



**UNIVERSITY
OF LONDON**

ST2187 Business Analytics, Applied Modelling and Prediction

Enhancing Sales through Customer Segmentation with RFM Analysis

Kanada Gabriele Calista
Student Number : 200579973
Word Count: 1328

Executive Summary

This report presents an in-depth analysis of customer segmentation using RFM (Recency, Frequency, Monetary) analysis through Tableau. Firstly, the dashboard provides a comprehensive financial perspective by incorporating key performance indicators (KPIs) to assess the company's position and pinpoint areas for enhancement.

Secondly, the research starts with RFM segmentation, an effective approach for grouping clients according to their frequency of purchases, current purchasing patterns, and monetary worth. This segmentation allows for a deeper understanding of customer engagement.

After RFM segmentation, market bundle analysis allows us to explore types of products that customers are purchasing together. This reveals co-occurrences, aiding cross-selling strategies, thus maximizing sales potential. Furthermore, delving into sales and profit analysis of related sub-categories provides insights into market trends and overall profitability.

Next, analysing discounts' impact on profit per order refines pricing for beneficial promotions. Understanding this relationship ensures attractive offers while optimizing profits. Examining discounts' effect on RFM segment sales guides effective promotions, crucial for informed marketing decisions and maintaining competitiveness.

Lastly, the analysis is whose the business should target the customer. The business should target the "big spenders" customer segment. These customers exhibit the highest average sale and profit, making them the most valuable segment for the business. By analysing their purchasing behaviour and preferences, Companies may create customized marketing strategies that cater to this market, maximizing conversion rates and promoting client loyalty.

Table of Contents

EXECUTIVE SUMMARY.....	1
TABLE OF CONTENTS	2
1. INTRODUCTION	3
2. ANALYSIS.....	4
2.1 Global KPI's	4
2.2 RFM Segmentation	8
2.3 Market Bundle Analysis	12
2.4 Discounts Analysis	13
2.5 Big Spenders target Customers.....	16
3. FINDINGS AND RECOMMENDATIONS	18
4. CONCLUSION	18
5. REFERENCE.....	19

1. Introduction

To learn more about our consumers, we used Tableau to convert raw Excel data into five dashboards. Our marketing plans are informed by these dashboards, which provide us with guidance on how to effectively target various consumer segments inside the company.

The reason behind selecting RFM analysis was its capacity to precisely target customers based on their purchasing history, segment the customer base into discrete groups for customized marketing, and increase customer satisfaction by finding high-value categories. According to (Singh,2023) , RFM stands for three key customer traits: **Recency (R)** is the number of days since the last order or purchase, The overall quantity of orders is represented by **Frequency (F)**, while total sales is indicated by **Monetary value (M)**.

Here are the RFM segments from the top customer type to the lowest, along with their corresponding RFM scores:

1. Best Customers (RFM Score: 111)
2. Loyal Customers (RFM Score: 121)
3. Big Spenders (RFM Score: 131)
4. Almost Lost (RFM Score: 311)
5. Lost Customers (RFM Score: 411)
6. Lost Cheap Customers (RFM Score: 444)
7. Look Out Buyers (RFM Score: 222)
8. Occasional Buyers (RFM Score: 333)
9. New Customers (RFM Score: 444)

