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Specialization: *Unsupervised ML*

Business Focus: *NGO*

Tool: *Python*

Addressing Social Issues for HELP International

Project Learning Opportunities

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Tools and Technology to be Used

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Case Study Overview

Introduction to the Business

HELP International is an international humanitarian NGO that is committed to fighting poverty and providing the people of developing countries with basic amenities and relief during the time of disasters and natural calamities. The NGO Aims to Improve The Health and Wealth Of Marginalized Nations all around the Globe As communicated in their Mission statement

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Case Study Overview

Problem Statement

The Organizations Problem Statements are outlined as follows:

- *Fast Tracking Access to Health care For Vulnerable Persons in Developing Countries*
- *Addressing Prejudice Against Women And Children Welfare Especially in Developing Nations*
- *Improving The Income Capacity for Lower Income Individuals*
- *Addressing And Empowering Individuals to be goods and Service Providers As Opposed to being only Consumers in a bid to improve National Output*

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Rationale for the Project

(What is the Importance of the project to the business)

1.

Group the country dataset optimally so we can successfully group and identify countries in critical conditions

2.

Then explore countries in the groups to identify the countries to prioritize when allocating resources.

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Data Description

Help International collected data contains columns relevant to the problems it is trying to address:

General:

- country: Name of Country

Socio-Economic Metrics:

- exports: Exports of goods and services per capita. Given as percentage of the GDP per capita Imports: Imports of goods and services per capita. Given as percentage of the GDP per capita
- Income: Net income per person
- Inflation: The measurement of the annual growth rate of the Total GDP
- gdpp: The GDP per capita. Calculated as the Total GDP divided by the total population.

Health Metrics:

- life_expec: The average number of years a newborn child would live if the current mortality patterns are to remain the same
- child_mort: Death of children under 5 years of age per 1000 live births
- health: Total health spending per capita. Given as percentage of GDP per capita
- total_fer: The number of children that would be born to each woman if the current age-fertility rates remain the same.

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Tech Stack

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Project Workflow

STEP 1

Data Cleaning:

- *Handle any missing values.*
- *Remove duplicate records or irrelevant columns.*
- *Check for and correct anomalies.*

STEP 2

Exploratory Data Analysis (EDA):

- *Visualize distributions and relationships between features.*
- *Identify patterns, trends, and potential anomalies.*
- *Form hypotheses based on data insights.*

STEP 3

Data Preprocessing:

- *Scale/normalize numerical features and encode categorical data.*
- ***Feature Engineering***

STEP 4

Model Training:

- *Select and train machine learning models on the data.*
- *Elbow Method to find the optimal number of clusters (k).*
- *Experiment with different algorithms and assess performance.*

STEP 5

Model Evaluation (Interpreting Results):

- *Visual Inspection: visualize the clustering results or reduced features to evaluate if meaningful patterns emerge.*

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READY TO DELVE IN?