ABC Streaming Co.

2025

Project Customer 360

PRESENTED TO: INTERVIEWER
PRESENTED BY: NGUYEN KHANH NHAT

PHU THUAN WARD, HO CHI MINH CITY
|+84 707 701 783|

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ABSTRACT

The Customer 360 project consolidates ABC Streaming's scattered customer data and applies the RFM model to segment user behavior.

I used **SQL Azure (T-SQL)** to process and clean the data, **Excel (VBA)** to automate the RFM segmentation (with some manual adjustments), and **Power BI** to visualize the results and build dashboards that track key customer groups (VIP, Loyal, Potential, At Risk, Lost).

I. CASE STUDY

1. Background

ABC Streaming's customer data is scattered across multiple systems (registration, transactions, customer service), so a **Customer 360 platform** is needed to unify the data and better understand customer behavior.

2. Objectives

- Consolidate all customer data into a unified profile.
- **Apply the RFM model** to analyze behavior and segment customers **(VIP, Loyal, Potential, At Risk, Lost)**.
- Provide actionable insights for Marketing and Business teams.
- **Build dashboards** to monitor customer segments and revenue performance.

II. CORE CONCEPTS

1.Introducing Customer 360

Customer 360 is a framework that consolidates all customer data and interactions across the entire lifecycle (registration, transactions, support, usage behavior) into a single unified profile, enabling a complete view of each customer.

2. Core Benefits of Customer 360

1. Unifies data from multiple sources, eliminating fragmentation.
2. Provides real-time visibility into customer behavior.
3. Supports analytics, prediction, and personalized marketing automation.
4. Serves as the foundation for RFM modeling and customer segmentation strategies.

II. CORE CONCEPTS

3. Introducing the RFM Model (Recency – Frequency – Monetary)

The RFM model analyzes customer behavior based on three key factors that determine their likelihood to repurchase and overall customer value.

4. What are Recency – Frequency – Monetary?

✓ **Recency (R)**

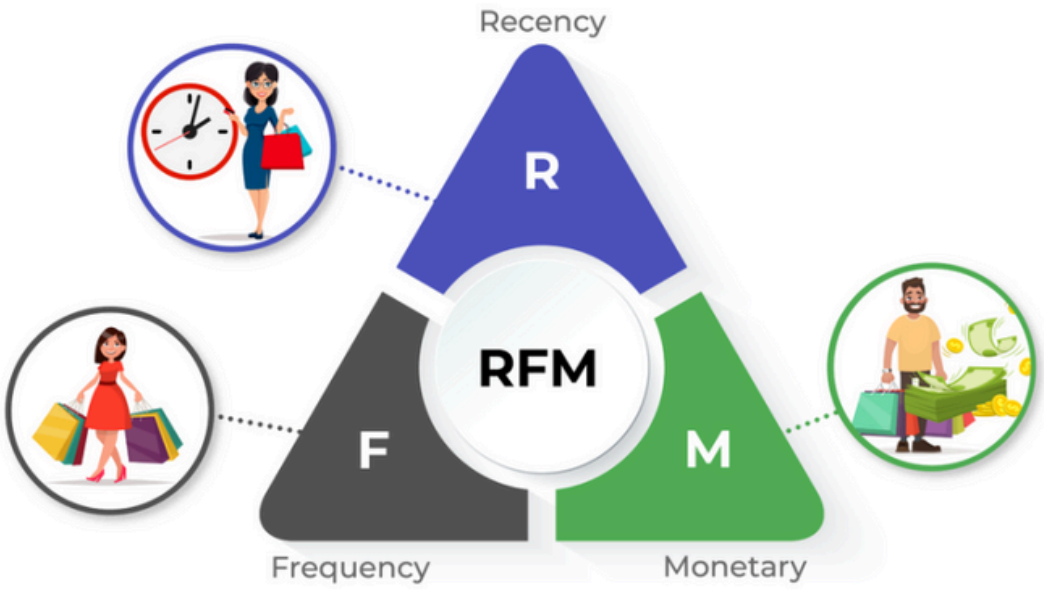
- Number of days since the latest transaction.
- Meaning: the more recent the purchase, the higher the chance of buying again.

✓ **Frequency (F)**

- Total number of transactions (normalized by customer lifetime).
- Meaning: higher frequency reflects stronger loyalty.

✓ **Monetary (M)**

- Total GMV or average yearly spending.
- Meaning: higher spending indicates higher lifetime value.



III. DATA

1. DATA SOURCE

The dataset was provided by my mentor: Trần Hoàng Long, containing transaction data recorded over three days (January 6–8, 2022).

A total of **1,048,574 transactions** were observed.

The project uses two main tables:

- Customer_Transaction
- Customer_Registered

2. CUSTOMER_TRANSACTION TABLE

Table 1: Customer_Transaction

	Transaction_ID	CustomerID	Purchase_Date	GMV
1	0	1327813	6/1/2022	95000
2	1	1157830	6/1/2022	75000
3	2	873915	7/1/2022	95000
4	3	3505071	7/1/2022	90000
5	4	2930918	7/1/2022	109091

- Includes the following columns: Transaction_ID, CustomerID, Purchase_Date, GMV.
- **Used for:**
  - Calculating Recency (reference date: 2022-09-01).
  - Determining the number of transactions and total GMV per customer.

