# Drone Technology in Supply Chain Management

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# Week 2 Discussion: Drone Technology in Supply Chain Management

Uncrewed Aerial Vehicles (UAVs), commonly known as drones, are increasingly pivotal in the evolution of supply chain management, particularly within warehouse operations and home delivery systems (Mohsan et al., 2022). The deployment of UAV technology in these domains offers an intriguing glimpse into the future of logistics, where efficiency and innovation intersect to redefine traditional practices.

In warehouse settings, UAVs contribute significantly to inventory management. They enable rapid stock checks and can reach areas less accessible to human workers, thus speeding up the retrieval and stocking processes. For instance, major companies have reported that using drones for inventory tasks reduces the time spent on manual stock checking, allowing for real-time inventory updates and fewer human errors. However, the integration of UAVs indoors is not without challenges (Mourtzis et al., 2024). Safety remains a primary concern, as drones must be operated in a manner that does not endanger human workers. Additionally, technical issues such as battery life and navigation within confined spaces pose operational challenges.

Outside the confines of warehouses, UAVs are making a mark in the delivery landscape, especially in last-mile delivery to consumers' doorsteps. This application of drone technology promises to cut down delivery times drastically and reduce carbon emissions associated with traditional delivery vehicles (Azmat & Kummer, 2020). An example is a pilot project conducted by a well-known e-commerce giant, which demonstrated that drones could deliver packages in less than thirty minutes, significantly enhancing customer satisfaction and operational efficiency. However, this innovation is accompanied by substantial hurdles, including airspace regulatory restrictions, privacy intrusion concerns, and the drones' vulnerability to adverse weather conditions.

These examples illustrate that while UAV technology harbors the potential to revolutionize supply chain management substantially, it also requires careful consideration of operational, regulatory, and ethical dimensions. As such, embracing UAV technology in supply chain management necessitates a balanced approach, weighing its extensive benefits against the practical and regulatory challenges it introduces.

References

Azmat, M., & Kummer, S. (2020). Potential applications of unmanned ground and aerial vehicles to mitigate challenges of transport and logistics-related critical success factors in the humanitarian supply chain. *Asian Journal of Sustainability and Social Responsibility*, *5*(1), 3. https://doi.org/10.1186/s41180-020-0033-7

Mohsan, S. A. H., Khan, M. A., Noor, F., Ullah, I., & Alsharif, M. H. (2022). Towards the Unmanned Aerial Vehicles (UAVs): A Comprehensive Review. *Drones*, *6*(6), Article 6. https://doi.org/10.3390/drones6060147

Mourtzis, D., Angelopoulos, J., & Panopoulos, N. (2024). Unmanned Aerial Vehicle (UAV) path planning and control assisted by Augmented Reality (AR): The case of indoor drones. *International Journal of Production Research*, *62*(9), 3361–3382. https://doi.org/10.1080/00207543.2023.2232470