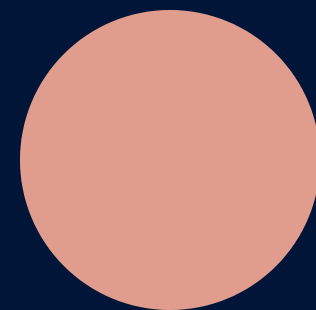# CRM Analytics Assignment

Group F

Business & Marketing Analytics

Customer Segmentation
Data Refinement

Problem ● ────────→ **Decision** ────────→ **Solution**

Customers who returned all purchased items, especially when original purchases were missing or outside the dataset, had **Monetary values ≤ 0**

Clustering methods **failed** to **capture differences** in customer behavior, so the segments didn't accurately reflect customer value

These customers were not valuable contributors as they provided no net gain and were **treated as "non-customers"**

Analyze the **distribution** of each **RFM** metric to manually create **meaningful segmentation criteria**

Removed non-positive Monetary customers to improve accuracy in customer segmentation and prevent misleading analysis

Defined **custom bin intervals** through Numeric Binner to obtain **realistic segments** that better represent our customers behavior

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RFM Analysis

Customer by Segment

Segment counts: 440 (1), 1124 (2), 1492 (3), 1123 (4), 549 (5)

	1	2	3	4	5
AVG. R	378.7	275.5	126	44.7	17.9
AVG. F	1	1.6	2.8	6.4	21.6
AVG M	197.9	319	655	1687	9440,8

1. Inactive
Very low frequency (avg. F = 1), low spending (avg. M = 197.9), contributing **1.02%** of total sales. High recency (avg. R = 378.7) well above overall avg. of 153.17, indicating minimal recent activity. Low impact on revenue.

2. Occasional
Frequency (avg. F = 1.6), moderate spending (avg. M = 319), **4.22%** of total sales. Recency (avg. R = 275.5) above overall avg. but improved vs. **Inactive**. Limited contribution, slight improvement over Inactive

3. Regular
Largest segment, **11.5%** of sales. Moderate frequency (avg. F = 2.8), spending (avg. M = 655), recency (avg. R = 126) below avg. but steady engagement. Largest by count but moderate contribution—potential for growth.

4. High-Value
22.29% of sales. High frequency (avg. F = 6.4), spending (avg. M = 1687). Low recency (avg. R = 44.7), indicating frequent, recent purchases. Contribute almost double vs. Regular segment despite fewer customers.

5. VIP
Most valuable, **60.97%** of sales, **11.6%** of customers. Very high frequency (avg. F = 21.6), spending (avg. M = 9440.8), lowest recency (avg. R = 17.9). Disproportionate revenue contribution, spending over **5x more than High-Value** on avg.

Segment Trend over Time

Best Month

November 2018 appears to be the best month overall, with the **highest recorded spending** across all RFM bins. This spike could be associated with holiday-related promotions or increased consumer spending due to events like **Black Friday** or **year-end discounts**

