



**ST. CLAIR**  
C O L L E G E

## **DAB322 CAPSTONE PROJECT REPORT**

### **Multi Mart: Loyalty Card Expansion**

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## **ABSTRACT**

This project centers on visualizing and analyzing sales and revenue data from Multi Mart Retail store spanning the period of 2019 to 2023. The primary objective is to provide a comprehensive understanding of sales performance, revenue generation, and customer behavior analysis to support informed decision-making, particularly regarding the potential expansion of its Loyalty Card program into new regions.

The dataset comprises various customer-centric variables including purchase history, revenue, churn indicators, product categories, campaign responses and loyalty card participation. The analysis involved an exploratory data analysis (EDA) phase, which included data cleansing, data preprocessing and visualization using Tableau.

Preliminary EDA encompassed understanding data types, ensuring data completeness, and enriching the dataset for improved analysis. Data visualization using Tableau aided in understanding purchase-revenue trends, seasonal revenue variations, customer frequency impacts on revenue, referral sources' impact on revenue and loyalty card adoption, campaign response analysis, product category-wise revenue distribution, churn analysis based on loyalty status etc.

This project report provides actionable insights that Multi Mart store can utilize to optimize its strategies, enhance customer engagement, and drive revenue growth.

## **ACKNOWLEDGMENTS**

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## **INTRODUCTION**

The primary objective of the visualization project for Multi Mart Retail store is to provide a comprehensive and visually intuitive view of the sales that happened in the store and revenue generated from sales from the year 2019 to 2023. This comprehensive analysis aims to shed light on the store's sales performance and revenue generation. With a focus on customer behavior and preferences, our goal is to guide the store in making informed decisions about the potential expansion of its Loyalty Card program to new regions.

## DATASET DESCRIPTION

Variable	Description
CustomerID	Unique customer ID
first purchase date	The "First Purchase Date" refers to the date when a customer or user made their initial purchase or transaction with the organization.
last purchase date	The "Last Purchase Date" refers to the date when a customer or user made their most recent purchase or transaction with the organization.
total purchases	"Total Purchases" is the count or sum of all purchases made by a customer or user with the organization. It represents the aggregate number of transactions.
total revenue	Total Revenue" is the sum of all revenue generated from customer or user transactions with the organization. It represents the aggregate monetary value of all transactions.
referral source	"Referral Source" refers to the origin or channel through which a customer or user was referred to your organization or website. It provides information about how individuals found out about your products or services.
churn indicator	The "Churn Indicator" is a binary flag that indicates whether a customer or user has churned (i.e., stopped using your products or services) or is still an active customer. Typically, a value of 1 or "Yes" is used to indicate churn, while 0 or "No" is used to indicate an active customer.
discount used	"Discount Used" indicates whether a customer or user has applied a discount or promotional code during a transaction. It provides information about whether a discount was utilized for a specific purchase or order.
product category	"Product Category" classifies products into specific categories or groups based on their characteristics or purpose. It helps organize and categorize products for various purposes, such as reporting and analysis.
responsetolastcampaign	"Response to Last Campaign" indicates whether a customer or user responded to the most recent marketing campaign. It provides information about whether the individual engaged with the campaign in some way.
feedbackscore	"Feedback Score" represents a numeric score or rating provided by customers or users as feedback for a product, service, or experience. It is often used to gauge satisfaction or quality.
preferredpaymentmethod	"Preferred Payment Method" indicates the payment method that a customer or user prefers to use for transactions. It provides information about the customer's preferred way to make payments.
supportticketsraised	"Support Tickets Raised" represents the number of customer or user support tickets that have been opened or raised by individuals seeking assistance, reporting issues, or making inquiries.
hasloyaltycard	"Has Loyalty Card" is a binary indicator that shows whether a customer or user possesses a loyalty card or membership with your organization. It helps identify individuals who are part of a loyalty program.
frequency	"Frequency of Customers" represents how often a customer or user interacts with your organization, such as making purchases, engaging with your services, or participating in activities. It is a measure of how frequently individuals interact with your business. The frequency column is based on the first purchase date and the last purchase date period. It shows how frequently the customer has purchased during this period.

