Project Report:

Assessment of Debit and Credit Card Usage in the Indian Banking Industry: A Comprehensive Dashboard for HDFC Bank

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Abstract

The banking industry in India is characterized by its dynamism and constant evolution, marked by remarkable growth and transformation. Amidst this vibrant diversity, HDFC Bank, as one of the top banks in the country, seeks to maintain its leadership position by making informed decisions and embracing data-driven strategies. In light of the challenges faced in the highly competitive market, the bank has recognized the need for a comprehensive card usage dashboard. This dashboard aims to monitor critical performance indicators and assess HDFC Bank's standing relative to the broader banking landscape, thereby enabling the leadership to benchmark its performance, analyze customer behavior, and drive customer satisfaction. The project encompasses a journey from web scraping with Selenium to data preparation in Excel and ultimately, creating an interactive and insightful dashboard with Power BI. The subsequent report provides a comprehensive analysis of the dashboard, unveiling key insights and actionable recommendations that will empower HDFC Bank to chart a path towards continued success and excellence in India's banking sector.

Data Collection and Preparation

Data Collection :

To initiate the project, we collected the required data from the Reserve Bank of India (RBI) website using web scraping techniques with Selenium. Selenium is a powerful automation tool that allows us to interact with web pages and extract data programmatically. The RBI website provides valuable data on various banking and financial metrics, including debit and credit card usage for different banks.

The web scraping process involved the following steps:

1. Accessing the RBI website's specific page for debit and credit card usage data (**https://www.rbi.org.in/Scripts/ATMView.aspx**).
2. Automating the web browser using Selenium to navigate to the desired page and extract the data.
3. Using Python programming language, the web scraping script collected data for each month from April 2022 to March 2023.
4. The data was extracted in tabular format and saved in Excel files for further analysis.

Data Preparation :

Upon obtaining the data through web scraping, the next crucial step was data preparation in Excel. The raw data required thorough cleaning and transformation to make it suitable for analysis and visualization.

Data preparation steps included:

- Stripping Irrelevant Data: The leadership was interested only in credit and debit card data. Hence, all other data unrelated to these card types, such as data for prepaid cards, was removed from the dataset.
- Unmerging Cells: The raw data contained merged cells, which made it difficult to use the data for analysis and visualization. Merging cells were unmerged to ensure data

integrity and accuracy.

- Aggregating Transaction Values: For each bank, we aggregated the transaction values across different transaction modes (PoS, Online, and Others) to obtain the total spending in ₹ (Indian Rupees) for each month. We excluded the "Cash Withdrawal" data from the analysis as it was not relevant to the bank's card usage performance.
- Categorizing Banks: The raw data presented bank names grouped by bank type (Public, Private, and Foreign). We categorized the banks accordingly, removing entries for "Payment" and "Small Finance" banks.
- Deleting Empty Rows and Columns: To ensure a clean and structured dataset, we removed any empty rows or columns that did not contain meaningful information.

Dashboard Overview

In this, created a dashboard to monitor credit card and debit card usage in India. HDFC banks require clear visibility about their own performance in the industry with other banks. Also,they need to know other banks' performance depends on various key performance indicators (KPIs) such as:

- No. of cards Issued
- Transactions
- Spending
- Spend per Card
- Average Transaction Size

In detail, the market share was visualized based on no transactions, no cards issued, and spending. Also represented the overall and month-wise data of the above-stated KPIs, market share, and top banks using different filters,

- Card type (Credit/Debit)
- Bank
- Month

To achieve this criterion, data was collected from the RBI website from April 2022 to March 2023 using web scraping. The data was cleaned and merged. By using this final dataset, created a dashboard.

