DATE:	03/10/2022
TEAM ID:	PNT2022TMID39608
PROJECT TITLE:	EFFICIENT WATER QUALITY ANALYSIS AND PREDICTION USING MACHINE LEARNING.

PROBLEM-SOLUTION FIT

1. CUSTOMER SEGMENT(S)

- Water purifying agencies.
- Private and Public Laboratories.
- Various industries and places like hotels, restaurants and various textile factories who wish to test the water sources they use.
- Various educational institutions who utilize the purified drinking water.
- Customers who wish to have a water quality tester for household checking purpose.

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6. CUSTOMER STATE LIMITATIONS

- Customer has to depend on the testing agencies in order to test the water quality.
- They don't get accustomed in using those testing tools.
- Testing using agencies can't be done at anytime and at anyplace.
- Customers cannot get access to the results when they want and they are unaware of the predicting parameters.
- The interpretation of the result of water quality analysis are done only by the testing agencies which may be trustable or not.
- The available tools predict the quality based on a few parameters which is not trustable as some important factors may not be considered.

5. AVAILABLE SOLUTIONS

- **Test strips:** Cheapest way to test the hardness, pH and salinity of water.
- **Colorimetric Test Kits:** Helps to understand the concentration of substance through specific colors.
- **Titrimetric Test Kits:**

  Determines the concentration of solids in a water sample.
- **Turbidimeters / Turbidity meters:** Determines how the concentration of suspended particulates affects the clarity of water.
- **Portable pH meters:** Determines the concentration of ions of hydrogen present in water and also whether it is acidic or basic.
- **Portable TDS Testers:** It determines the concentration of various types of organic salts like Magnesium, calcium, sodium bicarbonates, sulfates and chlorides.
- **Pocket ORP Tester:** It determines the sanitizing power of the water.

2. PROBLEMS / PAINS	9. ROOT/CAUSE	7. BEHAVIOUR
▪ Safe and readily available water is important for public health. So, it is necessary to detect the contaminants present in those samples. ▪ Customers are affected in various ways of life such as health, food production, environment, etc. due to contaminated water. ▪ Water quality has been estimated through expensive and time consuming lab and devices that does not consider all the necessary factors that has caused the deterioration in water quality.	▪ Rapid industrialization and urbanization has led to the deterioration of water quality at an alarming rate. ▪ Poor water quality have been known to be one of the major factors of escalation of harrowing diseases. ▪ The release of industrial effluents into water sources, the oil spills and leaks and deforestation are also the various reasons for the lack of water quality and created the necessity of monitoring the water quality.	▪ The consumption of polluted or contaminated water makes the people fall ill and causes various health issues which affect them economically, physically and mentally as well. ▪ The poor interpretation of results with tools considering less parameters causes distrust and reduces their hope in water quality prediction tools or methods.

3.TRIGGERS TO ACT

To enhance the standard of living of people by improving health aspects by providing water quality testing tools in order to reduce the water borne diseases and also to save time for predicting the quality and if possible to be integrated with future technologies.

4.EMOTIONS

BEFORE: Customers are in a doubtful state regarding the quality of water they consume or utilize based on their daily needs. They feel a little tentative on using available testing tools as it considers only a few parameters.

AFTER: Customers feel satisfied, contended and happy because they can test any kind of water samples at anytime and they can view a better representation of results of water quality analysis.

10. YOUR SOLUTION

To build an effective and efficient water quality prediction system for all kinds of water samples using the Regression and Classification algorithms of Machine Learning to provide a better and easy interpretation of analysis of water samples so that the people with no prior knowledge can understand the results of analysis process and can be made available at anytime and at anyplace.

8. CHANNELS OF BEHAVIOUR

ONLINE:

Through Advertising in social media, news platform makescustomer to know and realize the importance of monitoring the level of water quality that we consume for our needs and to provide awareness about the need for measuring the water quality level.

OFFLINE:

Words of mouth among customers.