## EXPLORATORY DATA ANALYSIS

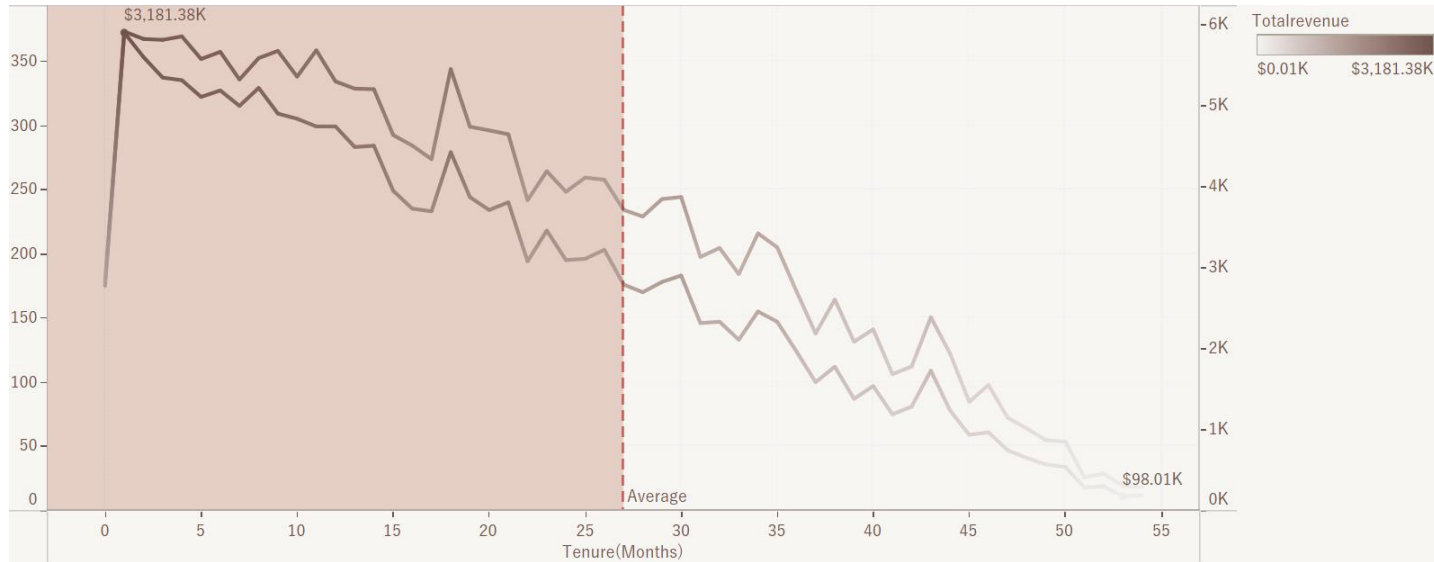
We started by loading the given dataset into a pandas' data frame for EDA, after which we obtained a comprehensive report outlining the data types of every column in the dataset. This made it clearer to us how many of the columns were numerical and how many were categorical. To comprehend the dataset's fundamental statistical summary, we next computed. Additionally, we determined whether any dataset missing values exist.

### i. Preliminary EDA-

- The dataset comprises **2 Date-Time, 6 Categorical, and 11 Numerical** columns.
- none of the columns in our dataset have any missing values. Also, there are no duplicate records.
- We added two additional columns to the data frame:
  - **Rounded Feedback Score:** This column contains the feedback score rounded to the nearest whole number.
  - **Products:** This column contains products by grouping them according to the initial letter of their names listed under the product categories column.
- Finally, we exported the data to an excel file and then imported to Tableau for data visualization.

