



## Retail Customer Retention Analytics – TARGET

### *Power BI Data Science Project*

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#### **Project Submitted By**

**Harivansh Dogne**

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#### **Project Type**

Power BI Analytics Project  
(Customer Retention & Business Insights)

#### **Project Objective**

To analyze customer behavior, identify churn and retention patterns, evaluate channel performance, and provide data-driven recommendations to improve customer loyalty and lifetime value for a retail organization (TARGET).

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#### **Tools & Technologies Used**

- Microsoft Power BI
  - Power Query (Data Cleaning & Transformation)
  - DAX (Measures & Calculated Columns)
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#### **Key Concepts Covered**

- Customer Segmentation
  - Retention & Churn Analysis
  - Channel Performance Evaluation
  - KPI & Dashboard Design
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#### **Training Program**

**Internshala Trainings**  
Power BI / Data Science Program

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### **Academic / Learning Purpose**

This project is created as part of practical learning to demonstrate real-world analytics skills required for **Data Analyst / Business Analyst / Data Science** roles.

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### **Date**

*December 2025*

*Video Explain Link:-*

*<https://www.loom.com/share/b6104ed362da4a7ebb1a5319da9f85c8>*

## ❖ Introduction to the Project

This project focuses on **Retail Customer Retention Analytics** with the objective of understanding customer purchasing behavior, identifying churn risks, and improving long-term customer value.

In today's competitive retail environment, **retaining existing customers is more cost-effective than acquiring new ones**. Therefore, the analysis leverages historical transaction data to segment customers, evaluate channel performance, and identify drivers of repeat purchases and loyalty.

The insights from this project aim to support **data-driven decision-making** for improving retention, optimizing marketing channels, and strengthening customer engagement strategies.

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## ❖ Problem Statement

The target retail company is facing challenges related to **declining repeat purchases and inconsistent customer engagement across channels**.

The key business problems addressed in this project are:

- Identifying **which customers are at high risk of churn**
- Understanding **which customer segments contribute the most to revenue**
- Evaluating **performance of different sales/marketing channels**
- Designing **actionable retention and loyalty strategies**

The ultimate goal is to **increase customer lifetime value (CLV)** and reduce customer churn using analytical insights.

## Task 1: Data Modeling & Cleaning

- Load and transform datasets in Power Query
  - Handle duplicates, missing values and ensure correct data types
  - Create calculated columns.
1. Membership Duration = Today-Membership Since
  2. Extract Transaction Year, Transaction Month
  - Create a basic Data Model view
  - One-to-Many: Customer Demographic -> Transactions, Loyalty Program, Churn Labelled Customers
  - Many-to-One: Transactions->Store Locations

The screenshot shows the Power BI Data View interface. On the left, there is a table titled "Transactions" with the following data:

	Transaction_ID	Transaction Month	Transaction Year
1	T0001	12	2023
2	T0002	9	2024
3	T0003	4	2023
4	T0004	8	2023
5	T0005	10	2023
6	T0006	3	2024
7	T0007	3	2023
8	T0008	2	2023
9	T0009	4	2023

On the right, there is a table titled "Customer Demographics" with the following data:

	Customer_ID	Membership_Duration(Days)
1	C001	837
2	C002	2268
3	C003	1002
4	C004	1616
5	C005	1177
6	C006	2590
7	C007	2254
8	C008	2837
9	C009	2167
10	C010	2367
11	C011	2419
12	C012	2865
13	C013	767
14	C014	2528
15	C015	2367
16	C016	1557
17	C017	2010
18	C018	1862
19	C019	1866
20	C020	1246
21	C021	1974
22	C022	482
23	C023	1118
24	C024	1361
25	C025	986
26	C026	1677
27	C027	1238
28	C028	2408
29	C029	817
30	C030	2179