2. Analysis

2.1 Global KPI's

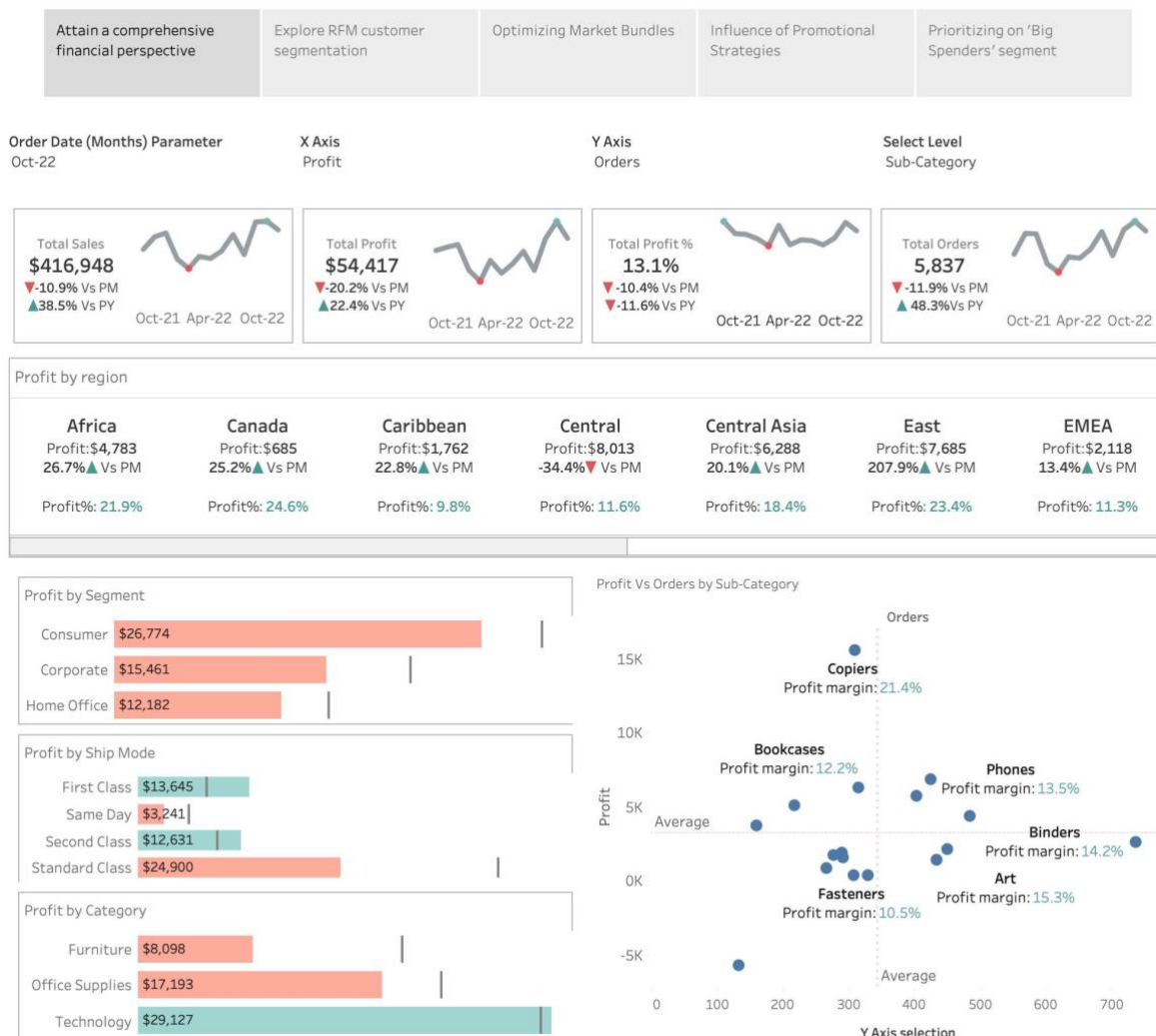


Figure 1. Global KPI's

Global KPIs offer a thorough summary of the company's performance at an elevated level. They provide an overview of important indicators like total sales, profit, orders placed, profit margins, and more. In order for stakeholders to comprehend the general well-being and prosperity of the company, they must have this overview.

Prioritizing the presentation of global KPIs allows you to set comparison benchmarks that will be used as points of reference for the rest of the analysis. This enables stakeholders to pinpoint areas of strength and development by comparing regional sales or segment profitability against the global KPIs.



Figure 2. Financial Overview

Reviewing performance indicators from October 2021 to October 2022, there was a decline in total sales, profit, and orders compared to the previous month, along with a decrease in profit percentage. This trend suggests challenges in maintaining profitability amidst lower sales volume, possibly influenced by seasonal fluctuations or shifts in consumer behaviour.

