**Project Overview**

This project aims to predict customer churn using machine learning, enabling proactive customer retention strategies. The stacking model achieved **80.3% accuracy and a ROC AUC score of 85.7%**, making it a reliable tool for identifying at-risk customers and optimizing retention efforts.

**Key Insights and Business Recommendations**

**1. High Churn Among New Customers**

**Insight:** Customers with a shorter tenure are more likely to leave the telecom service. **Business Impact:** Early-stage churn leads to higher customer acquisition costs without long-term revenue. **Recommendation:**

* Implement a **"First 90-Day Engagement Program"** with personalized discounts and onboarding assistance.
* Use targeted push notifications to enhance user engagement and service adoption.

**2. Low Service Usage Correlates with High Churn**

**Insight:** Customers who make fewer calls, send fewer SMS, or use less data are at a higher risk of churning. **Business Impact:** Underutilization of services can make customers feel they are not getting value for their money. **Recommendation:**

* Launch a **"Personalized Usage Booster" campaign** recommending customized plans based on user behavior.
* Offer **bonus incentives** such as free data or discounted call minutes to encourage service use.

**3. Regional Churn Trends**

**Insight:** Certain states and cities experience higher churn rates, potentially due to network issues or competitor influence. **Business Impact:** Losing customers in key regions can lead to localized revenue decline and market share loss. **Recommendation:**

* Conduct **region-based churn analysis** and invest in improving network coverage in high-churn areas.
* Launch **region-specific promotions** to counter competitor offers and retain customers.

**4. Service Issues Drive Customer Attrition**

**Insight:** Customers with frequent complaints (e.g., billing errors, slow data speed, call drops) are more likely to churn. **Business Impact:** Poor customer experience reduces brand loyalty and negatively impacts customer retention. **Recommendation:**

* Introduce **AI-driven customer support chatbots** for faster query resolution.
* Offer **"Loyalty Compensation"** (e.g., bonus data, bill discounts) to customers experiencing service disruptions.
* Proactively reach out to at-risk customers before they file complaints.

**5. Competitor Influence on Churn**

**Insight:** Many customers leave not due to dissatisfaction but because competitors offer better pricing or bundled services. **Business Impact:** Telecom providers may lose loyal customers due to aggressive pricing strategies from rivals. **Recommendation:**

* Implement an **AI-driven retention system** to identify at-risk customers and send personalized retention offers.
* Run **win-back campaigns** offering exclusive discounts to customers who have recently churned.
* Introduce **referral programs** to enhance customer loyalty and reduce churn risk.

**Strategic Business Value**

These insights help telecom companies: ✅ **Make Data-Driven Decisions:** Predictive modeling enables **targeted retention strategies** based on real customer data. ✅ **Reduce Costs & Increase Revenue:** Targeting high-risk churn customers minimizes acquisition costs and maximizes **customer lifetime value (CLV)**. ✅ **Gain Competitive Advantage:** Leveraging AI for customer retention enables telecom companies to **outperform competitors** and improve customer satisfaction. ✅ **Enhance Customer Experience:** Personalized interventions ensure customers stay engaged and satisfied with the service.

By applying these insights, the telecom company can **significantly reduce churn rates, improve customer satisfaction, and drive revenue growth**. This project demonstrates the power of machine learning in optimizing customer retention strategies and creating a competitive edge in the telecom industry.