The Dashboard contains three different aspects

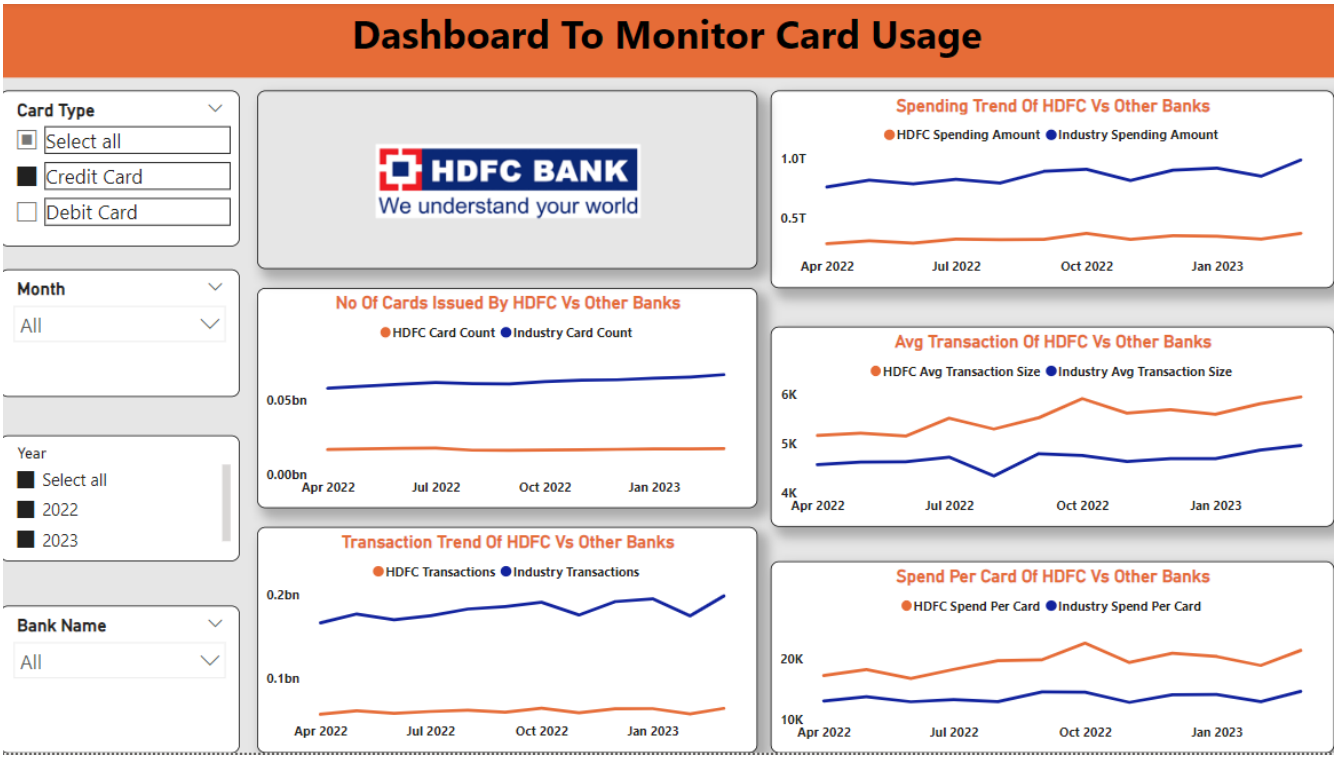
- HDFC Bank’s performance Vs Other Banks
- KPI Trends
- Top Banks based on Trends

This section provides an in-depth look at the Power BI dashboard created to monitor and assess debit and credit card usage at HDFC Bank within the broader banking landscape. This section highlights the key visualizations, interactive features, and filters incorporated into the dashboard to cater to the bank's leadership requirements.