Spending Segments Trends
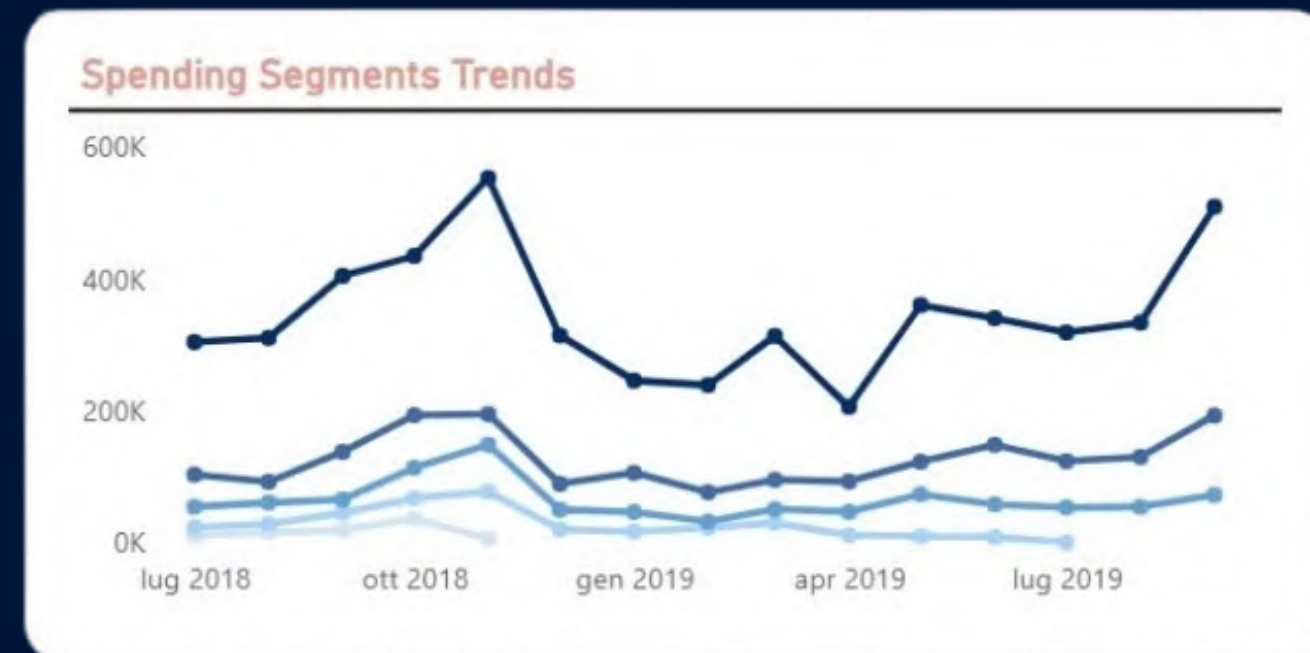
Worst Month

April 2019 There is a visible drop in spending across almost all customer segments in April 2019 compared to previous months. This decline is noticeable among "VIP" and "High-Value" customers, which typically contribute a significant portion of overall sales.

Trending Patterns for Each Customer Segment

Inactive

Drops off after **November 2018**, with spending decreasing to **5,700**. No spending recorded after this point, indicating **complete disengagement**

Occasional

Irregular spending, peaking at **77,106** in **November 2018**. Afterward, spending drops significantly, reaching only **11,063** in **April 2019**

Regular

Highest spending recorded in **November 2018** at **148,376**. Spending remains relatively stable but lower in early 2019, with **46,585** in **April 2019**

High-Value

Peak spending in **November 2018** at **194,552**. Noticeable drop in **April 2019** to **92,605**, with some recovery by **September 2019** at **192,522**

VIP

Consistently highest spending, reaching **552,616** in **November 2018**, and experiencing a rise again to **509,107** in **September 2019**

Category Analysis

All segments show the same best and worst category, tis is the unified analysis considering all them collectively rather than separating.

Best Category
Home, represents 48.0% of total sales.

Worst Category
Hobbies represent 5.5% of total sales.