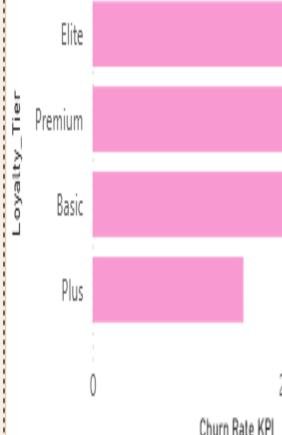
The screenshot shows the Power Query Editor interface with the "Customer Demographics" table. The table has the following columns: Age, Gender, Region, Income\_Level, Membership\_Since, and Membership\_Duration(Days). The editor shows the following applied steps:

- Source
- Promoted Headers
- Changed Type
- Changed Type1
- Changed Type2
- Added Custom
- Renamed Columns
- Changed Type3
- Reordered Columns

## Task 2: Churn & Retention Metrics

- Create Churn Rate KPI = (Churned Customers/Total Customers)\*100
- Visualize churn rate by:
  1. Region
  2. Income Group
  3. Channel (Store/Online)
  4. Loyalty Tier
- Funnel Chart: Total Customers-> Repeat Customers->Churned

Churn Rate KPI by Loyalty\_Tier



49

Churned Custo...

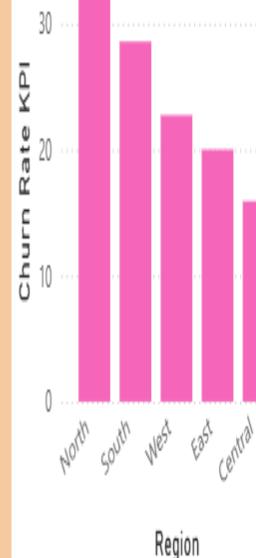
200

Total Customers

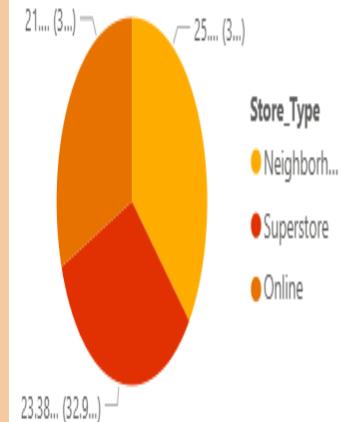
24.50

Churn Rate KPI

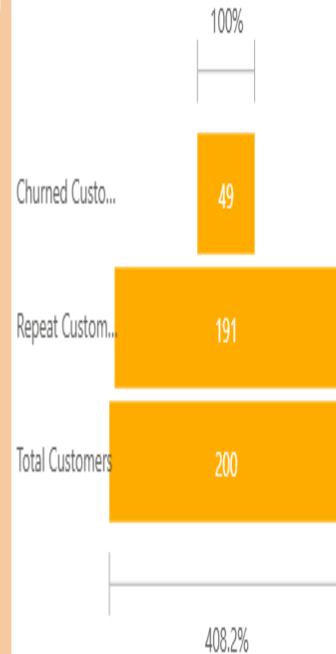
Churn Rate KPI by Region



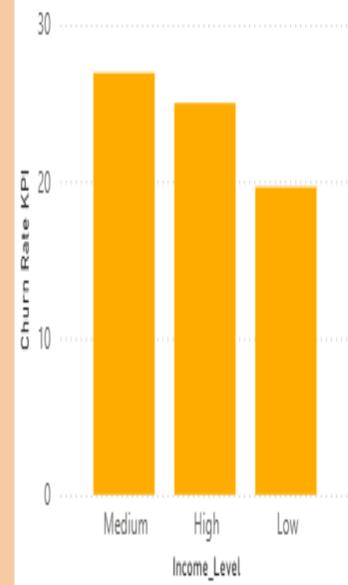
Churn Rate KPI by Store\_Type



Funnel Value by Stage



Churn Rate KPI by Income\_Level



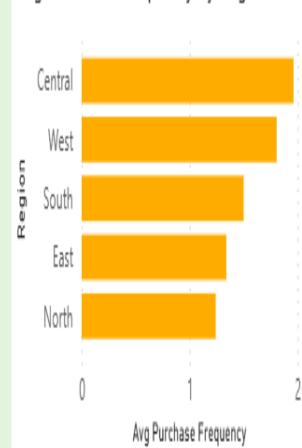
### Task 3: Repeat Purchase Analysis

- Segment customers:

