Client Background

RetailPlus Analytics is a mid-sized Indian e-commerce retailer operating across multiple product categories, including electronics, fashion, home essentials and lifestyle goods. The company primarily trades through its online platform and relies on digital marketing channels to acquire and engage customers. During 2019, overall transaction volumes remained stable, but management observed inconsistencies in customer retention and uneven revenue contribution across the customer base.

Although reporting focused on aggregate sales and transaction counts, there was limited visibility into customer-level behaviour. Leadership lacked a structured understanding of which customers were driving long-term value, which segments were at risk of churn and how purchasing behaviour influenced revenue sustainability. This gap highlighted the need for a more customer-centric, data-driven approach to support retention and revenue protection decisions.

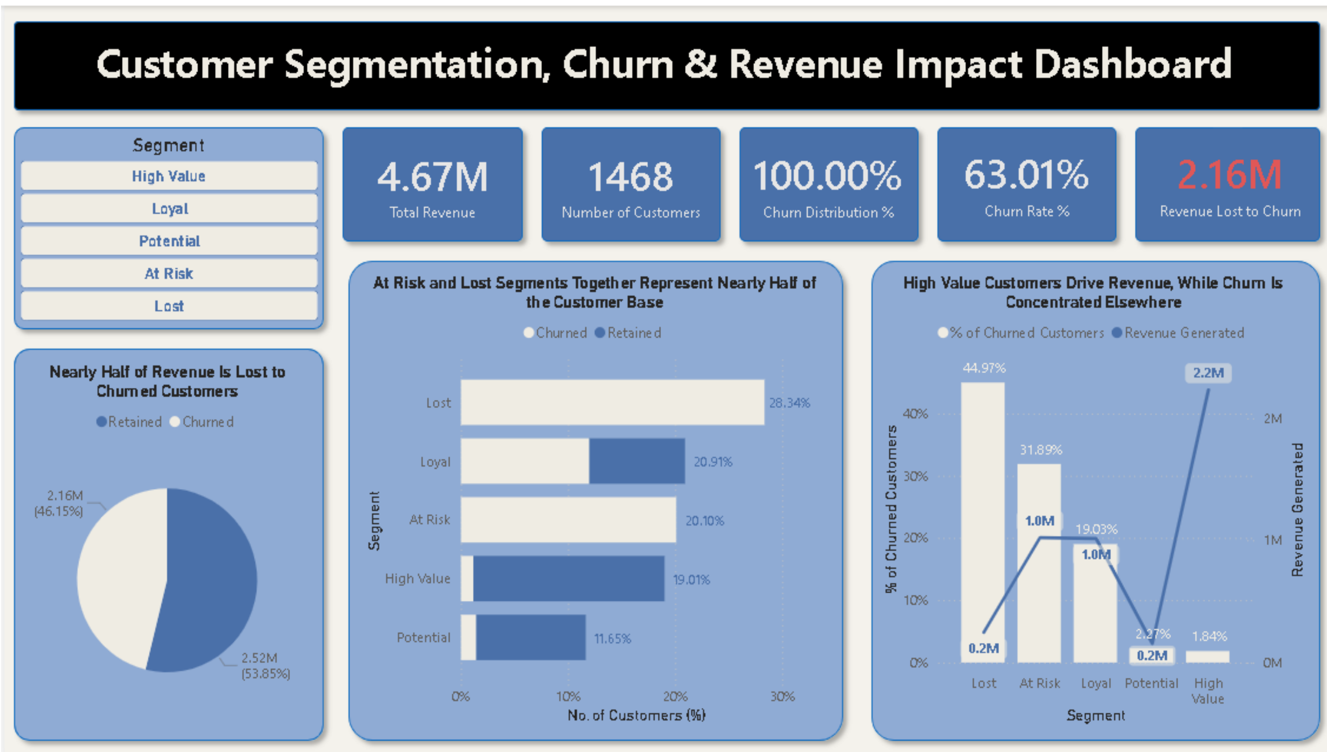
Business Objectives

The objective of this analysis is to support leadership with data-driven insights by:

- Segmenting customers using Recency, Frequency and Monetary (RFM) metrics to identify High Value, Loyal, Potential, At Risk and Lost customer groups.
- Defining customer churn based on transaction inactivity and analysing churn behaviour across customer segments.
- Evaluating revenue contribution and revenue concentration by segment to understand where business value is generated.
- Comparing average and total revenue between churned and retained customers to assess the financial impact of churn.
- Quantifying revenue exposure associated with high-risk customer segments.
- Statistically validating whether differences in churn behaviour and revenue patterns are significant rather than driven by random variation.
- Enabling more targeted retention strategies and improved prioritisation of customer segments to protect and grow revenue.

