Credit Card Analytics & Insights

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This project analyses credit card transaction and customer data to derive key performance metrics and visualize trends using SQL and Power BI.

Data & Methodology

Two data sets were used for this project them being c_add and c_details serving complementary purposes and are designed to work together to provide a complete view of each client.

- **c_add (Client Details Dataset):**
  This dataset contains core client information such as client ID, name, address, contact details, and other demographic or profile-related attributes. It represents who the client is.
- **c_details (Client Bank Details Dataset):**
  This dataset stores financial or banking-related information, such as account numbers, bank names, branch details, account types, or transaction-related identifiers. It represents how the client is associated with banking services.

SQL Queries

1.KPI report

```
SELECT 'Total_client' AS Measure_Name, COUNT(DISTINCT Client_Num) AS Measure_Value FROM c_add
UNION ALL
SELECT 'Income' AS Measure_Name, SUM(Income) AS Measure_Value FROM c_add
UNION ALL
SELECT 'Revenue' AS Measure_Name, Round(SUM(Total_Trans_Amt + Annual_Fees + Interest_Earned),2) AS Measure_Value FROM c_details
UNION ALL
SELECT 'Total_Interest' AS Measure_Name, ROUND(SUM(Interest_Earned),2) AS Measure_Value FROM c_details
UNION ALL
SELECT 'Trans_volume' AS Measure_Name, SUM(Total_Trans_Vol) AS Measure_Value FROM c_details
UNION ALL
SELECT 'Customer_satisfaction_score' AS Measure_Name, AVG(Cust_Satisfaction_Score) AS Measure_Value FROM c_add
```

	Measure_Name	Measure_Value
1	Total_client	10108
2	Income	575914439
3	Revenue	55315410.23
4	Total_Interest	7843382.23
5	Trans_volume	655651
6	Customer_satisfaction_score	3

2. Total Revenue Per Month

```
SELECT MONTH(Week_Start_Date) AS Month,
SUM(Total_Trans_Amt + Annual_Fees + Interest_Earned) AS Revenue
FROM c_details
WHERE Week_Start_Date IS NOT NULL
GROUP BY MONTH(Week_Start_Date)
ORDER BY Revenue DESC;
```

	Month	Revenue
1	7	5654512.79161835
2	1	5373465.16876221
3	4	5185119.37052536
4	10	5054987.27983856
5	6	4388380.95993042
6	2	4386698.66928101
7	8	4293168.98939133
8	9	4287797.90945816
9	5	4247066.39044952
10	11	4229738.76046753
11	3	4204198.92892075
12	12	4010275.01118469

3. Total revenue per month and running total of revenue over time.

```
-- Cumalitive Analysis
--Total revenue per month and running total of revenue over time.
SELECT C_Month, Revenue,
 SUM(Revenue) OVER (ORDER BY C_Month) AS running_total
FROM (
SELECT MONTH(Week_Start_Date) AS C_Month,
ROUND(SUM(Total_Trans_Amt + Annual_Fees + Interest_Earned),2) AS Revenue
FROM c_details
WHERE Week_Start_Date IS NOT NULL
GROUP BY MONTH(Week_Start_Date)) T
```

C_Month	Revenue	running_total
1	5373465.17	5373465.17
2	4386698.67	9760163.84
3	4204198.93	13964362.77
4	5185119.37	19149482.14
5	4247066.39	23396548.53
6	4388380.96	27784929.49
7	5654512.79	33439442.28
8	4293168.99	37732611.27
9	4287797.91	42020409.18
10	5054987.28	47075396.46
11	4229738.76	51305135.22
12	4010275.01	55315410.23

4. Moving avg and running total of Interest Earned

```
SELECT C_Month, int_earned,
      SUM(int_earned) OVER(ORDER BY C_Month) AS running_total,avg_int,
      AVG(avg_int) OVER(ORDER BY C_Month ROWS BETWEEN 2 PRECEDING AND CURRENT ROW) AS moving_avg
      FROM(
SELECT MONTH(Week_Start_Date) AS C_Month,
ROUND(SUM(Interest_Earned),2) AS int_earned,
ROUND(AVG(Interest_Earned),2) AS avg_int
FROM c_details
WHERE Week_Start_Date IS NOT NULL
GROUP BY MONTH(Week_Start_Date))t
```

