

TASK2 REPORT



Title: **Walmart Retail Customer Retention Analytics**

Tool Used: **Power BI Desktop**

Dataset Sources:

- **Customer Demographics**
- **Customer Transactions**
- **Churn Labelled Customers**
- **Store Locations**
- **Loyalty Program**

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1. Abstract / Executive Summary

This project focuses on analysing Walmart's customer data to evaluate churn, repeat purchase behaviour, loyalty engagement, and overall business performance. Using Power BI, multiple datasets were integrated to generate actionable insights on customer retention and loyalty program effectiveness.

The dashboard provides an executive overview through KPIs such as Churn Rate (**49.67%**), Repeat Rate (**83.67%**), and Customer Lifetime Value (**₹807**). The analysis highlights key areas where Walmart can improve customer loyalty and reduce churn through data-driven strategies.

2.OBJECTIVE

1. To analyse customer churn and retention rates using Power BI.
2. To measure repeat purchase frequency and segment customers by behaviour.
3. To calculate Customer Lifetime Value (CLV) for different loyalty tiers.
4. To evaluate the impact of promotions and loyalty programs on retention.
5. To visualize store and channel performance for better business decision-making.
6. To provide actionable recommendations to improve customer loyalty and retention.

3. Tools & Technologies Used

<u>Tool / Concept</u>	<u>Purpose</u>
Microsoft Power BI	Data visualization & dashboard creation
DAX (Data Analysis Expressions)	Calculated columns & measures
Power Query	Data transformation & table merging
Excel / CSV Datasets	Data source for customer and store information
Data Modelling	Relationship creation between tables
KPI Cards, Bar, Column, Donut, and Scatter Charts	Visualization types

4. Dataset Description

4.1 Customer Demographics

Contains details such as Customer_ID, Age, Gender, Income Level, Region, and Membership Since.

4.2 Customer Transactions

Includes TransactionID, Customer_ID, StoreID, Product Category, Amount, Promotion Applied, etc.

4.3 Churn Labelled Customers

Stores Customer_ID and Churn Flag (1 = churned, 0 = active).

4.4 Loyalty Program

Includes Loyalty Tier, Points Earned, and Points Redeemed for each customer.

4.5 Store Locations

Provides Store_ID, Store Type, Region, and Opening Year.

5. Methodology / Project Workflow

Subtask 1: Data Modelling & Cleaning:

- Loaded And Transformed the datasets in the Power Query Editor.
- Handled Duplicates, Missing Values and Corrected the Data Types.
- Created THREE Calculated Columns:

○ Membership_Duration:

```
1 Membership Duration (Years) =  
2 DATEDIFF ( Customer_Demographics[Membership_Since], TODAY(), DAY ) / 365.25  
3
```

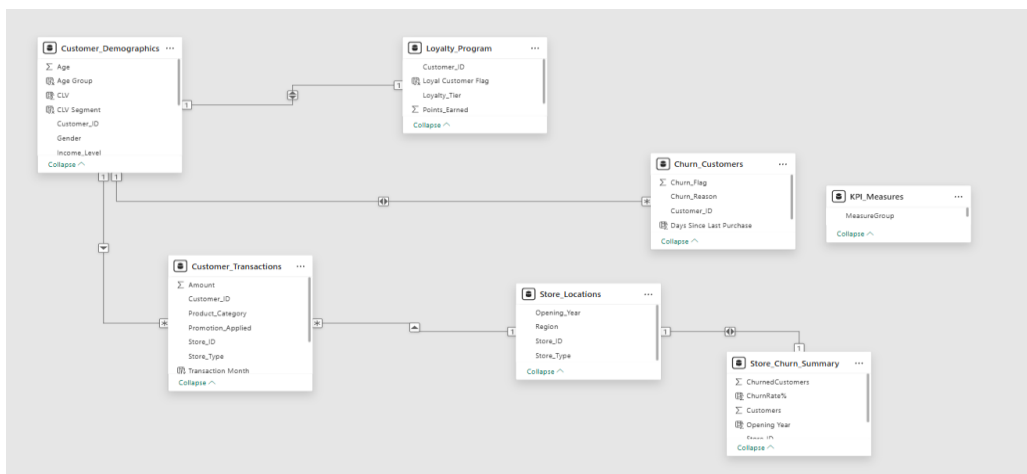
○ Transaction Year:

```
1 Transaction Year = YEAR ( Customer_Transactions[Transaction_Date] )  
2
```

○ Transaction Month:

```
1 Transaction Month = FORMAT ( Customer_Transactions[Transaction_Date], "MMM" )  
2
```

- Created a Relationship between the datasets in the Data Model View.