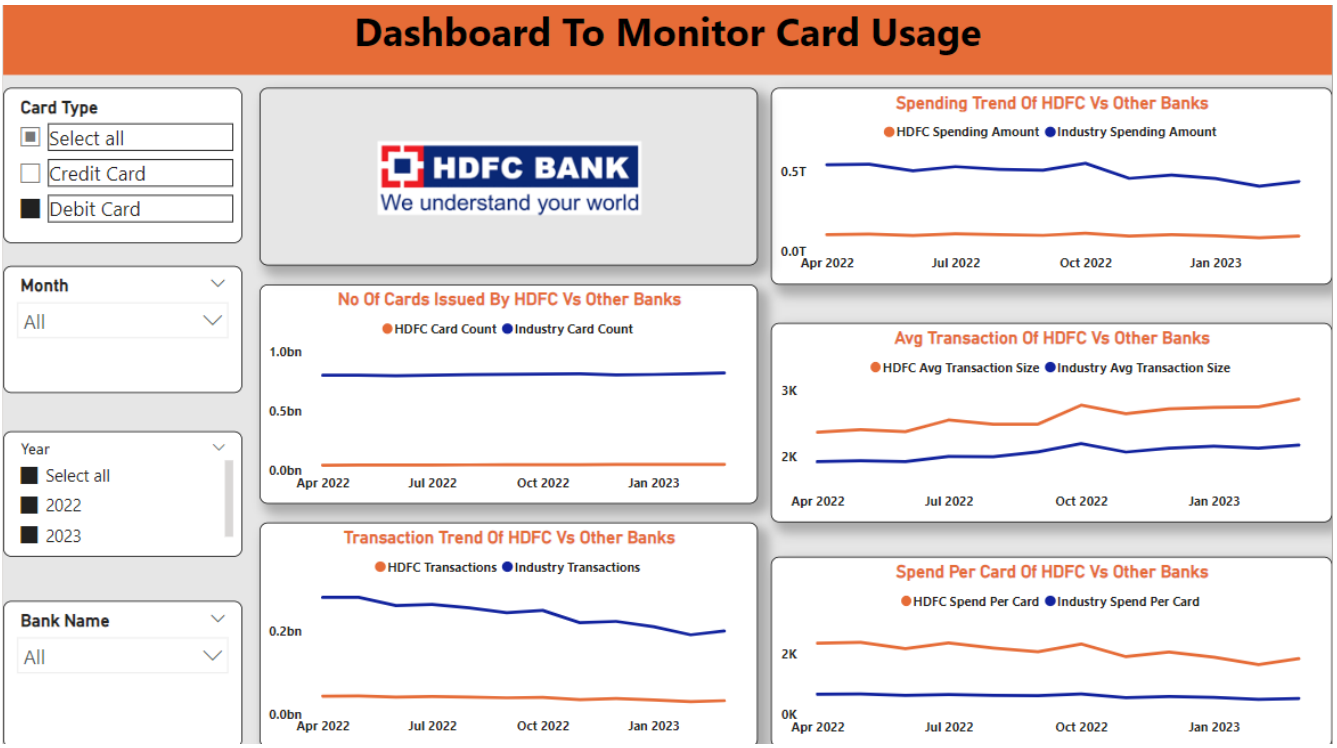
The Power BI dashboard serves as a powerful tool that enables real-time tracking and analysis of key performance indicators (KPIs) and market share metrics. With a focus on providing actionable insights, the dashboard empowers HDFC Bank's management with data-driven decision-making capabilities to remain competitive in the rapidly evolving banking industry.

Key Visualizations:

1. HDFC Vs Other Banks

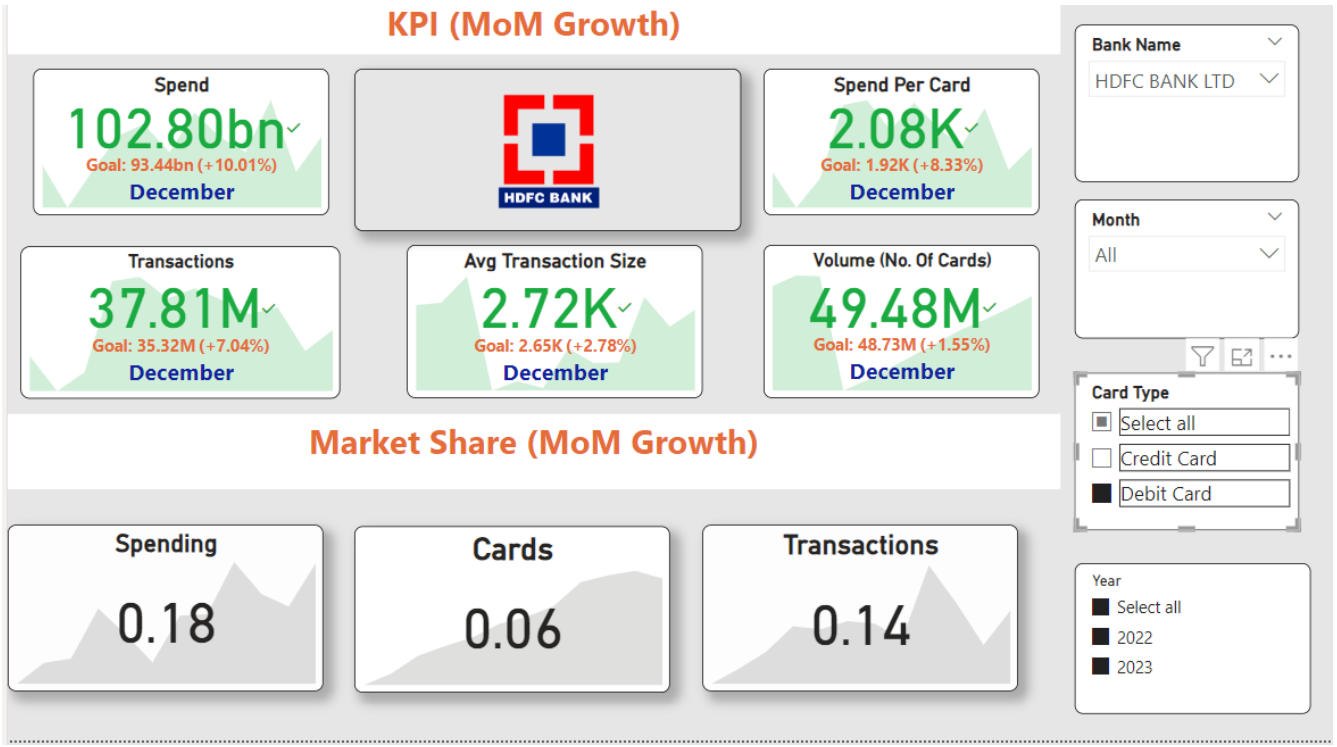


In the credit card segment HDFC bank performed better in Avg Transaction size and Spend per card as compared to other banks.

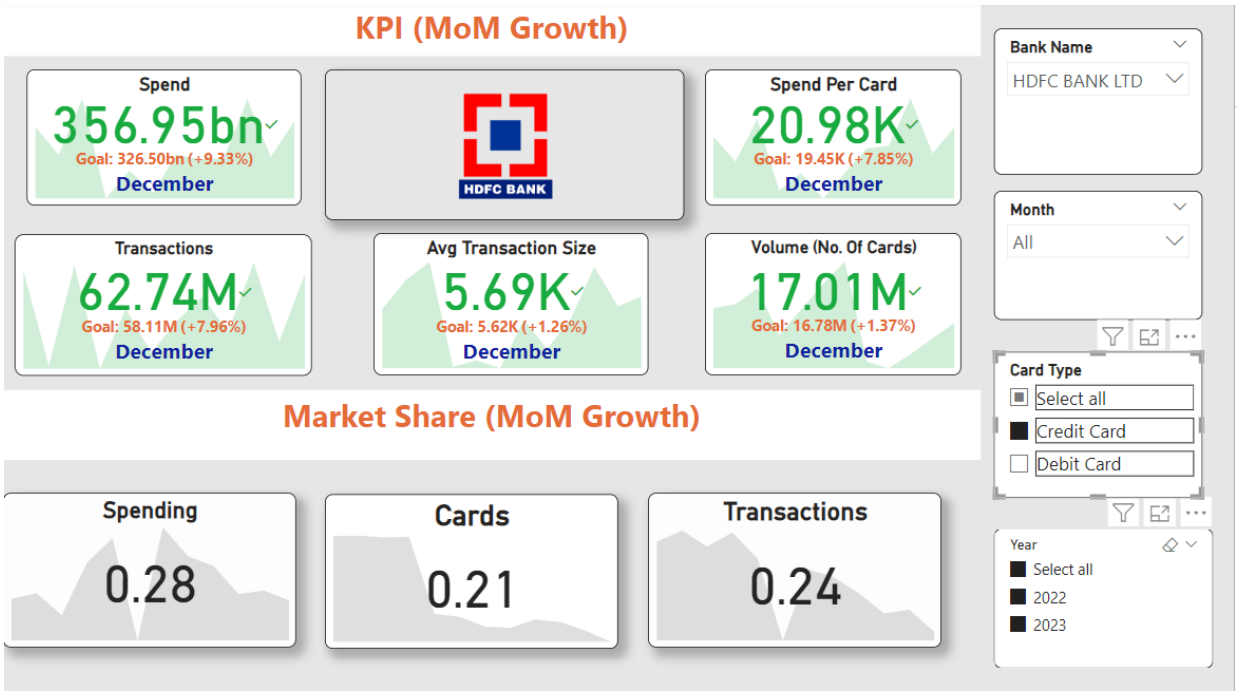


In the Debit Card segment HDFC bank performed better in Avg Transaction size and Spend per card as compared to other banks.