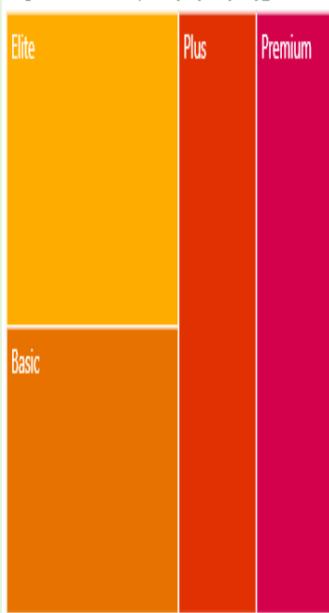
  - Low-Tier: 0-3 purchases
  - Mid-Tier: 4-8 purchases
  - High-Tier: 9+ purchases

- Compare avg. purchase frequency by Region, Age Group, Loyalty Tier
- Identify most purchased product categories by loyal customers

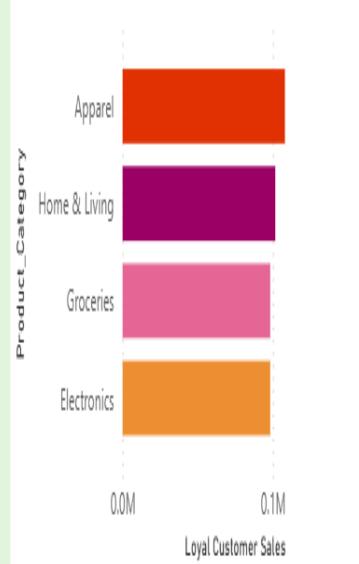
Avg Purchase Frequency by Region



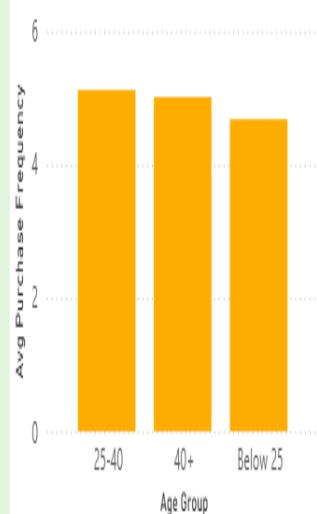
Avg Purchase Frequency by Loyalty\_Tier



Loyal Customer Sales by Product\_Category



Avg Purchase Frequency by Age Group



Customer_ID	Total Purchases	Customer Tier Segment
C001	7	Mid-Tier
C002	5	Mid-Tier
C003	2	Low-Tier
C004	2	Low-Tier
<b>Total</b>	<b>1000</b>	

#### Task 4: Promotion & Loyalty Impact

- Calculate % of transactions with promotion applied.
- Compare average purchase amount with vs. without promotions.
- Analyze churn rate across loyalty tiers.
- Visualize Points Earned vs. Redeemed by Tier (Clustered Column Chart).
- Give recommendations to improve redemption & retention.

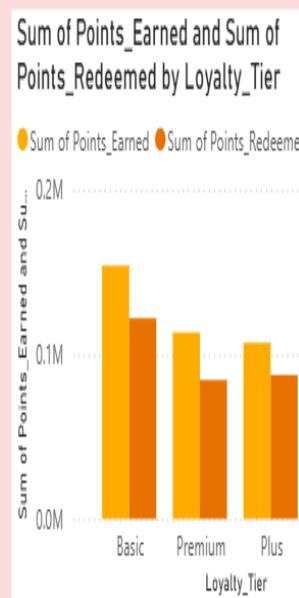
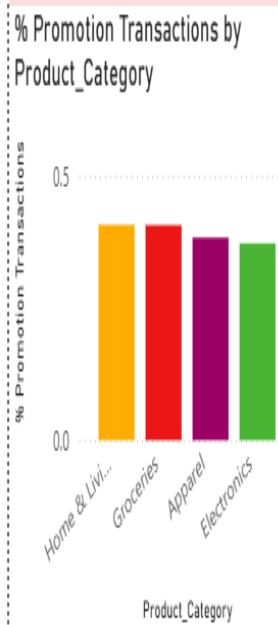
**Recommendations to improve redemption and retention.**

- Increase redemption for Basic tier with low-value, easy-to-claim rewards and expiry reminders.
- Boost loyalty for Premium/Plus tiers using exclusive perks, 2x point campaigns, and personalized recommendations.
- Address Elite-tier churn with high-value benefits, reactivation bonuses, and personalized engagement campaigns.

