**Ideation Phase**

**Defining the Problem Statements**

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| **Team ID** | **721** |
| **Project Name** | **Customer Churn Prediction** |

**Customer Churn Prediction using Data Analytics**

**Problem Definition and Design Thinking**

**Introduction**

The objective of this project is to leverage data analytics to predict customer churn and identify the factors that influence customer retention. Customer churn, also known as customer attrition, is a critical challenge for businesses across various industries. By understanding why customers leave and predicting who is likely to churn, businesses can take proactive measures to reduce attrition and improve customer retention.

**Problem Statement**

Objective: Develop a data analytics model that predicts customer churn with a high level of accuracy and identifies the key factors influencing customer retention.

Data: We have a dataset containing historical customer information, including demographics, usage patterns, and customer churn status. This data will be used to train and evaluate our data analytics model.

**Key Challenges:**

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

2. Feature Selection: Identifying the most relevant customer attributes and usage patterns for accurate churn prediction.

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

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

5. Recommendations: Providing actionable insights to businesses for reducing customer attrition.

**Design Thinking Approach**

**Empathize:**

Before solving the problem, it's crucial to empathize with businesses and understand their pain points related to customer churn. We need to gather insights into the industries, customer segments, and reasons why customers leave.

**Actions:**

- Conduct interviews or surveys with business stakeholders to understand their challenges related to customer churn.

- Analyze historical churn data to identify common patterns and reasons for attrition.

- Seek input from customer support and sales teams for anecdotal insights.

**Define:**

Based on our understanding of the problem and 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.

- Identify the top factors influencing customer retention.

- Provide actionable recommendations to reduce churn based on the analysis.

**Ideate:**

Brainstorm potential solutions and approaches to address the problem. This phase involves creatively thinking about data analytics techniques and methods for churn prediction.

**Actions:**

- Explore various data analytics methods, including logistic regression, decision trees, random forests, and clustering.

- Experiment with feature engineering to create relevant customer attributes.

- Consider sentiment analysis on customer feedback and social media data to gauge customer satisfaction.

**Prototype:**

Create a prototype of the data analytics model and the analytics dashboard for churn analysis.

**Actions:**

- Develop data preprocessing scripts and analytics notebooks to build and evaluate predictive models.

- Create an interactive dashboard using tools like Tableau or Power BI to visualize churn-related insights.

- Test the prototype using a subset of the dataset 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 data analytics 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 dashboard's usability and insights.

**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 dataset.

- Deploy the model and analytics dashboard as part of a production-ready solution.

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

**Iterate:**

Continuous improvement is essential. Gather business feedback and iterate on the model and dashboard to enhance accuracy and usability.

**Actions:**

- Monitor the model's performance and retrain it periodically with updated customer data.

- Address business feedback and make necessary improvements to the analytics dashboard.

- Stay informed about advancements in data analytics and customer churn prediction techniques for potential enhancements.

**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 businesses, defining objectives, ideating potential solutions, prototyping, testing, implementing, and iterating.

Our ultimate goal is to develop a data-driven solution that empowers businesses to predict and reduce customer churn effectively. By following this structured approach, we aim to provide actionable insights that lead to improved customer retention and business success.