Subtask 2: Churn & Retention Metrics:

- Created a new table called KPI_Measures and Inside the table created a measure called **Churn Rate %**.

```
1 Churn Rate % = DIVIDE( [Churned Customers], [Total Customers], 0 ) * 100
2
```

- Created 4 Visuals using **Clustered Column Chart** for
 - Region
 - Income Group
 - Channel (Store/Online)
 - Loyalty Tier
- Created 3 new measures under KPI_measures as **Total customers, repeat customers and churned customers**.

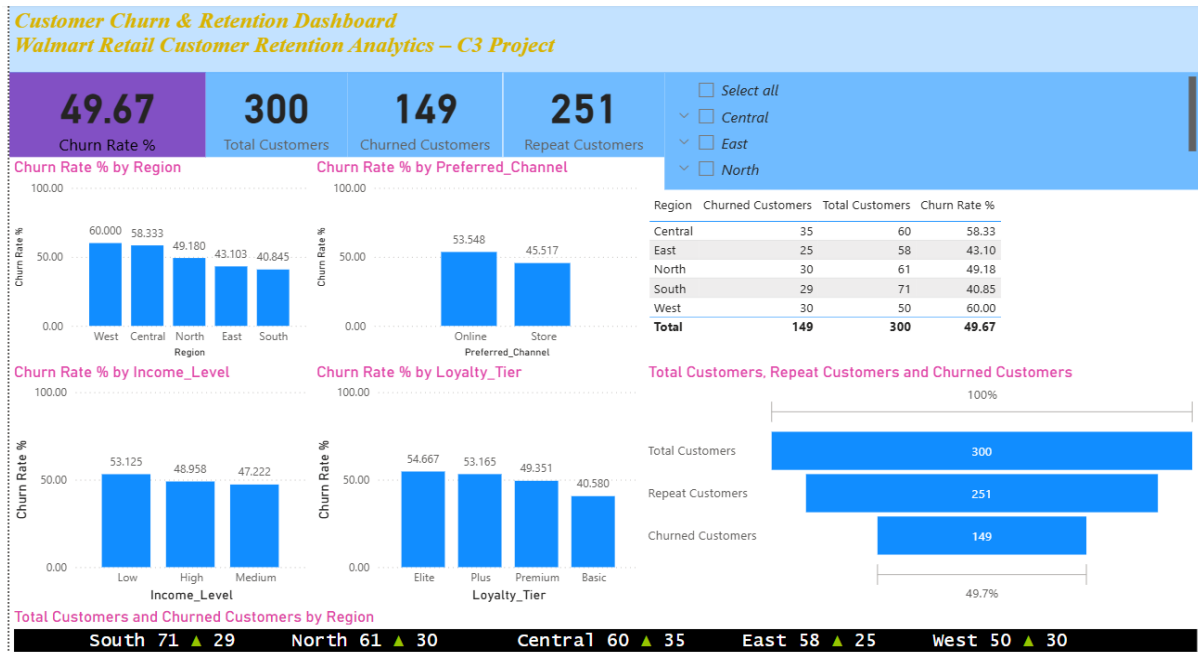
```
1 Total Customers = DISTINCTCOUNT( Customer_Demographics[Customer_ID] )
2
```

```
1 Repeat Customers =
2 SUMX(
3     VALUES( Customer_Demographics[Customer_ID] ),
4     IF( CALCULATE( COUNTROWS( Customer_Transactions ) ) > 1, 1, 0 )
5 )
6
```

```
1 Churned Customers =
2 CALCULATE(
3     DISTINCTCOUNT( Churn_Customers[Customer_ID] ),
4     Churn_Customers[Churn_Flag] = 1
5 )
6
```

- Used **Funnel visual** to show the difference between the total customers, repeat customers and churned customers in order.
- Created a slicer visual under **region and income level** fields to access the required the data and the visual.

- Used **Scroller visual** to show the Total customers and Churned customers by Region.



Report of Page 1: KPI's.