Product_Category	% Promotion Transactions
Home & Living	0.41
Groceries	0.41
Electronics	0.37
Apparel	0.38
<b>Total</b>	<b>0.39</b>

Promotion_Applied	Avg Purchase Amount
No	411.49
Yes	397.70
<b>Total</b>	<b>406.07</b>

Loyalty_Tier	Total Customers	Churned Customers	Active Customers	Churn Rate
Basic	68	18	50	0.26
Elite	31	9	22	0.29
Plus	51	8	43	0.16
Premium	50	14	36	0.28
<b>Total</b>	<b>200</b>	<b>49</b>	<b>151</b>	<b>0.25</b>

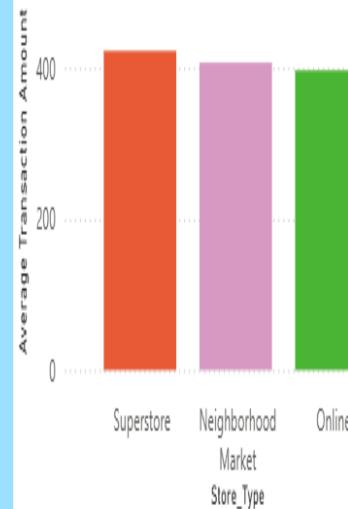


**0.39**  
% Promotion Transactions

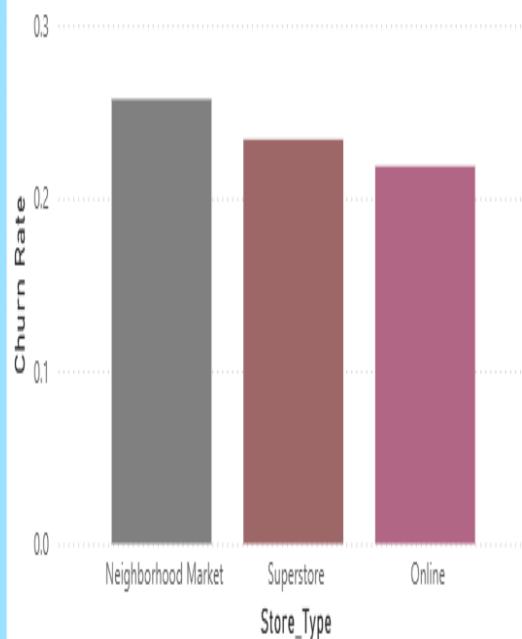
### Task 5: Store & Channel Performance vs Retention

- Merge store data with transactions
- Visualize:
  1. Avg. transaction amount by Store Type
  2. Churn rate by store type
  3. Correlation between store opening year & retention.

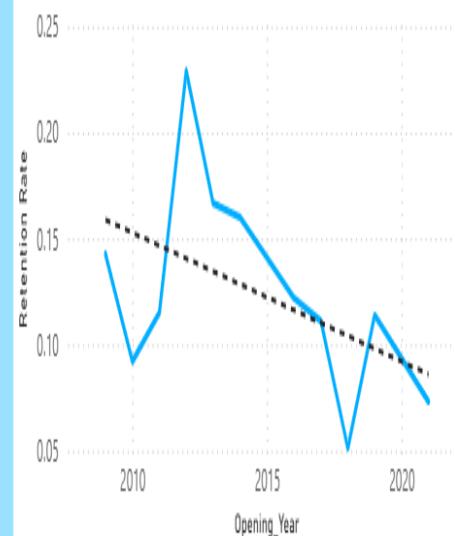
Average Transaction Amount by Store\_Type



