SEPA-CREDIT-TRANSFER TRANSACTION DATA

1.Project Overview

This project focuses on analysing SEPA Credit Transfer transaction data using Microsoft Excel and Power BI. The objective is to understand transaction patterns, validate IBAN details, analyse transaction amounts, and identify trends based on dates and transaction status.

2.Data Source

- Source Description and Timeline: gomask ai and 2025
- Link: https://gomask.ai/marketplace/datasets
- Domain: Banking / Financial services domain

3. Problem Statement

- Identify valid and invalid transactions.
- Analyse transaction trends over time.
- Classify transactions based on amount levels (Low, Medium, High, Very High).
- Monitor transaction statuses like Settled, Pending, Rejected, Returned, etc.

4.Attribute Details

S.NO	Attributes Name	Data Types	Description
1	Initiating Party IBAN	String	Sender International Bank Account Number (IBAN)
2	Initiating Party BIC	String	Sender Bank Identifier Code (BIC)
3	Initiating Party Name	String	Payment Sender Name
4	Beneficiary IBAN	String	Receiver International Bank Account Number (IBAN)
5	Beneficiary BIC	String	Receiver Bank identifier Code (BIC)
6	Beneficiary Name	String	Payment Receiver Name
7	Transaction Key	String, Integer	A unique internal identifier to each transaction for tracking and Reference.
8	Transaction Date	Date	Date on which the transaction Initiated
9	Transfer ID	String, Integer	Identifier used to the payment transfer process

10	Transaction Amount	Integer	The Amount Transferred from the initiating party to the Beneficiary
11	Currency	String	Euro for SEPA transactions
12	Remittance Information	String	Payment description provided by the Sender
13	Charge Bearer	String	Who bears the transaction Charges
14	Settlement Date	Date	Date on which the transaction settled between Banks
15	Status	String	Current Processing Step
16	End To End ID	String, Integer	A Unique identifier to track from sender to beneficiary
17	Inter Bank Reference	String, Integer	A Reference number used for communication between banks
18	IBAN Valid	String	Whether the IBAN passed validation rules
19	Settlement Delay	Integer	Number of days between transaction and settlement dates
20	Amount Category	String	A Derived field used to classify transactions based on amount
21	Initiating Party Country Code	String	Sender Country Code
22	Beneficiary Country Code	String	Receiver Country Code
23	Cross-Border Status	String	Whether Transaction done within Country or Crossed the Border
24	No Of Transactions	Integer	Number of Transaction done on Date which is in the Date Column
25	Total Amount of Transaction	Integer	Amount Of Transaction done on Date which is in the Date Column
26	Country	String	Name Of Country
27	Country Code	String	Code which used to identifies the name of Country

5.Tools & Technologies

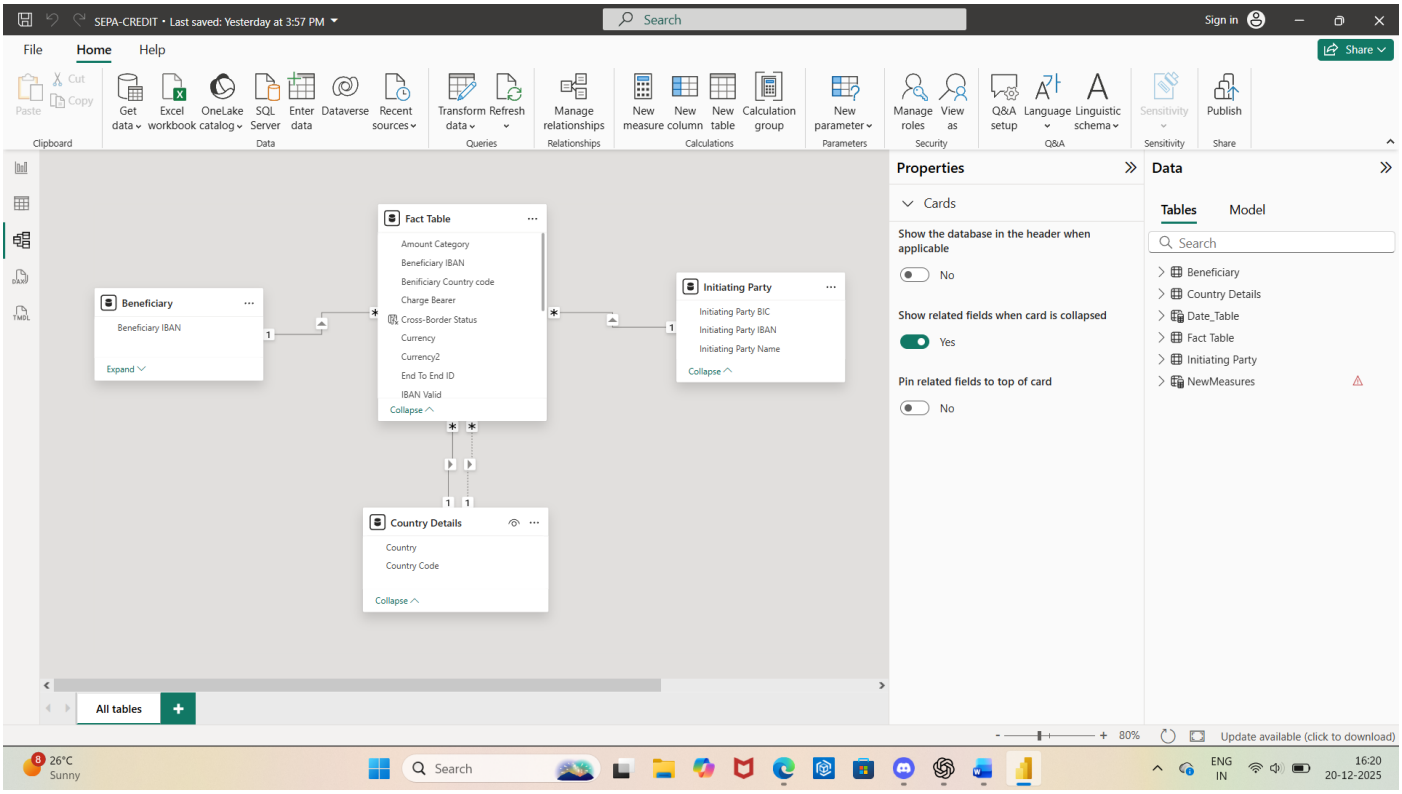
- Excel – Data Cleaning, Categorization, Pivot Table
- Power BI - Data modelling, creating measures, and building interactive dashboards for insights and decision-making.