Subtask 3: Repeat Purchase Analysis:

- Used **3 KPI Card Visuals** to show the Avg customers, Repeat customers and Repeat Rate.
- Created 2 Measures for **Repeat rate and Avg Customers** and used the existing Repeat customers measure.

```
. Avg Purchases = AVERAGE( Customer_Demographics[Total Transactions] )  
!
```

```
1 Repeat Rate % = DIVIDE( [Repeat Customers], [Total Customers], 0 ) * 100  
2
```

- Created a new column called **Repeat segment** to show high tier, mid tier and low tier customers.

```
1 Repeat Segment =  
2 SWITCH(  
3     TRUE(),  
4     [Total Transactions] <= 3, "Low-Tier (0-3)",  
5     [Total Transactions] <= 8, "Mid-Tier (4-8)",  
6     "High-Tier (9+)"  
7 )  
8
```

- Created and used **Loyal Customer Flag** to check loyal and non-loyal customers.

```
Loyal Customer Flag =  
IF(  
    Loyalty_Program[Loyalty_Tier] IN { "Plus", "Premium", "Elite" },  
    "Loyal",  
    "Non-Loyal"  
)
```

- Used **Clustered Column Charts and Donut chart** to visually represent the data.
- Created Slicer Visual under Loyal customers and product category fields.
- Used The Scroller Visual in the same way it was been used in the previous task.

"Repeat Purchase & Frequency Analysis"

3.40

Avg Purchases

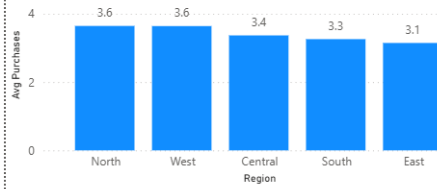
221

Repeat Customers

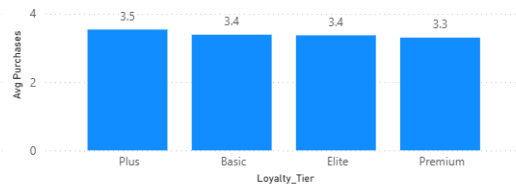
73.67

Repeat Rate %

Avg Purchases by Region

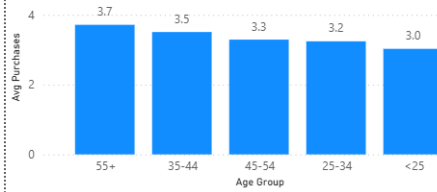


Avg Purchases by Loyalty_Tier



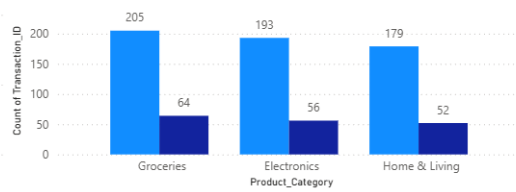
- ☐ Select all
- ☐ Apparel
- ☐ Electronics
- ☐ Groceries
- ☐ Home & Living

Avg Purchases by Age Group

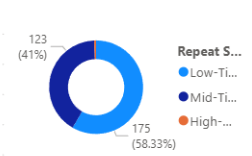


"Most Purchased Product Categories – Loyal Customers"

Loyal Customer Flag: Loyal (Blue), Non-Loyal (Dark Blue)



"Customer Repeat Segment Distribution"



Electronics 300 ▲ 63

Groceries 300 ▲ 72

Home & Living 300 ▲ 54

Report of Page 2: Loyalty

Subtask 4: Promotion & Loyalty Impact

- Calculated % of transactions with promotion applied and visually presented in KPI.(Value=49.00%)

```
1 Promo % of Transactions =  
2 DIVIDE([Promo Transactions], [Total Transactions], 0) * 100  
3
```

- Calculated **average amount of transactions with promotion and without promotion.**

