effective for routine queries, it is less suited to complex or emotionally charged issues, where human judgment becomes more important. Therefore, a smooth transition mechanism from AI to human agents is critical to ensure users receive accurate, responsive, and empathetic support. Aligning the roles of AI and humans based on the complexity and urgency of the task can improve perceptions of the overall effectiveness and helpfulness of the service.

## 6. CONCLUSION

This study highlights the importance of the Human-AI Service Co-Management approach in airline customer service by presenting structured guidelines aimed at reducing digital friction, increasing service responsiveness, and improving the overall user experience. This approach emphasizes a clear division of roles between AI and human agents, where AI handles routine queries consistently and quickly, while human agents provide support in complex, emotional, or urgent situations.

Specifically, this study proposes the use of video-based AI avatars as a more inclusive service innovation, especially to support people with disabilities such as deaf, blind, and mute individuals. AI avatars enable the delivery of information through multiple communication modes, including audio for visually and visually impaired users and sign language for deaf or mute users, thus reducing communication barriers in digital interactions.

From a theoretical perspective, this study expands the understanding of human-AI interactions by emphasizing the role of emotion, cognition, and situational context in shaping the user

experience. From a practical perspective, it provides industry-oriented guidance for optimizing the performance of AI-based virtual assistants to be more empathetic, responsive, and inclusive in airline customer service environments.

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