Churn Rate by Store\_Type



Retention Rate by Opening\_Year



## Task 6: Customer Lifetime Value (CLV) Analysis

- CLV = Total Amount Spent/Membership Duration (Years)
- Segment customers into Low, High CLV
  - 1. Above Average CLV as High
  - 2. Below Average CLV as Low
- Visualize:
  1. CLV vs Days Since Last Purchase
  2. CLV by Loyalty Tier & Region

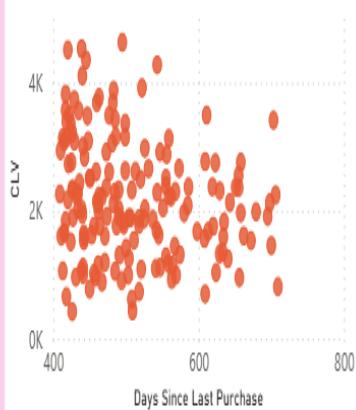
Customer_ID	CLV	CLV Segment
C001	3,819.76	High CLV
C002	1,327.71	High CLV
C003	812.50	High CLV
C004	438.05	High CLV
C005	1,764.29	High CLV
C006		High CLV
C007	3,365.44	High CLV
C008	960.24	High CLV
Total	406,070.31	High CLV

Total Amount Spent and CLV Segment



0.0M            0.5M  
Total Amount Spent

Days Since Last Purchase and CLV by Customer\_ID



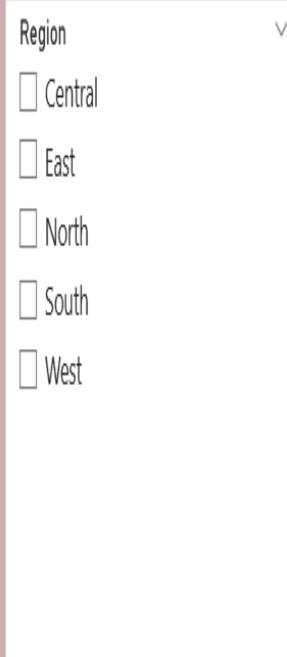
Loyalty_Tier	Central	East	North	South	West	Total
Basic	28,635.30	17,442.48	30,407.10	32,203.61	31,859.35	140,547.84
Elite	9,808.62	10,927.91	23,874.70	19,478.02	6,357.61	70,446.86
Plus	18,481.49	11,898.74	23,666.01	18,472.60	24,704.79	97,223.63
Premium	27,004.44	23,886.80	9,430.78	17,007.45	20,522.51	97,851.98
Total	83,929.85	64,155.93	87,378.59	87,161.68	83,444.26	406,070.31

## Task 7: Final Dashboard & Executive Summary

- Multi-page Power BI Report:
  1. Page 1: KPI (Churn, CLV, Repeat Rate)
  2. Page 2: Loyalty & Promotion Impact
  3. Page 3: Store/Channel Insights
  4. Segmentation (Churned, Repeat, High-Value)
- Slicers: Region, Channel, Income, Loyalty Tier
- Provide Top 3 Recommendations for Target:
  - \*Which customers to prioritize for retention?
  - \*Which channels are underperforming?
  - \*How to strengthen loyalty engagement?