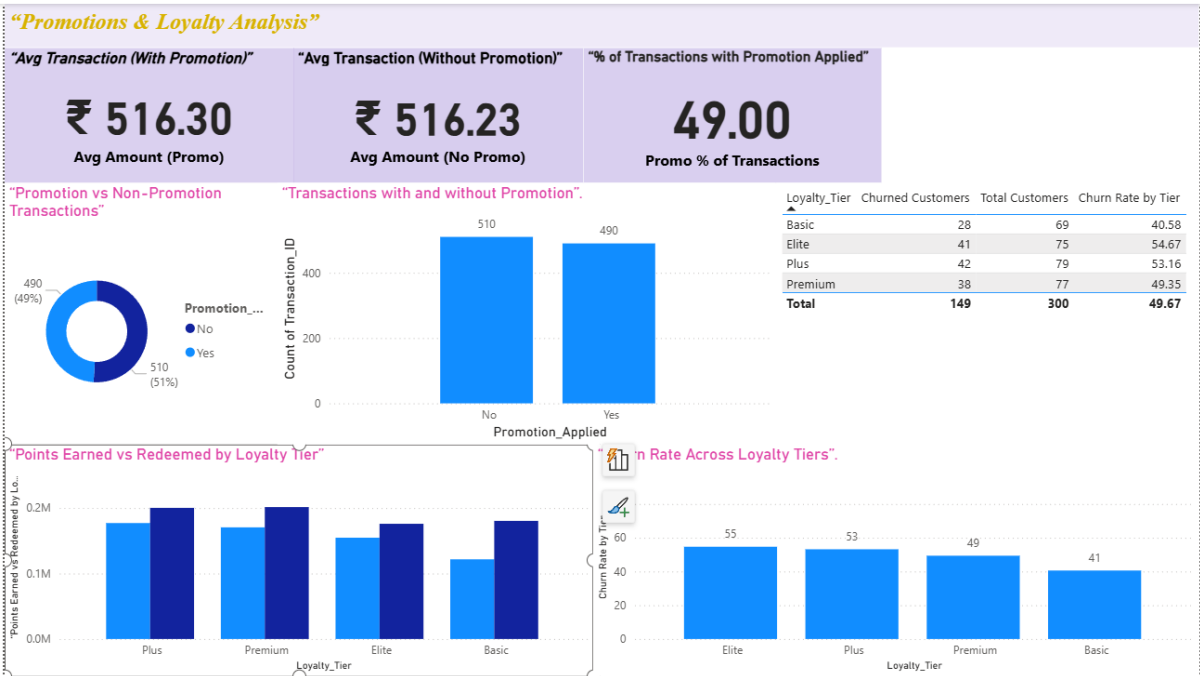
```
1 Avg Amount (Promo) =  
2 CALCULATE(  
3 | AVERAGE(Customer_Transactions[Amount]),  
4 | Customer_Transactions[Promotion_Applied] = "Yes"  
5 )  
6
```

```
1 Avg Amount (No Promo) =  
2 CALCULATE(  
3 | AVERAGE(Customer_Transactions[Amount]),  
4 | Customer_Transactions[Promotion_Applied] = "No"  
5 )  
6
```

- Used both clustered column chart and donut chart to represent transactions with and without promotion.
- Calculated **Loyalty by tier** to compare churn rate across loyalty tier.

```
1 Churn Rate by Tier =  
2 DIVIDE(  
3 | CALCULATE(  
4 | | DISTINCTCOUNT(Churn_Customers[Customer_ID]),  
5 | | Churn_Customers[Churn_Flag] = 1  
6 | ),  
7 | DISTINCTCOUNT(Customer_Demographics[Customer_ID])  
8 ) * 100  
9
```

- Compared Points Earned vs Redeemed by Tier using **clustered column chart**.
- Recommendations to Improve Redemption & Retention:
 - Improve Loyalty Point Redemption Experience.
 - Strengthen Loyalty Tier Engagement.
 - Personalize Promotions Based on Customer Behaviour.
 - Increase Customer Awareness of Loyalty Benefits.
 - Integrate Promotions with Loyalty Program.



Report of Page 3: Promotion and Loyalty Analysis.

Subtask 5: Store & Channel Performance vs Retention

- In the Power Query editor Merged Store locations and Customer Transactions and created a relationship with the help of Store_Type Taken from Store Locations.
- Created a **churn rate by store type measure** under KPI_Measures to compare Churn Rate by Store type.

```
1 Churn Rate by StoreType =
2 VAR CustIDsInContext = DISTINCT( Customer_Transactions[Customer_ID] )
3 VAR TotalCustomersInContext = COUNTROWS( CustIDsInContext )
4 VAR ChurnedCustomersInContext =
5     CALCULATE(
6         DISTINCTCOUNT( Churn_Customers[Customer_ID] ),
7         Churn_Customers[Churn_Flag] = 1,
8         TREATAS( CustIDsInContext, Churn_Customers[Customer_ID] )
9     )
10 RETURN
11 IF(
12     TotalCustomersInContext = 0,
13     BLANK(),
14     DIVIDE( ChurnedCustomersInContext, TotalCustomersInContext, 0 ) * 100
15 )
16
```

