



Innovation & Entrepreneurship Hub for Educated Rural Youth (SURE Trust – IERY)

E COMMERCE LTV AND CHURN ANALYSIS

The domain of the Project
SQL and PowerBI

Team Mentors :
Sidhikka Shah(Software Engineer PowerBI)
Abishek Ramachandran(Data Analyst)

Done by:

Mr. Dhanush S

Period of the project

Six months

August 2025 to January 2026



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Declaration

The project titled E Commerce LTV and Churn Analysis has been mentored by Sidhikka Shah, Abishek Ramachandran, organised by SURE Trust, from April 2023 to August 2023, for the benefit of the educated unemployed rural youth for gaining hands-on experience in working on industry relevant projects that would take them closer to the prospective employer. I declare that to the best of my knowledge the members of the team mentioned below, have worked on it successfully and enhanced their practical knowledge in the domain.

Team Member:

Mr. Dhanush S

Mentor's Name

Sidhikka Shah, TCS

Mentor's Name

Abishek Ramachandran, Intel

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Executive Summary

The **LTV & Churn Analysis Dashboard** is a comprehensive Power BI solution designed to analyze customer Lifetime Value (LTV) and churn patterns. The project integrates SQL and Power BI to provide businesses with a data-driven framework for understanding customer behavior, predicting attrition, and optimizing retention strategies. By segmenting customers based on value and risk, the dashboard enables organizations to quantify the financial impact of churn and implement targeted interventions to maximize long-term revenue.



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Introduction

This project focuses on identifying customer behavior patterns through a Power BI dashboard (LTV_Churns.pbix). It serves to help businesses understand Customer Lifetime Value (LTV) and predict churn to optimize retention.

- **Goal:** The primary objective is to categorize customers by value and churn probability while quantifying the financial impact of attrition.
- **Scope:** The analysis utilizes transaction data, demographics, and support history to generate actionable retention strategies.
- **Innovation:** It moves beyond basic reporting by correlating value with risk, specifically identifying high-LTV customers at risk of leaving.



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Project Objectives

The project aims to achieve the following goals:

- **LTV Analysis:** Calculate and visualize customer LTV across various segments and identify historical trends.
- **Churn Prediction:** Identify at-risk customers and analyze the primary causes of attrition.
- **Segmentation:** Categorize the customer base into four quadrants (VIPs, At-Risk, Stable Low-Value, and Low-Priority).
- **Financial Impact:** Quantify the revenue loss associated with churn and calculate the ROI of retention efforts.
- **Strategy Optimization:** Provide data-backed recommendations for customer intervention and upselling.



Methodology and Results

The analysis followed a structured technical workflow:

1. **Data Integration:** Aggregation of transaction, subscription, demographic, and support history data.
2. **Core Calculations:**
 - $\text{\$LTV} = \text{\$Average Order Value} \times \text{\$Purchase Frequency} \times \text{\$Customer Lifespan}$.
 - $\text{\$Churn Rate} = \left(\frac{\text{\$Customers Lost}}{\text{\$Total Customers}} \right) \times 100$.
3. **Risk Scoring:** Development of a Churn Risk Score based on engagement drops, support ticket increases, and payment issues.
4. **Visualization:** Use of bar charts, scatter plots, and geographic maps to display distribution and correlations.
5. • **Segmentation Clarity:** Successful identification of "VIP" customers (High LTV, Low Risk) versus "At-Risk Valuable" customers.
6. • **Trend Identification:** Visualization of LTV growth trends and their correlation with retention efforts.
7. • **Actionable Dashboards:** Creation of drill-through reports that allow users to view detailed customer lists for immediate marketing intervention.



Learning and Reflection

Through this project, several key competencies were developed:

- **Technical Proficiency:** Mastery of DAX for complex LTV and churn rate calculations within Power BI.
- **Analytical Thinking:** Understanding how to interpret the correlation between customer value and retention.
- **Data Visualization:** Learning best practices for designing executive-level dashboards that emphasize KPIs and scannable metrics.
- **Strategic Insight:** Bridging the gap between raw data (SQL) and business strategy (Power BI).



Conclusion and Future Scope

Future Scope

To further enhance the dashboard, the following features are proposed:

- **Machine Learning:** Integrating advanced predictive models for more accurate churn forecasting.
- **Automation:** Implementing real-time churn alerts and automated triggers for retention campaigns in CRM systems.
- **Advanced Mapping:** Detailed customer journey mapping to identify specific "friction points" before a churn event occurs.

Conclusion

The **LTV & Churn Analysis Dashboard** serves as a vital tool for any subscription-based or transactional business. By successfully bridging the gap between historical data and predictive insights, the project provides a roadmap for increasing customer loyalty and maximizing the long-term profitability of the customer base.



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