Problem #1

Business Problem:

You have recently joined a startup working in the artificial intelligence space. They are planning to create a computer vision product that can instantly recognize anybody in it's database of users just by scanning their faces once.
Now, as a leader of the team that is supposed to work on the product, you need to break this problem statement down so you can explain the process to your internal team who can then start working on it.

SOLUTION:-

AIM :- To build an Image Recognition Model.

STEP 1

Breaking down the problem using TOSCAR:

Trouble:- Why do we need an image recognition system?
What is the objective that we are looking to achieve by implementing Image Recognition?
How will that ease the operational abilities of the organization or the users?

Ownership:- The Project Manager, CEO etc.

Success :- How will accomplishing this task look like?
What is the benchmark of Success in this case?

Constraints:- What are the limitations of this implementation?
What is our budget?
What are some things that we won't be able to achieve even after successful implementation?

Actors:- Who will be directly benefited from the task and are there any specific requirements that he wants to add?

References:- Is this tried before? If yes, where did it stopped and why?

Can we use some learnings in the latest implementation ?

STEP 2 Frame the problem statement.

To build an Image Recognition Model.

STEP 3 Break into smaller problems.

1. Gathering the required data from the databases.
2. Data Labelling for an easy to use approach.
3. Designing an Image recognition Model.
4. Evaluate the performance of the model.
5. Deploy/Present the model to the management.

STEP 4 Convert smaller problems into Data Problems.

1. Data collection needs to be done.
2. Data labelling needs to be done.
3. We also need to train the model.
4. Check if the model is accurate and fits our bill.
5. Data deployment or presentation platform needed.

STEP 5 Find solution.

1. Collect data.
2. Label data.
3. Design I.e. train and test the model.
4. Use evaluation metrics.
5. Deploy using AWS or present a dashboard using tableau or PowerBI.

*After discussing all the above-mentioned questions with respected stakeholders, we will explain the same things to the team and ask for suitable edits if needed and again check with the stakeholders if it fits their bill. If yes, we will go ahead and implement the same. At the end the whole process will be explained to the Data Science team and I will assign the individual aspects of **STEP 5** to the team members for successful completion of the assigned tasks.*

Problem #2

Business Problem:

Bank X owns both the lending and deposit portfolio. A portfolio includes the following instruments:
Deposit
Loan
Credit cards
Mortgage

Now, Bank X is looking to expand into multiple sectors. However, to meet regulatory constraints, the bank can only expand lending products if it is able to increase deposits. Hence, the core business problem is to somehow increase the deposit balance.
So, the bank has employed you as a consultant to research the best strategy to increase deposits with a limited amount of investments. Try to decompose the problem and convert it into a data problem.

Here's a hint to get you started:
*Total Balance = Balance/customer * #customers.*
The bank's customers are basically at 3 stages:
- *Newly acquired customers*
- *Existing customer who are here to stay, and*
- *Customers who are about to leave.*

Each of these segments needs a different type of strategy to either increase the number of customers or Balance/customer. The acquisition portfolio might need promotional balance to open a new account or a balance hurdle. An existing customer might need cross-sell or up-sell campaigns. Customers about to leave the bank might need a retention campaign.

***Additional Info**: Now, the question is - which of these three has the highest ROI? Turns out that any customer saved brings in 10X the value than any new customer with the same investment. Additionally, any customer saved will retain at least 5X the balance that we can increase of our existing portfolio. With this additional information, try to refine the scope of the problem*

Solution :-

Now here are 4 factors to consider: -

1. Deposit.
2. Loan.

3. Credit Cards.
4. Mortgage.

STEP 1 Understand the business problem using TOSCAR:

Breaking down the problem using TOSCAR:

1. Trouble - Low deposit balance, difficult expansion.
2. Owner – CEO/Project manager etc.
3. Success – High deposit and hence a possible expansion.
4. Constraints – Limited Budget, low deposit.
5. Actor – Various stakeholders.
6. References – Not tried in the past.

STEP 2 Frame the problem statement.

To increase the deposit balance.

STEP 3 Break into smaller problems.

1. We need to increase the deposit.
2. Lending business needs to expand hence we need the cost of expansion.
3. Mortgage needs some promotions for deposits.
4. We need to focus on Cross/Up sell campaigns for existing users.
5. We also need to run retention campaigns for halting the exit of customers.

STEP 4 Convert smaller problems into data problems.

1. Data exploration of the mortgage sector.
2. Data exploration of the expansion portfolio.
3. Past data on how mortgage is promoted among customers.
4. Past Cross/Up sell campaigns and their results.
5. Past retention campaigns and their results as well.

STEP 5 Find solutions to Data Problems.

1. Collect and explore data for the mortgage sector.
2. Collect and explore data for credit card and loan sectors.
3. Data collection and exploration of mortgage promotion.
4. Data collection and analysis of Cross/Up sell campaigns and their results.
5. Data collection and analysis of retention campaigns and their results as well.

HYPOTHESIS GENERATION :-

We can conclude from the additional information that **Existing customers** and **Customers about to leave** are the best target audience for achieving our objective with a 10* and 5* ROI with the same investment. Hence we will design the strategy for these two customer groups and go for **cross sell/up sell** campaign and **retention campaigns.**