



Adoption of AI in Early Warning Systems for Climate Change Adaptation Projects in Southern Mozambique

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Abstract

Early warning systems (EWS) play a crucial role in climate change adaptation projects by providing timely information to communities and stakeholders. The review employed a systematic search strategy across databases such as PubMed, Web of Science, and Google Scholar. Studies published between and were included based on predefined inclusion criteria. AI technologies showed significant adoption in developing EWS for climate change adaptation projects, with a proportion of 65% of the reviewed studies utilising machine learning algorithms. The findings suggest that AI can enhance the accuracy and timeliness of early warning information provided by EWS in Southern Mozambique's climate change adaptation efforts. Further research should focus on evaluating the cost-effectiveness of AI-driven EWS and their impact on community resilience to climate-related hazards. Model estimation used $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \{ \sum_{i=1}^n (y_i - f(\theta; \xi))^2 + \lambda \|\theta\|_2^2 \}$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, geospatial, methodology, ontology, machine learning, predictive analytics, geographical information systems*

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