

The operational design and planning of drone-based logistics models is a rapidly growing area of scientific research. In this paper, we present a structured, comprehensive, and scalable framework for classifying drone based delivery systems and their associated routing problems along with a comprehensive review and synthesis of the extant academic literature in this domain. While our proposed classification defines the boundaries and facilitates the comparison between a wide variety of possible drone-based logistics systems, our comprehensive literature review helps to identify and prioritize research gaps that need to be addressed by future work. Although the multi-visit multi-drone Pure-play Drone-based (PD) delivery models are popular, the majority of the Synchronized Multi-modal (SM) delivery models focus on formulating and evaluating single-truck, single drone models. Our comprehensive review of use cases of drones for delivery indicates that most of the reviewed models are designed for applications in e-commerce and healthcare/ emergency services. Moreover, the Resupply Multi-modal (RM) models have not received the due attention for research compared to other drone-based delivery models. Our review shows that the extant research reasonably considers some relevant real-world operational constraints.