III. DATA

3. BẢNG CUSTOMER_REGISTERED

Table 2: Customer_Registered

	ID	Contract	LocationID	BranchCode	Status	created_date	stopdate
1	1	SGDN00215	8	1	0	11/25/2011	1/5/2012
2	4	SGD022064	8	1	2	6/22/2011	5/29/2013
3	5	SGD041015	8	5	2	12/17/2011	11/11/2014
4	7	SGD374348	8	1	3	11/26/2012	12/13/2012
5	12	SGDN00017	0	0	2	12/4/2017	4/27/2018

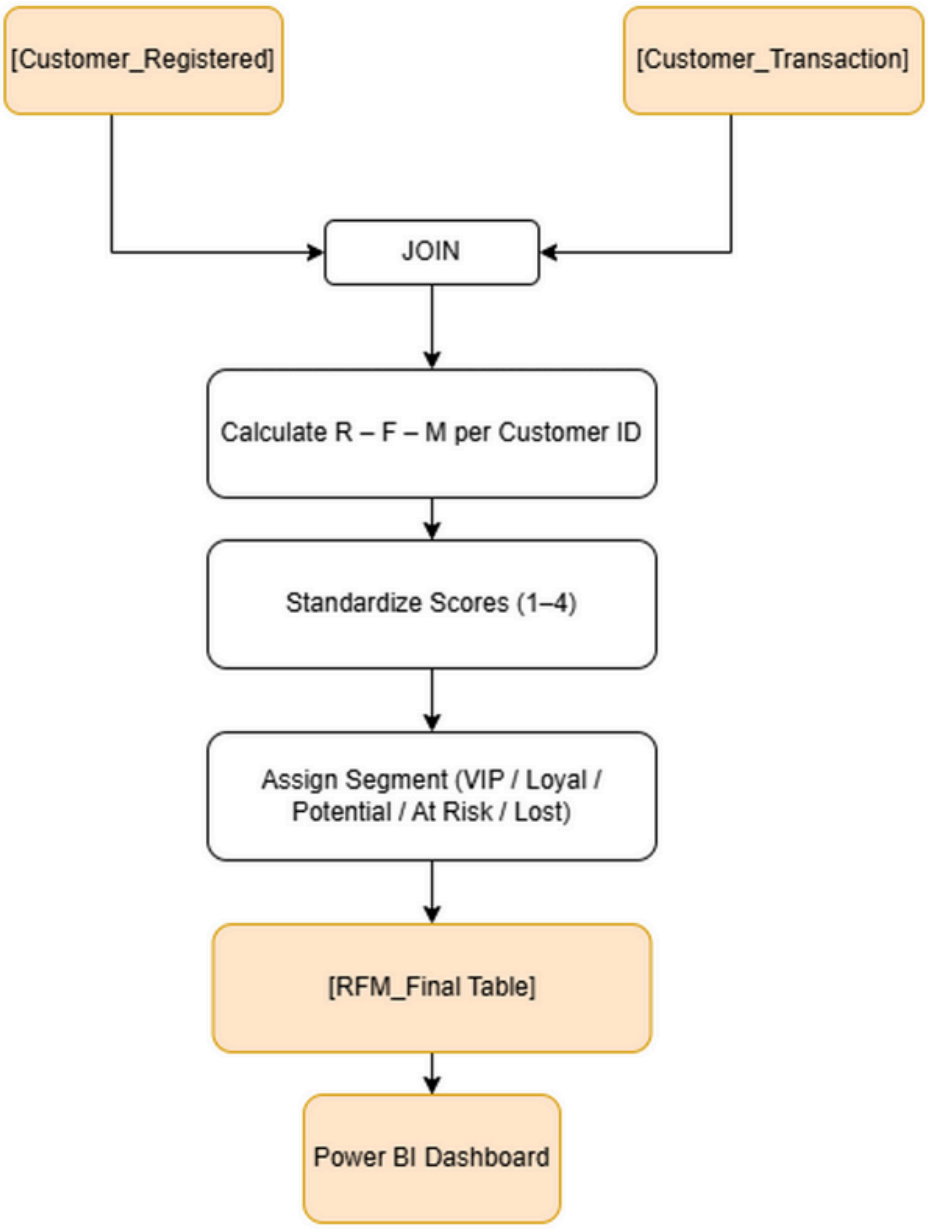
- Columns: ID, Contract, LocationID, BranchCode, Status, created_date, stopdate.
- **Used for:**
  - Calculating Contract_Age to normalize Frequency and Monetary based on customer lifetime.
  - Analyzing customers by branch, region, and status.

IV. METHOD

1. Method Overview

- This project applies **the RFM model (Recency – Frequency – Monetary)** to analyze customers' movie-purchasing behavior.
- The three metrics are normalized into a **scoring scale (1–4)** and used to segment customers into five strategic groups **(VIP, Loyal, Potential, At Risk, Lost).**

2. Process Model (Step-by-Step Workflow)



IV. METHOD

3. RFM CALCULATION STEPS

Recency (R)

- Number of days since the most recent transaction (reference date: 2022-09-01).

Frequency (F)

- Total number of transactions divided by Contract_Age.

Monetary (M)

- Total GMV divided by Contract_Age.