## ii. Data Visualization-

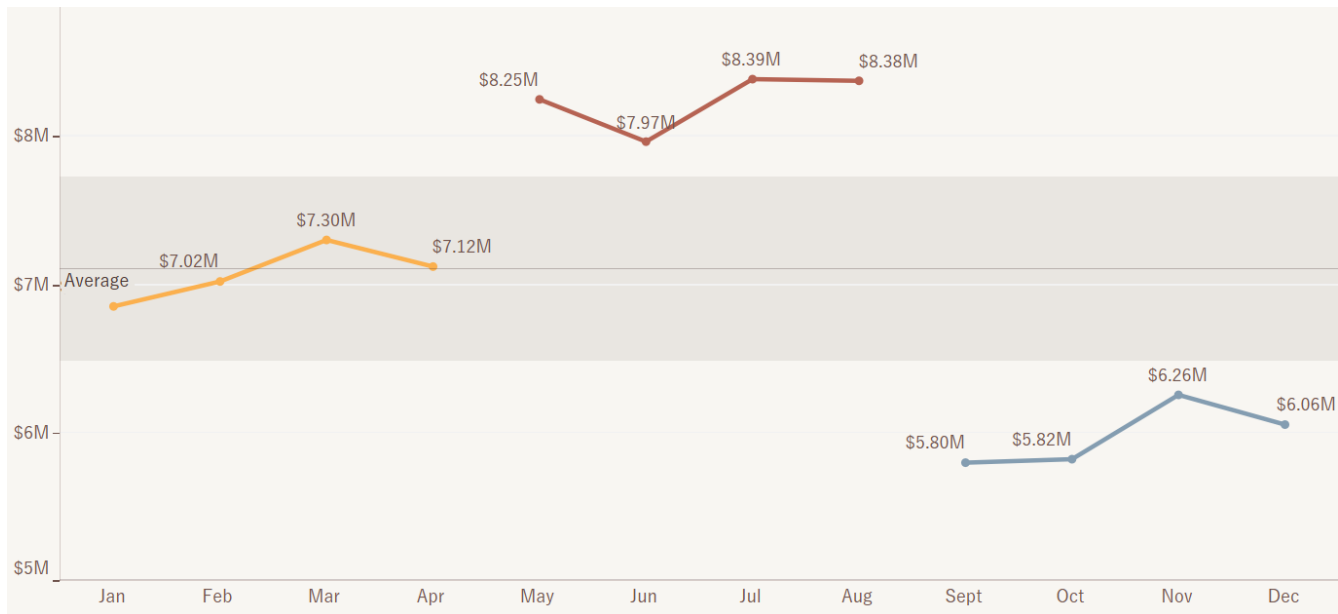
### Purchase-Revenue Analysis



- The line chart vividly depicts the trends in total purchases and revenue against customer tenure, accentuated by an average line for reference.
- Among the 372 customers, there were a total of 5913 purchases, resulting in a noteworthy contribution of \$3,181.38k to the revenue.
- Interestingly, a subset of 11 loyal customers, fostering a 55-month association, made 304 purchases, significantly contributing \$98.01k to the revenue. This contrast underscores the impact and potential value derived from long-term customer relationships.

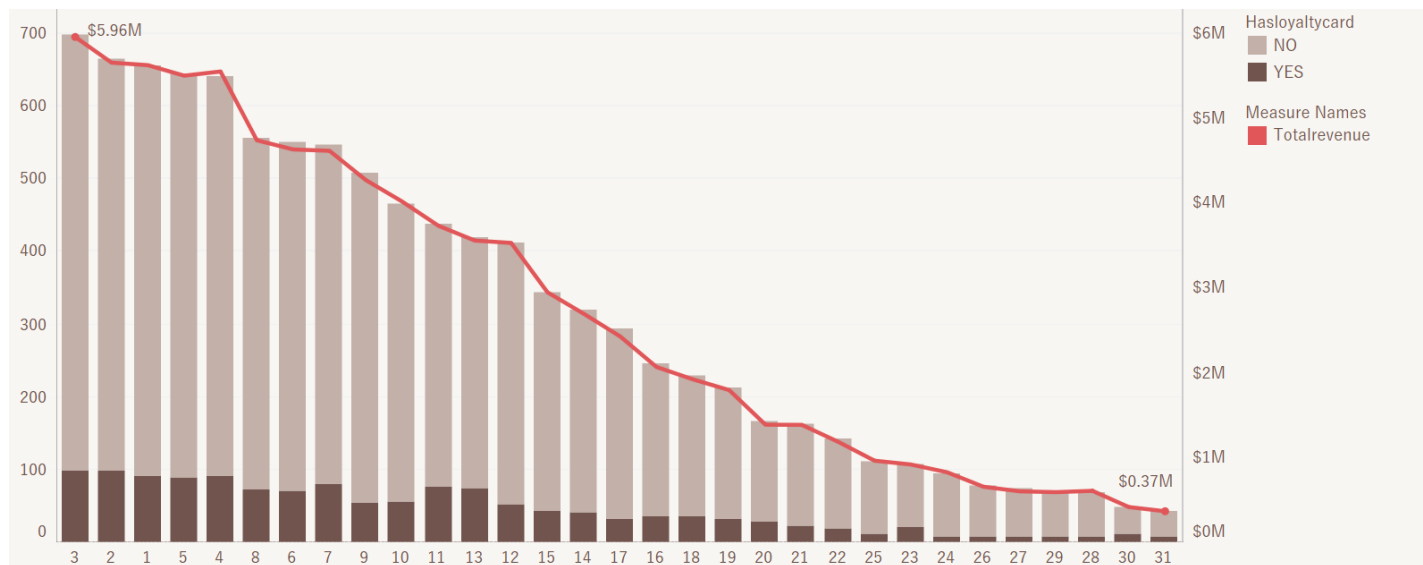


## Clustered Monthly Revenue



- The clustered line chart displays monthly store revenue with an average band.
- Notably, the peak revenue, spanning from \$8.25M to \$8.39M, is distinctly observed during the months of May through August.
- Conversely, a contrasting trend is evident, indicating the lowest revenue range fluctuating between \$5.8M to \$6.26M, occurring notably from September to December.
- This stark contrast underscores the seasonal variation in revenue, highlighting potential patterns or contributing factors during these periods.