6.Data Preprocessing

- Data Cleaning: Removed Duplicates, handled missing values, Standardised formats, Applied Filtering and Shorting to focus on relevant record.
- Pivot Table: Generated Pivot Tables to summarize the data and derive initial insights.
- Convert the data into Fact and Dimensional Table.
- Data Loading: Loaded cleaned Excel data into Power BI.
- Transformations: Rechecked data types (Date, Text, Decimal)
- Data Modeling: Ensured relationships between fact and dimension table. Checked primary keys and foreign keys were correctly mapped.
- Calculated Measures: Created measures such as Total transaction amount, Transaction count, Status-wise transaction totals,
- Data Validation: Cross verified payment status with IBAN valid to ensure Accuracy

7.Data Modeling

A structured star-schema–like data model was designed with a central Fact Table. Fact Table Stores transaction-level SEPA credit data. Beneficiary, Initiating Party, Country details used as dimension Tables. Relationships are one-to many from dimension to fact table. Country Details are shared by Beneficiary and Initiating Party to derive the insights about the Cross-Border Status. One is Active, second one kept as Inactive by design to ensure the Accuracy.

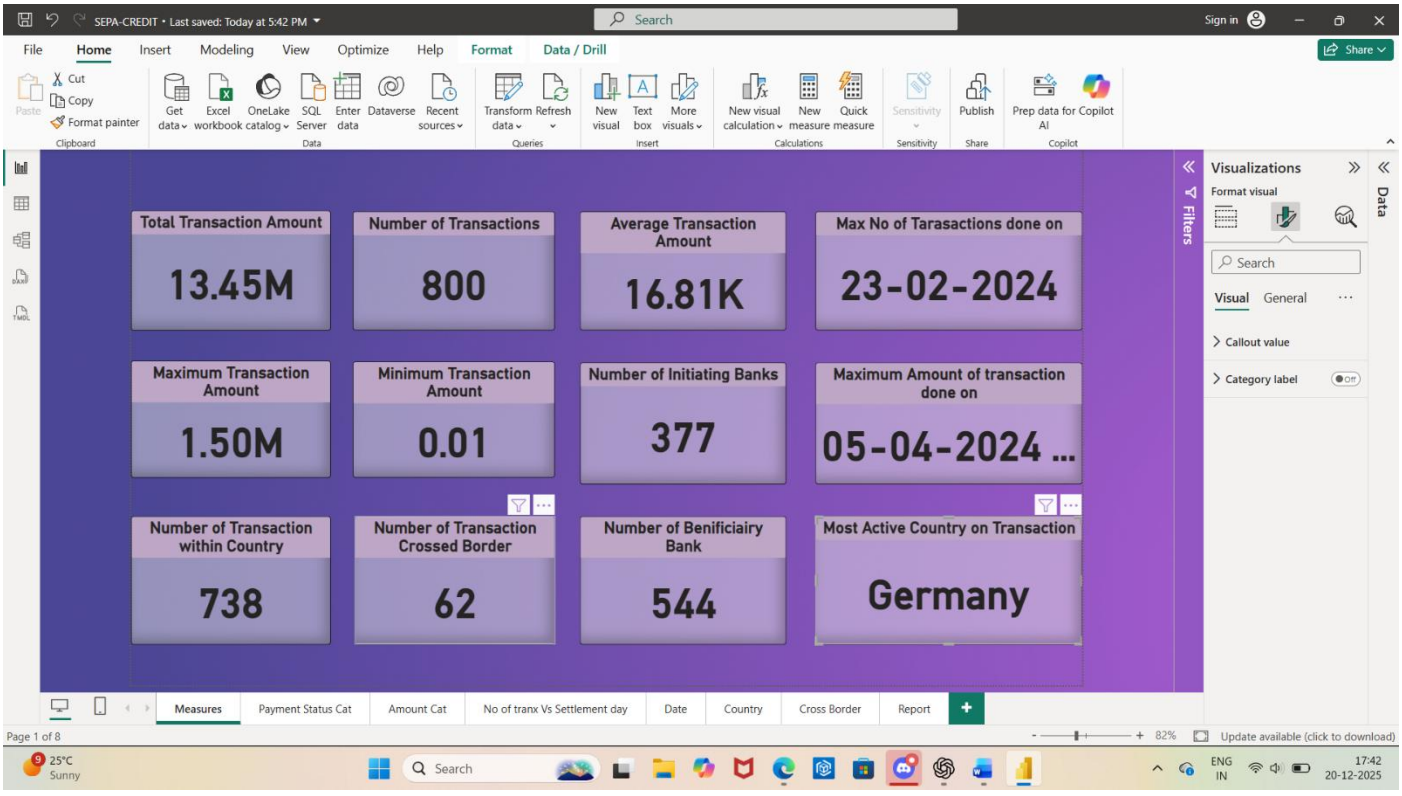


8.Calculated Column

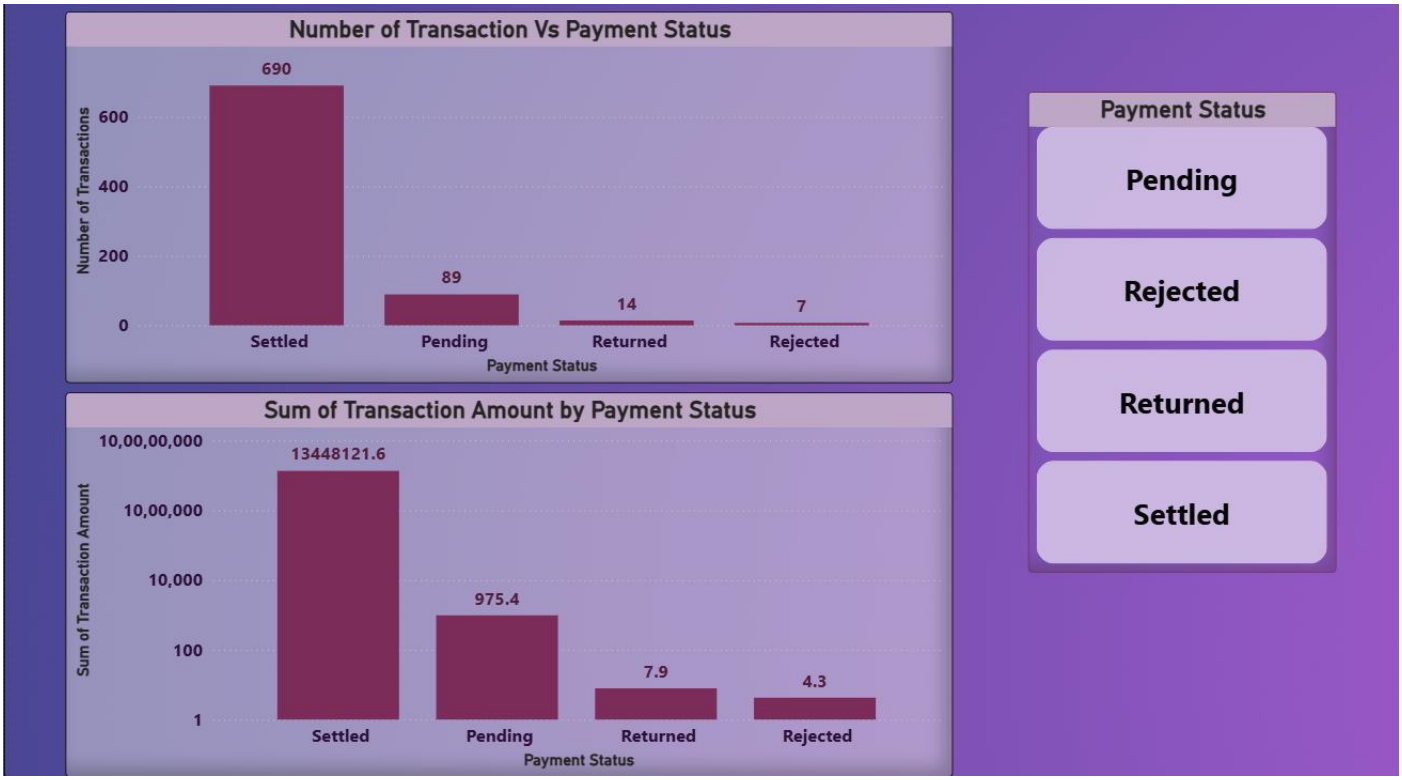
- **Date_Table** = DISTINCT('Fact Table'[Transaction Date])
- **No Of Transactions** = CALCULATE(COUNT('Fact Table'[Transaction Key]),FILTER('Fact Table','Fact Table'[Transaction Date]='Date_Table'[Transaction Date]))
- **Total Amount of Transactions** = CALCULATE(SUM('Fact Table'[Transaction Amount]), FILTER('Fact Table','Fact Table'[Transaction Date]='Date_Table'[Transaction Date]))
- **Cross-Border Status** = if('Fact Table'[Initiating Party Country Code]='Fact Table'[Benificiary Country code],"Within Country","Cross-Border")

