

Task 1: Customer Segmentation Dashboard using RFM Analysis (Power BI)

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Internship Project Report

Objective:

The goal of this task was to analyze customer behavior by segmenting them using RFM (Recency, Frequency, Monetary) analysis for the years 2009 and 2010, and to present the findings through an interactive dashboard created in Power BI.

Tools Used:

- Microsoft Power BI
- Excel (for initial data preprocessing)

Data Source:

- Online retail sales transaction data for 2009 and 2010

Steps Performed:

1. Data Preparation:

- Cleaned and combined two separate sheets of transactional data (2009–2010 and 2010–2011).
- Created a new column "Snapshot Date" to calculate Recency.
- Calculated:
 - **Recency:** Days since last purchase from snapshot date.
 - **Frequency:** Number of transactions per customer.
 - **Monetary:** Total spending per customer.
- Applied scoring for RFM and created a new RFM Code (e.g., 555 for high value customers).
- Segmented customers into: **Loyal, Big Spender, Potential, Others**, etc.

2. Pivot Table Analysis (in Excel):

- Generated pivot tables for each year with RFM scores and segments.
- Added a "Year" column to label 2009 and 2010 data separately.
- Combined both pivot sheets into Power BI.

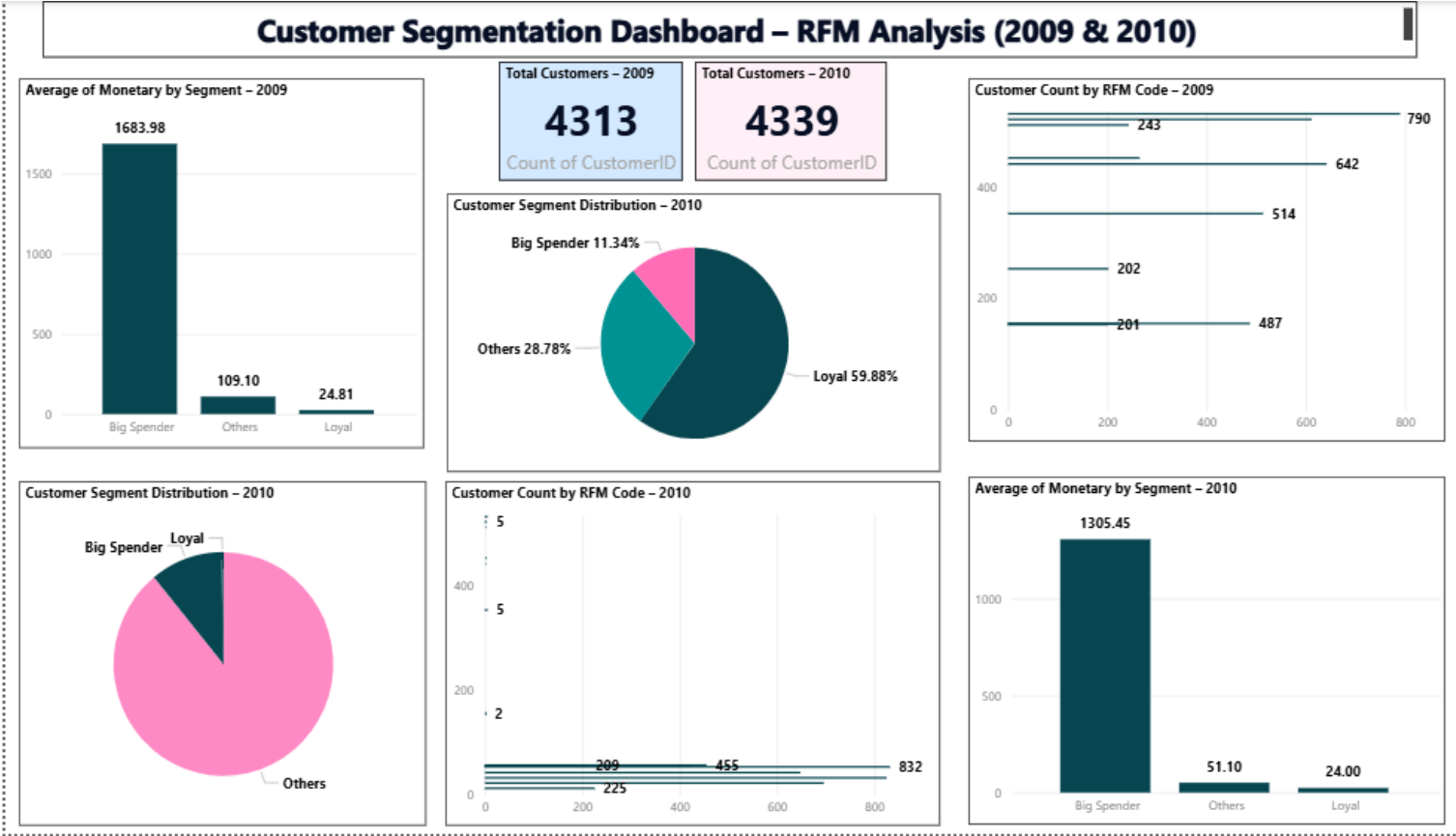
3. Dashboard Design (in Power BI):

- Created:
 - **Pie charts** for segment distribution (2009 & 2010).
 - **Bar charts** for Customer Count by RFM Code.
 - **Bar charts** for Average Monetary by Segment.
 - **Cards** showing Total Customers for each year.
- Used colorblind-friendly theme.