2. KPI Trends

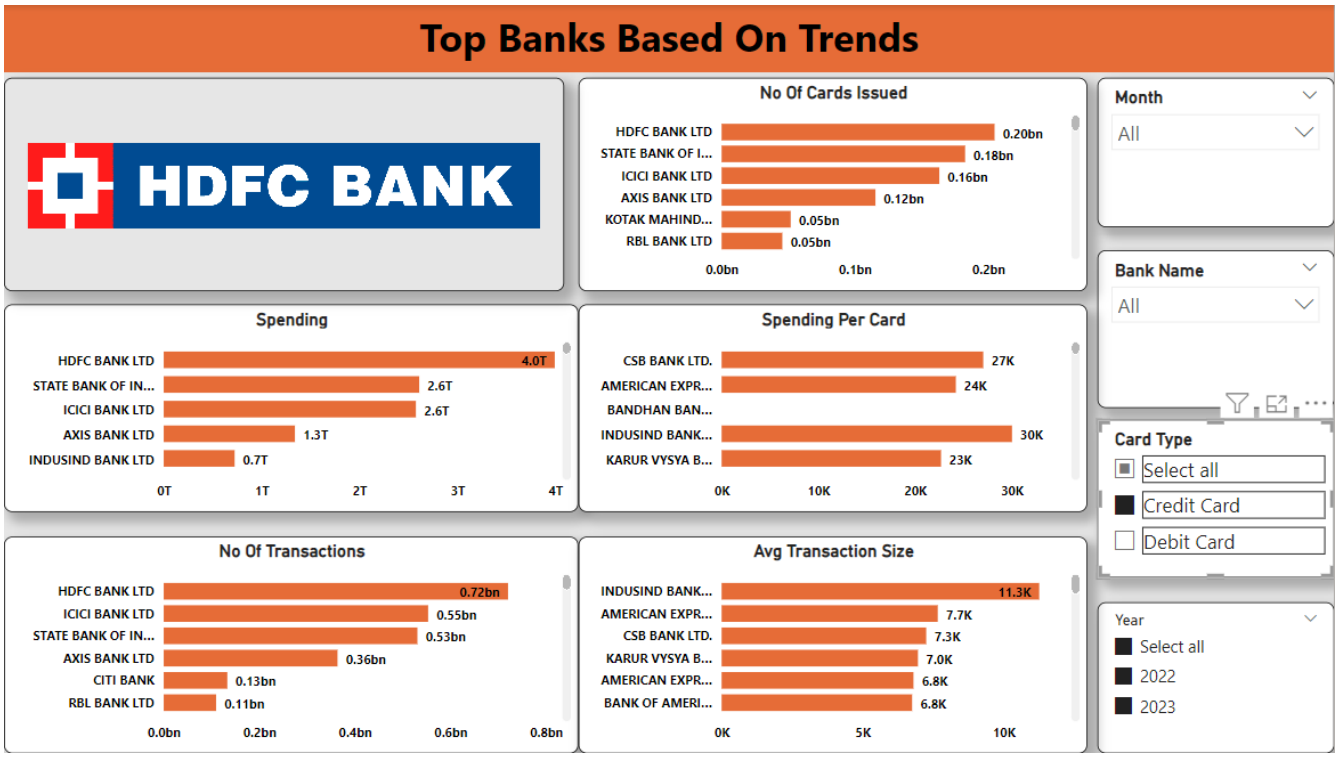


In the debit card segment HDFC Bank occupied 18 % market share in spending,6% market share in total cards and 14% market share in transactions.