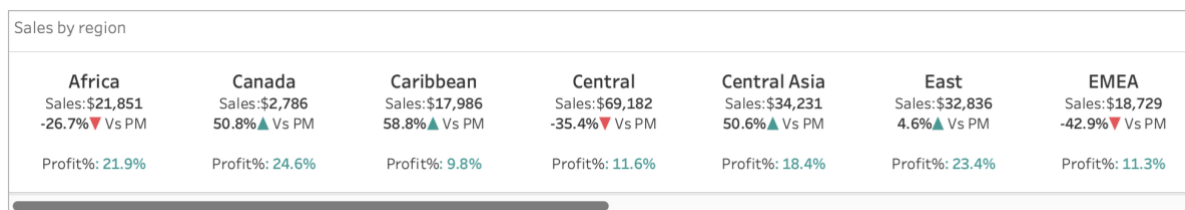


Figure 3. Sales by Region

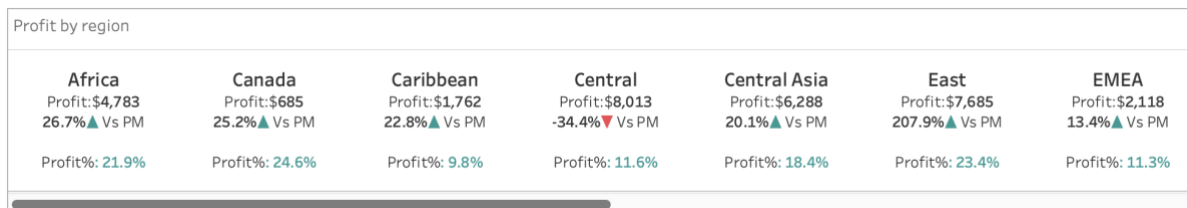


Figure 4. Profit by Region

Analysing sales and profit by region shows a positive trend across most regions compared to the previous month, despite stagnant or decreased total sales and profit. Although there is an overall decrease in total profit, the positive regional trends suggest opportunities for targeted strategies. Boosting profitability in successful regions can reverse the downward trend and drive overall profit growth.

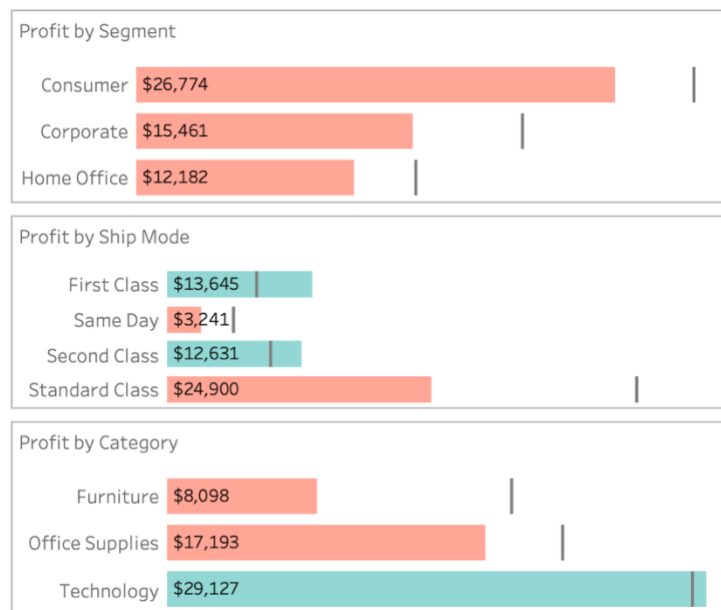


Figure 5. Profit Breakdown

Profit analysis by segment reveals a concerning trend as all segments, including consumer, corporate, and home office, show a decline compared to the previous month. Analysing profit by ship mode reveals positive trends in First Class and Second Class compared to the previous month, indicating potential strengths in shipping efficiency or customer preferences. In terms of categories, Technology stands out as the sole category with a positive trend.