- Aligned and grouped visuals cleanly.
- Applied filters for segmentation and year.

Screenshots Included:

- Power BI Dashboard:



- Pivot Tables in Excel
- Year 2009-2010

Row Label	LastPurchaseDate	Frequency	Monetary	R_Score	F_Score	M_Score	RFM_Code	Segment	Year
12346	33	33	33	4	4	1	441	Loyal	2009
12347	71	71	71	3	5	2	352	Others	2009
12348	20	20	20	5	3	1	531	Loyal	2009
12349	102	102	102	2	5	3	253	Others	2009
12351	21	21	21	5	3	1	531	Loyal	2009
12352	18	18	18	5	3	1	531	Loyal	2009
12353	20	20	20	5	3	1	531	Loyal	2009
12355	22	22	22	5	3	1	531	Loyal	2009
12356	84	84	84	3	5	2	352	Others	2009
12357	165	165	165	1	5	4	154	Others	2009
12358	58	58	58	4	5	2	452	Loyal	2009
12359	117	117	117	2	5	3	253	Others	2009
12360	88	88	88	3	5	2	352	Others	2009
12361	19	19	19	5	3	1	531	Loyal	2009
12362	1	1	1	5	1	1	511	Loyal	2009
12366	3	3	3	5	1	1	511	Loyal	2009
12368	18	18	18	5	3	1	531	Loyal	2009
12369	93	93	93	2	5	2	252	Others	2009
12370	35	35	35	4	4	1	441	Loyal	2009
12371	104	104	104	2	5	3	253	Others	2009
12373	37	37	37	4	4	1	441	Loyal	2009
12374	50	50	50	4	5	2	452	Loyal	2009
12376	13	13	13	5	2	1	521	Loyal	2009
12377	75	75	75	3	5	2	352	Others	2009
12378	82	82	82	3	5	2	352	Others	2009

- Year 2010-2011

Row Label	LastPurchaseDate	Frequency	Monetary	R_Score	F_Score	M_Score	RFM_Code	Segment	Year
12346	1	1	1	5	1	1	511	Loyal	2010
12347	182	182	182	1	5	4	154	Others	2010
12348	31	31	31	4	4	1	441	Loyal	2010
12349	73	73	73	3	5	2	352	Others	2010
12350	17	17	17	5	3	1	531	Loyal	2010
12352	85	85	85	3	5	2	352	Others	2010
12353	4	4	4	5	1	1	511	Loyal	2010
12354	58	58	58	4	5	2	452	Loyal	2010
12355	13	13	13	5	2	1	521	Loyal	2010
12356	59	59	59	4	5	2	452	Loyal	2010
12357	131	131	131	1	5	3	153	Others	2010
12358	19	19	19	5	3	1	531	Loyal	2010
12359	248	248	248	1	5	5	155	Big Spender	2010
12360	129	129	129	1	5	3	153	Others	2010
12361	10	10	10	5	2	1	521	Loyal	2010
12362	266	266	266	1	5	5	155	Big Spender	2010
12363	23	23	23	5	3	1	531	Loyal	2010
12364	85	85	85	3	5	2	352	Others	2010
12365	22	22	22	5	3	1	531	Loyal	2010
12367	11	11	11	5	2	1	521	Loyal	2010
12370	167	167	167	1	5	4	154	Others	2010
12371	63	63	63	3	5	2	352	Others	2010
12372	52	52	52	4	5	2	452	Loyal	2010
12373	14	14	14	5	2	1	521	Loyal	2010
12374	33	33	33	4	4	1	441	Loyal	2010
12375	17	17	17	5	3	1	531	Loyal	2010
12377	77	77	77	3	5	2	352	Others	2010

Key Insights:

- In **2009**, most customers belonged to the **Loyal** and **Big Spender** categories.
 - In **2010**, there was a noticeable shift with more customers falling into the **Others** segment.
 - The average monetary value of Big Spenders was significantly higher in both years.
 - Although customer count slightly varied (4313 in 2009, 4339 in 2010), spending behavior showed changes.
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Conclusion:

This customer segmentation task using RFM helped visualize customer patterns effectively. It demonstrated how Excel and Power BI can be used together to extract and present meaningful insights that aid in decision-making for marketing and customer relationship strategies.

Thank you for reviewing this report. Screenshots and dashboard visuals are attached.