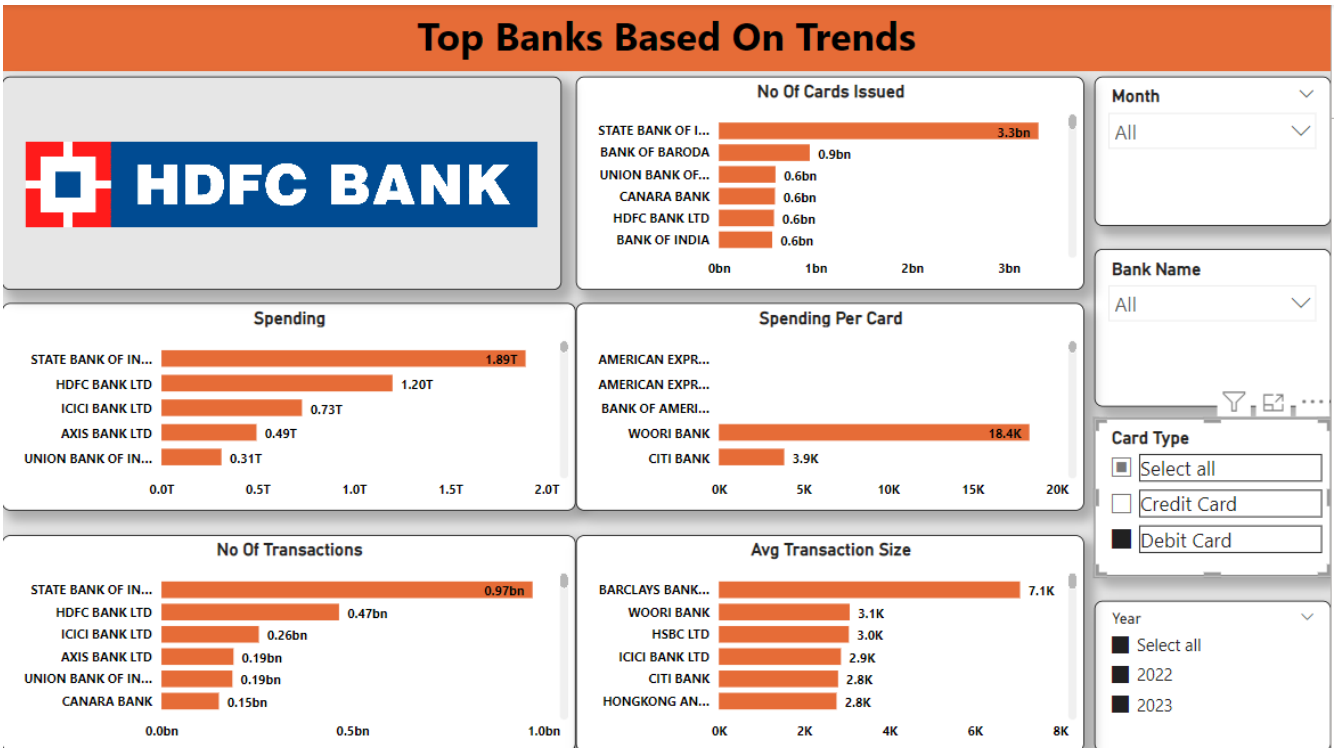


In the Credit Card segment HDFC Bank occupied 28 % market share in spending,21% market share in total cards and 24% market share in transactions.

