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EMERGING TRENDS ON SATELLITE-BASED APPLICATIONS IN HEALTHCARE: A SYNOPTIC
VIEW

Abstract

This study examines the state of the art and the maturity adoption of satellite-based applications in the healthcare domain. Moreover, it deepens the main drivers and barriers for their effective development.

Living in a more globalized, intertwined, and technologically advanced world has opened the door to a more digital healthcare system able to connect many actors, reach remote locations, and provide coverage at a global level, whose exploitation has become even more urgent due to the Covid-19 pandemic. Space technologies may be a valid asset to tackle future healthcare challenges. Despite the clear linkage of the two domains, the literature lacks a holistic view of the phenomenon of the current adoption of space assets in the healthcare domain. Moreover, the factors that limit or foster the development of satellite-based applications in health management and healthcare delivery are still unclear and require a thorough investigation.

The framework on the relationship between space activities and global health applications elaborated by the United Nations Office for Outer Space Affairs (UNOOSA) has been adapted and populated with 86 business-cases gathered from a systematic literature review of the ESA and NASA public databases. The results have been then analyzed to provide a comprehensive and in-depth view of the most relevant trends. The joint combination of satellite and digital technologies appears as the enabling factor to provide an effective service to professional end-users and improve the quality of health for citizens. The importance of data combination from multiple satellite technologies and additional data is highlighted in many projects as fundamental to developing effective applications.

The technical, economic, organizational, socio-cultural and political factors have been explored in terms of barriers to or opportunities for the adoption of satellite-based applications in the healthcare domain. To this end, further information was gathered through a systematic literature review of 89 scientific articles and interviews with 5 internationally recognized experts. Results show how multiple factors could hamper the spread and success of the emerging applications, and how those factors should inform strategic decisions to foster the development of healthcare satellite-based applications in the future.

This study may benefit academics, practitioners and public institutions to grasp the benefits and challenges in adopting satellite and geospatial data in healthcare. It provides a clear overview of the existing good practices highlighting barriers and opportunities. The proposed synoptic view might be useful also in building a One Health network.