



# Grameenphone Customer Churn Analysis – Executive Summary

This project delivers an in-depth analysis of customer churn behavior for **Grameenphone**, one of Bangladesh's leading telecom operators. Leveraging data exploration and visualization techniques, the analysis uncovers valuable insights into why customers leave and which segments are most at risk — forming the basis for effective customer retention strategies.

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## Workflow Overview

### 1. 📦 Data Acquisition & Inspection

- Imported customer churn data using `pandas`.
- Explored the structure with `.info()`, `.head()`, and `.describe()` to understand the volume and nature of the variables.

### 2. 🧹 Data Cleaning & Quality Checks

- Checked for **missing values** and **duplicate entries** to ensure clean and reliable data for analysis.

### 3. 📊 Exploratory Data Analysis (EDA)

A series of powerful visualizations were used to identify patterns and behavioral trends:

- **Churn Breakdown:**
  - A **pie chart** highlighted the percentage of customers who churned vs. those retained.
- **Recharge Behavior:**
  - A **histogram** of monthly recharge amounts revealed the distribution of spending patterns.
- **Data Consumption:**
  - A **boxplot** of data usage (in GB) helped detect outliers and understand high-usage behaviors.

- **Customer Segmentation:**
  - Customers were segmented by **tenure** into **New**, **Established**, and **Loyal**.
  - **Countplots** compared churn rates across these segments.
- **Package Preference:**
  - Visual analysis of the **package type** showed which plans had higher retention rates.

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## Visualization Summary

The following visual tools were employed:

Chart Type	Purpose	Count
Pie Chart	Churn percentage distribution	2
Histogram	Monthly recharge behavior	1
Boxplot	Data usage distribution	1
Barplot	Package-wise customer distribution	1
Countplot	Segment-wise churn comparison	5

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## Key Insights

- **Churn Rate:** A significant portion of users are leaving, indicating potential service gaps or dissatisfaction.
  - **Low Spend & Low Usage = High Risk:** Customers with low recharge amounts and minimal data usage showed the highest churn probability.
  - **Tenure Matters:** New customers are more likely to churn. Retention improves significantly as customer tenure increases.
  - **Package Effectiveness:** Some packages outperform others in retaining users, providing an opportunity to restructure offerings or promote stickier plans.
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## **Conclusion**

This churn analysis delivers actionable business intelligence that can help Grameenphone — or any telecom provider — target the right customer segments, tailor package offerings, and reduce churn through data-driven strategies. It also lays the groundwork for advanced modeling, such as predictive churn classification using machine learning.