

FINANCIAL DATA ANALYSIS

Power BI | DAX | Analysis



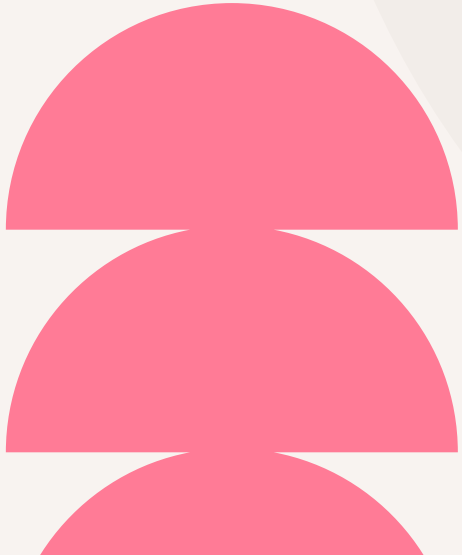
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This presentation explore credit card usage patterns and essential financial metrics to understand customer behaviour.



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Introduction & Objective

- In this analysis, we'll look at credit card usage and key financial metrics to understand customer behavior, credit use, and potential risks.
- Using **Power BI** and **DAX functions**, we'll calculate important metrics that give a clear picture of customer activity and financial health.
- These insights will help create actionable KPIs to improve customer engagement, spot high-risk groups, and boost retention. The goal is to strengthen the bank's performance and ensure long-term growth while managing risks.



Data Overview

This analysis combines Credit Card & Customer datasets to examine clients' credit card usage behaviour, demographics and risk factors.

Credit Card Dataset:

- **Key Info:** Includes details like Credit_Limit, Total_Revolving_Bal, Total_Trans_Amt and Avg_Utilization_Ratio.
- **Focus:** Tracks spending habits, credit utilization and risk indicators (eg., Delinquent_Acc).

Customer Dataset:

- **Key Info:** Demographic and financial attributes such as Income, Education_Level, and Cust_Satisfaction_Score.
- **Focus:** Provides insights into customer profiles and satisfaction.

Key Analysis

- **Financial Metrics:** Running totals, moving averages, and growth rates for transactions.
- **Risk Indicators:** Delinquency rates, credit risk scores, and high-risk client flags.
- **Behavioral Insights:** Retention, churn indicators, and transaction patterns. Correlations: Examined income vs. credit limit and loan approvals vs. credit limits



Running Total of Credit Card Transactions

```
running_total = CALCULATE(SUM(credit_card[Total_Trans_Amt]), FILTER(all(credit_card),  
credit_card[Week_Start_Date] <= max(credit_card[Week_Start_Date])))
```

Calculate the 4-week moving average of the creditLimit for each client.

```
moving_average =  
  
var window_4_weeks = DATESINPERIOD('calendar'[Date],MAX('calendar'[Date]),-28,DAY)  
  
var sales = CALCULATE(SUM(credit_card[Credit_Limit]),window_4_weeks)  
  
var distinct_week = CALCULATE(DISTINCTCOUNT('calendar'[weeknum]),window_4_weeks)  
  
return DIVIDE(sales,distinct_week)
```

Calculate the mom% growth and wow% growth on transaction amount.

```
mom%growth =  
  
var previous_month = CALCULATE(SUM(credit_card[Total_Trans_Amt]),DATEADD('calendar'[Date],-1,MONTH))  
  
return DIVIDE(SUM(credit_card[Total_Trans_Amt])-previous_month,previous_month,0)
```

```
wow%growth =  
  
var previous_week = CALCULATE(SUM(credit_card[Total_Trans_Amt]),DATEADD('calendar'[Date],-7,DAY))  
  
return DIVIDE(SUM(credit_card[Total_Trans_Amt])-previous_week,previous_week,0)
```


Calculate Customer Acquisition Cost (CAC) as a Ratio of Transaction Amount.

```
ac_trans_amt = DIVIDE(SUM(credit_card[Customer_Acq_Cost]),SUM(credit_card[Total_Trans_Amt]))
```

Calculate the yearly average of
avg_utilization_ratio for all
clients.

```
avg_utilization_ratio =
```

```
AVERAGE(credit_card[Avg_Utilization_Ratio])/DISTINCTCOUNT(credit_card[current_year])
```