Best Subcategory
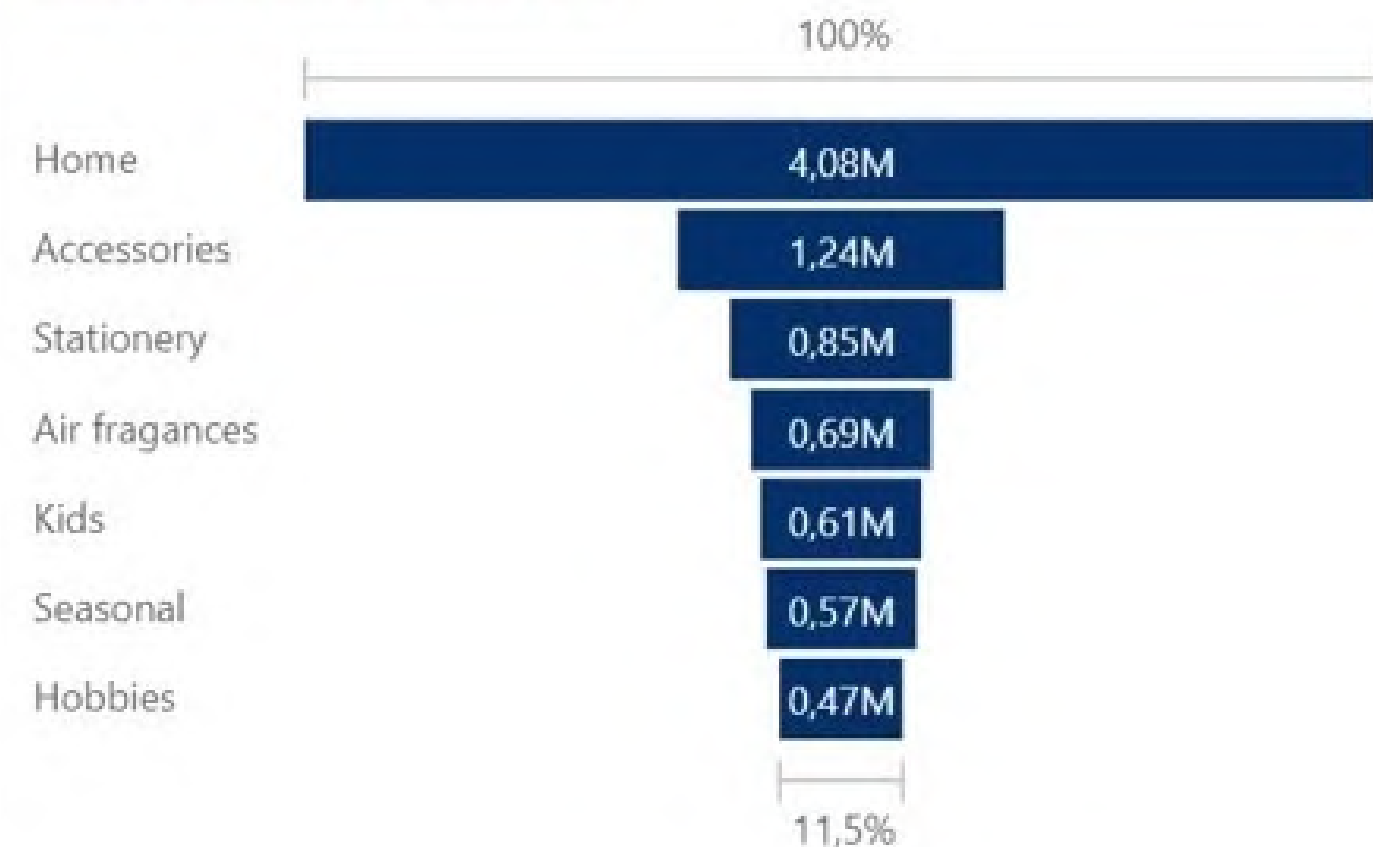Kitchen represent 24.8% of total sales

Worst Subcategory
Tech represent 0.08% of total sales

Top 5 products

1. REGENCY CAKESTAND 3 TIER
2. WHITE HANGING HEART T-LIGHT HOLDER
3. JUMBO BAG RED RETROSPOT
4. ASSORTED COLOUR BIRD ORNAMENT
5. PARTY BUNTING

Sales Amount by Category

	100%
Home	4,08M
Accessories	1,24M
Stationery	0,85M
Air fragances	0,69M
Kids	0,61M
Seasonal	0,57M
Hobbies	0,47M
	11,5%

Marketing Proposals

Inactive (440 Customers)

Reactivation Offer

Send a personalized email campaign offering a limited-time 20% discount to encourage re-engagement.

