Chapter 9
Catalyzing Aerospace Progress Machine Learning Strategies for Emerging Economics

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ABSTRACT

The advancement in machine learning technology is impacting the aircraft industry globally as it develops at a very high rate. That is why more and more emerging states come to realize that aerospace innovation is the key to economic diversification and technical self-sufficiency and the path to national development. Machine learning has played an important role in enhancing design, safety, and operation efficiency; classified learning, learning from experience learning, neural networks, and local learning are quite suitable here. Some of the methods of avoiding such negative impacts include localization of data generating projects as well as cloud computing options that have been developed to suit the socio-economic conditions of emerging countries and; ethical AI governance frameworks.

INTRODUCTION

Innovation as witnessed in the aerospace industry, has been the spear header of the national development Initiatives in scientific research, communication, transport and military. To assuage this, the industrialized nations have over the years maintained full control of the aerospace industry through better technological endowments, capital investment and environments for research. That said, the new hype and existence of digital disruption such as artificial intelligence, machine learning and data driven engineering as part of the disruption strategy have begun to make the playing field more leveled. New generations of emergent countries have more opportunities compared with the precedent ones to go beyond ordinary development models and start domestic innovations in aerospace industry and share in the international market. There are questions regarding the steps that emerging countries may take to alter their aerospace capabilities, contribute to improved economic stability, and help in the process of democratization of aerospace development with the use of digital technology.

Background

This is particularly evidenced by the fact that as more and more developing economies are now emerging to come up with and endorse state of the art utensils for defining their strategic relevance, the aerospace landscape internationally is gradually evolving. These countries might move from historical limitations and adopt technologically advanced fields such as satellite launch, usage of drones and space discovery due to digitization, infrastructure development and education (OECD, 2020). Aerospace innovation, therefore, is a process by which developing nations achieve diversification of their economy, a guarantor of their security and a way to become a player on the world stage and to enhance their technological progress. ML, a component of the Artificial Intelligence (AI) that designs systems to learn from experience, may change the aircraft industry. (Jordan et al., 2015 and Mitchell, 2015) claim that ML enhances aircraft operational performance, optimizes design processes, offers reliable maintenance and enhances the operational safety. Machine learning

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