**NAAN MUDHALVAN PROJECT ABSTRACT**

**CUSTOMER CHURN PREDICTION**

PHASE 1

**Phase 1: Project Definition and Design Thinking**

**Introduction:**

Customer churn is a critical concern for businesses across various industries. Losing customers can be costly and detrimental to a company's long-term success. Predicting customer churn using artificial intelligence (AI) can provide valuable insights into customer behavior, enabling businesses to take proactive measures to retain their customers. This project aims to develop a customer churn prediction system using AI techniques.

**Problem Statement:**

In today's highly competitive business world, retaining customers is highly important for sustainable growth and profitability. Customer churn, poses a significant threat to businesses across various industries. To address this challenge effectively, there is a critical need for the development of a customer churn prediction system bringing in artificial intelligence (AI) .The problem at hand revolves around the uncertainty of when and why customers decide to leave a business. Companies are seeking a proactive approach to predict and prevent customer churn by using the power of AI.

**Analysis Objectives:**

1. Predict Customer Churn: The primary objective is to predict customer churn accurately. This involves identifying customers who are likely to churn in the future based on historical data.
2. Understand Key Churn Factors: Beyond predicting churn, you want to understand the key factors contributing to churn. This may include analyzing customer demographics, usage patterns, customer service interactions, and more.

**Data Collection:**

1. Data Sources: Identify the sources of data, which may include customer databases, transaction logs, customer service records, and surveys.
2. Data Collection Methods: Depending on your data sources, you may need to set up data pipelines, ETL (Extract, Transform, Load) processes, and data integration methods to ensure data quality and consistency.

**Visualization Strategy:**

1. Types of Visualizations: Determining the types of visualizations we'll use in IBM Cognos.
2. Churn Rate Dashboards: Creation of dashboards that show churn rates over time, segmented by different customer attributes.
3. Churn Prediction Models: Visualizing the results of the predictive models. This could be in the form of ROC curves, confusion matrices, and precision-recall curves.
4. Feature Importance: Using visualizations to display the importance of different features in predicting churn. This could be bar charts or heatmaps.
5. Customer Segmentation: Clustering of customers based on their behaviour and visualize these segments. This can help tailor retention strategies.
6. Interactivity: Making the visualizations interactive so that stakeholders can explore the data and insights on their own.

**Predictive Modelling:**

1. Machine Learning Algorithms: Choosing appropriate machine learning algorithms for churn prediction. Some possible choices from our point of view include:
2. Logistic Regression: A simple and interpretable algorithm for binary classification.
3. Random Forest: Useful for handling complex datasets and capturing feature importance.
4. Gradient Boosting : Often provides high predictive accuracy.
5. Neural Networks: Deep learning models can capture complex patterns, but they may require more data.

*Feature Selection and Engineering:* Confirmation on the features (variables) to include in your predictive model. This could include customer demographics, usage frequency, customer lifetime value, customer service interactions, and more. Feature engineering may involve creating new features or transforming existing ones to improve model performance.

*Model Evaluation:* Using common metrics for binary classification like churn prediction include accuracy, precision, recall, F1-score, ROC AUC, and confusion matrices.

*Hyperparameter Tuning:* Optimizing the hyperparameters of the chosen algorithms to improve model performance.

**Conclusion:**

In conclusion, the project to predict customer churn and identify factors influencing customer retention using IBM Cognos is a strategically sound and comprehensive initiative aimed at empowering businesses to reduce customer attrition effectively. By defining clear analysis objectives, establishing robust data collection methods, devising an insightful visualization strategy, and implementing well-informed predictive modelling techniques, this project equips organizations with the tools and knowledge needed to make data-driven decisions.

Ultimately, this project embodies a data-driven and iterative approach to customer retention, one that enables businesses to not only identify potential churners but also implement tailored strategies to retain valuable customers. As a result, it promises to be a valuable asset in the ongoing effort to reduce customer attrition and foster sustainable business growth.

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