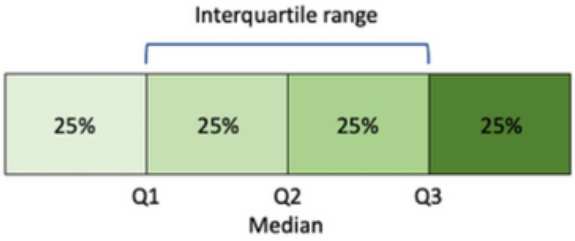
Table 3: RFM Calculated Results

	CustomerID	Frequency	Recency	Monetary
1	900290	0.800000000000	31	113636
2	1014520	0.800000000000	31	113636
3	824132	1.200000000000	15	103636
4	1037484	0.750000000000	31	103295
5	1044045	0.750000000000	31	103295

4. RFM SCORING (NORMALIZATION)

After calculating R/F/M, customers are ranked using ROW_NUMBER, then split into four score levels (1–4):

- Top 25% → score 4
- 25–50% → score 3
- 50–75% → score 2
- Bottom 25% → score 1



IV. METHOD

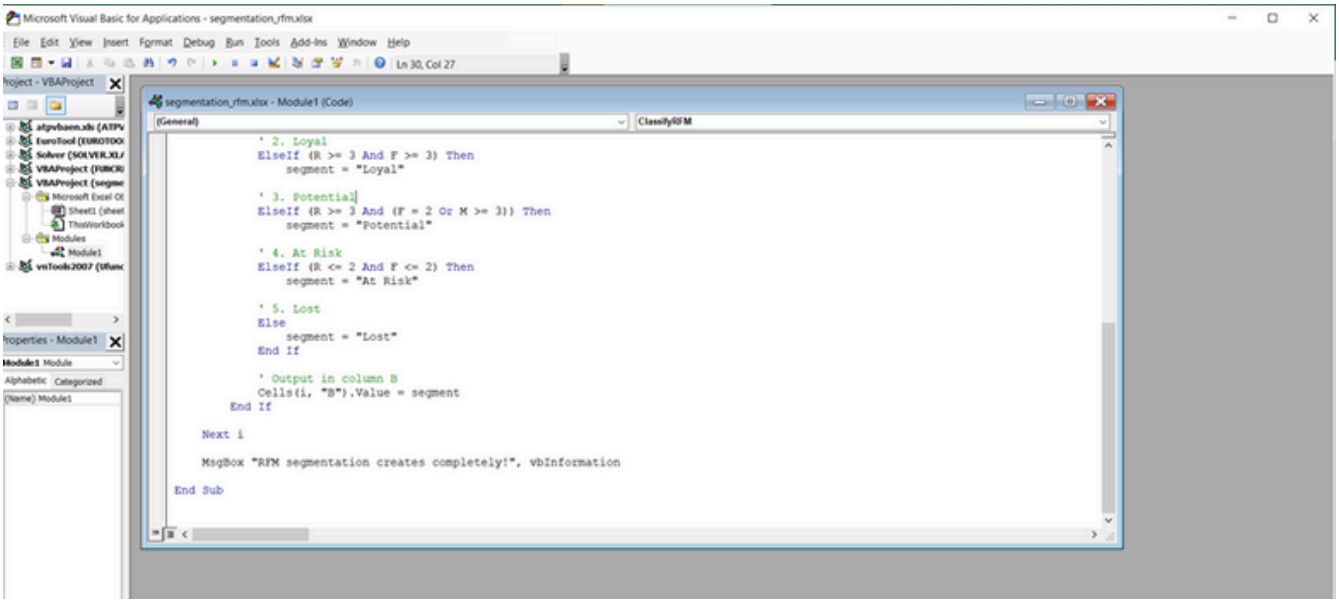
Table 4: RFM Score Normalization

	CustomerID	R	F	M	RFM
1	1014520	3	1	1	311
2	900290	3	1	1	311
3	824132	4	1	1	411
4	1044045	3	1	1	311
5	1037484	3	1	1	311

5. Customer Segmentation

The customer segmentation model is based on the **Putler RFM Segmentation Framework** and implemented **using VBA in Excel** to automatically assign segments based on RFM scores. After that, **manual adjustments** were made to better match the project's real data.