## Customer Frequency & Revenue Distribution



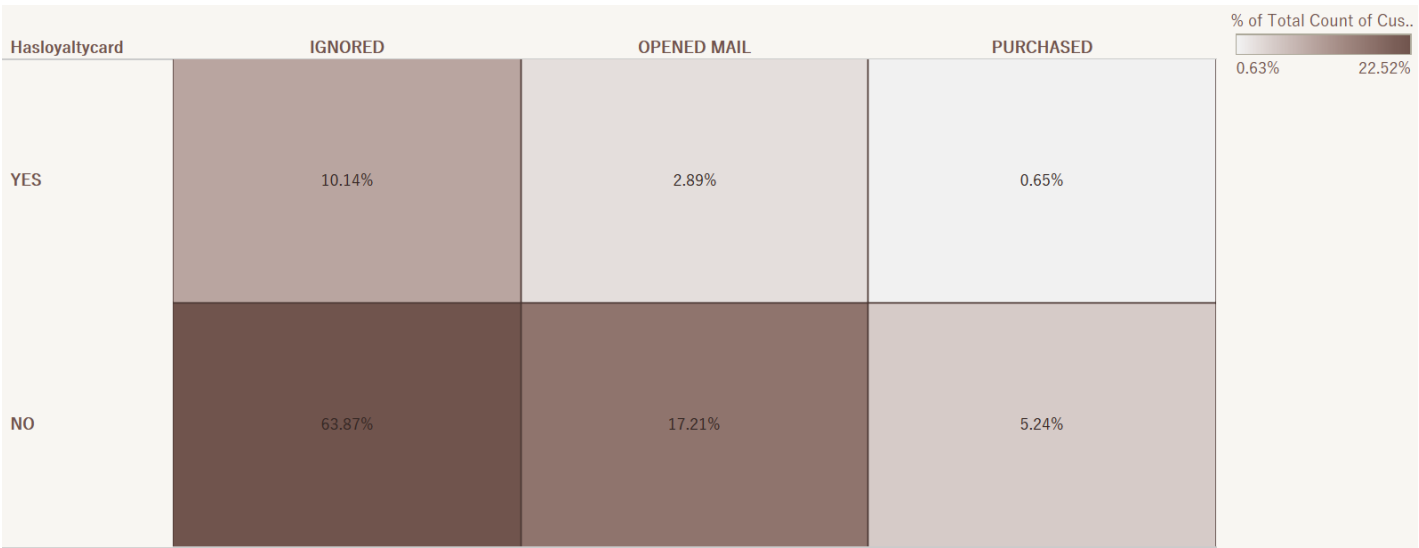
- This graph offers valuable insights into the correlation between customer frequency and revenue distribution, categorized based on Loyalty card membership.
- It highlights that a substantial portion of customers visit the store infrequently, yet their contribution to revenue is notably significant. Noteworthy segments of customers have contributed up to 5.96 million in revenue, emphasizing the potential impact of infrequent visitors on overall sales.
- Additionally, a notable revelation is that only 15% of the customer base holds a Loyalty card. This observation indicates a promising opportunity for the store to enhance its Loyalty card adoption strategies, potentially fostering stronger customer relationships and increased revenue through incentivized loyalty programs.

Referral Impact: Revenue & Loyalty Card



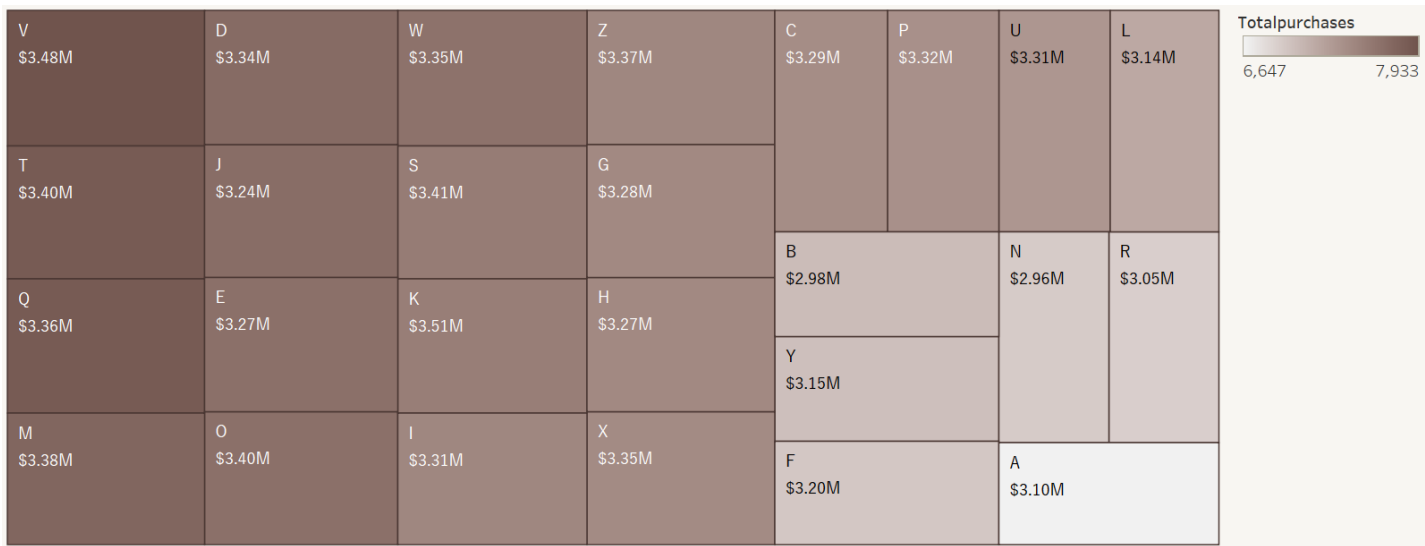
- This graph provides valuable insights into revenue generated from various referral sources, distinguished by Loyalty card membership.
- The chart highlights that Influencer endorsements, online advertisements, and social media promotions stand out as the primary referral sources significantly contributing to the store's revenue share.
- However, the data indicates a lower percentage of customers holding Loyalty cards within these influential referral sources.
- This indicates an opportunity to channel efforts into incentivizing Loyalty card adoption within these influential referral channels, potentially enhancing customer retention and engagement within these high-revenue streams.