Occasional (1,124 Customers)

Loyalty Program Invite

Promote joining a loyalty program where they can earn points toward future discounts, encouraging more frequent purchases.

Regular (1,492 Customers)

Targeted Cross-Sell

Provide personalized product recommendations or bundle deals to boost the average order value, enhancing the customer's experience.

High-Value (1,123 Customers)

Exclusive Access

Offer early access to sales or exclusive product releases to make them feel valued and maintain high engagement.

VIP (549 Customers)

VIP Events

Organize exclusive events, such as private sales or in-store gatherings, to reinforce loyalty and foster a sense of prestige.

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Extra Findings
Size of Prize

The Incremental Sales Estimate calculates the potential revenue gain from encouraging lower-value customer segments to spend at the level of the top segment.

How It's Calculated

· Identify the segment with the highest average order value.
· For each lower segment, calculate the difference in average spend if upgraded to this top level.
· Multiply this difference by the customer count in each segment to get the potential sales increase.

RFM score bin	Mean Order Value	Segment Count	Size of price	rank
3	655.015	1492	13108361	1
2	319.02	1124	10252858	2
4	1686.998	1123	8707497	3
1	197.897	440	4066869	4
5	9440.78	549	0	5

Incremental Sales Estimate balances mean order value with cluster size, highlighting revenue potential by focusing on large clusters with lower spend. Prioritize marketing to segments with high customer count and low spending for maximum impact

Significant revenue potential exists by targeting larger, lower-spending segments for upgrades, with Segment 3 alone showing over $13 million in possible additional revenue.

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Extra Findings

JAS 18 vs JAS 19

RFM Segment Highlights

Significant growth in customers with RFM score 5 in 2019, showing increased engagement among the most loyal customers. Notably, Inactive and Occasional customers saw a sharp decline and were practically nonexistent in 2019, reflecting improved focus on high-value customer retention

Total Sales
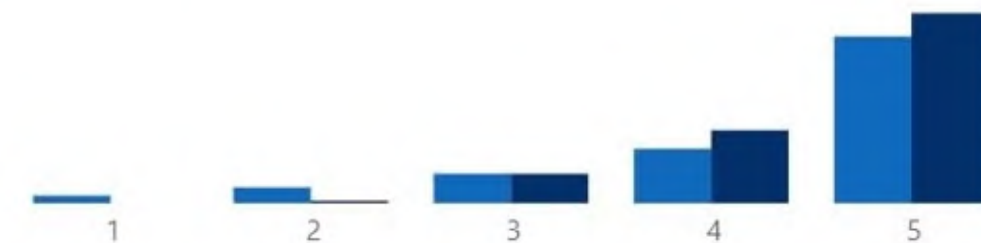Increased by 6.81% (from €1.67M to €1.79M)

Top Drivers
Growth in Accessories (+16.91%), Home (+9.5%), Seasonal (+20.03%), and Kids (+7.10%)

Key Drainers
Decline in Air Fragrances (-22.91%) and Stationery (-3.75%)

Sum of amount by RFM score bin and Year

Year ● 2018 ● 2019

Category sales JAS 2018 – JAS 2019

Category	JAS 2018 Sales	JAS 2019 Sales	JAS YoY Change%
Accessories	260.396,28	304.441,29	16,91
Air fragances	143.184,01	110.373,71	-22,91
Hobbies	74.515,30	76.332,46	2,44
Home	797.304,67	873.075,64	9,50
Kids	115.895,78	124.126,81	7,10
Seasonal	115.195,31	138.265,23	20,03
Stationery	165.778,22	159.567,58	-3,75

Appendix

Knime   Pierpaolo, Lorenzo, Piergiorgio

PowerBi   Piergiorgio, Alessandro, Pierpaolo, Giulio, Simone, Gianmarco

Slides   Lorenzo, Ignazio, Piergiorgio, Kostadin

Report   Kostadin, Lorenzo