

## **ABSTRACT**

*This study aims to develop a plant health classification system based on the CNN-EfficientNetB3 model, utilizing Normalized Difference Vegetation Index (NDVI) values. This aligns with the global objectives outlined in the United Nations' Sustainable Development Goals (SDGs), particularly the Zero Hunger goal, which has also been adopted by Indonesia in its 2045 Development Pillars to ensure food security and enhance farmer welfare. Chili plants (*Capsicum annum*) are a key focus due to their significant role in the agricultural and food industries. However, challenges in chili cultivation, such as diseases and pests, can lead to reduced yields and product quality. This research employs the IS-Research Hevner framework and the CRISP-DM data mining methodology. Data collection was conducted using a Mapir Survey 3W multispectral camera, followed by image segmentation and NDVI calculation for data labeling. The resulting dataset was used to train the CNN-EfficientNetB3 classification model. The findings indicate that the developed model can classify chili plant health with an average accuracy of 90.45%. The model has been implemented as a web application for ease of use by farmers and other stakeholders. However, there is potential to further improve model performance by addressing overfitting issues.*

**Keywords — Agriculture , Classification, CNN, CRISP-DM, EfficientNet, Multispectral, Plant Health**