Summary and Recommendations

Objective:

This analysis examines factors influencing customer churn in a telecom company using **data preprocessing, statistical analysis, and visualizations**. The findings highlight key service-related and financial indicators affecting churn rates and provide actionable insights to improve customer retention.

1. Data Preparation & Cleaning:

- The dataset was **preprocessed** to handle missing values, data inconsistencies, and incorrect data types.

- TotalCharges, which had missing values, was replaced with **0** and converted to float for accurate analysis.

- **SeniorCitizen** values were transformed from **0/1 to Yes/No** for better interpretability.

- No duplicate customer IDs were found, ensuring data integrity.

2. Customer Churn Distribution

- **Overall Churn Rate**: **26.5%** of customers have **churned**, while **73.5%** remain active.

- **Count and Pie Charts** show a significant churn rate, indicating retention challenges.

- This suggests that more than **1 in 4 customers** are leaving, requiring urgent intervention.

3. Key Factors Influencing Churn

A. Demographics and Customer Type

- **Senior Citizens** have a **42% churn rate**, **higher than non-senior customers (24%)**.

- This suggests older customers may require different engagement strategies to enhance retention.

B. Service-Related Insights

- **Customers without key services are more likely to churn**:

- o **Online Security:** 45% of customers without security churned, compared to 15% with security.

- o **Tech Support:** 43% churn rate among those without support vs. 14% with support.

- o **Online Backup & Device Protection:** Similar trends, showing customers with **added services** are less likely to leave.

- **Contract Type Strongly Impacts Churn**:

  - o **Monthly contract customers have a 60% churn rate**, while those on **1-year (11%) and 2-year (3%) contracts** have significantly lower churn.

  - o This highlights the importance of **long-term contracts** in customer retention.

C. Internet Service and Streaming

- **Fiber optic users have a 42% churn rate**, much higher than **DSL (26%)** or customers without internet (7%).

- **Streaming Service Subscription** (Streaming TV/Movies) slightly reduces churn, suggesting **bundling entertainment options** could enhance retention.

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4. Financial Insights

- **Total Charges & Tenure Relationship**:

  - o **Customers with lower TotalCharges (< $1000) have a 50% churn rate**, whereas those with **higher TotalCharges (> $5000) have a churn rate of only 5%**.

  - o This indicates that **long-term customers contribute more revenue and are more loyal**.

- **Payment Method Impact on Churn**:

  - o **Electronic Check users have a 45% churn rate**, significantly higher than **credit card (15%) or bank transfers (11%)**.

  - o This suggests that customers using **automated, stable payment methods** are less likely to churn.

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5. Visualizations & Insights

- **Count Plots, Pie Charts, and Grouped Bar Charts** were used to analyze categorical variables effectively.

- **Strong correlation observed** between contract type, additional services, and churn rate.

- **Boxplots and Histograms** further revealed financial patterns, highlighting tenure-based customer segmentation.

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6. Actionable Recommendations

A. Contract & Pricing Strategies

- Encourage customers to **switch from monthly to annual contracts** using **discounts or loyalty programs**.

- Provide **customized retention offers** to senior citizens and fiber optic users to improve retention.

B. Service & Support Enhancements

- Promote **online security and tech support packages** to reduce churn among high-risk groups.

- Enhance customer experience by bundling **streaming services** and promoting **service upgrades**.

C. Payment Optimization

- Encourage **bank transfers or credit card autopay** to minimize churn linked to payment failures or irregularities.

Conclusion

This analysis provides **clear data-driven insights** to **reduce churn rates** and improve **customer retention strategies**. By focusing on **contract flexibility, service bundling, and payment optimization**, the telecom company can **significantly lower churn while maximizing revenue**.