- Used Clustered Bar chart to show the Churn rate by store type.
- To Find the Correlation between store opening year & retention I used **scatter plot** visual to present it.
- Created a new table as **Store Churn Summary** to find the correlation, which includes :
 - Churned Customers.
 - Churn Rate %
 - Customers
 - Opening year
 - Store id
 - Store type

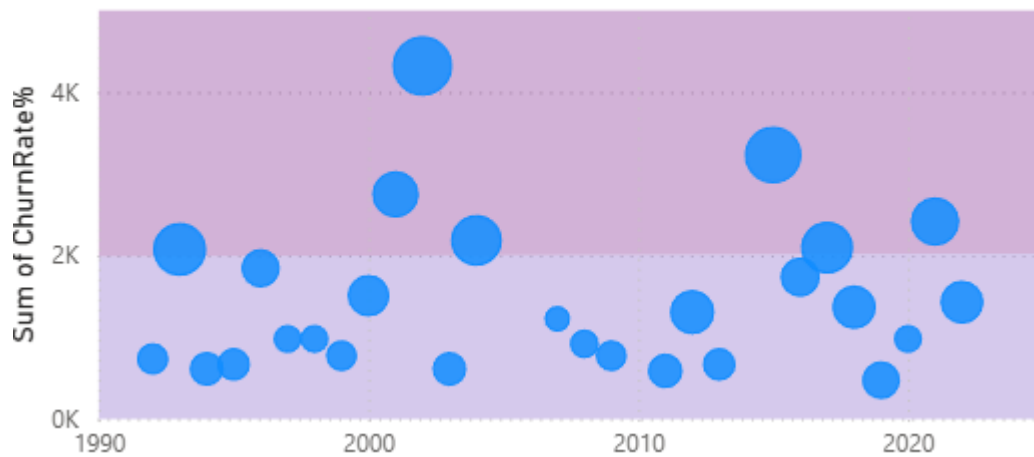
```

1 Store_Churn_Summary =
2 VAR base =
3     SUMMARIZE(
4         Customer_Transactions,
5         Customer_Transactions[Store_ID],
6         Customer_Transactions[Store_Type]
7     )
8 RETURN
9 ADDCOLUMNS(
10     base,
11     "Customers", CALCULATE( DISTINCTCOUNT( Customer_Transactions[Customer_ID] ), ALLEXCEPT( Customer_Transactions, Customer_Transactions
12     [Store_ID] ) ),
13     "ChurnedCustomers",
14     CALCULATE(
15         DISTINCTCOUNT( Churn_Customers[Customer_ID] ),
16         Churn_Customers[Churn_Flag] = 1,
17         TREATAS( VALUES( Customer_Transactions[Customer_ID] ), Churn_Customers[Customer_ID] )
18     )
19 )

```

- The scatter plot visual used for it is below:

Scatter plot Opening Year vs Churn Rate



Subtask 6: Customer Lifetime Value (CLV) Analysis

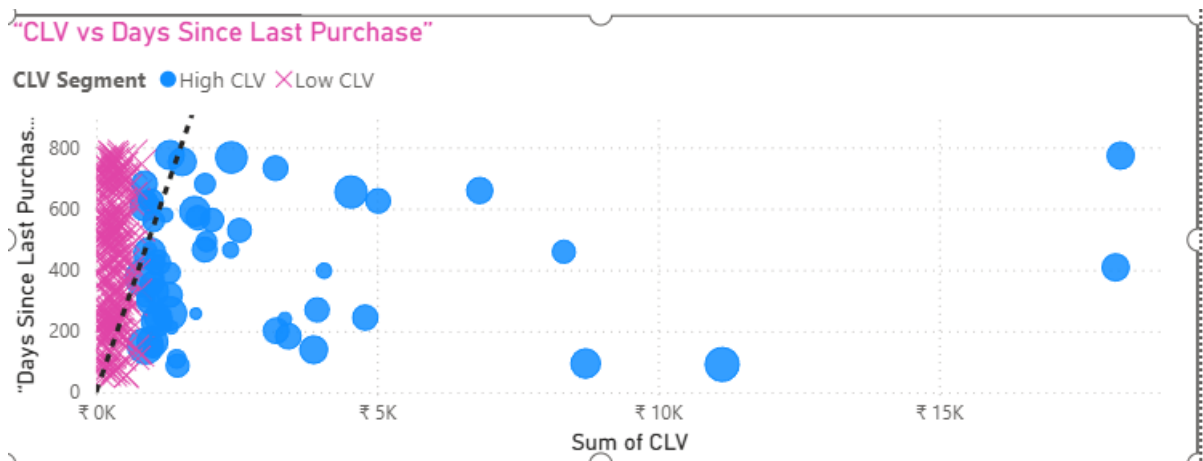
- Created new calculated column **CLV** using Dax formulas in Customer Demographics.

```
1 CLV = DIVIDE([Total Amount], [Membership Duration (Years)], 0)
2
```

