FINANCIAL ANALYSIS

Using DAX Functions

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FINANCIAL ANALYSIS AND BUSINESS IMPACT-

Risk Assessment & Credit Monitoring

Identifies high-risk clients with high debt utilization & delinquent accounts.
Helps banks and credit institutions reduce default risk through early intervention.

Customer Insights & Retention

Tracks churn indicators (inactive customers) for targeted re-engagement strategies.
Highlights top clients by transactions for premium loyalty programs.

Profitability & Growth Tracking

MoM & WoW growth metrics enable real-time monitoring of transaction trends.
Evaluates interest earned vs revolving balance to optimize revenue streams.

Operational Efficiency

Customer Acquisition Cost (CAC) provides cost-effectiveness of marketing campaigns.
Enables data-driven loan approval decisions based on credit limit analysis.

INTRODUCTION:-

Objective:

-To calculate and analyze financial metrics such as running totals, moving averages, and growth rates for credit card usage.

-To assess key performance indicators (KPIs) related to customer behavior, credit utilization, and delinquency risk.

-To generate actionable insights for improving customer retention and enhancing financial performance.

Scope:

-Analyzing credit card transaction data and financial metrics.

-Creating dynamic reports and dashboards in Power BI.

-Calculating KPIs related to customer behavior, utilization rates, and delinquency risk.

-Providing insights for strategic decision-making to improve financial outcomes.

Tools:

Power BI: For data visualization and dashboard creation.

DAX (Data Analysis Expressions): For advanced calculations and metrics.

Excel/SQL: For data preprocessing and initial analysis if needed.

Write DAX formulas for the following:

1. Running total of credit card transactions.
2. Calculate the 4-week moving average of the credit Limit for each client.
3. Calculate the MOM% growth and WOW% growth on transaction amount.
4. Calculate customer acquisition cost (CAC) as a ratio of transaction amount.
5. Calculate the yearly average of avg_utilization_ratio for all clients.
6. Calculate the percentage of Interest_Earned compared to Total_Revolving_Bal for each client.
7. Calculate Top 5 Clients by Total Transaction Amount.
8. Identify clients whose Avg_Utilization_Ratio exceeds 80%.
9. Customer Churn Indicator: Create a KPI that flags clients who have not made any transactions (Total_Trans_Amt = 0) in the last 6 months.

Write DAX formulas for the following:

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

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

12. **Income vs Credit Limit Correlation:** Show the correlation between Income and credit_Limit for all clients.

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

14. **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.

15. **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.

1. Running total of credit card transactions.

```
1  RUNNING_TOTAL =
2      CALCULATE(
3        SUM('credit_card and cc_add'[Total_Trans_Amt]),
4        FILTER(
5          ALLSELECTED('credit_card and cc_add'[Week_Start_Date]), 'credit_card and cc_add'[Week_Start_Date] <= MAX('credit_card and cc_add'
           [Week_Start_Date]))
6          )
```

2. Calculate the 4-week moving average of the credit Limit for each client.

```
1  MOVING_AVERAGE_FOR_4_WEEKS =
2      VAR WEEKS_4 = DATESINPERIOD(CALENDER[Date], MAX(CALENDER[Date]), -28,
3      DAY)
4      VAR TOTAL_AMOUNT = CALCULATE([TOTAL_TRANSACTION_AMOUNT], WEEKS_4)
5      VAR NUM_OF_WEEKS = CALCULATE(DISTINCTCOUNT('credit_card and cc_add'[Week_Num]), WEEKS_4)
6
7      RETURN DIVIDE(TOTAL_AMOUNT, NUM_OF_WEEKS, 0)
```

3.Calculate the MOM% growth and WOW% growth on transaction amount.

```
1  MOM_growth =
2  VAR PREV_MONTH = CALCULATE(SUM('credit_card and cc_add'[Total_Trans_Amt]),
3  DATEADD(CALENDER[Date],-1,MONTH)
4  )
5  RETURN DIVIDE(SUM('credit_card and cc_add'[Total_Trans_Amt])-PREV_MONTH,PREV_MONTH,0
6  )
```

```
1  WOW_GROWTH =
2      VAR PREV_WEEK = CALCULATE(
3      [TOTAL_TRANSACTION_AMOUNT],
4          DATEADD(CALENDER[Date], -7,DAY))
5
6      RETURN DIVIDE([TOTAL_TRANSACTION_AMOUNT]-PREV_WEEK, PREV_WEEK, 0)
```