9.DAX Formulas

- **Max_Amount_of_Transaction_done_on** = CALCULATE(MAX('Date_Table'[Transaction Date]),FILTER(Date_Table,Date_Table[Total Amount of Transactions]=MAX('Date_Table'[Total Amount of Transactions])))
- Max_No_Of_Transactions_done_on = CALCULATE(MAX(Date_Table[Transaction Date]), FILTER(Date_Table,Date_Table[No Of Transactions]=MAX(Date_Table[No Of Transactions])))
- **No_of_Tranx_With_in_Country** = CALCULATE(COUNT('Fact Table'[Cross-Border Status]),'Fact Table','Fact Table'[Cross-Border Status]="Within country")
- **No_Of_Tranx_Cross_Border** = CALCULATE(COUNT('Fact Table'[Cross-Border Status]),'Fact Table','Fact Table'[Cross-Border Status]="Cross-Border")
- **Most_Active_Country_on_Tranx** = TOPN(1,VALUES('Country Details'[Country]), [Transaction_Count],DESC)



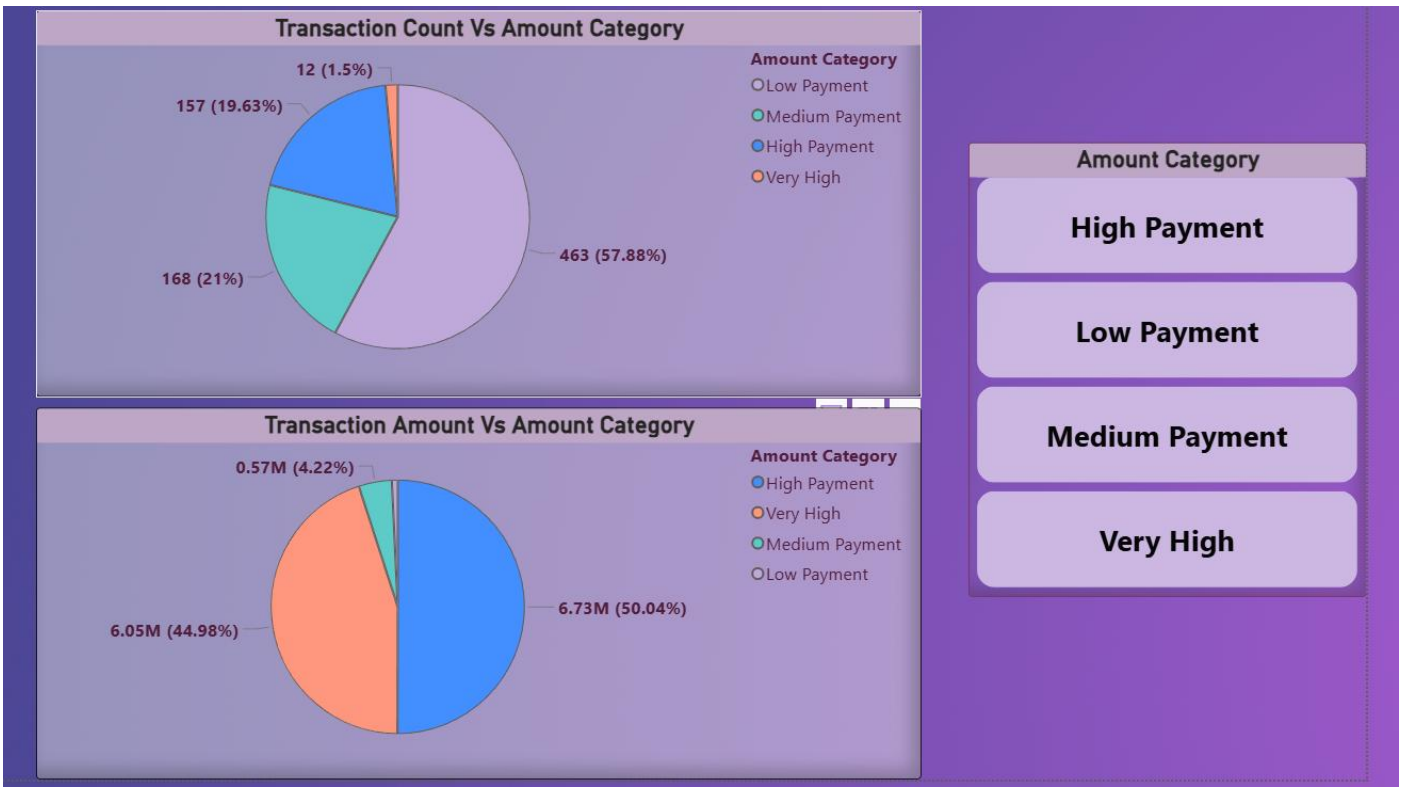
Number of Transaction and Sum of Transaction by Payment Status



Insights:

- Majority of transactions are Settled, Contributing almost all transaction value.
- Pending Transactions are exists but are low in Value.
- Returned and Rejected cases are minimal, indicating good payment efficiency.