Executive Summary

Customer behavior analysis using RFM segmentation reveals that revenue and churn are highly concentrated across customer segments. A small share of customers generates the majority of revenue with low churn, while a large portion of the customer base contributes disproportionately to churn with limited revenue impact. Statistical testing confirms that these patterns are significant and not random, reinforcing the need for targeted, segment-based retention strategies.



Key Business Findings

Customer Lifecycle & Value Segmentation

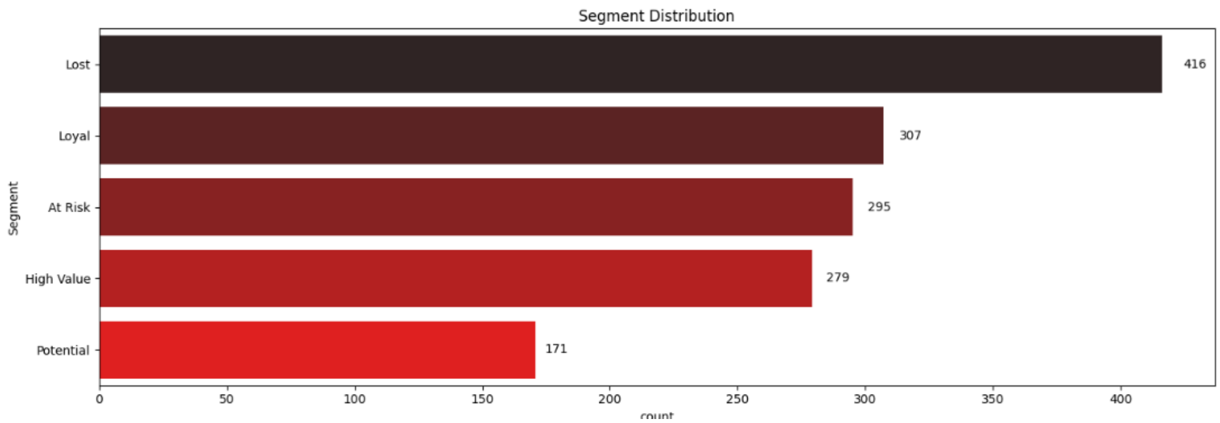


Fig. 1

- High Value customers represent ~19% of the customer base but contribute ~48% of total revenue, confirming strong revenue concentration.
- Loyal customers form ~21% of customers and contribute ~22% of revenue, indicating stable repeat behavior but moderate spend.
- Potential customers account for ~12% of customers but contribute only ~3% of revenue, signaling low engagement despite recent activity.
- At Risk and Lost customers together make up ~48% of customers but generate less than ~27% of total revenue, highlighting significant retention leakage.

Recommendations

- Prioritize retention investment for High Value and Loyal customers through personalized offers and loyalty programs.
- Design activation campaigns (bundles, onboarding nudges) to move Potential customers into Loyal status.
- Limit broad incentives for Lost customers; instead, use low-cost win-back campaigns to test reactivation potential.
- Track movement from Loyal to At Risk as an early warning signal for churn prevention.