0.96

Repeat Rate



406.07K

CLV

24.50

Churn Rate KPI

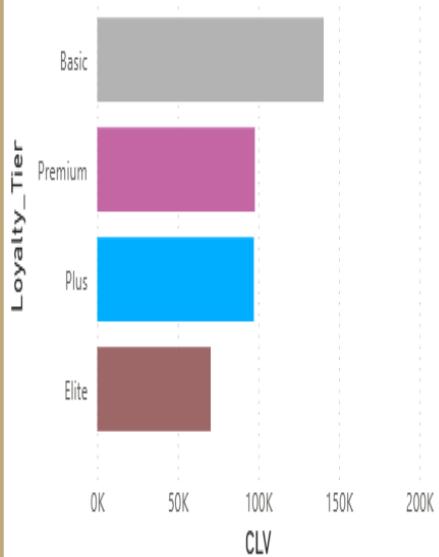
## Task 7 - PAGE 2

### Loyalty & Promotion Impact

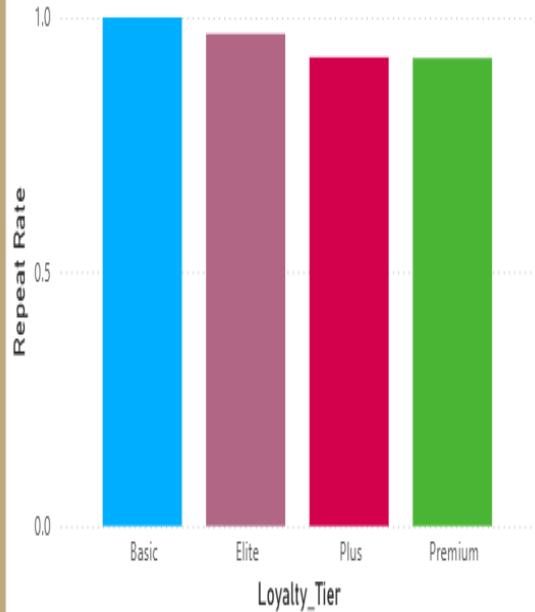
Store\_Type

- Neighborhood Market
- Online
- Superstore

CLV by Loyalty\_Tier

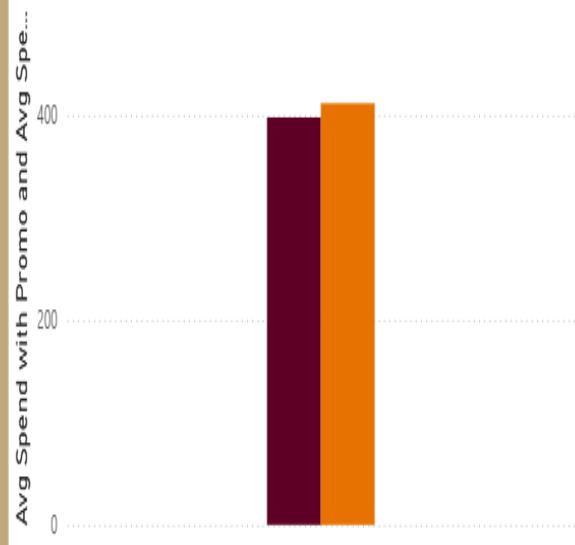


### Repeat Rate by Loyalty\_Tier

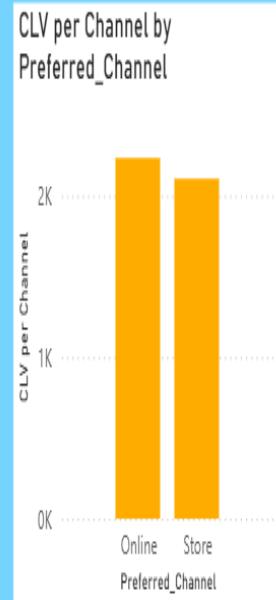
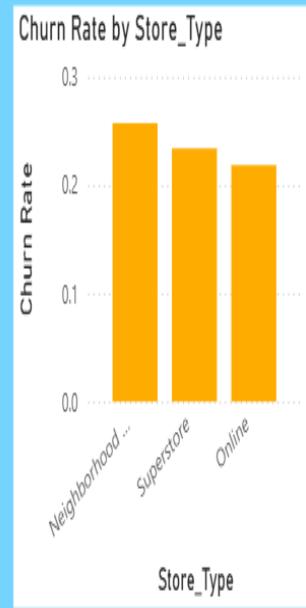
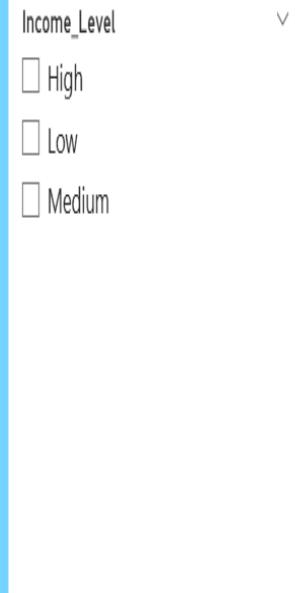