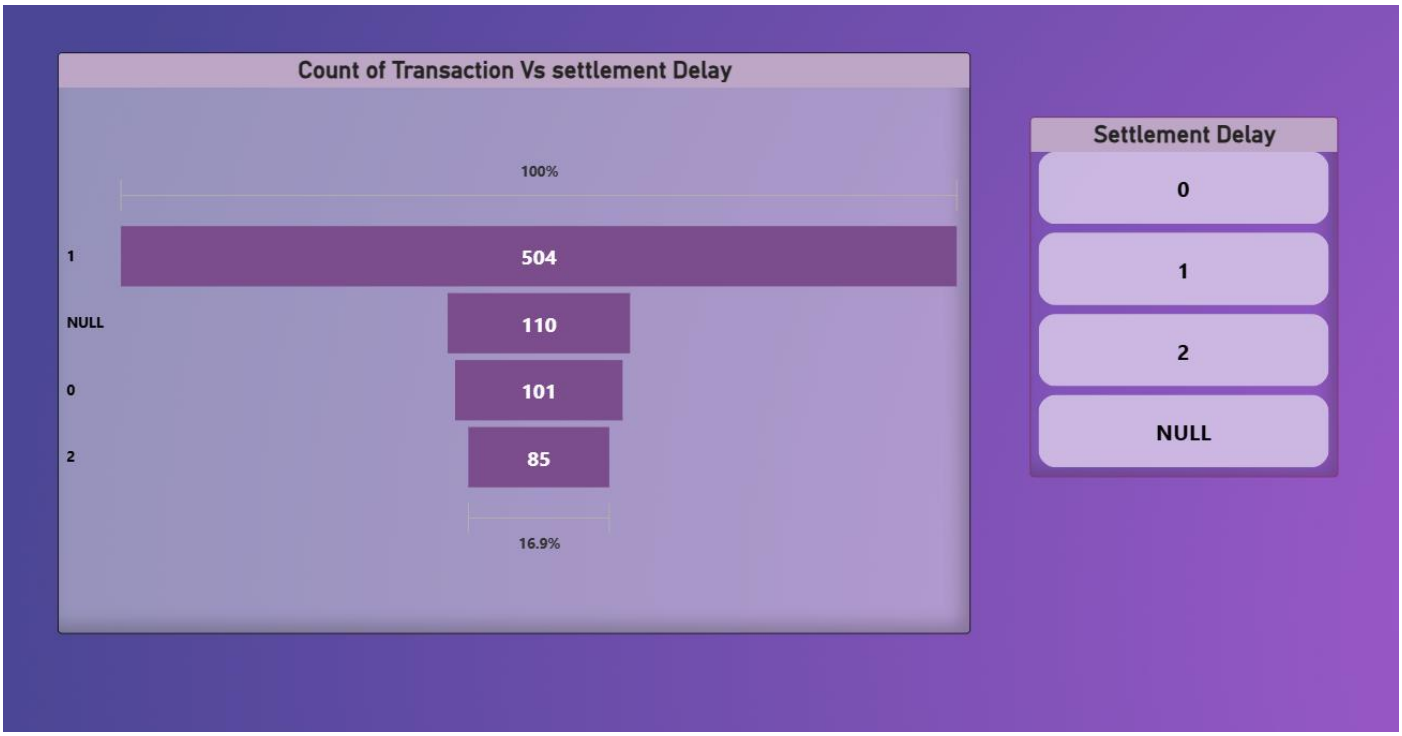
Number of Transaction and Sum of Transaction by Amount Category



Insights:

- Low value payments dominate the volume (58 % of transactions) but contribute minimal total amount.
- High payment and very high payments are less in volume but contribute 95% of total value.
- Revenue is highly concentrated in high value transactions.
- Operational focus should be on monitoring and securing high value payments.