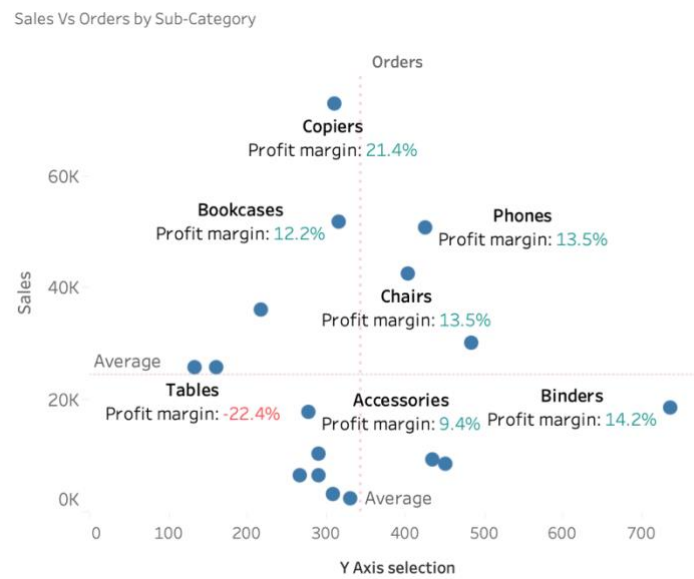


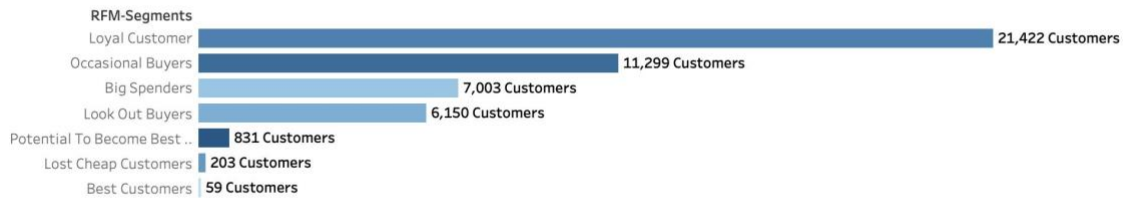
Figure 6. Scatter Plot by Sub-Category

The positive impact of high-profit-margin subcategories like Copiers and Phones on Technology's profitability highlights effective sales strategies. However, this does not translate to overall segment profitability, suggesting potential influences from operational costs or pricing strategies on segment profitability.

2.2 RFM Segmentation

Attain a comprehensive financial perspective	Explore RFM customer segmentation	Optimizing Market Bundles	Influence of Promotional Strategies	Prioritizing on 'Big Spenders' segment
--	-----------------------------------	---------------------------	-------------------------------------	--

RFM Customer Segments



RFM Table Score

R- score	F-Score	M-Score			
		1	2	3	4
1	1	Best Customers	Loyal Customer		
	2	Potential To Become Bes..	Potential To Become Bes..		
2	1	Loyal Customer	Loyal Customer		
	2	Big Spenders	Look Out Buyers	Look Out Buyers	
	3		Look Out Buyers	Look Out Buyers	Look Out Buyers
	4		Look Out Buyers	Look Out Buyers	Look Out Buyers
3	1	Loyal Customer	Loyal Customer		
	2	Big Spenders	Occasional Buyers	Occasional Buyers	
	3		Occasional Buyers	Occasional Buyers	Occasional Buyers
	4		Occasional Buyers	Occasional Buyers	Occasional Buyers
4	1	Loyal Customer	Loyal Customer		
	2	Big Spenders	Occasional Buyers	Occasional Buyers	
	3		Occasional Buyers	Occasional Buyers	Occasional Buyers
	4		Occasional Buyers	Occasional Buyers	Lost Cheap

Customer Segmentation | with RFM Analysis



Figure 7. RFM Analysis

RFM analysis gives an extensive overview of how customers engage and what they buy. Businesses can prioritize marketing efforts and create tailored strategies for each consumer group by establishing groups like "Best Customers" and "Lost Cheap Customers."

RFM Table Score					
R- score	F-Score	M-Score			
		1	2	3	4
1	1	Best Customers	Loyal Customer		
	2	Potential To Become Bes..	Potential To Become Bes..		
2	1	Loyal Customer	Loyal Customer		
	2	Big Spenders	Look Out Buyers	Look Out Buyers	
	3		Look Out Buyers	Look Out Buyers	Look Out Buyers
	4		Look Out Buyers	Look Out Buyers	Look Out Buyers
3	1	Loyal Customer	Loyal Customer		
	2	Big Spenders	Occasional Buyers	Occasional Buyers	
	3		Occasional Buyers	Occasional Buyers	Occasional Buyers
	4		Occasional Buyers	Occasional Buyers	Occasional Buyers
4	1	Loyal Customer	Loyal Customer		
	2	Big Spenders	Occasional Buyers	Occasional Buyers	
	3		Occasional Buyers	Occasional Buyers	Occasional Buyers
	4		Occasional Buyers	Occasional Buyers	Lost Cheap

Figure 8. RFM Table Score

The RFM segments are listed in order of highest to lowest RFM scores for each type of customer:

- Best Customers (RFM Score: 111) : Recent, frequent, high-spending customers.
- Loyal Customers (RFM Score: 121) : Recent, moderate-frequency, high-spending customers.
- Big Spenders (RFM Score: 131) : Recent, moderate-frequency, significant-spending customers.
- Almost Lost (RFM Score: 311) : Past frequent, significant-spending customers who haven't purchased recently.
- Lost Customers (RFM Score: 411) : Past frequent, moderate-spending customers who haven't purchased recently.
- Lost Cheap Customers (RFM Score: 444) : Customers who haven't purchased recently, infrequent, minimal spenders.

