FINANCIAL ANALYSIS PROJECT

BY APPLYING DAX FUNCTIONS

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INTRODUCTION

OBJECTIVE

- Analyze credit card usage and financial metrics for a banking institution using Power BI.
- Create detailed reports using DAX functions to assess customer behaviour and financial performance.

SCOPE

- Running totals, moving averages, growth rates, KPIs for credit utilization, and delinquency risk.

TOOLS

- Power BI for data visualization and report generation.
- Calculate metrics like running totals, moving averages, and growth rates.
- Generate KPIs for customer behaviour, credit utilization, and delinquency risk.

METRICS

- RUNNING TOTAL OF CREDIT CARD TRANSACTIONS
- 4-WEEK MOVING AVERAGE OF CREDIT LIMIT FOR EACH CLIENT
- MOM% GROWTH AND WOW% GROWTH ON TRANSACTION AMOUNT
- 4-WEEK MOVING AVERAGE OF CREDIT LIMIT FOR EACH CLIENT
- CUSTOMER ACQUISITION COST (CAC) AS A RATIO OF TRANSACTION AMOUNT
- YEARLY AVERAGE OF AVG_UTILIZATION_RATIO FOR ALL CLIENTS
- PERCENTAGE OF INTEREST EARNED COMPARED TO TOTAL REVOLVING BALANCE FOR EACH CLIENT

- TOP 5 CLIENTS BY TOTAL TRANSACTION AMOUNT
- CLIENTS WHOSE AVG_UTILIZATION_RATIO EXCEEDS 80%.
- INCOME VS CREDIT LIMIT CORRELATION
- AVERAGE CUSTOMER SATISFACTION SCORE BY CREDIT CARD CATEGORY
- LOAN APPROVAL VS CREDIT LIMIT ANALYSIS

RUNNING TOTAL OF CREDIT CARD TRANSACTIONS

```
Total_of_Credit_Card_Transactions =
CALCULATE(
    SUM(credit_card[Total_Trans_Amt]),
    FILTER(
        ALL(credit_card),
        credit_card[Week_Start_Date] <= MAX(credit_card[Week_Start_Date])
    )
)
```

4-WEEK MOVING AVERAGE OF CREDIT LIMIT FOREACH CLIENT

```
MOVING_AVG =
VAR TimePeriod = DATESINPERIOD(
    credit_card[Week_Start_Date],
    MAX(credit_card[Week_Start_Date]),
    -28,
    DAY
)
VAR TotalCreditLimit = CALCULATE(
    SUM(credit_card[Credit_Limit]),
    TimePeriod
)
VAR DistinctWeeks = CALCULATE(
    DISTINCTCOUNT(Calendar[Week_num]),
    TimePeriod
)
RETURN DIVIDE(TotalCreditLimit, DistinctWeeks)
```

GROWTH ON TRANSACTION AMOUNT

MOM % GROWTH

```
MOM_GROWTH =
VAR CurrentMonth = SUM(credit_card[Total_Trans_Amt])
VAR PreviousMonth = CALCULATE(
    SUM(credit_card[Total_Trans_Amt]),
    DATEADD(Calendar[Date], -1, MONTH)
)
RETURN
DIVIDE(CurrentMonth - PreviousMonth, PreviousMonth)
```

GROWTH ON TRANSACTION AMOUNT

WOW % GROWTH

```
WOW_GROWTH =
VAR CurrentWeek = SUM(credit_card[Total_Trans_Amt])
VAR PreviousWeek = CALCULATE(
    SUM(credit_card[Total_Trans_Amt]),
    DATEADD(Calendar[Date], -7, DAY)
)
RETURN
DIVIDE(CurrentWeek - PreviousWeek, PreviousWeek, 0)
```

CUSTOMER ACQUISITION COST(CAC) AS A RATIO OF TRANSACTION AMOUNT

```
CAC =
DIVIDE(
    SUM(credit_card[Customer_Acq_Cost]),
    SUM(credit_card[Total_Trans_Amt]),
    0
)
```

YEARLY AVERAGE OF AVG_UTILIZATION_RATIO FOR ALL CLIENTS

```
AVG_utilization_ratio =
AVERAGE(credit_card[Avg_Utilization_Ratio])
```

