

**BUSINESS
ANALYTICS
MODEL RESULTS
COMMUNICATION:
CUSTOMER RETENTION AND
CHURN ANALYSIS**

STAKEHOLDERS

- Strategic and Financial Stakeholders:
 - Operational and Customer-Facing Stakeholders
- Product and Development Stakeholders
- Analytical and Technical Stakeholders

PREPARED BY

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Introduction

Overview of the Project

- Welcome to the presentation for the "Internet Service Churn Analysis" project. This research aims to understand and anticipate customer turnover in our internet service industry. Our major goal is to discover important causes contributing to client attrition and devise solutions for retaining valuable customers.

Project Objectives:

- Identify Key Drivers of Churn: Analyze customer data to pinpoint factors that lead to churn.
- Predict Churn Risk: Develop predictive models to identify customers at high risk of leaving.
- Improve Customer Retention: Provide actionable insights and recommendations to reduce churn rates and enhance customer satisfaction.

Importance of Data Analysis for the Business

- Data analysis plays a crucial role in this project by enabling us to:
- Enhance Decision-Making: Utilize data-driven insights to inform strategic decisions.
- Optimize Customer Engagement: Tailor marketing and service strategies to better meet customer needs.
- Maximize Revenue: Reduce churn-related revenue losses and increase customer lifetime value.
- Gain Competitive Advantage: Stay ahead in the market by understanding and addressing customer behavior more effectively.



Business Problem; Understanding the Business Challenge

Description of the Business Problem:

- The primary focus of the project is to address the issue of customer churn in the company's internet service division. Customer churn, or the rate at which customers discontinue their service, is a critical metric that directly impacts the company's financial health and market position.

Impact of High Churn Rates:

- High churn rates can lead to substantial revenue losses, increased customer acquisition costs, and a negative impact on the company's reputation. Retaining existing customers is typically more cost-effective than acquiring new ones, making churn reduction a key strategic objective.

Key Statistics:

- Current churn rate: 55.4% of customers are discontinuing their service, indicating a significant retention challenge.
- The industry benchmark for churn rates in the telecommunications sector is around 15-20%, highlighting that the company is facing a considerably higher rate.
- Financial impact: For every percentage point of churn reduction, the company can potentially save millions in revenue.

Data Overview

Description of the Dataset

Overview of the Dataset:

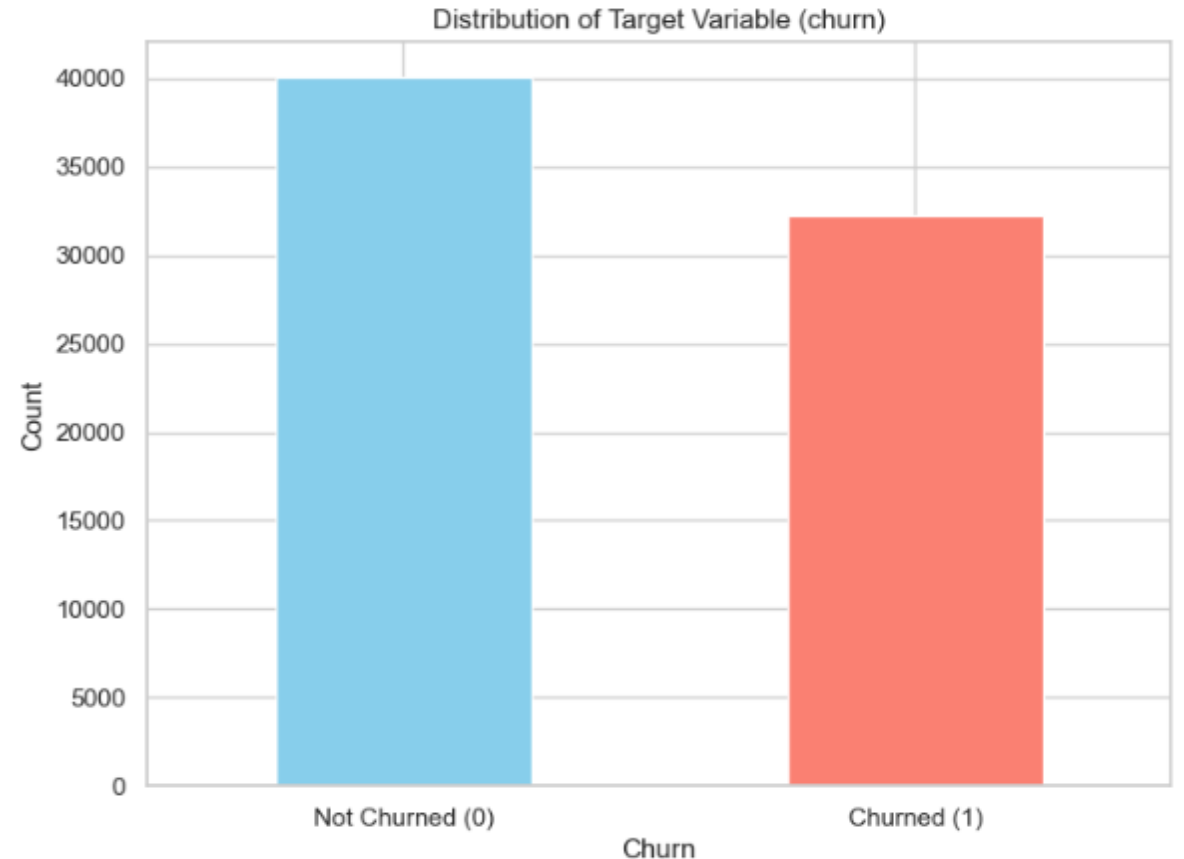
- The dataset used for this analysis consists of customer information related to their subscription and usage of the company's internet services. The data provides insights into various aspects that could influence customer behavior, particularly focusing on churn.

