Chapter 11
The Economic Impact of AAM Vehicle Certification on the Aviation Supply Chain:
A Catalyst for Sustainable Growth

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ABSTRACT

The AAM market is forecasted to grow rapidly due to its capability of revolutionizing the movement of people in urban areas through the use of eVTOL aircraft and other technologies. However, strong, and efficient certification processes are essential prerequisites for such growth. This chapter looks into the intricately woven economic cost burden of AAM vehicle certification on the aviation ecosystem. It examines the totality of certification costs, the market and competition angle, stakeholder paradoxes of risk and reward, and the preeminent features of certification such as sustainability and value from the AAM ecosystem perspective. With these elements dissected, this chapter sets out to explain how certification can bring about sustainable development in the AAM industry.

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1. INTRODUCTION

1.1 Background and Reasoning

The civil aviation sector has always been an essential part of the economy, opening doors for international trade, tourism and travel, as well as fueling employment opportunities and a nation's Gross Domestic Product (GDP) (Dev, et al., 2023). In the U.S, civil aviation alone had supported over 10 million job opportunities and stimulated $1.3 trillion in total economic activity in the year 2009 (AIAA Certification Task Force, 2025). The aviation industry also had a contribution of $2.7 Trillion in 2016 across the globe, sustaining 65.5 million job opportunities (Industry High Level Group (IHLG), 2019). These figures show the the degree of economic impact adds value to any shifts taking place in the industry. Advanced Air Mobility (AAM) is such a groundbreaking change which aims to transform transportation in urban and regional areas using new types of aircraft such as electric Vertical Take-Off and Landing (eVTOL) aircraft. The Applicability of these remarkable vehicles span from passenger transport and cargo delivery to emergency medical services which enables the movement of people and goods in a far more safe, cleaner, quick, and affordable manner. Moreover, congestion in the freight industry has increased roughly $74.5 billion per year in operational expenses (Grand View Research, 2022). The losses that individuals suffer is also considerable with the average American spending $1,348 annually for commuting which amounts to $87 billion in total while in fact spending 97 hours a year stuck in traffic (Grand View Research, 2022).

Achieving this 'true' potential is crucially dependent on how well regulatory agencies certify these AAM vehicles. Organizations like FAA and EASA are crucial in protecting the public's trust and the accurate functioning of operations of novel class lightweight aircraft. The FAA has recently approved powered-lift category aircraft to be AAM vehicles, which include many designs of AAM vehicles (Stouffer & Alcabin, 2024). The FAA usually tailors existing rules with operating and airworthy requirements to a new concept aircraft, integrating production and design based elements. For other certain projects, the FAA may require additional airworthiness standards using specific technologies. EASA was the first to publish a Special Condition in 2019 allowing the use of small VTOL aircraft and later provided guidance on light UAS and UAS design verification (Nogueira, Silva, & Reis, 2024). EASA also revised its SC- VTOL adding new FAA agreed changes on safe flight and landing, handling qualities, and single-point failures (Angelov, 2023). This process, however, poses some economic burden on the aviation supply chain due to the aircraft's unconventional manufacturing and maintenance needs. So this chapter aims to analyze the economic impact of AAM vehicle certification

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