PERCENTAGE OF INTERESTEARNED COMPARED TO TOTAL REVOLVING BALANCE FOREACH CLIENT

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

CLIENTS WHOSE AVG_UTILIZATION_RATIO EXCEEDS 80%

```
High_Utilization_Clients =
credit_card[Avg_Utilization_Ratio] > 0.8
```

TOP 5 CLIENTS BY TOTAL TRANSACTION AMOUNT

```
TOP5_CLIENT =
TOPN(
    5,
    SUMMARIZE(
        credit_card,
        credit_card[Client_Num],
        "TOTAL_AMOUNT", SUM(credit_card[Total_Trans_Amt])
    ),
    [TOTAL_AMOUNT],
    DESC
)
```

AVERAGE CUSTOMER SATISFACTION SCORE BY CREDIT CARD CATEGORY

```
Avg_score_by_card_category =
SUMMARIZE(
    credit_card,
    credit_card[Card_Category],
    "AVG_SCORE", ROUND(AVERAGE(credit_card[Cust_Satisfaction_Score]), 2)
)
```

LOAN APPROVAL VS CREDIT LIMIT ANALYSIS

```
Loan_yes =
CALCULATE(
    AVERAGE(credit_card[Credit_Limit]),
    credit_card[Personal_loan] = "yes"
)
```

```
Loan_no =
CALCULATE(
    AVERAGE(credit_card[Credit_Limit]),
    credit_card[Personal_loan] = "no"
)
```

INCOME VS CREDIT LIMIT CORRELATION

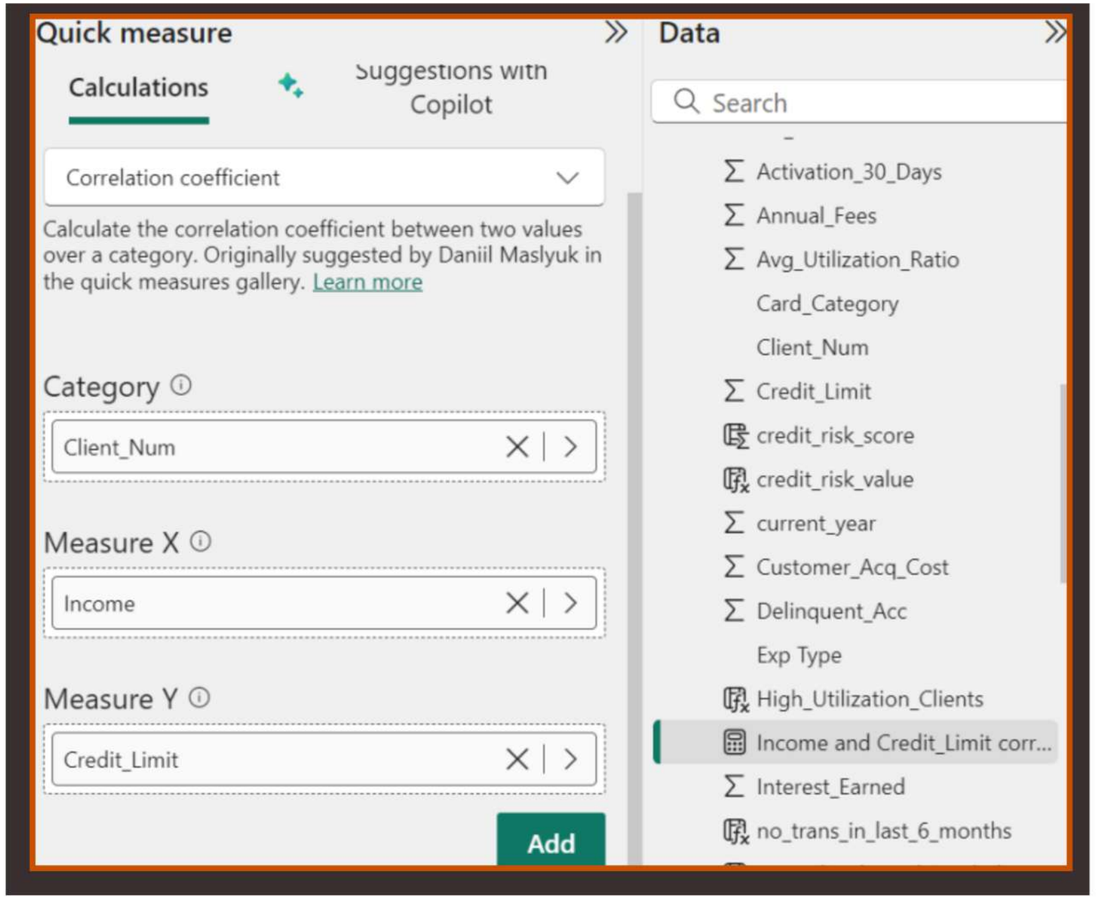
- **IN THIS ANALYSIS, WE UTILIZED QUICK MEASURES TO CALCULATE THE CORRELATION BETWEEN DIFFERENT METRICS.**