VBA Script for Automated RFM Segmentation



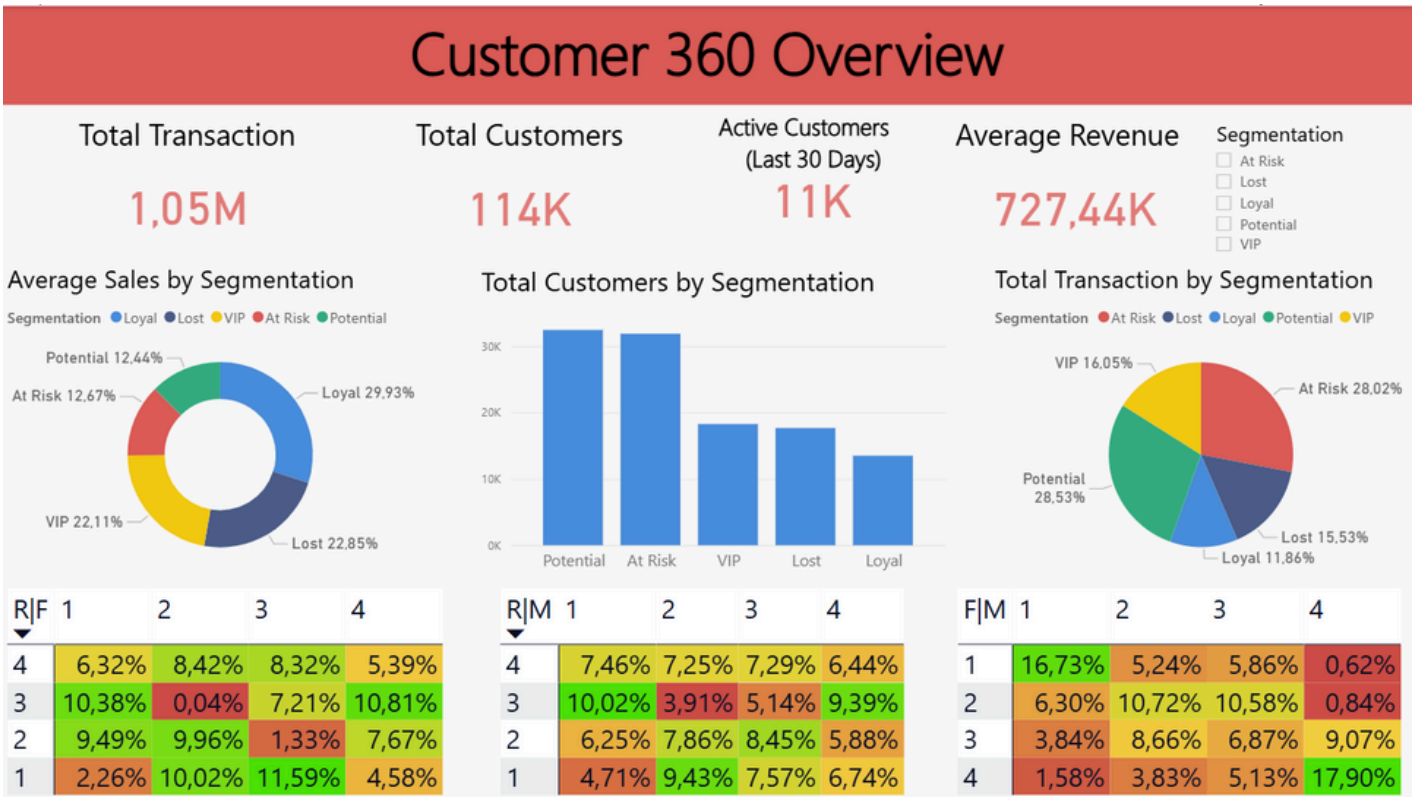
IV. METHOD

Bảng 5: RFM segmentation table

Customer Segment	RFM Score	Description
VIP	444, 443, 434, 433, 344, 334	Recent, frequent, and high spenders; your most valuable and loyal customers.
Loyal	442, 441, 432, 431, 343, 342, 341, 333, 332, 331, 324	Buy regularly and recently with stable spending; consistent and reliable customers.
Potential	424, 423, 422, 421, 414, 413, 412, 411, 323, 322, 321, 314, 313, 244, 243, 242, 241, 234, 233, 232, 231, 224, 223, 222	New, returning, or growing customers who show strong potential to become Loyal or VIP.
At Risk	312, 311, 221, 214, 213, 212, 211, 144, 143, 142, 141, 134, 133	Have not purchased recently; frequency or spending is dropping and re-engagement is needed.
Lost	132, 131, 124, 123, 122, 121, 114, 113, 112, 111	Very low recency, frequency, and monetary value; nearly inactive or churned customers.

V. RESULTS & ANALYSIS

Dashboard 1: Customer 360 Overview



R|F	1	2	3	4
4	6,32%	8,42%	8,32%	5,39%
3	10,38%	0,04%	7,21%	10,81%
2	9,49%	9,96%	1,33%	7,67%
1	2,26%	10,02%	11,59%	4,58%

R|M	1	2	3	4
4	7,46%	7,25%	7,29%	6,44%
3	10,02%	3,91%	5,14%	9,39%
2	6,25%	7,86%	8,45%	5,88%
1	4,71%	9,43%	7,57%	6,74%

F|M	1	2	3	4
1	16,73%	5,24%	5,86%	0,62%
2	6,30%	10,72%	10,58%	0,84%
3	3,84%	8,66%	6,87%	9,07%
4	1,58%	3,83%	5,13%	17,90%

Overview customer 360

- **Potential and At Risk segments are the largest**

→ indicating both strong growth opportunities and high churn risk.

- **Only ~10% are active customers**

→ weak retention is directly impacting revenue.