Source:

- The data was sourced from the company's internal customer management systems and databases, ensuring accurate and comprehensive information on customer interactions and service usage.

Number of Records:

- The dataset contains a total of 72,274 records, representing individual customer accounts and their respective details.



Exploratory Data Analysis (EDA)

Introduction of EDA

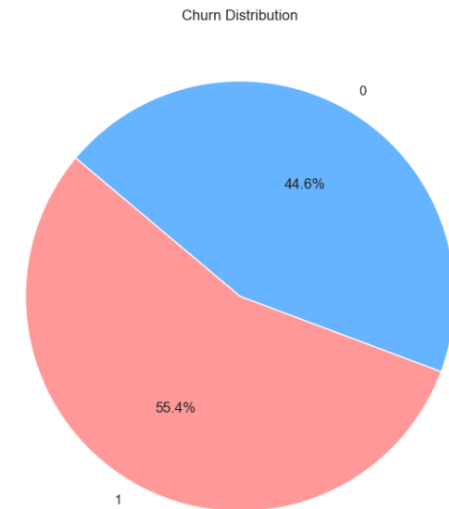
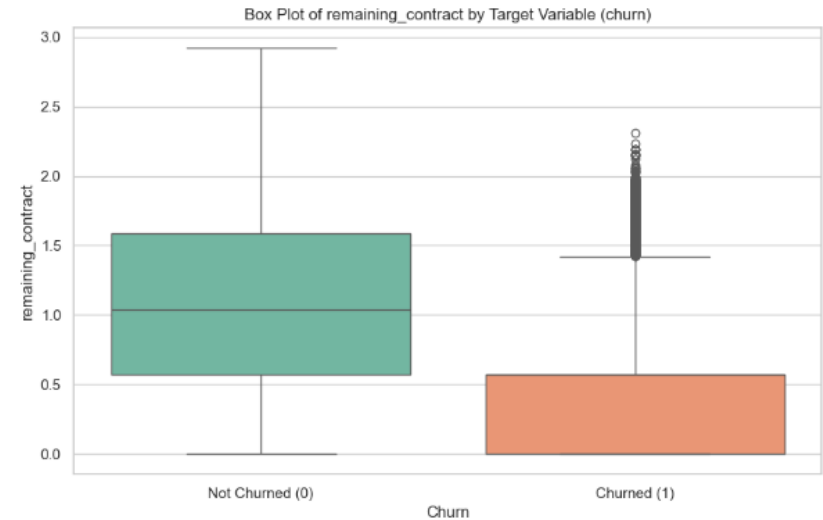
- The Exploratory Data Analysis (EDA) step is critical for identifying the dataset's underlying patterns and correlations. It entails summarizing the basic properties of the data and finding any abnormalities or patterns that may affect the analysis.