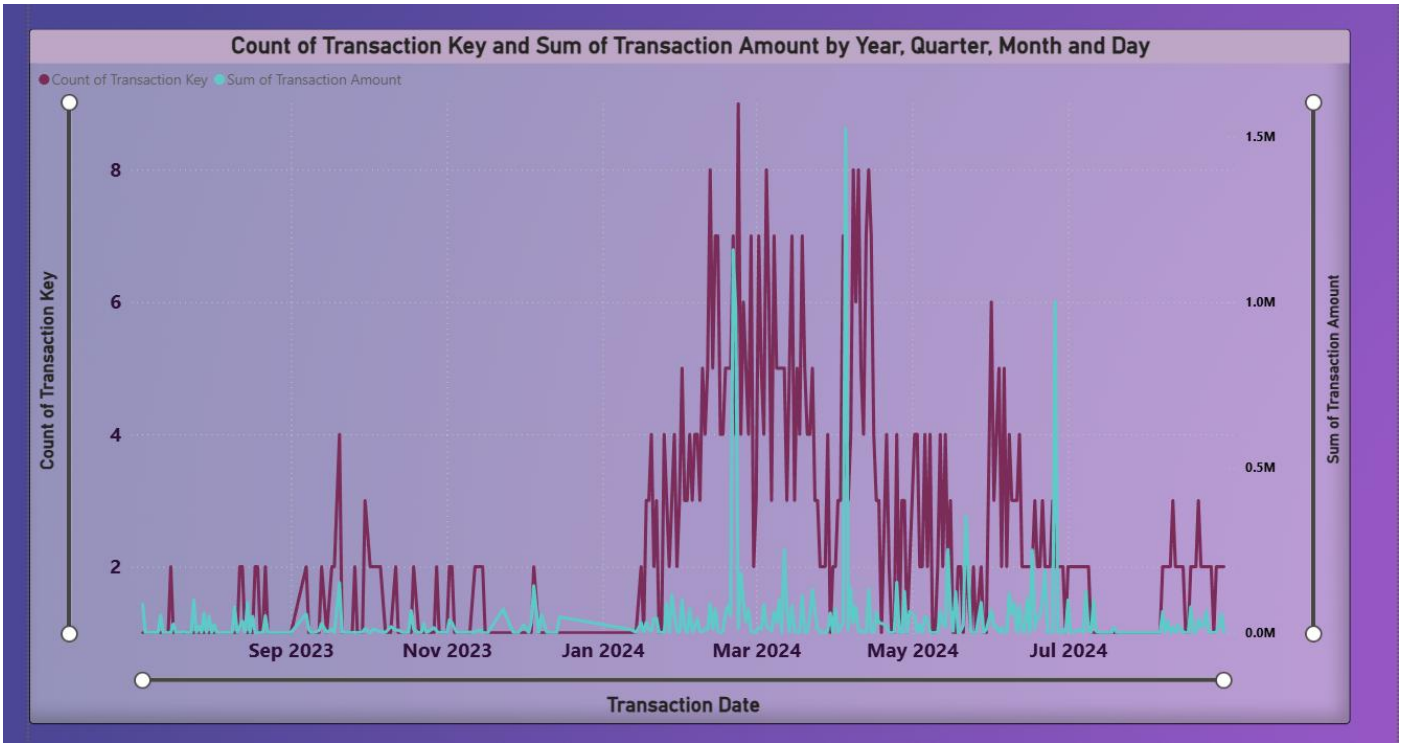
Count of transaction Vs Settlement delay



Insights:

- Majority of transactions are settled in 1 day (Highest Count).
- Same-day and 2-day delays are significantly lower.
- Null delays indicate pending and not yet settled transactions.
- Overall, settlement is quick, mostly within 1-2 days.

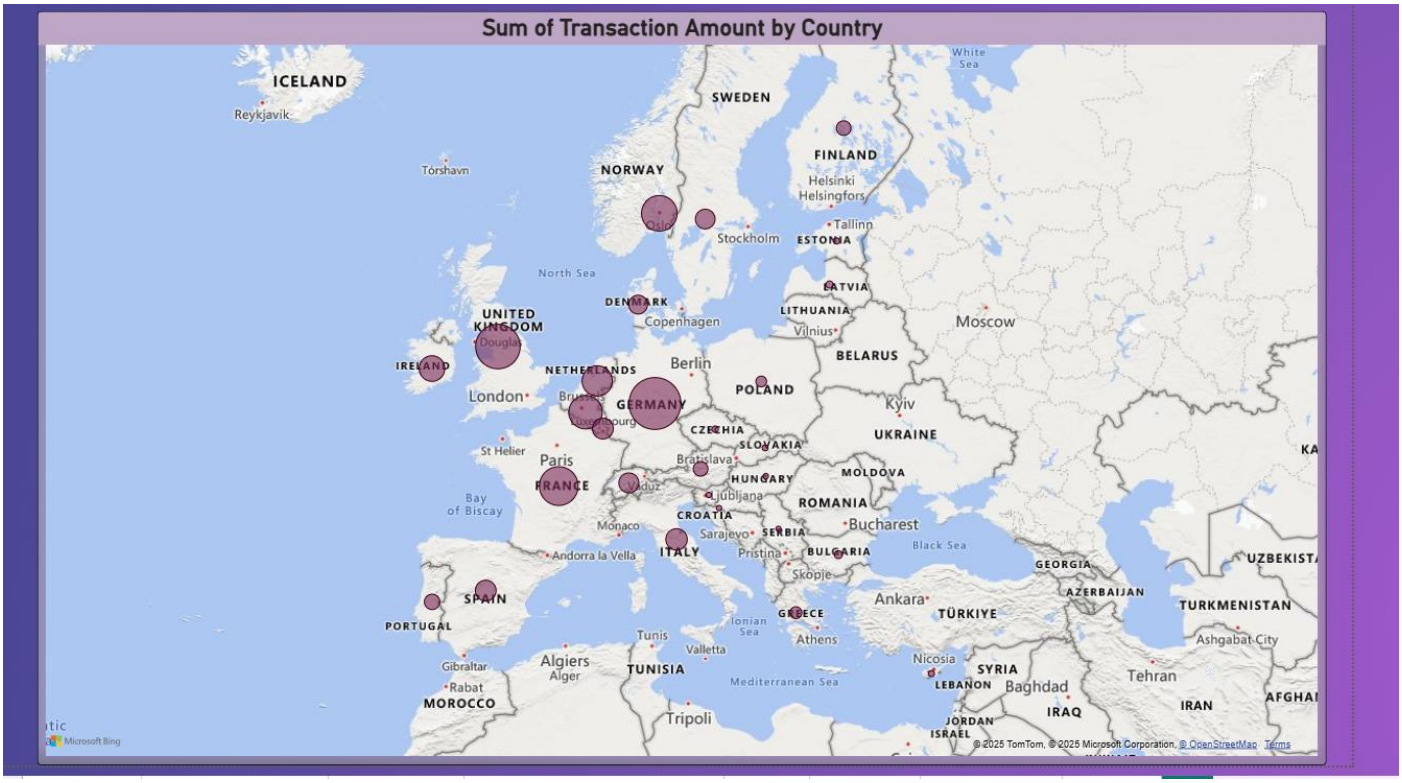
Daily transaction Count and amount trend