- Created new calculated column **CLV Segments** using Dax formulas in Customer Demographics.(High CLV and Low CLV)

```
1 CLV Segment =
2 VAR _AvgCLV = CALCULATE( AVERAGE( Customer_Demographics[CLV] ), ALL( Customer_Demographics ) )
3 RETURN
4 IF( Customer_Demographics[CLV] >= _AvgCLV, "High CLV", "Low CLV" )
5
```

- Created a **scatter plot visual** to compare CLV vs Days Since Last Purchase.

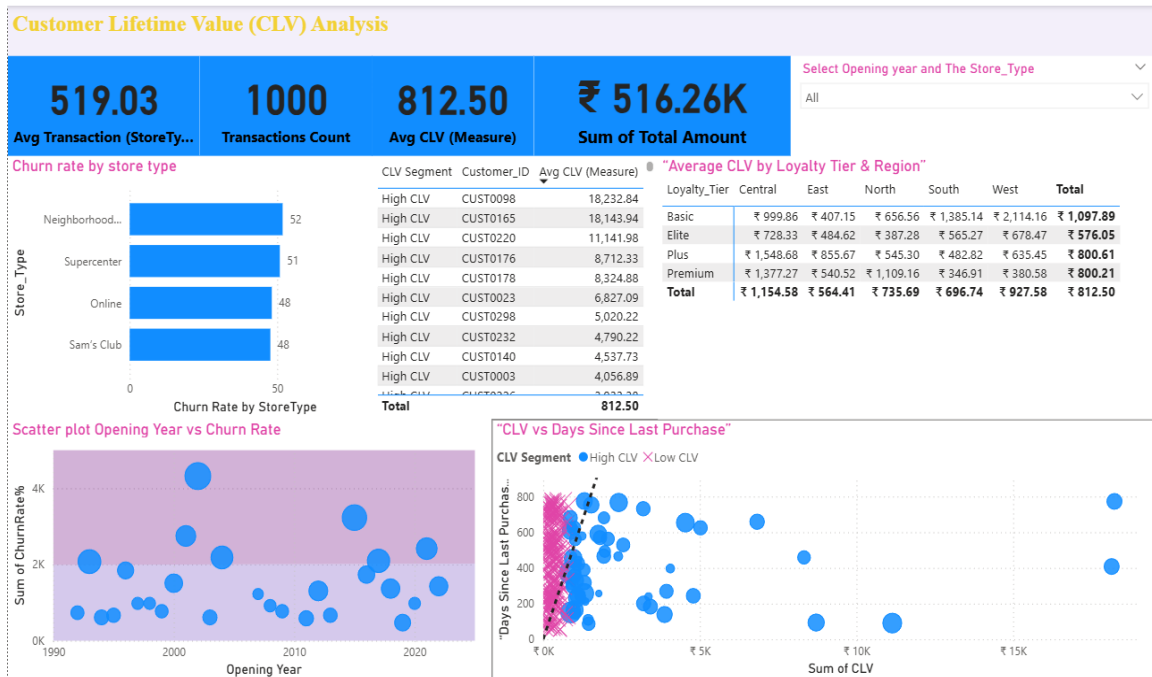


- Used **Matrix Visual** to compare CLV by Loyalty Tier & Region with Loyalty tier , region and Avg CLV.

