**Data Science Use Case Document Template**

**1. Problem Statement**

**Description:**  
Telecom companies aim to anticipate customer behavior to improve service delivery, enhance customer satisfaction, and reduce churn. Traditional approaches often fail to predict behaviors like churn, upselling opportunities, or payment defaults accurately. A robust forecasting solution is needed to proactively understand and act on customer behavior.

**2. Target Variable / Number of Clusters**

**Definition:**  
The target outcome includes predictions such as likelihood of churn, customer lifetime value (CLV), or the probability of upselling success. Clustering can group customers with similar behavioral patterns for targeted actions.

**3. Input Variables / Parameters**

**Key Influencers:**

* Historical customer data (e.g., billing and payment history)
* Service usage patterns (e.g., call, data, and SMS usage)
* Customer demographics (e.g., age, location, and profession)
* Interaction history (e.g., complaints and support tickets)
* External factors (e.g., economic conditions, competitor activity)

**4. Sector**

**Telecom**

**5. Approach / Technology Used**

**Technology Stack:**

* **Machine Learning Models:** For predictive analytics, such as churn prediction and CLV estimation.
* **Time Series Analysis:** To identify trends and seasonal patterns in usage and payments.
* **Behavioral Segmentation Algorithms:** To group customers based on shared characteristics.
* **Data Integration Tools:** To combine structured and unstructured data for comprehensive insights.
* **Visualization Dashboards:** For actionable insights and easy tracking of forecasts.

**6. Benefits**

* Proactive customer retention strategies reduce churn.
* Enhanced upselling and cross-selling opportunities.
* Improved customer satisfaction through timely, personalized offers.
* Optimized resource allocation for customer service and marketing.
* Better financial planning through accurate forecasting.

**7. Expected Outcome**

* **Reduced Churn:** Up to 20-30% decrease in customer turnover.
* **Increased Revenue:** Higher earnings through targeted upselling and cross-selling campaigns.
* **Operational Efficiency:** Streamlined processes based on customer forecasts.
* **Customer Insights:** Deeper understanding of customer needs and behaviors.

**8. Challenges / Risks**

* Data silos hindering comprehensive analysis.
* Difficulty in maintaining updated models for changing behaviors.
* Privacy concerns when handling sensitive customer data.
* High initial investment for advanced analytics tools and model development.