Insights:

- Low transaction activity in late 2023, with 1-2 transactions per day.
- Peak activity during Feb-Apr 2024, showing the highest daily transactions count.
- High Value transaction spikes occur on selected days, not always matching high counts.
- After May 2024, transactions reduced in frequency with mostly small transaction amount.

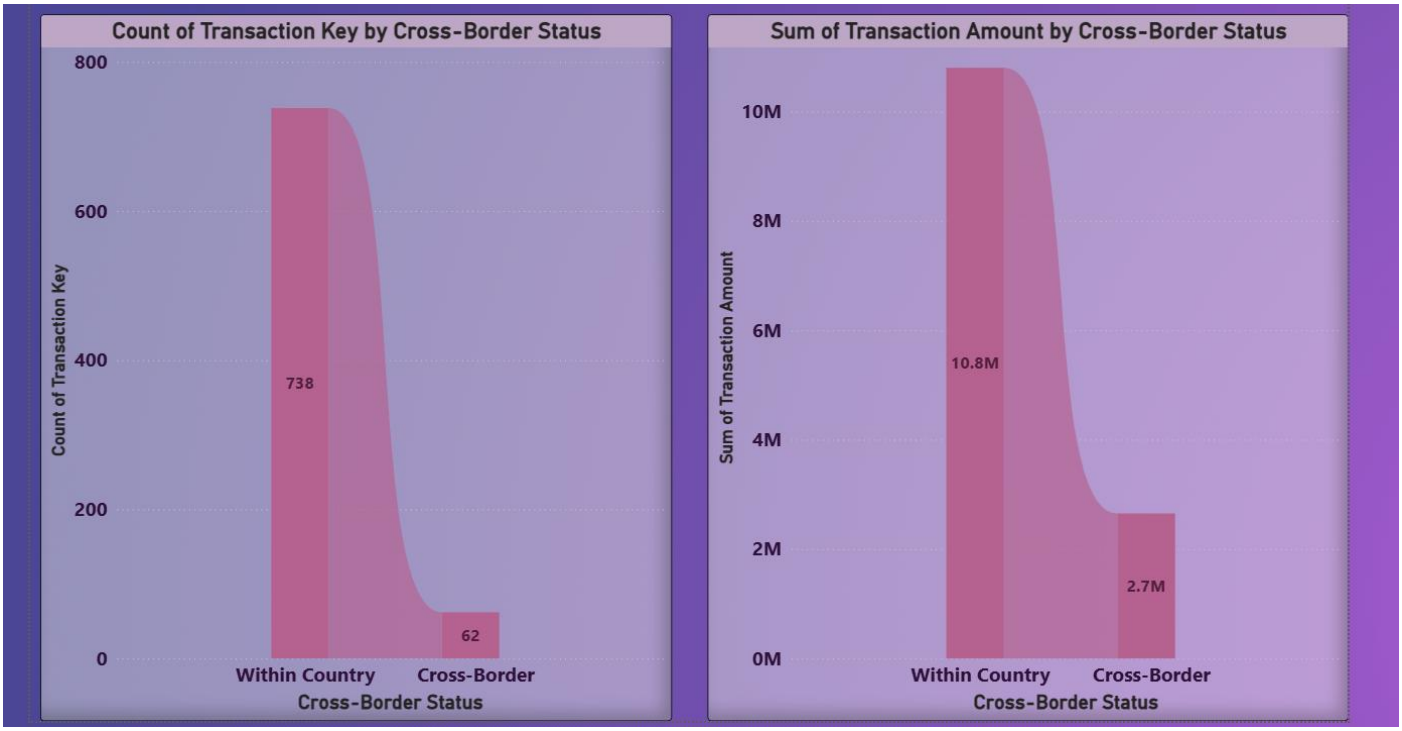
Transaction Amount Distribution by country



Insights

- Transaction Value is concentrated in western Europe.
- Northern and Eastern Europe shows comparatively lower transaction volumes.
- Indicates strong cross border activity happened.

