Additive Manufacturing: A Catalyst for Economic Development in Zimbabwe

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Abstract

Additive Manufacturing (AM) or 3D printers (3DP) present a transformative opportunity for agro-based third-world countries like Zimbabwe. By enabling localized, on-demand production, AM/3D can revolutionize various sectors, including agriculture, food processing, and rural development. This study explores the current state of implementation of AM, challenges being faced by the industries in implementing AM technologies, and success stories in the nearby countries like South Africa and Botswana. Furthermore, the authors explored the opportunities where AM can be used. In the agricultural sector, the authors delved into specific applications, including the creation of precision agricultural tools, custom-fit prosthetic devices for farm workers, and innovative packaging solutions for perishable goods. Additionally, the study discusses the positive economic implications of AM adoption, including job creation, reduced reliance on imports, and the promotion of sustainable practices. By leveraging AM, 3rd world countries like Zimbabwe can unlock new avenues for growth, improve livelihoods, and enhance their global competitiveness. Furthermore, the study draws up the implementation framework of AM technology in Zimbabwe's agriculture, highlighting the need to involve institutions of higher learning and research to involve all provinces.