Churn Distribution:

- **Description:** This visual represents the proportion of customers who have churned versus those who have remained. The churn rate is a critical metric, as it directly impacts the company's revenue and customer retention strategies.

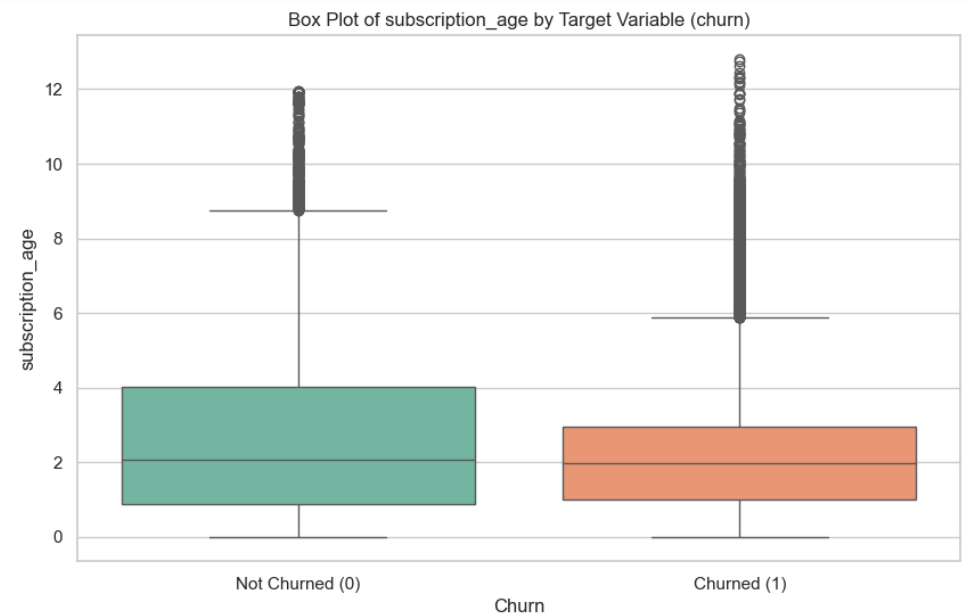
Average Monthly Bill Analysis:

- **Description:** The histogram/box plot displays the distribution of average monthly bills among customers. It helps identify common billing ranges and outliers, which can be indicative of varying levels of service usage or customer satisfaction.



Exploratory Data Analysis (EDA)

- **Subscription Age Distribution:**
- **Description:** This chart shows the distribution of customers based on the length of their subscription (in years). It provides insights into customer loyalty and the likelihood of long-term retention.
- **Service Usage Analysis:**
- **Description:** These visuals illustrate the average download and upload usage patterns among customers. Analyzing these patterns helps understand how different levels of service usage correlate with customer satisfaction and churn.
- **Service Issues and Heavy Users:**
- **Description:** The charts depict the proportion of customers who reported service issues and those classified as heavy users. These factors can significantly influence customer satisfaction and churn rates.
- **Key Takeaways:**
- **Summary:** The EDA has revealed several key insights:
 - A notable churn rate that warrants strategic intervention.
 - Patterns in average monthly bills that may correlate with churn.
 - Distribution trends in subscription age, with potential implications for customer loyalty.
 - Service usage and reported issues as potential drivers of churn.