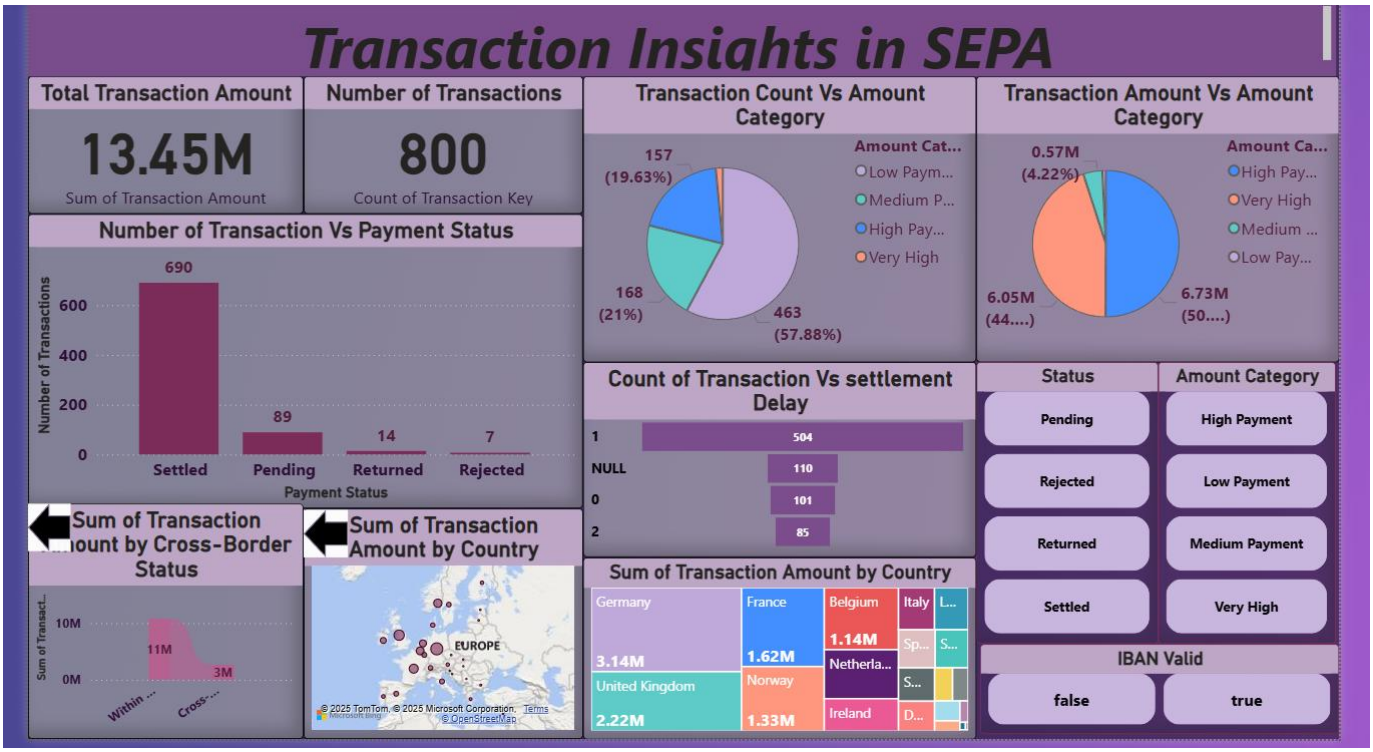
Within Country Vs cross border Transactions – Volume and Value Comparison



Insights:

- Within country transactions dominates with 738 transactions compared to only 62 cross border transactions.
- Within country payments significantly higher total amount 10.8M versus cross border transactions 2.7M.
- Cross border transactions are fewer in number but still contributes notable share value, indicating higher average transaction amounts compared to domestic payments.

Dashboard



Overall Insight:

SEPA credit transfers are predominantly domestic and successfully settled within one business day. While low value payments drive transaction volume, high value transfers contribute the majority of total transaction value, highlighting SEPA's dual role in retail and corporate payments.

Descriptive Anatlysis

- Total number of transactions is 800, Total transaction amount is 13.45M.
- Majority of transactions are settled.
- Within country transactions dominate both volume and value.
- Low Value payments form most of the transaction count.
- High and very high payments contribute most of the total amount.
- Most of the transactions are settled with in one day.
- Transaction value is concentrated in western Europe.

Diagnostic Analysis

- High settlement rate indicates efficient payment processing.
- Low Value transactions are frequent due to routine domestic payments and a test trial payment.
- High Value transaction drives revenue despite lower volume.
- Faster settlement (1 day) shows strong Banking Infrastructure.
- Higher value in cross border payment is due to business / International transfer.
- Western Europe dominance reflects higher economic activity and transaction flow.

Predictive Analysis

- High Value transactions will continue to drive revenue.
- Cross border payments may grow in value even if volume remains low.
- Settlement delays likely to remain within 1-2 days.
- Transaction spikes may continue around specific business periods.
- Countries with high value will remain key contributors.

Prescriptive Analysis

- Focus monitoring and controls on high & very high value transaction.
- Strengthen fraud checks for cross border payments.
- Reduce pending transactions by improving settlement follow ups.
- Optimize resources around peak transaction periods.
- Target High value countries for business Expansion and partnership.

Key Findings

- Most transactions are completed successfully, indicating high processing efficiency.
- Low-Value payments dominate volume while high and very high payments drive total value.
- Most transactions settled within 1 day with minimal delays beyond 2 days.
- Transaction activity peaked during Feb-Apr 2024, with high value spikes on select days.
- Western Europe contributes the highest transaction value.
- Within country transactions dominate volume and value, while cross border payments show higher average transaction amount.

Conclusion

The SEPA Credit Transfer analysis shows that most transactions are successfully settled, with domestic payments dominating overall volume. Low value transfers account for the majority of transaction counts, while high value payments contribute most of the total amount. Most transactions are settled within 1 business day, confirming the efficiency and reliability of the SEPA payment framework.