"Average CLV by Loyalty Tier & Region"

Loyalty_Tier	Central	East	North	South	West	Total
Basic	₹ 999.86	₹ 407.15	₹ 656.56	₹ 1,385.14	₹ 2,114.16	₹ 1,097.89
Elite	₹ 728.33	₹ 484.62	₹ 387.28	₹ 565.27	₹ 678.47	₹ 576.05
Plus	₹ 1,548.68	₹ 855.67	₹ 545.30	₹ 482.82	₹ 635.45	₹ 800.61
Premium	₹ 1,377.27	₹ 540.52	₹ 1,109.16	₹ 346.91	₹ 380.58	₹ 800.21
Total	₹ 1,154.58	₹ 564.41	₹ 735.69	₹ 696.74	₹ 927.58	₹ 812.50

- Used **Slicer Visuals** with Opening Year and Store Type as a Filter Panel.

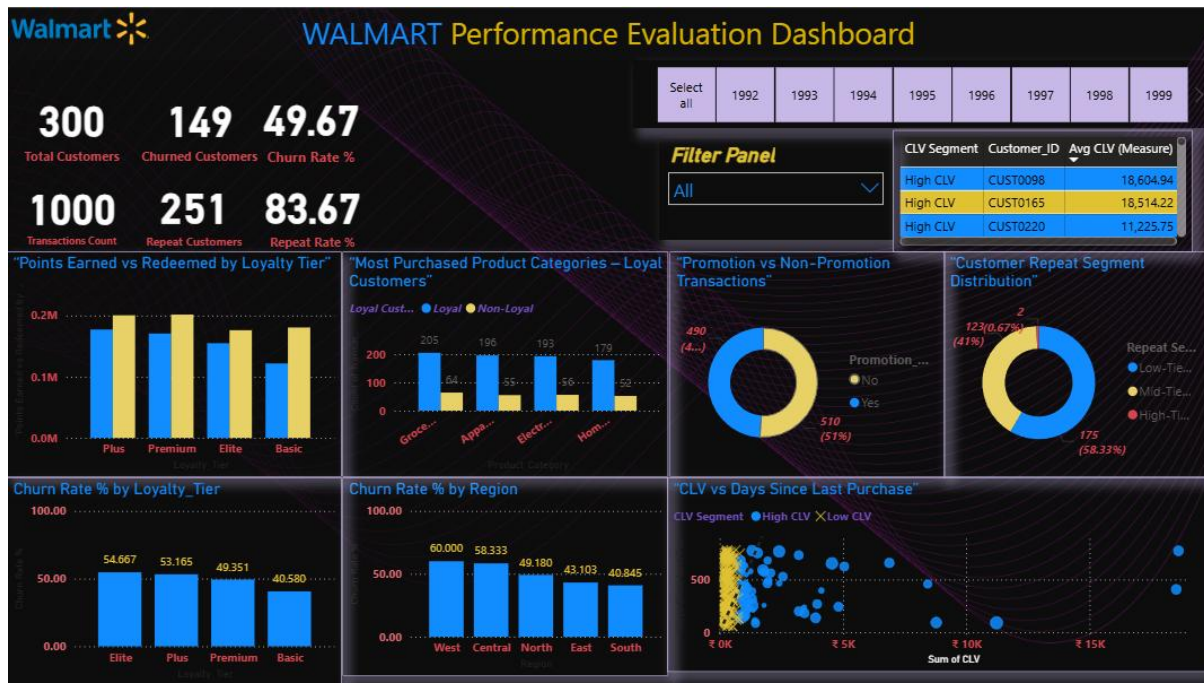


Scatter plot Opening Year vs Churn Rate

"CLV vs Days Since Last Purchase"

Report Of Page 4: CLV Analysis

6. Dashboard Overview



Final Dashboard With the Key insights of all 4 Reports.

- **Blue and Yellow Theme** is Inspired by the Logo of Walmart and It has been covered throughout the Dashboard.
- It contains the key insights of this project they are:
 - **Total Customers= 300**
 - **Transactions Count = 1000**
 - **Churned Customers = 149**
 - **Repeat Customers = 251**
 - **Repeat rate = 83.67%**
 - **Churn Rate = 49.67%**
- Filter Panel is a **slicer** which contains **Region, Channel, Income and Loyalty Tier**.
- The another **slicer** contains all the years from **1992 to 2022**, where we can check the data of each particular year.
- Table Beside Filter panel helps us to check **CLV Vs Days Since Last Purchase** for each of the customer. It also help with each customers total transactions.