C_Month	int_earned	running_total	avg_int	moving_avg
1	764869.17	764869.17	785.29	785.29
2	618433.67	1383302.84	792.86	789.075
3	580721.93	1964024.77	744.52	774.223333333333
4	724341.37	2688366.14	742.91	760.096666666667
5	594248.39	3282614.53	761.86	749.763333333333
6	628090.96	3910705.49	805.24	770.003333333333
7	821819.79	4732525.28	842.89	803.33
8	615435.99	5347961.27	789.02	812.383333333333
9	607163.91	5955125.18	778.42	803.443333333333
10	718848.28	6673973.46	737.28	768.24
11	600408.76	7274382.22	769.75	761.816666666667
12	569000.01	7843382.23	759.68	755.57

5. Revenue by card category

```sql
SELECT Card_Category,
    ROUND(SUM(Total_Trans_Amt + Annual_Fees + Interest_Earned),2) AS Revenue
FROM c_details
GROUP BY Card_Category
ORDER BY Revenue DESC;
```

	Card_Category	Revenue
1	Blue	46139397.74
2	Silver	5586332.28
3	Gold	2454072.16
4	Platinum	1135608.05

6. Credit Utilization Ratio Summary

```sql
SELECT
    CASE
        WHEN Avg_Utilization_Ratio < 0.3 THEN 'Low Usage'
        WHEN Avg_Utilization_Ratio BETWEEN 0.3 AND 0.7 THEN 'Medium Usage'
        ELSE 'High Usage'
    END AS Utilization_Band,
    COUNT(*) AS Customer_Count
FROM c_details
GROUP BY CASE
        WHEN Avg_Utilization_Ratio < 0.3 THEN 'Low Usage'
        WHEN Avg_Utilization_Ratio BETWEEN 0.3 AND 0.7 THEN 'Medium Usage'
        ELSE 'High Usage'
    END
ORDER BY Customer_Count DESC;
```

	Utilization_Band	Customer_Count
1	Low Usage	6234
2	Medium Usage	2817
3	High Usage	1057

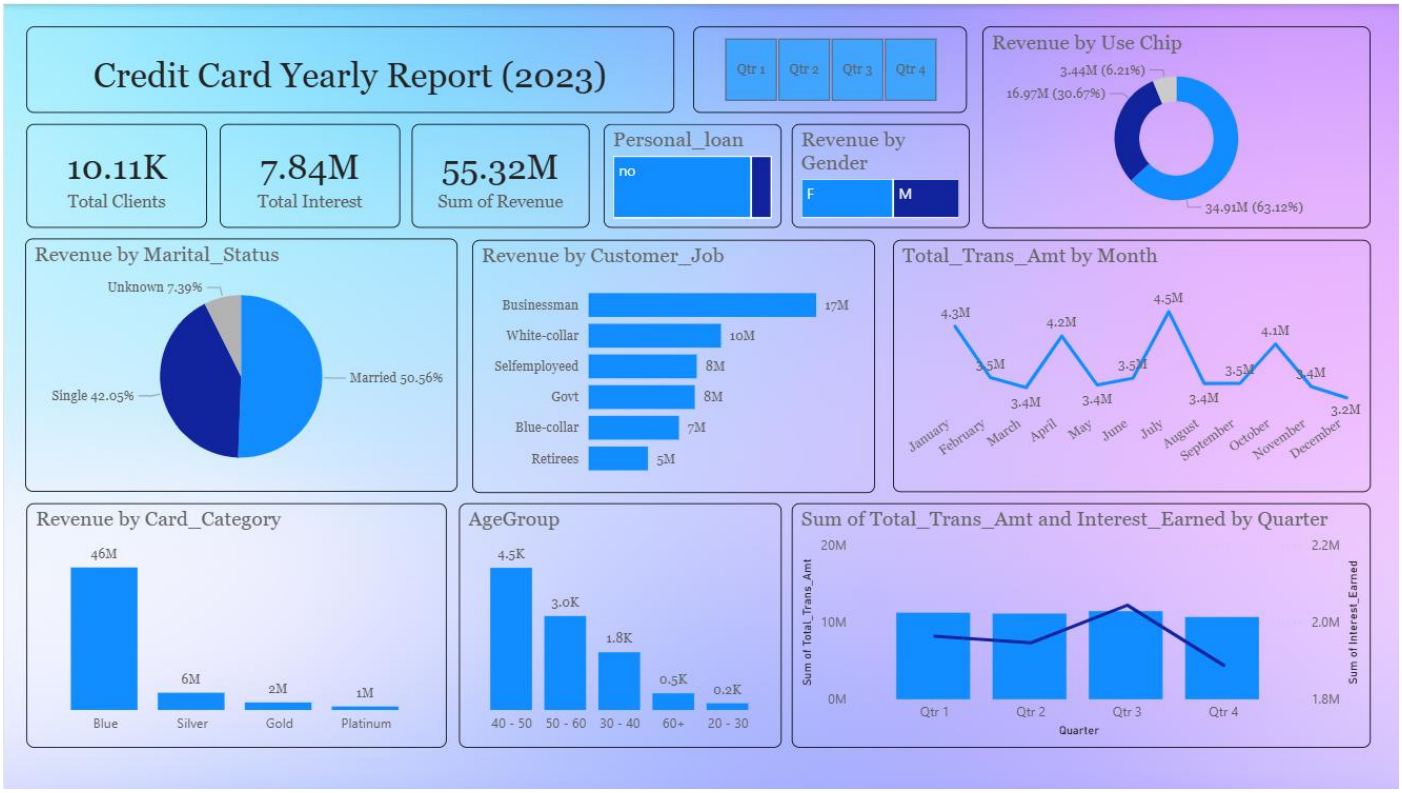
7. Clients Credit card limit

```
SELECT COUNT(DISTINCT Client_Num) AS Total_client,
       CASE
        WHEN Credit_Limit < 10000 THEN 'Below 10k'
        WHEN Credit_Limit BETWEEN 10000 AND 50000 THEN '10K TO 30K'
        ELSE 'Above 30k'
        END AS cc_limit
FROM c_details
GROUP BY
       CASE
        WHEN Credit_Limit < 10000 THEN 'Below 10k'
        WHEN Credit_Limit BETWEEN 10000 AND 50000 THEN '10K TO 30K'
        ELSE 'Above 30k'
        END
ORDER BY cc_limit DESC
```

