**Problem Definition and Design Thinking**

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**26-09-2023**

* **Project Definition:**

The primary goal of this project is to leverage IBM Cognos to predict customer churn and gain insights into the factors that influence customer retention. Customer churn, or attrition, refers to the phenomenon where customers discontinue their relationship with a product or service provider. Understanding and predicting churn is crucial for businesses to take initiative-taking measures and retain valuable customers. This project encompasses the following key components:

1. **Analysis Objectives**: Clearly define the specific objectives of predicting customer churn, which include identifying potential churners and gaining an in-depth understanding of the key factors contributing to churn.
2. **Data Collection**: Determine the sources and methodologies for collecting customer data. This data will encompass various aspects, including customer demographics, usage behaviour, and historical interactions, which are essential for predicting churn accurately.
3. **Visualization Strategy**: Develop a comprehensive plan for visualizing the insights derived from the data using IBM Cognos. Effective visualizations will play a crucial role in showcasing the factors that affect churn and retention rates.
4. **Predictive Modelling**: Make informed decisions regarding the choice of machine learning algorithms and features required to build a robust predictive model for customer churn. This model will serve as a valuable tool for anticipating and mitigating churn risks.

**Design Thinking:**

* **Analysis Objectives:**
* **Empathize**:
* Understand the pain points of the business regarding customer churn.
* Identify key stakeholders and their specific needs related to churn prediction.
* Recognize the importance of not only identifying potential churners but also understanding the drivers behind churn.

**Define**:

* Objectives:
  + Identify potential churners before they leave.
  + Understand the key factors contributing to churn, such as pricing, customer support, product features, and more.
  + Determine which customer segments are most likely to churn.
* Key Performance Indicators (KPIs):
  + Churn rate.
  + Customer segmentation.
  + Factors contributing to churn.

**Ideate**:

* Brainstorm potential strategies and methodologies for achieving the defined objectives.
* Encourage creative thinking among team members.

**Prototype**:

* Create a preliminary plan for how to approach each objective.
* Outline the analysis methodologies and tools that might be employed.
* Consider initial ideas for visualization to convey the results effectively.

**Test**:

* Share the defined objectives and preliminary approach with stakeholders.
* Gather feedback and refine objectives based on their input.

**Data Collection:**

**Empathize**:

* Understand the current data collection processes within the organization.
* Identify gaps or limitations in existing data sources.

**Define**:

* Specify the data sources required for predicting churn, such as CRM systems, transaction records, customer surveys, and social media interactions.
* Determine which data attributes are critical for the analysis, e.g., customer demographics, transaction history, customer service interactions.

**Ideate**:

* Explore innovative methods for collecting additional data, including external sources or customer feedback from social media.

**Prototype**:

* Develop a data collection plan detailing data source, collection methods, and data storage.
* Address data privacy and compliance considerations.

**Test**:

* Validate the data collection plan by discussing it with data stakeholders and compliance experts to ensure alignment with legal and ethical standards.

**Visualization Strategy:**

**Empathize**:

* Understand the preferences and needs of your audience for visualizing data.
* Identify the key stakeholders who will consume the visualizations.

**Define**:

* Specify the essential visualizations required to effectively convey churn and retention insights, such as:
  + Customer churn trend over time.
  + Customer segmentation analysis.
  + Factors contributing to churn.

**Ideate**:

* Explore different visualization tools and techniques, including IBM Cognos.
* Consider integrating interactive elements to enhance user engagement.

**Prototype**:

* Create mock-ups or prototypes of the visualizations.
* Test these prototypes with stakeholders to ensure their usability and effectiveness.

**Test**:

* Present the visualizations to stakeholders and gather their feedback.
* Make adjustments based on their input to improve the effectiveness of visualizations.

**Predictive Modelling:**

**Empathize**:

* Understand the capabilities and limitations of various machine learning algorithms.
* Assess the expertise and resources available for modelling.

**Define**:

* Specify the machine learning algorithms and features that will be used for predicting customer churn. For example:
  + Use logistic regression, decision trees, and random forests for classification.
  + Include features such as customer demographics, usage behaviour, and historical interactions.

**Ideate**:

* Explore alternative modelling approaches and feature engineering techniques.
* Consider the trade-offs between model complexity and interpretability.

**Prototype**:

* Create a prototype of the predictive modelling pipeline, including data preprocessing, model selection, and evaluation metrics.
* Test the prototype on a subset of the data to assess its performance.

**Test**:

* Evaluate the prototype's performance and interpretability with stakeholders.
* Gather feedback and iterate on the modelling approach as needed.

By following the principles of design thinking, this project will not only address the technical aspects of predicting customer churn but also ensure alignment with the needs and preferences of stakeholders, ultimately leading to more effective solutions and better outcomes.