## Campaign Response Across Loyalty Card Membership



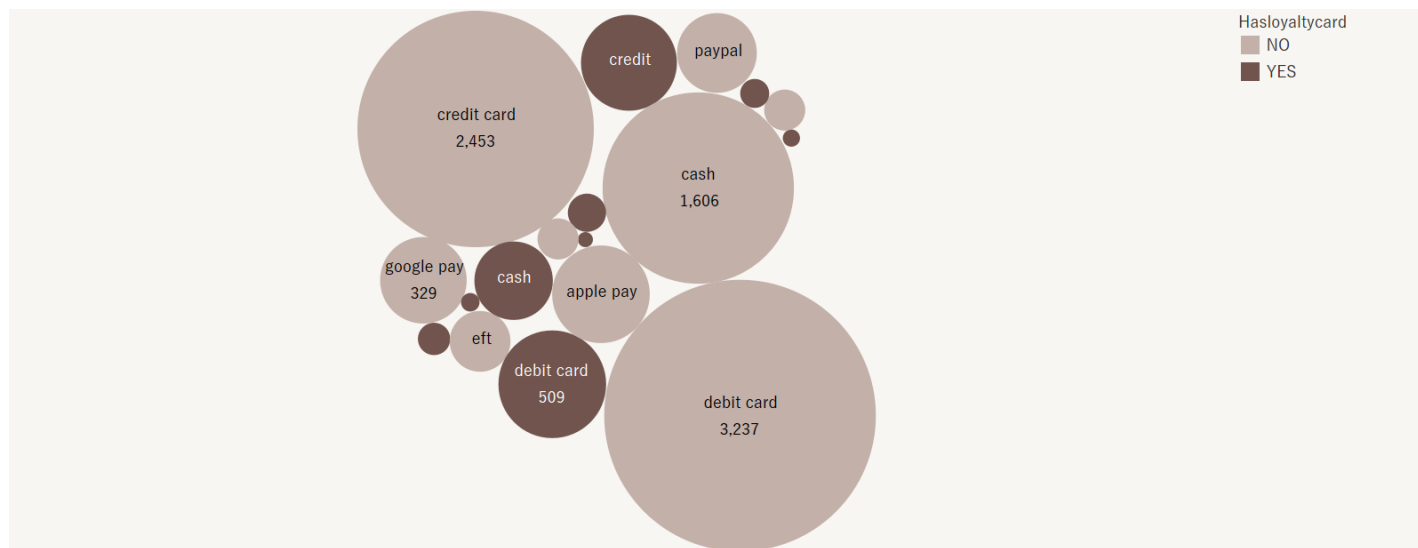
- The table represents customer responses to the loyalty card campaign.
- Majority of customers do not currently hold a loyalty card with the store.
- Interestingly, the response to the campaign indicates a prevalent trend of customer indifference, with a significant proportion disregarding the campaign entirely. Among those engaged, only a minority open the emails, and an even smaller fraction convert these engagements into purchases.
- A vast majority of 74.01% of customers exhibit indifference to the campaign, while a mere 5.89% acknowledge it as successful.
- This highlights the challenge of capturing customer interest and conversion in loyalty card campaigns, necessitating potential strategies for heightened engagement and conversion rates.