	Total_client	cc_limit
1	7359	Below 10k
2	2749	10K TO 30K

Credit card analysis report

Developed an end-to-end credit card analytics dashboard using Power BI to visualize key performance metrics such as monthly and quarterly revenue trends, total interest earned, customer segmentation by demographics, and product performance by card category. Implemented dynamic filters and KPI indicators to support data-driven insights and business strategy recommendations.



- Revenue peaked in Q3, likely driven by increased card usage in mid-year months. December saw a dip, suggesting seasonal variations.
- Blue card category drives the majority of revenue.
- Business owners contribute significantly more.

Conclusion

The Credit Card Analytics & Insights project effectively demonstrated the use of SQL and Power BI to extract, analyse, and visualise key business KPIs from credit card customer and transaction datasets. The analysis pipeline ensured accurate computation of performance measures such as total revenue, interest generated, client segmentation, running totals, and moving averages across time by using systematic data preparation techniques such as cleaning, normalisation, and feature selection.

The dashboard visualisations highlight key trends and actionable data, such as the blue card category's major contribution to overall income, seasonal variance in total transaction amounts across months, and card usage patterns by demographics. Customer segmentation (e.g., job category, age group, marital status) is useful for developing tailored company strategies.

Overall, the project demonstrates the potential to convert raw transactional data into organised analytical outputs and interactive visual narratives to aid in informed decision-making. The approaches and tools exhibited, including as sophisticated SQL querying, window functions, and interactive BI modelling, are realistic skills applicable to real-world credit risk and revenue analytics applications.

Appendix

Client_Num	Unique identifier for each customer
Week_Start_Date	Transaction week date (used for trend analysis)
Total_Trans_Amt	Total transaction amount for the period
Interest_Earned	Interest value earned from transactions
Annual_Fees	Annual fees charged to the customer
Credit_Limit	Maximum credit limit available to the customer
Card_Category	Type of card (Blue, Silver, Gold, Platinum)
Avg_Utilization_Ratio	Ratio of used credit to credit limit
Customer_Job	Job or occupation category of customer
Customer_Age	Age of the customer
Gender	Gender of customer
Marital_Status	Marital status classification