### Avg Spend with Promo and Avg Spend Without Promo

● Avg Spend with Promo ● Avg Spend Without Promo

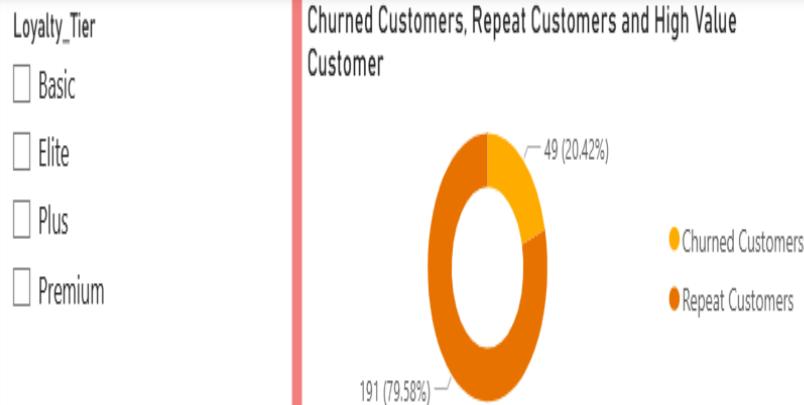


## Task 7:- PAGE - 3 Store/Channel Insights



## Task-7: PAGE-4

### Segmentation (Churned, Repeat, High-Value)



#### Which Customers to Prioritize for Retention?

##### Priority Order:

###### High-Value Repeat Customers

- High sales contribution
- Frequent purchases
- Strong loyalty potential

###### Actions:

- Exclusive offers
- Early access to sales
- Personalized recommendations

###### Medium-Value Repeat Customers

- Good potential to move into high-value segment

###### Actions:

- Targeted upselling
- Bundled offers
- Loyalty points acceleration

###### Recently Churned High-Value Customers

- Previously profitable but inactive

###### Actions:

- Win-back campaigns
- Personalized re-engagement emails/SMS
- Special comeback discounts

#### Which Channels Are Under-Performing?

Under-performing channels are identified as those with:

- Low repeat purchase rate
- High discount dependency
- Low average order value

#### Common Patterns:

- Channels focused only on **price promotions**
- Channels with poor post-purchase engagement
- Channels lacking personalization

###### Recommendations:

- Reduce blanket discounting
- Improve channel-specific targeting
- Track **repeat rate and CLV**, not just sales volume

#### How to Strengthen Loyalty & Engagement?

##### 1. Personalized Loyalty Programs

- Tier-based rewards (Silver, Gold, Platinum)
- Benefits based on purchase frequency and value

##### 2. Lifecycle-Based Communication

- Welcome campaigns for new customers
- Re-engagement campaigns for inactive customers
- Appreciation rewards for loyal customers

##### 3. Data-Driven Offers

- Offer discounts only where churn risk is high
- Promote premium products to high-value customers

##### 4. Improve First-Purchase Experience

- Smooth onboarding
- Fast delivery
- Easy returns

First experience strongly influences retention probability.

## ❖ Key Findings and Insights

### 🔍 Customer Segmentation Insights

- A small percentage of customers contribute a large share of total revenue (Pareto principle).
  - High-value and repeat customers show consistent purchase frequency and higher average order value.
  - Churned or one-time customers contribute minimal revenue and show low engagement after first purchase.
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### 🔍 Channel Performance Insights

- Certain channels generate high traffic but low conversion or repeat rates, indicating under-performance.
  - Digital channels may show better reach, but offline or assisted channels often drive higher ticket sizes.
  - Discount-heavy channels attract short-term buyers but lower long-term loyalty.
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### 🔍 Behavioral Insights

- Customers with early positive experiences (first purchase satisfaction) are more likely to return.
- Higher discounts increase short-term sales but do not always improve retention.
- Loyalty engagement drops significantly after long gaps between purchases.

# THANK YOU