- **VIP customers are few but spend significantly**

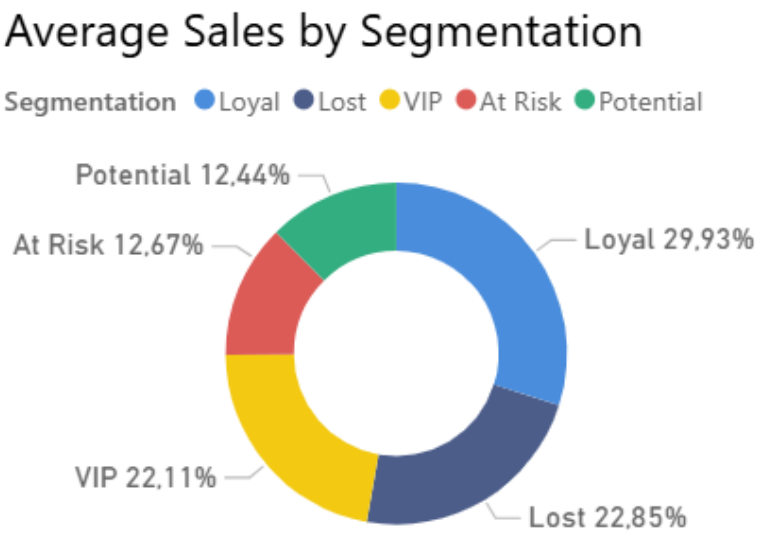
→ requiring dedicated care to maximize value.

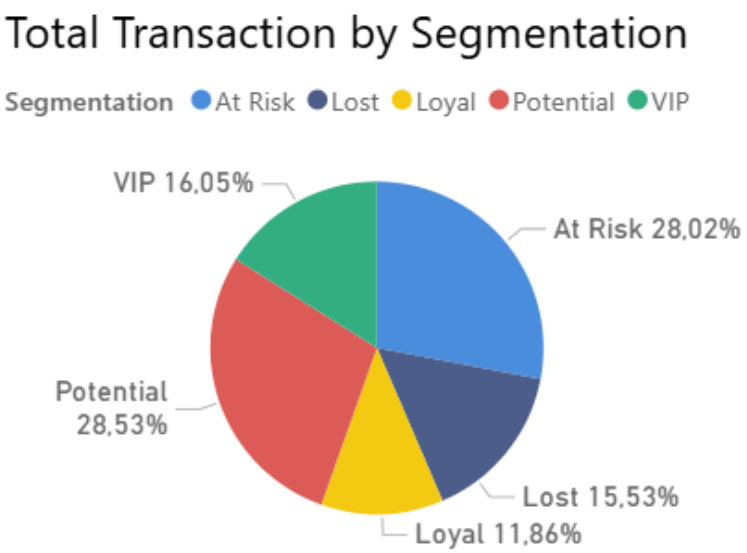
The Power BI file is attached in the project folder.

V. RESULTS & ANALYSIS

★KEY POINT

The Potential segment contributes the highest number of transactions (28.53%) but has the lowest average sales per customer (12.44%), indicating high activity but low spending power.





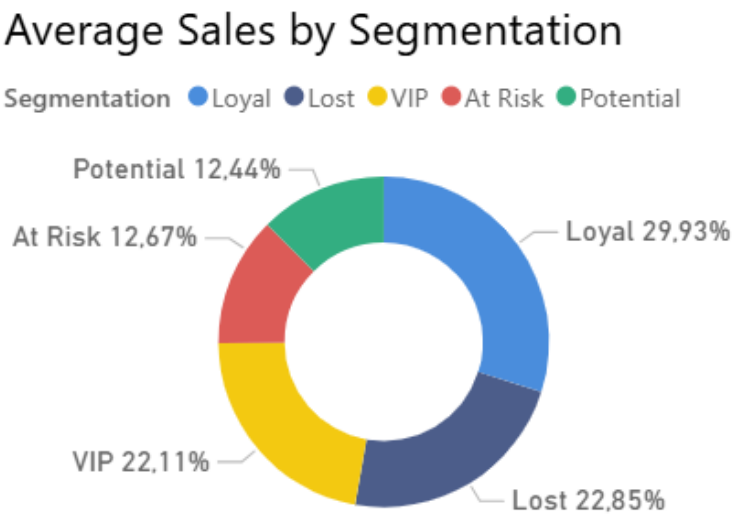
ANALYSIS

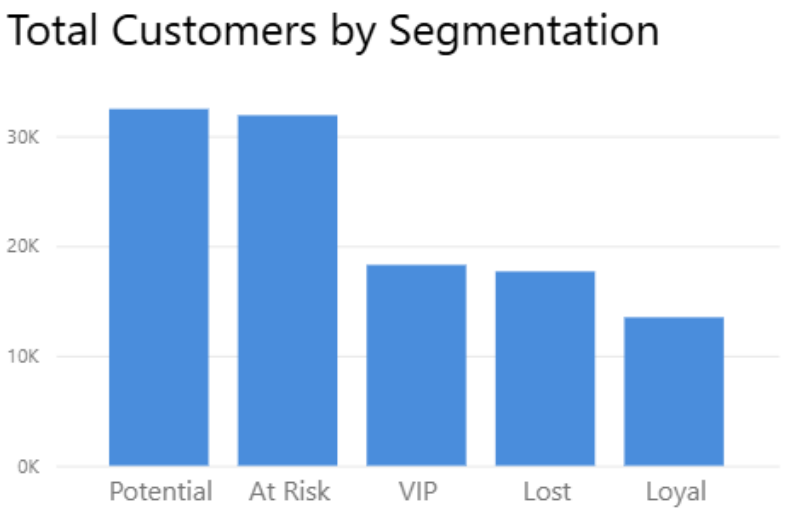
- Potential has ~33K customers, the biggest segment in the dataset.
- Potential contributes 28.53% of total transactions, ranking #1 across all segments.
- Average sales of the Potential group are only 12.44%, significantly lower

V. RESULTS & ANALYSIS

★KEY POINT

The VIP segment represents a smaller customer base (~18K customers) but generates a high share of revenue, with strong average sales (22.11%) proving they are the highest-value spenders.