Calculate the percentage of Interest_Earned compared to Total_Revolving_Bal for each client.

```
interest_by_revolving_bal =  
DIVIDE(SUM(credit_card[Interest_Earned]),SUM(credit_card[Total_Revolving_Bal]),0)
```

Calculate Top 5 Clients by Total Transaction Amount.

```
top_5_clients_by_transaction_amt =
```

```
TOPN(5,SUMMARIZE(credit_card,credit_card[Client_Num],"total_amount",SUM(credit_card[Total_Trans_Amt])),  
[total_amount],DESC)
```

Identify clients whose
Avg_Utilization_Ratio exceeds
80%.

```
avg_uti_exceedes_80% = IF([avg_utilization_ratio] > 0.8 , True,FALSE)
```

Customer Churn Indicator: Create a KPI that flags clients who have not made any transactions (Total_Trans_Amt = 0) in the last 6 months.

```
no_trans_in_last_6_months =  
  
var months_6 =  
CALCULATE(SUM(credit_card[Total_Trans_Amt]), DATESINPERIOD('calendar'[Date], MAX('calendar'[Date]), -6, MONTH))  
  
return IF(ISBLANK(months_6), True, False)
```

Delinquency Rate: Calculate the percentage of clients with Delinquent_Acc > 0.

```
delinquency_rate =
```

```
var delinquent_accounts = CALCULATE(COUNTROWS(credit_card),credit_card[Delinquent_Acc] > 0)
```

```
var total_accounts = COUNTROWS(credit_card)
```

```
return DIVIDE(delinquent_accounts,total_accounts,0)
```

Credit Risk Score: Create a score for each client based on their Avg_Utilization_Ratio, Delinquent_Acc, and Total_Revolving_Bal.

```
normalize_revolving_balance =  
  
var min_value = MIN(credit_card[Total_Revolving_Bal])  
  
var max_value = MAX(credit_card[Total_Revolving_Bal])  
  
return DIVIDE(credit_card[Total_Revolving_Bal]-min_value,max_value-min_value,0)
```

```
credit_risk_score =  
  
0.5 * credit_card[Avg_Utilization_Ratio] +  
0.3 * credit_card[Delinquent_Acc] +  
0.2 * credit_card[normalize_revolving_balance]
```


Income vs Credit Limit Correlation: Show the correlation between Income and Credit_Limit for all clients.

In the Home Tab in Report view

Go to Quick measures -> Under Calculation -> In mathematical operations (Correlation coefficient) ->

In category : Client_Num

On X-Axis : Summation of Income

On Y axis : Summation of credit_limit

0.13

Income and Credit_Limit correlation
for Client_Num

Average Customer Satisfaction Score by Credit Card Category: Calculate the average Cust_Satisfaction_Score by Card_Category.

```
average_score_by_card_category =
```

```
SUMMARIZE(credit_card,credit_card[Card_Category],"Avg score",ROUND(AVERAGE('customer data'[Cust_Satisfaction_Score]),2))
```

Loan Approval vs Credit Limit: Analyze how Credit_Limit affects Personal_loan approval by calculating the average credit limit for clients with and without loans.

```
personal_loan_yes = CALCULATE(AVERAGE(credit_card[Credit_Limit]), 'customer data'[Personal_loan] = "yes")
```

```
personal_loan_no = CALCULATE(AVERAGE(credit_card[Credit_Limit]), 'customer data'[Personal_loan] = "no")
```

High Risk Clients Flag: Create a flag for clients whose Total_Revolving_Bal exceeds 90% of their Credit_Limit and who have a high Avg_Utilization_Ratio.

```
flag_exceeds_90%_of_credit_limit =  
  
var credit_limit_90 = credit_card[Credit_Limit] * 0.9  
  
return if(credit_card[Total_Revolving_Bal] > credit_limit_90, True, False)
```

Conclusion

- The analysis revealed key insights into customer spending, uncovering patterns and trends to improve financial management and credit policies.
- Using DAX in Power BI, we calculated metrics that pinpointed high-risk groups, credit usage rates, and delinquency risks.
- These insights helped shape strategies to reduce defaults, refine credit offerings, and boost customer retention.
- The findings support the bank's goals of improving satisfaction, loyalty, and sustainable growth while managing risks effectively.





Let's Connect !!



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