

UNIVERSITI TEKNOLOGI MARA

**MODELLING THE ADOPTION
OF DRONES FOR DISASTER
VICTIM IDENTIFICATION
BY *TAKAFUL* OPERATORS
DURING MASS DISASTERS**

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ABSTRACT

Drones offer significant benefits in disaster management. Their adoption surged notably after Tropical Storm Harvey in 2013, where drones were primarily used for research, disease monitoring, and surveying disaster areas. This study explores why *takaful* operators, guided by *Shariah* principles, should adopt drones for disaster victim identification (DVI). The research focuses on assessing the advantages of drone technology, identifying challenges specific to *takaful* operations, and proposing a Drone-assisted DVI Model. The findings, analysed through thematic analysis based on interviews with loss adjusters, insurance representatives, drone experts, *Shariah* scholars, and forensic experts, show that drones significantly speed up DVI, crucial for identifying bodies within 48 hours to prevent decay. This aligns with the ethical responsibility of *takaful* operators to provide timely, compassionate service, rooted in the *Shariah* principle of harm prevention. While conventional insurers are already exploring drone use, *takaful* operators can leverage drones not only for efficiency but also for their ethical commitment to disaster response. However, *takaful* operators face unique challenges, including regulatory complexities and the need for *Shariah* compliance. These concerns involve privacy, dignity, and the sanctity of life, which conventional insurers do not face. Addressing these issues positions *takaful* operators to remain competitive while upholding moral integrity. The study proposes a Drone-assisted DVI Model that integrates these considerations, ensuring *takaful* operators can both match and surpass conventional insurers by offering faster, ethically responsible claims processing. Overcoming operational and regulatory challenges will enable *takaful* operators to deliver a more sensitive and efficient disaster response.

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CHAPTER 1

INTRODUCTION

1.1 Research Background

Located in Southeast Asia, Malaysia experiences a tropical climate all year round. Malaysia is geographically located outside the Pacific Ring of Fire, making it relatively accessible from severe natural disasters such as earthquakes and volcano eruptions found in neighbouring countries like Indonesia and the Philippines. Nevertheless, the effects of climate change have caused Malaysia to be vulnerable to certain natural disasters such as floods, landslides, forest fires, haze, and epidemics (Center for Excellence in Disaster Management & Humanitarian Assistance 2016). For example, the heavy floods at the end of 2014 were the worst floods ever in Malaysian history, affecting more than 100,000 people and causing 21 deaths (Reuters, 2014).

Disaster management is a top priority for the Malaysian government. It is crucial to reduce damages and loss of life due to mass disasters. Disaster management was previously held under the jurisdiction of the National Security Council (NSC) and has now been taken over by the Prime Minister's Department by setting up a new National Disaster Management Agency, NADMA (HAKAM 2015). Mass disaster management requires fast and efficient deployment of assets that can be used during search and rescue missions and disaster victim identification (DVI). There is immense potential for drone-assisted technology in disaster management (Reich, 2016). However, using assets, particularly drones, in disaster management has several cost implications. A cost-effectiveness study is required to determine their effectiveness compared to the current conventional procedure of DVI to justify the investment in developing high-technology drones (George, 2016).

The financial and non-financial costs of DVI processes for current conventional procedures and drone-assisted technology can be compared using the existing cost-effectiveness model. However, specific technology or deployment of certain assets may not be sufficiently justified using only the existing cost-effectiveness model. Using new