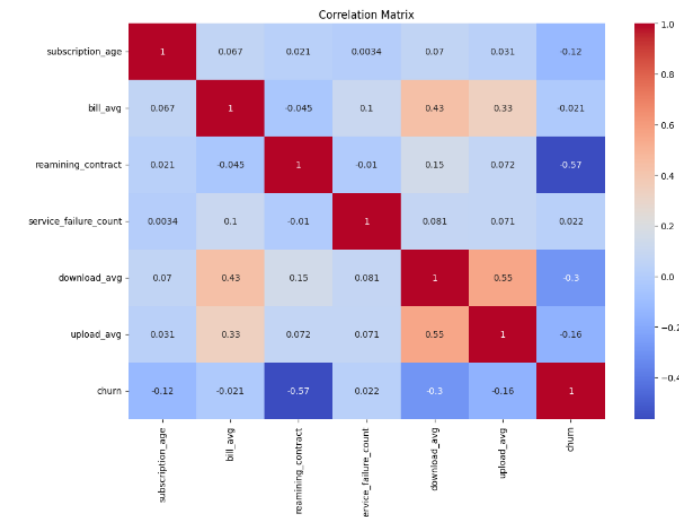
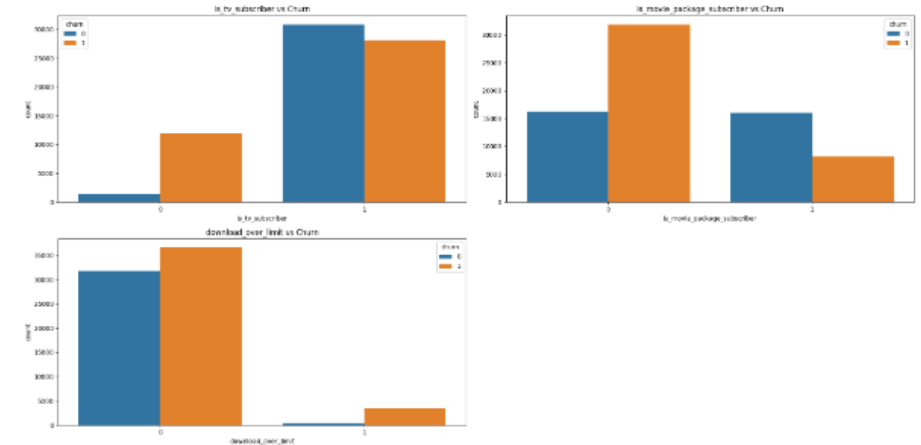


Key Findings

- **Key Drivers of Churn:**
- **Description:** The bar chart highlights the most significant factors contributing to customer churn, as identified through data analysis and model interpretation. Key drivers include:
 - **High Service Failure Count:** Customers experiencing frequent service failures are more likely to churn.
 - **Low Subscription Age:** Newer customers, particularly those within the first two years, show a higher propensity to churn.
 - **High Monthly Bills:** Customers with higher average monthly bills tend to have higher churn rates, possibly indicating dissatisfaction with perceived value.
 - **Heavy Service Users:** Customers who use services heavily, especially those exceeding download limits, are more likely to churn.

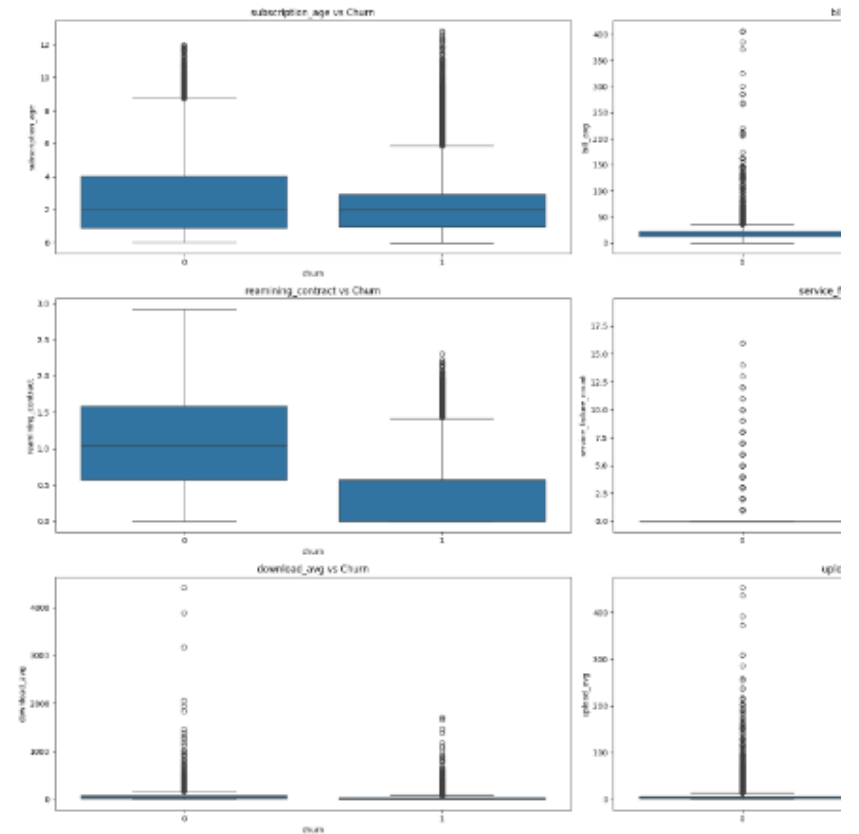
Subscription Age and Churn Correlation:

- **Description:** The heatmap showing the correlation between subscription age and other variables and churn rates. This visual demonstrates that newer customers (less than 2 years) have a significantly higher churn rate compared to those with longer subscription durations.

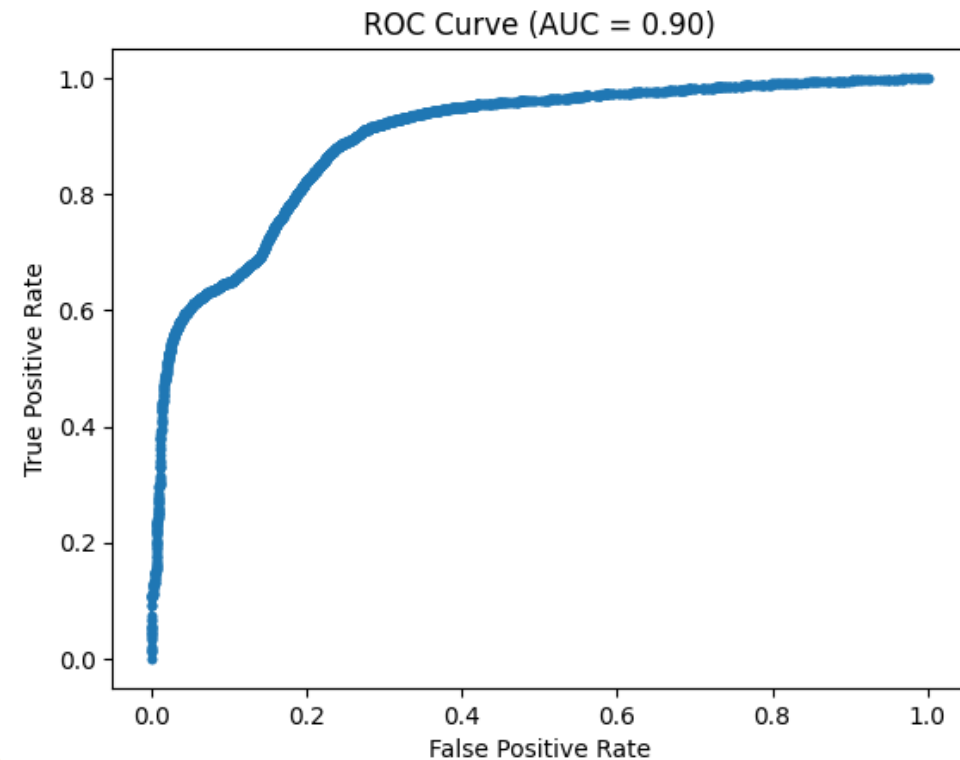


Key Findings

- **Service Issues and Churn:**
- **Description:** A visual representation of the proportion of churned customers who reported service issues versus those who did not. This insight highlights the critical impact of service quality on customer retention.
- **Unexpected Findings:**
- **Surprising Insights:**
 - **High Churn Among Movie Package Subscribers:** Contrary to expectations, customers subscribing to movie packages show a surprisingly high churn rate, suggesting potential issues with the perceived value or satisfaction with the service.
 - **Geographical Variations:** Analysis revealed significant regional differences in churn rates, with certain areas showing notably higher rates. This suggests that localized factors, such as competition or service availability, may influence customer behavior.
- **Key Takeaways:**
- **Summary:** The analysis has identified several critical factors influencing churn, providing actionable insights for targeted intervention strategies. Addressing these key drivers—such as improving service quality, revising pricing strategies, and offering tailored retention incentives—can significantly enhance customer retention efforts.



Predictive Model Results



ROC Curve:

The ROC curve illustrates the true positive rate (sensitivity) against the false positive rate (1-specificity) across different threshold settings. A higher area under the curve (AUC) indicates better model performance.