Customer Churn Risk Assessment

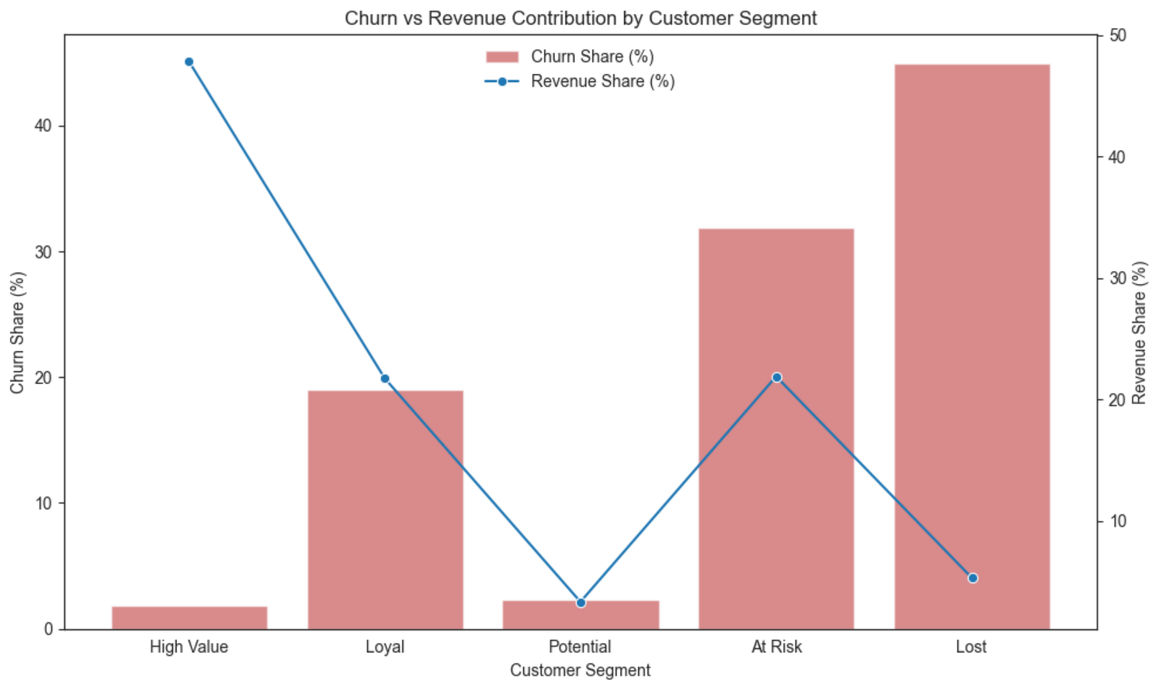


Fig. 2

- Lost and At Risk segments exhibit extremely high churn rates, indicating disengagement is strongly correlated with recency deterioration.
- High Value customers show very low churn (~6%), validating the effectiveness of current engagement for top customers.
- Although Loyal customers are relatively stable, they still contribute ~19% of total churn, making them an important secondary retention target.
- Churn is not evenly distributed; it is concentrated in specific lifecycle stages.

Recommendations

- Implement early intervention triggers for At Risk customers (e.g., inactivity reminders, targeted discounts).
- Protect High Value customers with proactive retention actions such as priority support and exclusive rewards.
- Introduce light re-engagement nudges for Loyal customers showing declining activity to prevent slippage.
- Measure churn monthly by segment to ensure retention actions are data-driven and timely.

Revenue Concentration & Exposure Analysis

As shown in Fig. 2,

- Revenue is highly concentrated, with a small proportion of customers driving a majority of sales.
- High Value customers generate ~6–7× higher average revenue per customer compared to Lost and Potential segments.
- At Risk customers still contribute ~22% of revenue, indicating meaningful revenue exposure if churn is not addressed.
- Lost customers account for the largest customer share (~28%) but only ~5% of revenue, suggesting diminishing returns from aggressive win-back efforts.

Recommendations

- Focus revenue protection efforts on At Risk customers, as preventing their churn offers the highest marginal revenue impact.
- Upsell Loyal customers with cross-sell and subscription-based offerings to increase their average revenue.
- Shift marketing spend away from blanket win-back strategies for Lost customers toward higher-ROI retention initiatives.
- Use revenue contribution metrics to prioritize customer segments, not just customer counts.

Statistical Validation of Customer Behaviour

1.Churn vs Segment (Chi-Square Test)

- A chi-square test confirms a statistically significant relationship between customer segment and churn ($p < 0.05$).
- This validates that churn behavior is structurally different across lifecycle segments, not random variation.
- The RFM segmentation framework is statistically meaningful for churn analysis.

Recommendations

- Use RFM segments as a core decision framework for retention and lifecycle management.
- Avoid one-size-fits-all churn strategies; segment-specific actions are statistically justified.

2.Revenue vs Churn (Two-Sample t-Test)

- A Welch's two-sample t-test shows that mean revenue differs significantly between churned and retained customers ($p < 0.001$).
- Retained customers generate substantially higher revenue, confirming the financial cost of churn.
- Revenue distribution is right-skewed, but the result remains robust under unequal variance assumptions.

Recommendations

- Position churn reduction as a revenue growth lever, not just a retention metric.
- Quantify revenue at risk from churned and At Risk customers to guide executive decisions.

Estimated Business Impact

Based on customer segmentation, churn and revenue analysis, revenue and churn are highly concentrated across a small number of customer segments. At Risk customers alone contribute approximately **22% of total revenue** while exhibiting extremely high churn, indicating a significant opportunity to protect **~2–3% of annual revenue** through modest retention improvements. High Value customers generate nearly **48% of revenue** with low churn, where preventing even **1–2% churn** could safeguard an additional **~0.5–1% of revenue**. Loyal customers contribute around **22% of revenue** and targeted engagement could drive a further **~1–2% revenue uplift**. Statistical validation confirms these patterns are significant, supporting a shift toward segment-driven retention strategies that could realistically deliver a **~3–6% annual revenue impact** while improving marketing efficiency by **10–20%** without increasing acquisition spend.