Revenue Across Product Categories



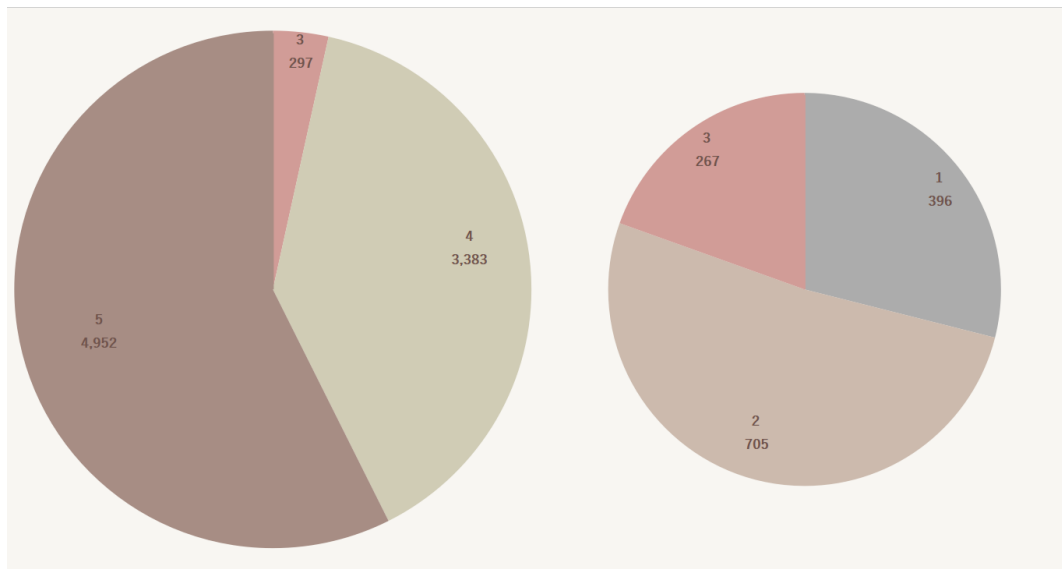
- The graph provides essential insights into revenue distribution across distinct product categories, segmented by Loyalty card membership.
- It's evident that products D, V, and Q stand out as the primary revenue drivers among customers without Loyalty cards.
- Conversely, products M, H, and S dominate in revenue generation among customers holding Loyalty card memberships.
- This disparity underscores varying purchasing behaviors based on Loyalty card affiliation across specific product categories.

## Customer Distribution by Payment Method



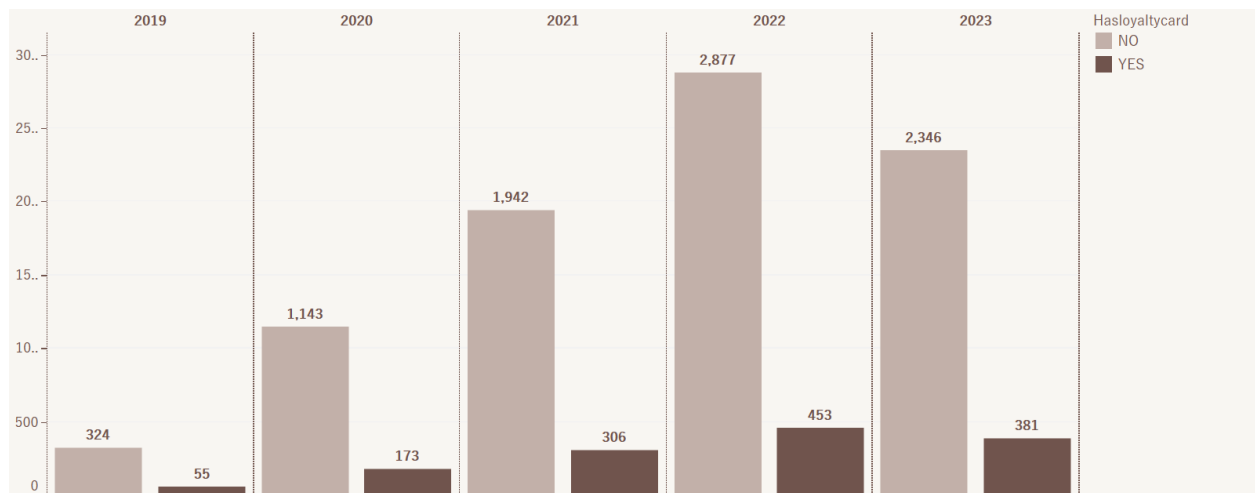
- The graph provides a holistic perspective on customer payment preferences, categorized by Loyalty card membership.
- A prominent trend emerges showcasing that the majority of customers prefer debit and credit cards as their primary payment methods.
- Interestingly, a significant portion of these customers does not possess Loyalty cards, signifying a potential area for the store to strategically promote and incentivize Loyalty card adoption.
- This observation underscores an opportunity for the store to leverage payment preferences as a strategic avenue to encourage Loyalty card enrollment, potentially fostering increased customer engagement and long-term loyalty.

## Feedback Score Distribution Across Loyalty



- The pie charts depict customer distribution concerning their loyalty card status and feedback scores.
- A notable trend emerges showcasing that customers holding loyalty cards predominantly provide lower scores, ranging between 1-3. Conversely, customers without cards tend to give higher scores, typically within the 3-5 range.
- This contrasting pattern suggests a potential correlation between loyalty card ownership and feedback scores, indicating that customers enrolled in the loyalty program might have differing experiences or expectations compared to those without cards.