4.Calculate customer acquisition cost (CAC) as a ratio of transaction amount.

```
1  RATIO_CAC_TRANSACTION_AMOUNT =
2          DIVIDE(
3              SUM('credit_card and cc_add'[Customer_Acq_Cost]),
4              [TOTAL_TRANSACTION_AMOUNT], 0)
```

5.Calculate the yearly average of avg_utilization_ratio for all clients.

```
1  AVG_UTILIZATION_RATIO =
2
3      AVERAGE('credit_card and cc_add'[Avg_Utilization_Ratio])
```

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

```
1 INTREST_EARNED_REVOLVING_BALANCE =
2     DIVIDE(
3         SUM('credit_card and cc_add'[Interest_Earned]),
4         SUM('credit_card and cc_add'[Total_Revolving_Bal])
5     )
```

7.Calculate Top 5 Clients by Total Transaction Amount.

Create a new table using the following DAX....

```
1  TOP_5_CLIENTS =
2    TOPN(5, SUMMARIZE('credit_card and cc_add','credit_card and cc_add'[Client_Num], "TOTAL_AMOUNT", [TOTAL_TRANSACTION_AMOUNT]),
3    [TOTAL_AMOUNT], DESC)
```

8.Identify clients whose Avg_Utilization_Ratio exceeds 80%.

```
1  CHECK_AUC_EXCEEDS_80 =
2      IF([AVG_UTILIZATION_RATIO] > 0.80,
3      TRUE,
4      FALSE
5      )
```

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

```
1   CHURN =
2     VAR BALANCE =
3         CALCULATE([TOTAL_TRANSACTION_AMOUNT],
4         DATESINPERIOD(CALENDER[Date], MAX(CALENDER[Date]),
5           -6,MONTH))
6
7     RETURN IF(ISBLANK(BALANCE), "CHURNED", "NOT_CHURNED")
8
9
```

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

```
1  DELINQUENCY_RATE =
2
3  VAR GREATERTHAN_ZERO = CALCULATE(COUNTROWS('credit_card and cc_add'),
4                                   'credit_card and cc_add'[Delinquent_Acc] > 0)
5
6  VAR TOTAL_ROWS = COUNTROWS('credit_card and cc_add')
7
8  RETURN DIVIDE(GREATERTHAN_ZERO, TOTAL_ROWS, 0)
```

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

Create two new columns in Credit table

```
1  NORMALISED_REVOLVING_BALANCE =
2
3  DIVIDE('credit_card and cc_add'[Total_Revolving_Bal] -
4  MIN('credit_card and cc_add'[Total_Revolving_Bal]),
5
6  MAX('credit_card and cc_add'[Total_Revolving_Bal]) -
7  MIN('credit_card and cc_add'[Total_Revolving_Bal]) , 0)
```

```
1  CREDIT_RISK_STORE =
2  'credit_card and cc_add'[Avg_Utilization_Ratio] * 0.5 +
3  'credit_card and cc_add'[NORMALISED_REVOLVING_BALANCE] * 0.3 +
4  'credit_card and cc_add'[Delinquent_Acc] * 0.2
```

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

In this analysis, we used Quick Measures to calculate the correlation between various metrics. Specifically

Category: Client_Num
Measure X: Income
Measure Y: Credit_Limit

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

```
1  AVG_SATIFACTION_SCORE =
2      SUMMARIZE('credit_card and cc_add','credit_card and cc_add'[Card_Category],
3      "AVG_SATIFACTION_SCORE" , AVERAGE('customer and customer_add'[Cust_Satisfaction_Score])
4      )
```

Card_Category	AVG_SATIFACTION_SCORE
Blue	3.19927536231884
Silver	3.22187981510015
Gold	3.04663212435233
Platinum	2.71641791044776

14. 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.

```
1  LOAN_APPROVAL_NO =
2  CALCULATE(AVERAGE('credit_card and cc_add'[Credit_Limit]),
3    'customer and customer_add'[Personal_loan] = "NO")
4
5
```

```
1  LOAN_APPROVAL_YES =
2  CALCULATE(AVERAGE('credit_card and cc_add'[Credit_Limit]),
3  'customer and customer_add'[Personal_loan] = "YES")
```

15. 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.

Create two new column in Credit table

```
1 FLAG_CLIENTS =

2 IF('credit_card and cc_add'[NORMALISED_REVOLVING_BALANCE] > 0.9 &&

3

4   [AVG_UTILIZATION_RATIO] > 0.8, "FLAGGED", "NOT_FLAGGED" )

5
```

Thank You