Problem-Solution fit canvas 2.0

Project Title: Early Detection of Chronic Kidney Disease using Machine Learning   **Team Id : PNT2022TMID20576**

1. CUSTOMER SEGMENT(S)   CS

Who is your customer?

Signs and symptoms of chronic kidney disease develop over time if kidney damage progresses slowly. Depending on how severe it is, loss of kidney function can cause:

- Loss of appetite
- Fatigue and weakness
- Sleep problems
- Urinating more or less
- Swelling of feet and ankles
- Dry, itchy skin
- Chest pain, if fluid builds up around the lining of the heart

Signs and symptoms of kidney disease are often nonspecific. This means they can also be caused by other illnesses.

6. CUSTOMER   CC

What constraints prevent your customers from taking action or limit their choices of solutions? i.e. spending power, budget, no cash, network connection, available devices.

- Lack of accuracy.
- Lack of awareness.
- By representing the data in a particular format there is a limitation of data.

5. AVAILABLE SOLUTIONS   AS

Which solutions are available to the customers when they face the problem or need to get the job done? What have they tried in the past? What pros & cons do these solutions have? i.e. pen and paper is an alternative to digital notetaking

- lifestyle changes – to help you stay as healthy as possible
- medicine – to control associated problems, such as high blood pressure and high cholesterol
- dialysis – treatment to replicate some of the kidney's functions, which may be necessary in advanced CKD

2. JOBS-TO-BE-DONE / PROBLEMS

Which jobs-to-be-done (or problems) do you address for your customers?
There could be more than one; explore different sides.

The following jobs are to be done:

- Create an ML model that can predict the presence of chronic kidney disease
- Design an interactive, simple and Effective freely available UI for communicating with the patients.
- It provides an accurate information about the health of the patient's kidney.

9. PROBLEM ROOT CAUSE   RC

What is the real reason that this problem exists?
What is the back story behind the need to do this job?
i.e. customers have to do it because of the change in regulations.

- Overusing pain killers.
- Can't able to predict on early stage.
- Smoking habits and drinking habits lead to spread of chronic kidney disease.
- Due to the large intake of junk foods.

7. BEHAVIOUR   BE

What does your customer do to address the problem and get the job done?
i.e. directly related: find the right solar panel installer, calculate usage and benefits;
indirectly associated: customers spend free time on volunteering work (i.e. Greenpeace).

- Follow up the prescription of the doctor.
- The customer should check and consult the doctor regularly.
- If the customer is fatigue or not feeling well immediately he or she should consult doctor and should take effective medication or take some rest.

3. TRIGGERS   TR

What triggers customers to act? i.e. seeing their neighbour installing solar panels, reading about a more efficient solution in the news.

Patients are encouraged to get a kidney function test if they experience symptoms that point to potential renal issues. These signs and symptoms may include: unusual nausea and vomiting; blood in urine (hematuria) and painful urination (dysuria).

4. EMOTIONS: BEFORE / AFTER   EM

How do customers feel when they face a problem or a job and afterwards?
i.e. lost, insecure > confident, in control - use it in your communication strategy & design.

Before: Decreased mental sharpness, Results take time, Hypertension
After: Patients experience works on interacting with the trained model .Research on faster results.

10. YOUR SOLUTION   SL

If you are working on an existing business, write down your current solution first, fill in the canvas, and check how much it fits reality.
If you are working on a new business proposition, then keep it blank until you fill in the canvas and come up with a solution that fits within customer limitations, solves a problem and matches customer behaviour.

In the proposed system we use a deep learning model which is called as Deep Neural Network which is suitable for accurate prediction. By using DNN, we can predict the chronic kidney disease with more than 95% of accuracy. In the DNN we have more hidden layers and hence its accuracy also high.

8. CHANNELS of BEHAVIOUR   CH

ONLINE
What kind of actions do customers take online? Extract online channels from #7

- The test results are submitted based on the requirement of the software, the model process and give the result.
- The customer can view the results via the UI.

OFFLINE
What kind of actions do customers take offline? Extract offline channels from #7 and use them for customer development.

Taking test after receiving the result, If the test result is above threshold range the patient should

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