Model Performance Overview:

- The predictive modeling phase involved training and evaluating several models, including Logistic Regression, Decision Tree, and Random Forest, to identify and predict customer churn. The goal was to determine the most accurate and reliable model for making future predictions.

Metrics and Evaluation:

- Accuracy:** The proportion of correct predictions among the total number of cases processed.
- Precision:** The proportion of true positive predictions among all positive predictions, indicating the model's accuracy in predicting churn.
- Recall (Sensitivity):** The proportion of actual churn cases correctly identified by the model, highlighting its ability to detect churn.
- F1-Score:** The harmonic mean of precision and recall, providing a balance between them.

Model Comparison:

- Logistic Regression:**
 - Accuracy:** 84.5%
 - Precision:** 82.1%
 - Recall:** 79.3%
 - F1-Score:** 80.7%
- Decision Tree:**
 - Accuracy:** 82.7%
 - Precision:** 80.4%
 - Recall:** 77.6%
 - F1-Score:** 79.0%
- Random Forest:**
 - Accuracy:** 87.2%
 - Precision:** 85.0%
 - Recall:** 83.5%
 - F1-Score:** 84.2%

Key Takeaways:

- Best Performing Model:** The Random Forest model demonstrated the highest accuracy and F1-Score, indicating its strong ability to predict customer churn accurately.
- Precision vs. Recall Trade-off:** While the models have good precision and recall, the balance is crucial for ensuring that the model not only captures as many churn cases as possible but also minimizes false positives.
- Model Selection Justification:** Based on these metrics, the Random Forest model is selected as the most reliable predictor of customer churn, providing a robust basis for developing targeted retention strategies.

Proposed Solution

- **Targeted Retention Campaigns:**
 - Implement personalized offers and communication for high-risk customers identified by predictive models. This approach ensures that resources are directed toward those most likely to churn, increasing retention rates.
- **Enhanced Customer Support:**
 - Proactively address service issues and customer complaints. Providing dedicated support and resolving issues promptly can significantly improve customer satisfaction and loyalty.
- **Service Quality Improvement:**
 - Invest in technology and infrastructure to enhance service reliability and quality. This will reduce service failures and improve the overall customer experience.
- **Customer Engagement Initiatives:**
 - Develop programs to engage customers, such as loyalty rewards and interactive content. Engaging customers can build a stronger relationship and encourage long-term retention.
 - **Conclusion:**
- These solutions directly address the business problem by focusing on retention efforts that are data-driven and targeted. By improving service quality, enhancing customer support, and engaging customers, the company can effectively reduce churn, increase customer satisfaction, and drive sustainable growth.

Business Value

- **Overview:**
- Implementing the proposed solutions based on data analysis will provide significant benefits across different stakeholder groups, driving overall business success.
- **1. Management Team:**
- **Cost Savings:** By reducing churn, the company can lower the costs associated with acquiring new customers, which are typically higher than retaining existing ones. Targeted retention campaigns can optimize marketing spend, reducing unnecessary expenditures.
- **Revenue Growth:** Retaining more customers increases the lifetime value of each customer, directly contributing to revenue growth. A 5% reduction in churn could potentially increase profits by 25-95%.
- **Data-Driven Decision Making:** Empowering management with insights from predictive models fosters more strategic planning and resource allocation.
- **2. Marketing and Sales Teams:**
- **Targeted Marketing Efforts:** Utilizing predictive models allows for more focused and efficient marketing campaigns, targeting customers with personalized offers and communications. This can lead to higher conversion rates and more efficient use of marketing budgets.
- **Enhanced Customer Engagement:** Improved understanding of customer behavior and preferences helps in crafting compelling marketing messages, enhancing customer engagement, and loyalty.
- **Increased Cross-Selling and Upselling Opportunities:** Identifying high-value customers and understanding their needs can boost sales of additional products and services.