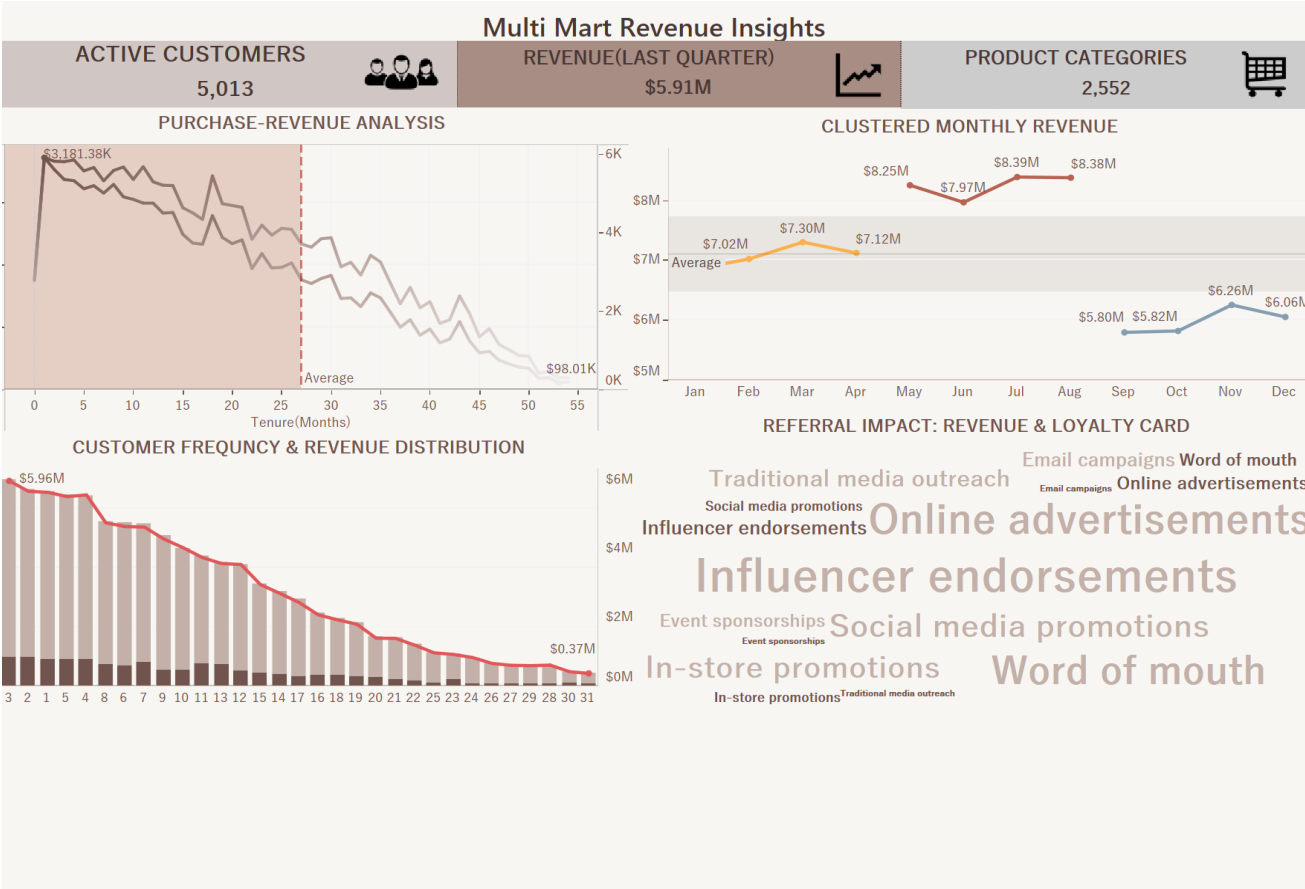
## Churn Analysis by Loyalty Status



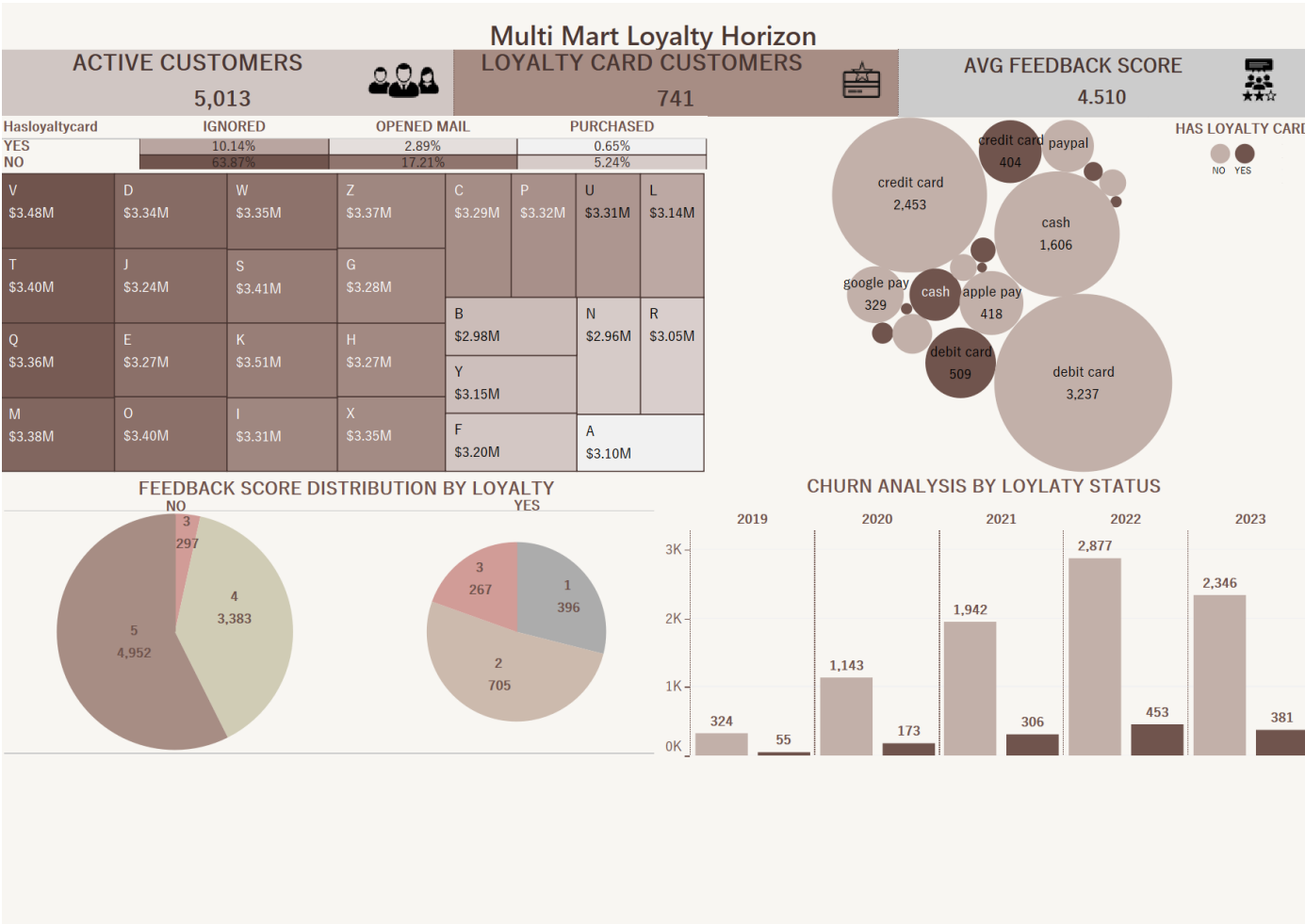
- The grouped bar chart effectively visualizes the annual customer churn rate.
- The data showcases a peak in churn during 2022, with a significant 2877 customers leaving the store that year. Remarkably, the churn ratio consistently exceeds the count of retained customers throughout the observed time frame, indicating a persistent challenge for the store in retaining its customer base.
- This trend underscores the importance of addressing factors contributing to churn and implementing effective retention strategies to stabilize and grow the customer base over time.



# DASHBOARD 1: Multi Mart Revenue Insights



DASHBOARD 2: Multi Mart Loyalty Horizon



## CONCLUSION

- **Impactful Customer Segments:** The significance of infrequent yet high-revenue-generating customers is evident, with the top segment contributing up to 5.96 million, emphasizing their considerable impact on overall revenue.
- **Key Revenue Drivers:** Influencer endorsements, online advertisements, and Social media promotions emerge as primary drivers of substantial revenue, underscoring their pivotal role in revenue generation.
- **Preferred Payment Methods:** Debit and credit cards dominate as the primary mode of payment for most customers, indicating a strong preference for these payment options.
- **Revenue Duration Impact:** Customers with shorter revenue duration exhibit a pattern of numerous purchases, leading to the highest revenue, suggesting the potential value in fostering more frequent engagement.