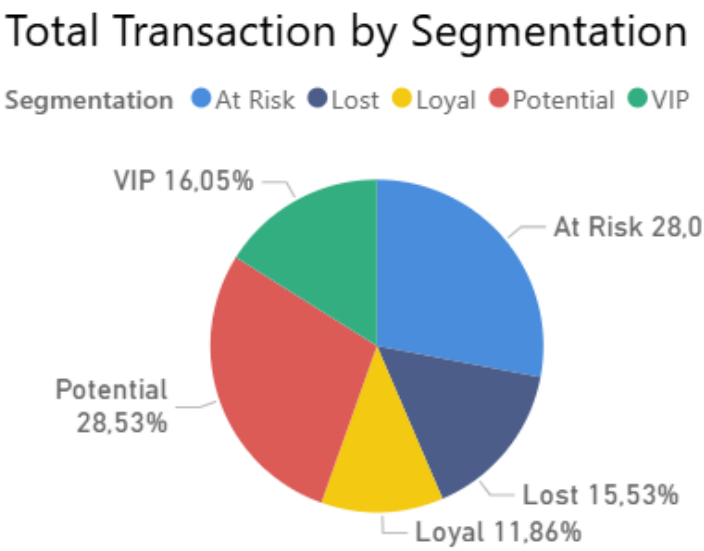
ANALYSIS

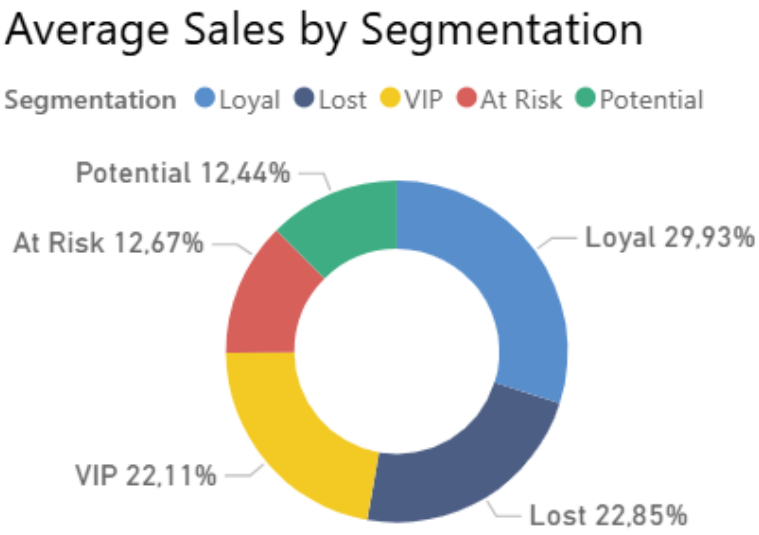
- VIP contains only ~18K customers, much smaller compared to Potential (~33K) and At Risk (~32K).
- Average sales for VIP reach 22.11%, ranking #2 among all segments, only behind Loyal (29.93%).
- VIP accounts for 16.05% of total transactions. It's impressive given its smaller size.

V. RESULTS & ANALYSIS

★KEY POINT

Lost customers account for 15% of total transactions and 22.85% of average sales, indicating that a large portion of customers make one or two purchases and then drop off.





ANALYSIS

For the Lost segment:

- Customer count: ~15K (the smallest segment).
- Average sales: 29.93%, the highest among all segments.
- Transaction share: only 11.86%, lower than Potential, At Risk, and Lost.

V. RESULTS & ANALYSIS

Graph: Heatmap R × F (Recency × Frequency)

R|F	1	2	3	4
1	2,26%	10,02%	11,59%	4,58%
2	9,49%	9,96%	1,33%	7,67%
3	10,38%	0,04%	7,21%	10,81%
4	6,32%	8,42%	8,32%	5,39%

ANALYSIS

- **R4–F3** (10.81%) and R4–F4 (5.39%) are the highest clusters, representing recent and frequent buyers key Loyal/VIP customers.
- Extremely small groups like **R3–F2** (0.04%) and R2–F3 (1.33%) indicate imbalance (regular buyers who haven't purchased recently).
- **R1–F3** (11.59%) is notably high, reflecting customers who used to buy frequently but have not returned → At Risk/Lost signals.

Graph: Heatmap R × M (Recency × Monetary)

R|M	1	2	3	4
1	4,71%	9,43%	7,57%	6,74%
2	6,25%	7,86%	8,45%	5,88%
3	10,02%	3,91%	5,14%	9,39%
4	7,46%	7,25%	7,29%	6,44%

V. RESULTS & ANALYSIS

ANALYSIS

- **R4–M3** (7.29%) and R4–M4 (6.44%) represent high-spending customers with recent activity—true VIPs.
- **R3–M2** (3.91%) shows low recency and low spending → trending toward At Risk.
- **R1–M2** (9.43%) and R2–M3 (8.45%) indicate many customers who once spent well but have not returned for a long time.