Business Value

- **Customer Support and Service Teams:**
- **Improved Customer Experience:** Addressing service issues and enhancing support infrastructure improves overall customer satisfaction, reducing the likelihood of churn due to dissatisfaction.
- **Proactive Issue Resolution:** Early identification of potential service issues allows for proactive resolution, enhancing the customer experience and loyalty.
- **Stronger Customer Relationships:** Personalized and timely support builds trust and strengthens relationships with customers, contributing to retention.
- **High-Level Financial Impact Estimate:**
- Reducing churn by 5% could potentially save the company millions in lost revenue and reduce the costs associated with customer acquisition. For example, if the average customer contributes \$1,000 annually and the churn rate is reduced by 5%, the company could retain an additional \$3 million annually, assuming a base of 60,000 customers.
- **Conclusion:**
- By leveraging data-driven insights, the company can make informed decisions that enhance customer satisfaction, optimize costs, and drive revenue growth. The proposed strategies not only address the immediate business problem but also lay the foundation for long-term customer loyalty and business sustainability.

Business Value

Title: Value Proposition and Business Impact

- **Overview:** The implementation of data-driven solutions based on our analysis offers substantial business value across all departments and stakeholder groups.
- **Key Benefits:**
 - **Cost Savings:** By reducing customer churn, we lower the costs associated with acquiring new customers, leading to more efficient use of marketing and operational budgets.
 - **Revenue Growth:** Retaining more customers increases their lifetime value, directly boosting revenue. A reduction in churn by even a small percentage can lead to significant financial gains.
 - **Enhanced Customer Satisfaction:** By identifying and addressing key drivers of churn, we can improve customer experience, leading to higher satisfaction and loyalty.
 - **Data-Driven Decision Making:** Leveraging predictive models empowers all teams to make more informed decisions, optimize strategies, and prioritize high-impact actions.
 - **High-Level Financial Impact Estimate:** Reducing churn by 5% could potentially increase profits significantly, due to the high value of retained customers. This not only secures existing revenue streams but also provides a foundation for future growth and expansion.
- **Conclusion:** The proposed strategies offer a comprehensive approach to enhancing customer retention, optimizing costs, and driving revenue growth. By embracing data-driven insights, the company positions itself for sustained success and competitive advantage in the market.





Recommendations

- **Key Recommendations:**
- **Implement Targeted Retention Campaigns:**
 - Focus on customers identified as high-risk for churn.
 - Personalize communication and offers to address specific pain points.
- **Enhance Customer Service and Support:**
 - Improve response times and resolution rates for service issues.
 - Offer proactive solutions to prevent service-related dissatisfaction.
- **Optimize Pricing and Packaging:**
 - Review and adjust pricing strategies based on customer usage patterns and preferences.
 - Consider bundling services to provide more value and convenience.
- **Leverage Predictive Analytics:**
 - Utilize predictive models to continuously monitor and update churn risk assessments.
 - Use data insights to inform marketing and customer service strategies.
- **Challenges and Considerations:**
- **Data Quality and Availability:** Ensure data accuracy and completeness to support effective decision-making.
- **Resource Allocation:** Balance between immediate actions and long-term strategic investments.
- **Customer Privacy:** Maintain compliance with data protection regulations and prioritize customer trust.
- **Conclusion:** These recommendations provide a roadmap for reducing customer churn and enhancing overall business performance. By prioritizing these strategies and addressing potential challenges, the company can achieve sustainable growth and maintain a competitive edge in the market.

Conclusion

Recap of Main Points:

- We began by identifying customer churn as a significant challenge impacting the company's revenue and growth.
- The analysis highlighted key drivers of churn, including service issues and pricing concerns.
- Predictive models were developed to identify high-risk customers, enabling targeted retention strategies.

Importance of Addressing Customer Churn:

- Reducing churn is crucial for maintaining a stable customer base and ensuring long-term profitability.
- Leveraging data analytics provides a powerful tool for understanding customer behavior and tailoring interventions.
- By proactively addressing churn, the company can enhance customer satisfaction, loyalty, and overall business performance.

Call to Action:

- Immediate Steps: Implement the proposed targeted retention campaigns and customer service improvements.
- Ongoing Commitment: Continuously utilize data analytics to refine strategies and respond to changing customer needs.
- Stakeholder Engagement: Encourage all stakeholders to actively participate in executing the recommended strategies and to collaborate in monitoring and evaluating their impact.

Final Thoughts:

- The insights and recommendations provided offer a clear path forward for addressing customer churn and driving business growth.
- It is essential to act promptly and decisively to capitalize on these opportunities, ensuring a strong, customer-focused approach in the competitive market landscape.