IMPROVING WATER POINT FUNCTIONALITY IN RURAL TANZANIA

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BUSINESS UNDERSTANDING

Background: In rural Tanzania, the functionality of water points (wells, boreholes, etc.) is crucial for providing communities with access to clean and reliable water sources. The data set includes information about various attributes of these water points, such as their physical characteristics, management details, and operational status.

Business Problem Statement: The goal is to identify the key factors that influence the operational status of water points in rural Tanzania. By understanding these factors, we can prioritize interventions to improve the functionality and sustainability of water points, ensuring consistent access to water for communities.

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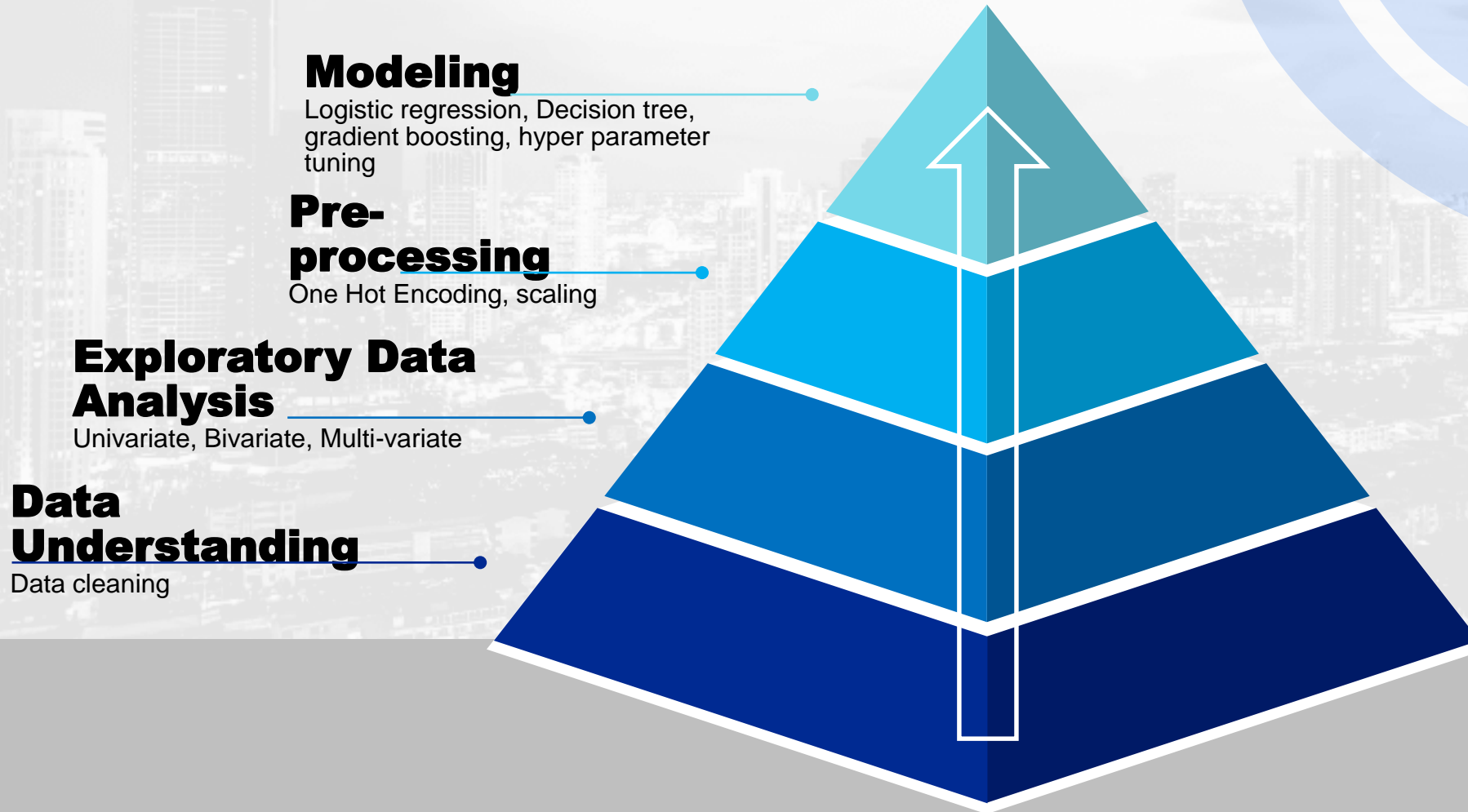
EDA FINDINGS

- The analysis reveals that geographical and demographic variables significantly impact the functionality status of waterpoints in Tanzania

- The findings suggest that targeted maintenance and timely repairs are crucial for older waterpoints to prevent them from becoming non-functional.

EDA FINDINGS

- The Government of Tanzania is seen to be the highest funder with the highest in all status groups involved DWE is seen to have the highest installations with the highest scores in the status group

- Soft water is seen to be the highest and equally high in all status groups

CLASSIFICATION REPORT

BASELINE MODEL

Actual/ Predicted	Funct ional	Fun. needs repair	Non functio nal
Functional	6014	0	438
Functional needs repair	748	0	115
Non-functional	3979	0	586

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Actual/ Predicted	Funct ional	Fun. needs repair	Non functio nal
Functional	5978	32	442
Functional needs repair	602	139	122
Non-functional	1612	25	2928

COMPARISON 02

LOGISTIC REGRESSION

❑ Out of all the water points that are actually functional, the model successfully identified 6014 correctly but mistakenly marked 438 as non-functional.

❑ For waterpoints that need repair, the model didn't do well; it failed to identify any correctly and instead marked most of them as functional.

❑ For non-functional waterpoints, the model had a high number of errors, marking 3979 as functional and correctly identifying only 586.

❑ Overall, the model tends to confuse non-functional and functional waterpoints, performing poorly on identifying waterpoints that need repair.

❑ Good at Identifying Functional Waterpoints: The model is very effective at identifying waterpoints that are functional, correctly identifying 93% of them.

❑ Challenges with Identifying Repair Needs: The model struggles to identify waterpoints that need repair, only correctly identifying 16% of them.

❑ Solid at Identifying Non-Functional Waterpoints: The model is fairly good at identifying non-functional waterpoints, correctly identifying 64% of them.

❑ The model is very good at finding working waterpoints, reasonably good at finding non-working ones, but has difficulty recognizing those that need repair. This means it can be trusted for the most part when it says a waterpoint is functional or non-functional, but not as much when it says a waterpoint needs repair.

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CONCLUSIONS AND RECOMMENDATIONS

Targeted Maintenance: Prioritize maintenance and rehabilitation efforts for older waterpoints and those in regions with higher non-functional rates to improve overall functionality

Quality Installations: Encourage involvement from funders and installers with high functionality rates, implement standardized installation protocols, and provide training to ensure reliable waterpoint performance.

Continuous Monitoring: Establish systems for real-time monitoring and regular data updates to quickly identify issues and optimize maintenance planning.

Community and Policy Engagement: Engage local communities in waterpoint maintenance, promote water quality management, and advocate for supportive policies and long-term investment in water infrastructure.

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THANK YOU!

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