**Ideation Phase**

**Defining the Problem Statements**

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| **Team ID** | **4494** |
| **Project Name** | **Customer Churn Prediction** |

**Customer Churn Prediction**

**Problem Definition and Design Thinking**

**Introduction**

Customer churn prediction is a crucial task for businesses across various industries, including telecommunications, subscription services, e-commerce, and more. It involves identifying customers who are likely to stop using a product or service in the near future. By predicting churn, companies can take proactive measures to retain valuable customers and reduce revenue loss. In this document, we will outline the problem statement, the steps involved in solving it, and the design thinking approach that will guide our project.

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**Problem Statement**

Objective: Develop a data analytics model that can predict customer churn with a high level of accuracy.

Data: We have a dataset containing historical customer information, including demographics, usage patterns, and whether the customer churned (i.e., stopped using the service) or not.

**Key Challenges:**

1. Data Quality: Ensuring the dataset is clean, complete, and free of errors.

2. Feature Selection: Identifying the most relevant features for accurate churn predictions.

3. Model Selection: Choosing the appropriate data analytics techniques and algorithms for the task.

4. Model Evaluation: Evaluating the model's performance using appropriate metrics.

5. Deployment: Translating model predictions into actionable strategies to reduce churn.

**Design Thinking Approach**

**Empathize:**

Before diving into solving the problem, it's crucial to empathize with the users (e.g., business stakeholders) and understand their needs. We need to gather insights into what factors contribute to customer churn and how predictive analytics can benefit the business

**Actions:**

- Conduct interviews with business stakeholders to understand their pain points and priorities related to customer churn.

- Analise historical customer data to identify common patterns and characteristics of churned customers.

- Seek feedback from customer service teams who interact with customers regularly.

**Define:**

Based on our understanding of the problem and the business needs, we will define clear objectives and success criteria for our project.

**Objectives:**

- Develop a data analytics model that achieves a high accuracy rate in predicting customer churn.

- Provide actionable insights and recommendations to the business based on the model's predictions.

**Ideate:**

Brainstorm potential solutions and approaches to address the problem. This phase involves thinking creatively and considering various data analytics techniques

**Actions:**

- Explore different data analytics techniques such as logistic regression, decision trees, random forests, and machine learning algorithms.

- Experiment with feature engineering techniques to enhance model performance.

- Consider incorporating external data sources (e.g., customer satisfaction surveys) to improve predictions.

**Prototype**

Create a prototype of the data analytics model and the reporting mechanism for actionable insights.

**Actions:**

- Develop Python or R scripts for data preprocessing, model training, and evaluation.

- Create visualizations and reports that showcase key insights and predictions.

- Test the prototype with a subset of historical data to ensure it meets performance objectives.

**Test**

Evaluate the model's performance using appropriate metrics and gather feedback from business stakeholders.

**Actions:**

- Split the dataset into training and testing sets.

- Train the model on the training set and evaluate it on the testing set.

- Use metrics such as accuracy, precision, recall, and F1-score to assess model performance.

- Collect feedback from business stakeholders on the usefulness of insights generated.

**Implement**

Once the prototype meets the defined objectives and receives positive feedback, proceed with full implementation.

**Actions:**

- Train the final data analytics model on the entire historical dataset.

- Automate the process of data preprocessing, model training, and insights generation.

- Conduct thorough testing to ensure the system is robust and user-friendly.

**Iterate**

Continuous improvement is essential. Gather user feedback and iterate on the model and reporting mechanism to enhance accuracy and usability.

**Actions:**

- Monitor the model's performance and update it periodically with new customer data.

- Incorporate additional data sources or features as needed for better predictions.

- Collaborate with business stakeholders to refine strategies for reducing churn based on model insights.

**Conclusion**

In this document, we've outlined our approach to solving the problem of customer churn prediction using data analytics. We've defined the problem, identified key challenges, and laid out a design thinking approach that involves empathizing with users, defining objectives, ideating potential solutions, prototyping, testing, implementing, and iterating. Our ultimate goal is to develop a reliable tool that provides actionable insights for reducing customer churn and improving business outcomes. By following this structured approach, we aim to create a valuable asset for businesses seeking to retain and grow their customer base.