Graph: Heatmap F × M (Frequency × Monetary)

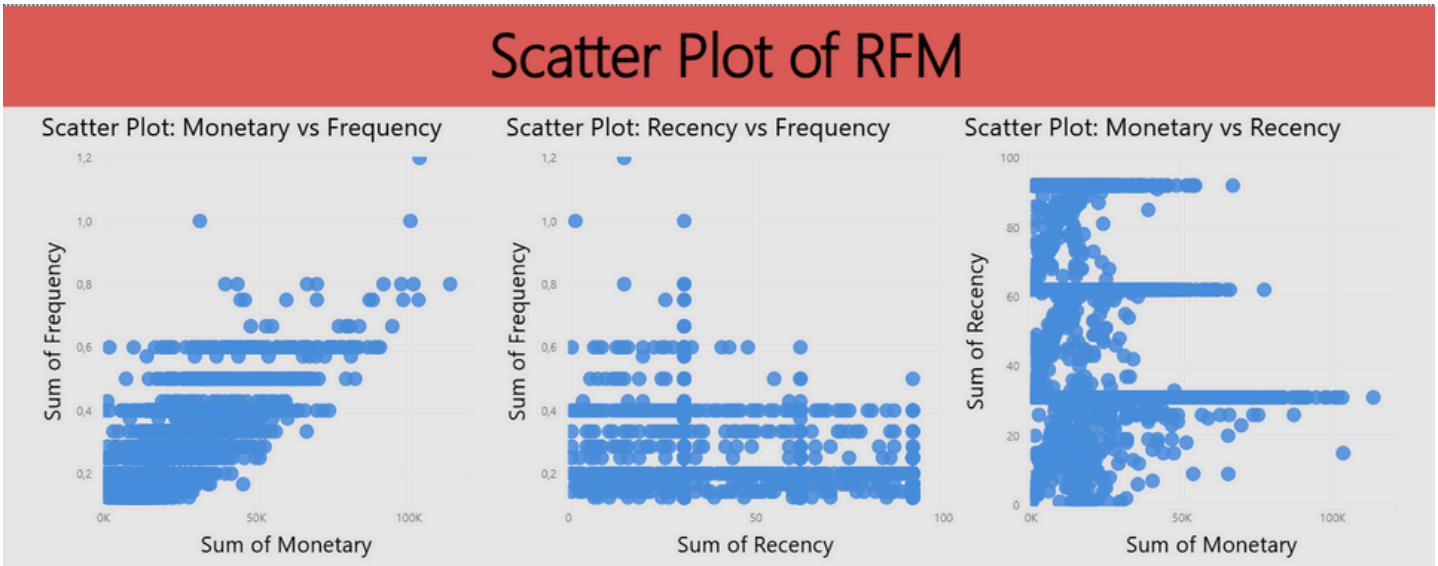
F|M	1	2	3	4
1	16,73%	5,24%	5,86%	0,62%
2	6,30%	10,72%	10,58%	0,84%
3	3,84%	8,66%	6,87%	9,07%
4	1,58%	3,83%	5,13%	17,90%

ANALYSIS

- **F4–M4** (17.90%) is the most dominant cluster high frequency and high spending core VIP/Loyal customers.
- **F1–M1** (16.73%) is also large, representing low-value, low-activity customers (Lost/At Risk).
- **F2–M2** (10.72%) and **F2–M3** (10.58%) represent “growing” customers with moderate spending and steady activity.

V. RESULTS & ANALYSIS

Dashboard 2: Scatter Plot of RFM



ANALYSIS

- **The Monetary–Frequency** chart shows a positive trend: high-spending customers also tend to purchase more frequently, representing core VIP/Loyal segments.
- **The Recency–Frequency** plot is widely scattered, indicating many customers who previously bought regularly but have not returned recently — signs of At Risk/Lost groups.
- **The Monetary–Recency** chart reveals a large cluster of low-spending but recent buyers, matching the characteristics of Potential customers.
- **Overall,** the scatter plots highlight clear behavioral differences between high-value, potential, and declining-engagement customer groups.

VI. CONCLUSION

1. Overall Conclusion

- **Potential and At Risk segments** are the largest and require continuous monitoring.
- **VIP and Loyal customers** generate strong revenue despite smaller group sizes.
- **Lost customers** remain significant, indicating previous retention strategies were ineffective.
- **Heatmap** results highlight two extremes: a strong active high-value group and another large group showing reduced engagement.
- **Scatter plots** reveal clear behavioral patterns: high-value customers align closely in Monetary–Frequency, while many low-spending customers have long recency gaps, reinforcing Potential and At Risk classifications.

2. Solutions

(A) Optimize Marketing for Each Customer Segment

- **At Risk:** send a 7-day comeback offer (discount on previously watched/followed movies).
- **Lost:** introduce a low-price "Come-back Pack" with 2–3 recommended movies.
- **Potential:** apply light upselling (10% off the second weekly purchase).

Targeted campaigns increase effectiveness and reduce wasted budget.

VI. CONCLUSION

2. Solutions (Continued)

(B) Improve Customer Retention

- Remind At Risk customers about unfinished or recently viewed content.
- **Re-engage Lost customers** with low-price combos and preference-based suggestions.
- These actions maintain engagement and reduce churn.