3.Top banks Based on KPIs

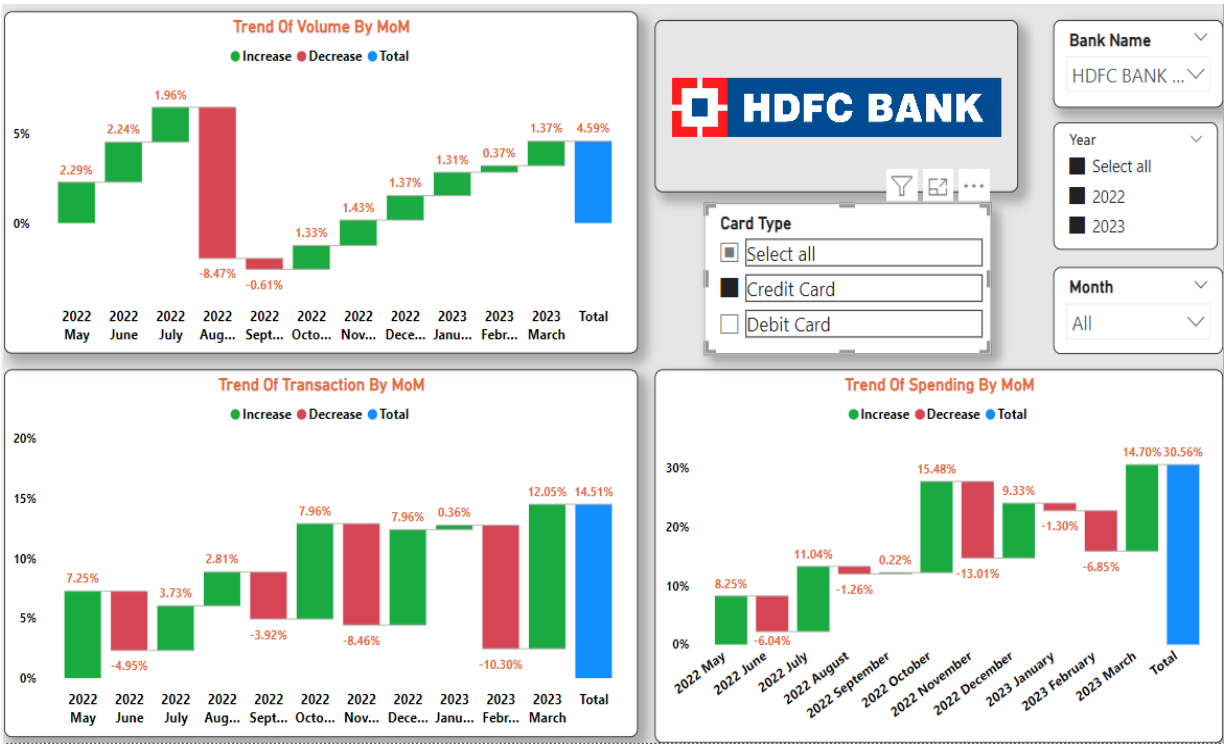


In Credit Card segment HDFC bank occupied first position in Number of card issued,total spending and total number of transactions.



In Dredit Card segment HDFC bank occupied second position in total spending and total number of transactions,fifth position in number of card issued.

4.Month Over Month Growth

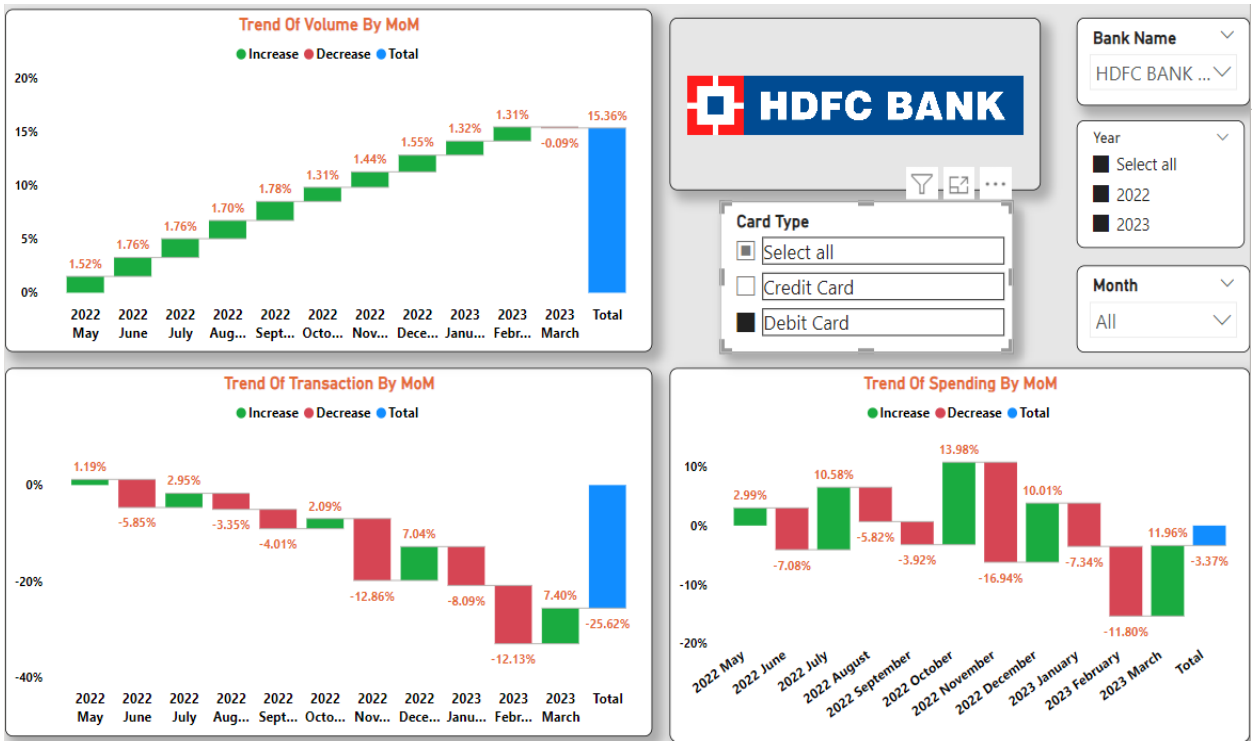


In credit card segment

Trend of volume : HDFC bank shows sharp decline trend in number of card issued in August-2022 and September-2022.

