Chapter 5
The Pros and Cons of Digitalization in Aviation:
Navigating Digital Potential Risks Into Opportunities

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ABSTRACT

The latest technology, digital implementations, and transformations have mainly shaped the development of the aviation industry. In addition to these developments, unprecedented risks must be considered to overcome the paradox of the beneficial and adverse sides of the new technology. The latest digital trends are explored and discussed by recognizing the importance of digital transformation in shaping the future of aviation. Thus, its role as a catalyst for innovation in the aviation industry, IATA (International Air Transport Association) is one of the pivotal organizations established to promote safe, reliable, and efficient air travel. However, in a digitalized world, the evolving nature of digital transformation within the latest technological developments and the power of technology effects are critical to take part at the forefront of the aviation industry. To provide insights into digital transformation in aviation management by discussing and evaluating the potential benefits and challenges, this chapter aims to contribute novel perspectives to digital transformation.

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"If I had asked people what they wanted, they would have said faster horses."

Henry Ford

1. INTRODUCTION

As Peter Drucker says, "One cannot manage change. One can only be ahead of it". Drucker's quote implies that change is inevitable, and as it cannot be controlled, it is not also possible to manage the change without being a part of and ahead of it. The word "change" also emphasizes establishing the future and shaping its impacts positively rather than being shaped by the forces of change. Organizations are the driving force and the source of the change. In addition to this potential trigger, technological innovations are added as one of the essential sources of a competitive business environment (Kok & Siripipatthanakul, 2023). Latest technological developments such as artificial intelligence (AI), robotics, and machine learning (ML) have been improving people's social and business environments in the era of the fourth industrial revolution (I4.0.) (Malik et al., 2021). The common goal of these revolutions is to enhance efficiency; new technologies also include complicated processes and unpredictable results (Woods and Dekker, 2000). The aviation industry is one of these which encounters the challenges (Xiong and Wang, 2022) of the digital transformation as well as its benefits, such as the Bluetooth-equipped unit load device (ULD) developed by the firm Unilode Aviation Solutions (Brett, 2019) or the digital twinning (DT) which provides significant opportunities for the aviation industry representing the virtual replicas of physical devices or products (Grieves, 2015). These digitally applied implementations are considered to improve and prioritize the safety of the overall operational process in the aviation industry by emphasizing the importance of digital safety for all aviation operations, referred to as general aviation (Hook et al., 2022). Digital technologies in the aviation industry help not only by the decrease in accident rates (Lu et al., 2006) but also by being the facilitator of the application of digitalization in aviation, airline organizations, employees, and customers may move beyond the actual applications for the sustainability (Lanshina et al., 2020).