

Tourists' sharing drone experiences in the era of low-altitude sharing economy transformation: A mixed-methods study

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INTRODUCTION

With the rise of the low-altitude economy, drones have become a valuable tool for tourists' leisure activities and are considered a disruptive technology in the tourism industry, capable of creating value for both tourists and businesses (Cahyanto et al., 2026). As a representative 'Tourism 4.0' technology, drones can greatly enrich tourists' experience and provide new avenues for tourism achieving long-term transformation (Stankov & Gretzel, 2020). Specifically, drones offer significant advantages in tourism photography. Besides greatly enhancing the tourists' visual experience through an aerial perspective, they also enable amateurs to access locations previously difficult to reach (Stankov et al., 2019) and allow tourists to virtually tour attractions online, thus enhancing their experience (Zhu & Wang, 2025). The increasing number of tourists sharing their drone experiences on social media highlights a shift in leisure expectations among tourists. However, it is worth noting that research often focuses on the perspective of tourists who own drones, which largely ignores the perceptions of tourists who have never used drones during travel.

In particular, the combination of the sharing economy and the low-altitude economy has become a new highlight, with the sharing economy representing a disruptive business model. Related research primarily focuses on sharing transportation (Zhao et al., 2026), shared accommodation (Gao & Li, 2026), and tourism sharing-economy platforms (Demir & Bertan, 2025). The unique aspect of the sharing economy lies in its sharing behavior, rather than the purchase or ownership of goods. The emergence of sharing drones (access-based use without ownership) (as shown in Figure 1.) impacts the tourists' experience in several ways. For instance, obtain high-angle views without carrying professional equipment, create high-value content for social media sharing (Kusuma & Azad, 2026), and lower the barriers to use.

Sharing drones, as a synergistic representation of the low-altitude economy and the sharing concept, provide new pathways for expanding the tourism experience. However, current research has yet to systematically explore the tourists' experience of using drones. The current tourism technology related scale (Pai et al., 2025) and tourism experience scale (Kim & Ritchie, 2014) cannot capture the unique characteristics of shared drones, which encompass both shared experience and high-altitude tourism technology experience, there is an urgent need for a dedicated scale to measure tourist experience in this context. As a novel sensory and participatory tool, the experience of using drones extends beyond merely completing a task, it encompasses a comprehensive range of emotional, cognitive, and social experiences. This can provide more robust theoretical support for understanding tourists' behavior, improving service quality, and promoting sustainable tourism. In addition, combining the sharing economy with drones can further illuminate the application scenarios and paradigms of the low-altitude economy, emphasizing shifts in tourist leisure experiences in the Tourism 4.0 era. Therefore, this study proposes that the tourists' sharing drone experience is unique and distinct from that of using private drones. This study focuses on the tourists' perspective, dividing drone-using tourists into two categories: those who do not own drones and those who do. This study aims to:

- (1) Identify the structure of tourists' sharing drone experiences;
- (2) Develop a psychometrically robust scale;
- (3) Test the reliability and validity of the developed scale; and
- (4) Explore the internal influence mechanisms of drone users on their continued use intention through a test of nomological validity.



Figure 1. Examples of Sharing Drones.

METHOD

The development of this scale will strictly follow Churchill (1979)'s study. Specifically, this study includes the following six steps: (1). Conduct an extensive literature review focusing on the experience economy, drone experience, and the sharing economy to generate initial items and adapt them for application in the sharing drone context of this study. (2). Conduct semi-structured interviews from tourists who have never owned a drone and tourists who own drones to obtain a comprehensive understanding of tourists' sharing drone experience dimensions. The research locations are mainly tourist attractions with sharing drone equipment, such as Xixi Wetland Scenic Area in Hangzhou, Xinghai Square in Dalian, Liaoning, and Binjiang Park in Nanjing, Jiangsu. These locations not only provide sharing drone equipment for tourists but also offer multiple aerial photography routes for other tourists. The interview process will follow the saturation principle. Open coding, axial coding, and selective coding will be used to analyze the interview results and further expand the item library generated in step 1.

(3). Conduct two rounds of Delphi surveys to evaluate the relevance and applicability of the initial items generated from the literature and interviews. (4). Conduct exploratory factor analysis to determine the dimensions and assess the scale's reliability and validity. The first round of questionnaire design and data collection will be carried out at the scenic spots equipped with sharing drone equipment mentioned above. The targeted sample size is ten times the number of items. (5). Conduct confirmatory factor analysis. Based on the results of the exploratory factor analysis, a second round of questionnaire design and collection will be conducted, followed by model-fit analysis and assessments of scale reliability and validity. (6). Nomological validity test. As shown in Figure 2, this study intends to construct a hypothesis model to test the criterion validity of the scale and further explore the intrinsic influence mechanism of sharing drone experience on continued use intention.

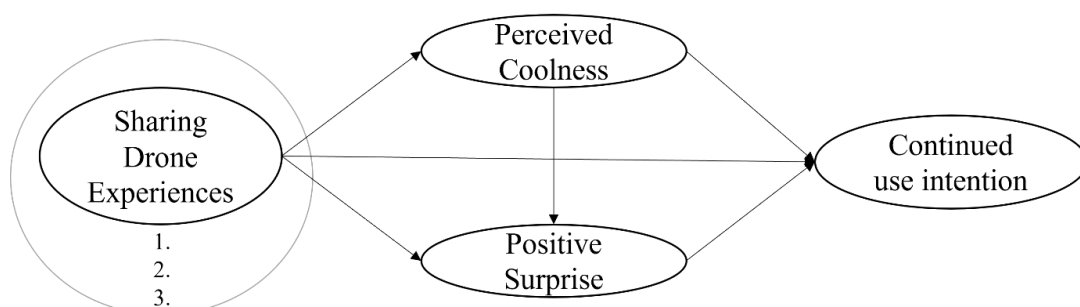


Figure 2. Test Model of Nomological Validity with Sharing Drone Experiences.

IMPLICATIONS OR CONCLUSION

This study is forward-looking. While existing research has focused on the application of drones in tourism activities from the tourists' perspective (Chen et al., 2020; Jiang et al., 2024), limited study has yet examined the multidimensional tourism experience brought about by drones. This expands the core issue of incorporating "technology-embedded experiences" into tourism experience research. In addition, the shared drone experience is essentially a process of experience creation and dissemination under sharing resources, providing a new theoretical perspective for understanding how resource sharing improves tourists' experiences.

As tourists' leisure needs shift, it is incumbent upon the tourism industry to emphasize the unique experiences that technology enables for tourists. The sharing-drone model can effectively enhance the tourist experience, which is crucial for tourist destinations. Specifically, aerial perspectives and panoramic shooting offer distinctive aesthetic experiences. From a sharing perspective, destinations can configure the appropriate number and model of drones and cloud-management platforms according to the characteristics of the scenic area, ensuring manageable queues and stable shooting quality. Ultimately, these measures promote the sustainable development of Tourism 4.0.

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