Top 3 Recommendations for Walmart:

1. Which Customers to Prioritize for Retention

Insights Observed:

- Overall churn rate is high (**49.67%**), with **West (60%)** and **Central (58%)** regions showing the most attrition.
- **Low and Mid-tier** customers account for the majority of churned users, while **High CLV** customers are far more engaged and recent buyers.
- Even **Premium** and **Elite** loyalty members show churn above 50%, indicating that benefits are not keeping them loyal long-term.

Recommendations:

- Prioritize **High CLV** and **Mid-tier repeat customers** for retention efforts, as they contribute the most value but are beginning to show signs of drop-off.
- Launch **personalized reactivation campaigns** (emails, app offers) targeting customers inactive for 60–90 days.
- Focus retention programs on **West and Central regions**, where churn is the highest.
- Introduce “**Win-back Offers**” (e.g., bonus points or 5% cashback) for customers who haven’t purchased recently.

Expected Outcome:

Reduced churn among high-value segments and improved retention in key underperforming regions.

2. Which Channels are Underperforming

Insights Observed:

- **Supercentres** show the **highest churn rate (~63%)**, while **Online** stores maintain the **lowest churn (~45%)**.
- **Average transaction value** is lowest in Supercentres (~₹488) compared to Online (~₹513) and Sam’s Club (~₹534).

- The correlation analysis suggests **newer stores** have slightly higher churn (weak positive correlation of $\sim +0.3$).

Recommendations:

- **Investigate operational inefficiencies** at Supercentres — including checkout delays, staff interactions, and product availability.
- Introduce **digital loyalty integration** at Supercentres (e.g., QR-based redemption, in-store app offers).
- Increase investment in the **Online channel**, which shows better retention and engagement performance.
- Launch “**Click & Collect**” **hybrid campaigns** to connect online convenience with in-store experience.

Expected Outcome:

Improved Supercentre retention and consistent customer experience across all channels, leveraging the strengths of Online engagement.

3.How to Strengthen Loyalty Program Engagement

Insights Observed:

- The *Points Earned vs Redeemed* chart shows **low redemption rates** even in higher tiers (Plus, Premium, Elite).
- Despite active point accumulation, customers appear **unaware or unmotivated** to redeem.
- Loyalty churn remains high, indicating the **program lacks emotional and financial value** for customers.

Recommendations:

- Simplify **point redemption** — allow instant redemption at checkout (both in-store and online).
- Introduce **tier-specific privileges** (early sale access, free shipping, or “double points” weekends).
- Add **in-app progress tracking** — show customers how close they are to the next tier or reward milestone.

- Launch a **“Redeem-to-Retain” campaign**, rewarding customers for redeeming points within a set period.
- Use **personalized notifications** to remind customers of expiring or unused points.

Expected Outcome:

Higher redemption participation, improved engagement across tiers, and stronger emotional attachment to Walmart’s loyalty ecosystem — ultimately increasing **Customer Lifetime Value (CLV)** and reducing churn.

7.Key Insights

- Churn Rate: ~**49.67%** — high customer loss.
- Repeat Rate: **83.67%** — good engagement but short-lived loyalty.
- Promotions: ~**51%** of transactions involve discounts, but impact on spend is minimal.
- CLV: High CLV customers are more recent buyers; low CLV customers are inactive.
- Loyalty Program: Strong earning, weak redemption — engagement gap.
- Store Insights: Supercentres have highest churn; Online stores lowest.
- Regional Gaps: West and Central regions need retention focus.

8.Recommendations

1. **Prioritize retention for churn-heavy regions (West, Central)**
 - Personalized campaigns, region-specific loyalty events.
2. **Revamp loyalty program**
 - Simplify redemption, highlight value, and add “Plus Tier Weekends”.
3. **Optimize promotions**
 - Replace blanket offers with data-driven, category-based promotions.
4. **Re-engage low CLV customers**
 - Automated reactivation messages for inactive users.
5. **Leverage data for predictive retention**
 - Future scope: Use machine learning for churn prediction.

9. Conclusion

The Walmart Customer Retention Dashboard provides a comprehensive view of customer churn, loyalty, and lifetime value.

The analysis reveals critical improvement areas in retention and engagement strategies. By leveraging Power BI's interactive visualizations, Walmart can identify high-risk segments, measure loyalty program performance, and implement targeted retention efforts.

The project demonstrates how data visualization enables strategic business decisions and enhances customer-centric growth.

10. References

- Walmart Retail Customer Data
- Microsoft Power BI Documentation
- DAX Guide (SQLBI.com)