  Category: Client_Num

  Measure X: Income

  Measure Y: Credit_Limit

- **THIS SETUP ALLOWS US TO EVALUATE THE RELATIONSHIP BETWEEN INCOME AND CREDIT_LIMIT FOR EACH CLIENT.**



KPI

CUSTOMER CHURN INDICATOR

Flags clients who have not made any transactions (Total_Trans_Amt = 0) in the last 6 months.

DELINQUENCY RATE

Calculates the percentage of clients with Delinquent_Acc > 0.

CREDIT RISK SCORE

Creates a score for each client based on their Avg_Utilization_Ratio, Delinquent_Acc, and Total_Revolving_Bal.

HIGH RISK CLIENTS FLAG

Flags clients whose Total_Revolving_Bal exceeds 90% of their Credit_Limit and have a high Avg_Utilization_Ratio.

CUSTOMER CHURN INDICATOR

```
no_trans_in_last_6_months =
VAR Last6Months =
    CALCULATE(
        SUM(credit_card[Total_Trans_Amt]),
        DATESINPERIOD(Calendar[Date], MAX(Calendar[Date]), -6, MONTH)
    )
RETURN
    IF(ISBLANK(Last6Months) || Last6Months = 0, TRUE, FALSE)
```

DELINQUENCY RATE

```
Delinquency_rate =
VAR DelinquentAcc =
    CALCULATE(
        COUNTROWS(credit_card),
        credit_card[Delinquent_Acc] > 0
    )

VAR TotalAccounts =
    COUNTROWS(credit_card)

RETURN
    DIVIDE(DelinquentAcc, TotalAccounts, 0)
```

CREDIT RISK SCORE

To create the credit risk score, we normalize the revolving balance and then weight the average utilization ratio, delinquent accounts, and normalized revolving balance.

- **Step 1**

```
normalized_revolving_balance =
VAR MinValue =
    CALCULATE(MIN(credit_card[Total_Revolving_Bal]))

VAR MaxValue =
    CALCULATE(MAX(credit_card[Total_Revolving_Bal]))

RETURN
    DIVIDE(
        credit_card[Total_Revolving_Bal] - MinValue,
        MaxValue - MinValue,
        0
```

- **Step 2**

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

- **Step 3**

```
credit_risk_value =
SWITCH(
    TRUE(),
    credit_card[credit_risk_score] <= 0.2, "Low Risk",
    credit_card[credit_risk_score] > 0.2 && credit_card[credit_risk_score] <= 0.5, "Medium Risk",
    credit_card[credit_risk_score] > 0.5, "High Risk"
)
```

HIGH RISK CLIENTS FLAG

```
exceeds_90%_of_creditlimit =
VAR Cl90 =
    credit_card[Credit_Limit] * 0.9

RETURN
    IF(
        credit_card[Total_Revolving_Bal] > Cl90,
        TRUE,
        FALSE
    )
```

CONCLUSION

The analysis provides a comprehensive view of credit card usage and financial metrics, offering valuable insights into customer behaviour, credit risk, and overall financial performance. By leveraging these insights, the banking institution can make informed decisions to enhance customer retention, optimize credit management, and improve financial outcomes. The use of Power BI and DAX functions facilitated in-depth analysis and visualization, enabling better strategic planning and decision-making.

THANK YOU
FOR ATTENTION

The best way to predict the future is to create it. Thank you for being a part of this journey towards insightful financial analysis and strategic growth