(C) Increase Revenue from High-Value Segments

- **Loyal:** launch tier-upgrade point systems to increase purchase frequency.
- **VIP:** offer early-access privileges and personalized benefits to maintain loyalty.
- Focus on high-value groups to drive revenue.

3. Expected Outcomes

- **Retention Rate** increases 8–12% through timely reactivation of At Risk & Lost customers.
- **Revenue increases** 10–15% from Loyal & VIP via upselling and tier upgrades.
- **Potential → Loyal conversion** rises 5–8% thanks to second-purchase discounts and personalized recommendations.
- **Reactivation Rate** rises 3–5%, especially among high-spending Lost customers.

VII. APPENDIX

CODE SQL

```sql
WITH calculate_rfm AS (
    SELECT
    t.CustomerID,
    1.0 * COUNT(*) / NULLIF(DATEDIFF(YEAR, MIN(r.created_date), '2022-09-01') + 1, 0) AS Frequency,
    DATEDIFF(DAY, MAX(t.Purchase_Date), '2022-09-01') AS Recency,
    SUM(t.GMV) / NULLIF(DATEDIFF(YEAR, MIN(r.created_date), '2022-09-01') + 1, 0) AS Monetary
FROM dbo.Customer_Transaction AS t
JOIN dbo.registered AS r ON r.ID = t.CustomerID
WHERE Purchase_Date IS NOT NULL
GROUP BY CustomerID
HAVING SUM(GMV) > 0),
row_num_rfm AS (
    SELECT *,
    ROW_NUMBER() OVER (ORDER BY Frequency DESC ) AS row_frequency,
    ROW_NUMBER() OVER (ORDER BY Recency ) AS row_recency,
    ROW_NUMBER() OVER ( ORDER BY Monetary DESC) AS row_monetary
    FROM calculate_rfm
),
max_vals AS (
    SELECT
        MAX(row_frequency) AS max_f,
        MAX(row_recency)   AS max_r,
        MAX(row_monetary)  AS max_m
    FROM row_num_rfm
),
final_rfm AS (
    SELECT
        r.*,
        CASE
            WHEN r.row_frequency >= m.max_f * 0.75 THEN 4
            WHEN r.row_frequency >= m.max_f * 0.50 THEN 3
            WHEN r.row_frequency >= m.max_f * 0.25 THEN 2
            ELSE 1
        END AS F,
        CASE
            WHEN r.row_recency >= m.max_r * 0.75 THEN 1
            WHEN r.row_recency >= m.max_r * 0.50 THEN 2
            WHEN r.row_recency >= m.max_r * 0.25 THEN 3
            ELSE 4
        END AS R,
        CASE
            WHEN r.row_monetary >= m.max_m * 0.75 THEN 4
            WHEN r.row_monetary >= m.max_m * 0.50 THEN 3
            WHEN r.row_monetary >= m.max_m * 0.25 THEN 2
            ELSE 1
        END AS M,
        CONCAT(
            CASE
                WHEN r.row_recency >= m.max_r * 0.75 THEN 1
                WHEN r.row_recency >= m.max_r * 0.50 THEN 2
                WHEN r.row_recency >= m.max_r * 0.25 THEN 3
                ELSE 4
            END,
            CASE
                WHEN r.row_frequency >= m.max_f * 0.75 THEN 4
                WHEN r.row_frequency >= m.max_f * 0.50 THEN 3
                WHEN r.row_frequency >= m.max_f * 0.25 THEN 2
                ELSE 1
            END,
            CASE
                WHEN r.row_monetary >= m.max_m * 0.75 THEN 4
                WHEN r.row_monetary >= m.max_m * 0.50 THEN 3
                WHEN r.row_monetary >= m.max_m * 0.25 THEN 2
                ELSE 1
            END
        ) AS RFM
    FROM row_num_rfm r
    CROSS JOIN max_vals m
)
SELECT CustomerID, R, F, M, RFM
FROM final_rfm
```

VII. APPENDIX

CODE VBA

```
Sub ClassifyRFM()
    Dim lastRow As Long
    lastRow = Cells(Rows.Count, "A").End(xlUp).Row    ' Column A = RFM

    Dim rfm As String
    Dim R As Integer, F As Integer, M As Integer
    Dim segment As String

    For i = 2 To lastRow    ' data start from line 2
        rfm = Cells(i, "A").Value
        ' If not a 3 character string => ignore
        If Len(rfm) = 3 Then
            R = Mid(rfm, 1, 1)
            F = Mid(rfm, 2, 1)
            M = Mid(rfm, 3, 1)

            ' Segment classification rules
            ' 1. VIP
            If (R = 4 And (F = 4 Or F = 3) And (M = 4 Or M = 3)) Then
                segment = "VIP"
            ' 2. Loyal
            ElseIf (R >= 3 And F >= 3) Then
                segment = "Loyal"
            ' 3. Potential
            ElseIf (R >= 3 And (F = 2 Or M >= 3)) Then
                segment = "Potential"
            ' 4. At Risk
            ElseIf (R <= 2 And F <= 2) Then
                segment = "At Risk"
            ' 5. Lost
            Else
                segment = "Lost"
            End If
            ' Output in column B
            Cells(i, "B").Value = segment
        End If
    Next i
    MsgBox "RFM segmentation creates completely!", vbInformation
End Sub
```

VIII.REFERENCE

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