# Churn Analysis Project Report

## 1. Introduction

Customer churn has emerged as one of the most critical challenges in the telecom industry. High competition and low switching costs make it easier for customers to change providers. This project focuses on predicting churn and deriving actionable strategies to retain users using SQL Server, Power BI, and Python.

## 2. Abstract

The objective of this project is to predict churn and provide actionable insights for retention strategies. A dataset of telecom customers was cleaned, transformed, and modeled to identify patterns leading to churn. Interactive dashboards in Power BI were developed to visualize churn rate across customer demographics, contract types, and internet services. Tooltips and navigation buttons were implemented to enhance user interactivity.

## 3. Tools Used

- SQL Server – for changing and managing data types, and data loading
- Python (Jupyter Notebook) – for exploratory data analysis (EDA)
- Power BI – for creating interactive dashboards, tooltips, and navigation buttons
- Excel – for initial data preprocessing

## 4. Steps Involved in Building the Project

1. Data Cleaning: Handled missing values, removed inconsistencies, and changed data types in SQL Server.
2. Data Transformation: Created new columns and measures in Power BI for better insights.
3. EDA in Python: Conducted exploratory analysis to identify correlations and churn patterns.
4. Dashboard Development: Designed interactive dashboards in Power BI with tooltips (e.g., churn reason by internet type) and navigation buttons for multi-page analysis.
5. Insight Generation: Highlighted customer segments with higher churn probability and provided recommendations for retention strategies.

## 5. Conclusion

This project demonstrates the use of SQL Server, Python, and Power BI in analyzing and predicting customer churn. The integration of data preprocessing, exploratory data analysis, and visualization provides a comprehensive view of churn drivers. The insights generated can guide telecom companies to take proactive measures to improve customer retention.