Trend of Transaction : HDFC bank shows sharp decline trend in total transactions in Feb-2023,also shows decline trend in month of June,September and November (2022).

Trend of Spending : HDFC bank shows sharp decline trend in total spending in Nov-2022,also shows decline trend in month of June-2022,August-2022 ,Jan-2023 and Feb-2023.



In Debit card segment

Trend of volume : HDFC bank shows decline trend in number of card issued in Mar-2023.

Trend of Transaction : HDFC bank shows sharp decline trend in total transactions in Nov-2022.It also shows decline trend in month of June-2022,Aug-2022,Sep-2022,Jan-2023 and Feb-2023.

Trend of Spending : HDFC bank shows sharp decline trend in total spending in Nov-2022,also shows decline trend in month of June-2022,August-2022 ,Sep-2022,Jan-2023 and Feb-2023.

Analysis and Insights

The analysis of the dashboard's visualizations offers valuable insights into HDFC Bank's debit and credit card usage performance within the Indian banking industry. The key findings are as follows:

1.Total Transactions:

- HDFC Bank stands out as the top bank in terms of total credit card transactions. However, for debit card transactions, it ranks second, with the State Bank of India (SBI) holding the first position.

- The bank's dominance in credit card transactions demonstrates its strong market presence and customer engagement in the credit card segment.

2.Total Spending Trend per Month:

- HDFC Bank exhibits a high spending trend per month compared to other banks, indicating the bank's popularity and customer spending habits.

- The consistent growth in total spending per month reflects the bank's effective marketing strategies and customer-centric approach.

3.Spend per Card:

- In terms of spend per card, HDFC Bank holds a prominent position, ranking among the top 5 banks for credit cards and top 4 banks for debit cards.

- Notably, HDFC Bank secures the top spot among private banks in debit cards transactions, showcasing its effectiveness in capturing high-value spending customers.

4.Average Transaction Size:

- HDFC Bank ranks 4th in average transaction size, signifying a balanced mix of small and large transactions by its cardholders.

- The bank's strong performance in this metric indicates effective customer segmentation and targeted marketing strategies.

5.Market Share:

- The KPI representing market share based on the number of cards issued, total transactions, and spending illustrate HDFC Bank's significant market share in the debit and credit card segment.

- The bank's substantial percentage of market share demonstrates its leadership position and market dominance compared to its competitors.

Insights and Implications :

1.Strengthening Debit Card Transactions:

While HDFC Bank excels in total credit card transactions, the bank could explore strategies to enhance its market share in debit card transactions. Analyzing the success factors of competitors like SBI, identifying customer preferences, and offering targeted incentives could help drive debit card usage.

2.Leveraging High Spending Trend:

HDFC Bank's high spending trend per month reflects its popularity among customers. The bank can capitalize on this trend by introducing personalized offers, exclusive partnerships, and premium rewards to further enhance customer loyalty.

3.Focusing on Spend per Card:

HDFC Bank's competitive position in spend per card for both credit and debit cards indicates a strong customer base and high-value clientele. The bank can continue its focus on offering premium services and tailored products to retain and attract affluent customers.

4.Enhancing Average Transaction Size:

Improving average transaction size can lead to increased revenue and profitability. HDFC Bank could consider targeted marketing campaigns, cross-selling opportunities, and incentivizing larger transactions to bolster this metric.

5.Sustaining Market Leadership:

HDFC Bank's dominant market share across various metrics reaffirms its position as a market leader. To maintain this status, the bank should continue leveraging data-driven insights, monitoring customer trends, and adapting strategies to cater to evolving customer needs.

Conclusion

The analysis and insights derived from the dashboard showcase HDFC Bank's strong performance in the debit and credit card segment, positioning it as a frontrunner in the Indian banking industry. By capitalizing on its strengths, addressing opportunities for improvement, and leveraging data-driven decision-making, HDFC Bank can sustain its position as a leading financial institution and enhance customer satisfaction and loyalty in the dynamic and competitive market.