- **Seasonal Revenue Trends:** Peak revenue of \$8.39M occurs mid-year, followed by a decline in the last quarter, highlighting distinct seasonal fluctuations in revenue.
- **Feedback Disparity:** Notably, higher feedback scores are provided by non-loyalty card holders, while those with cards tend to provide poorer feedback, signaling potential differences in customer experiences or expectations based on loyalty card status.

## RECOMMENDATIONS

- Multi Mart should focus on promoting the Loyalty card to infrequent customers holds significant potential to drive up both purchases and revenue. To achieve this, leveraging Influencer and Online advertising campaigns can effectively increase the Loyalty card membership base while concurrently boosting revenue streams.
- Introducing tenure-based offers like awarding extra Loyalty points to customers with over 2 years' association can deepen customer loyalty and incentivize continued patronage.
- Strategic implementation of compelling discounts in the last quarter is pivotal to stimulating increased purchases and elevating revenue above average during this crucial period.
- Establishing collaborative partnerships with local banks to introduce an integrated Loyalty card that aligns with debit card usage patterns presents an opportunity to expand the program's membership base significantly.
- Furthermore, enhancing the Loyalty card benefits, especially for cardholders providing lower feedback scores, while preserving positive experiences for non-cardholders, can significantly elevate overall customer satisfaction, thereby fostering stronger loyalty and engagement.