- Look Out Buyers (RFM Score: 222) : Somewhat recent, moderate-frequency, moderate spenders.
- Occasional Buyers (RFM Score: 333) : Moderately recent, moderate-frequency, moderate spenders.
- New Customers (RFM Score: 444) : Customers who are new and have not yet established a purchase pattern.

RFM Customer Segments

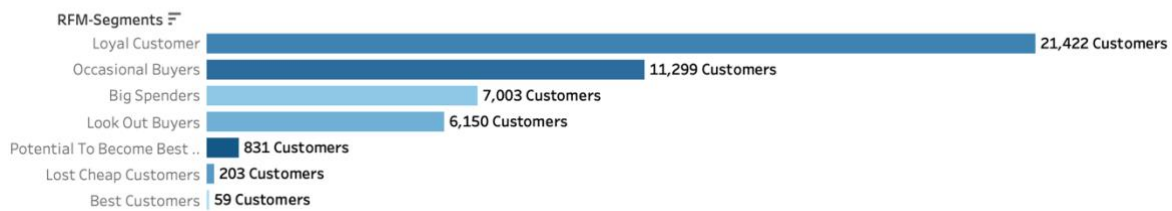


Figure 9. RFM Customer Segments

Figure 9 illustrates that Loyal Customers comprise the largest customer segment, followed by Occasional Buyers, with Best Customers being the smallest.. Additionally, strategies to retain and further engage the smaller Best Customers segment can enhance overall profitability.

Customer Segmentation | with RFM Analysis

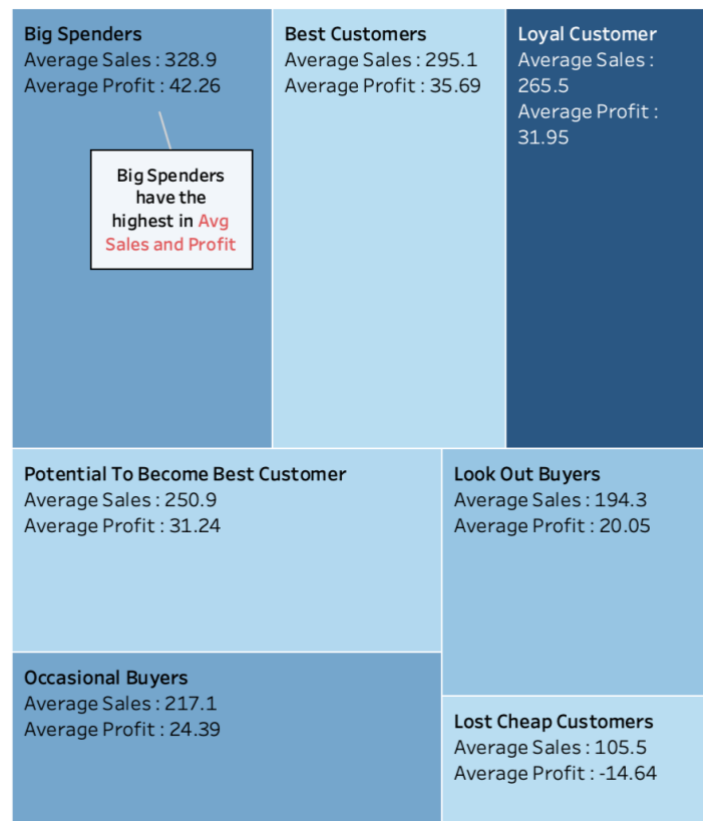


Figure 10. Summary RFM Segments

Among our segmented customers, Big Spenders stand out as the top performers, boasting the highest average sales and profit. Following closely behind are the Best Customers and Loyal Customers, indicating a strong presence of high-value customers in our segments.

2.3 Market Bundle Analysis

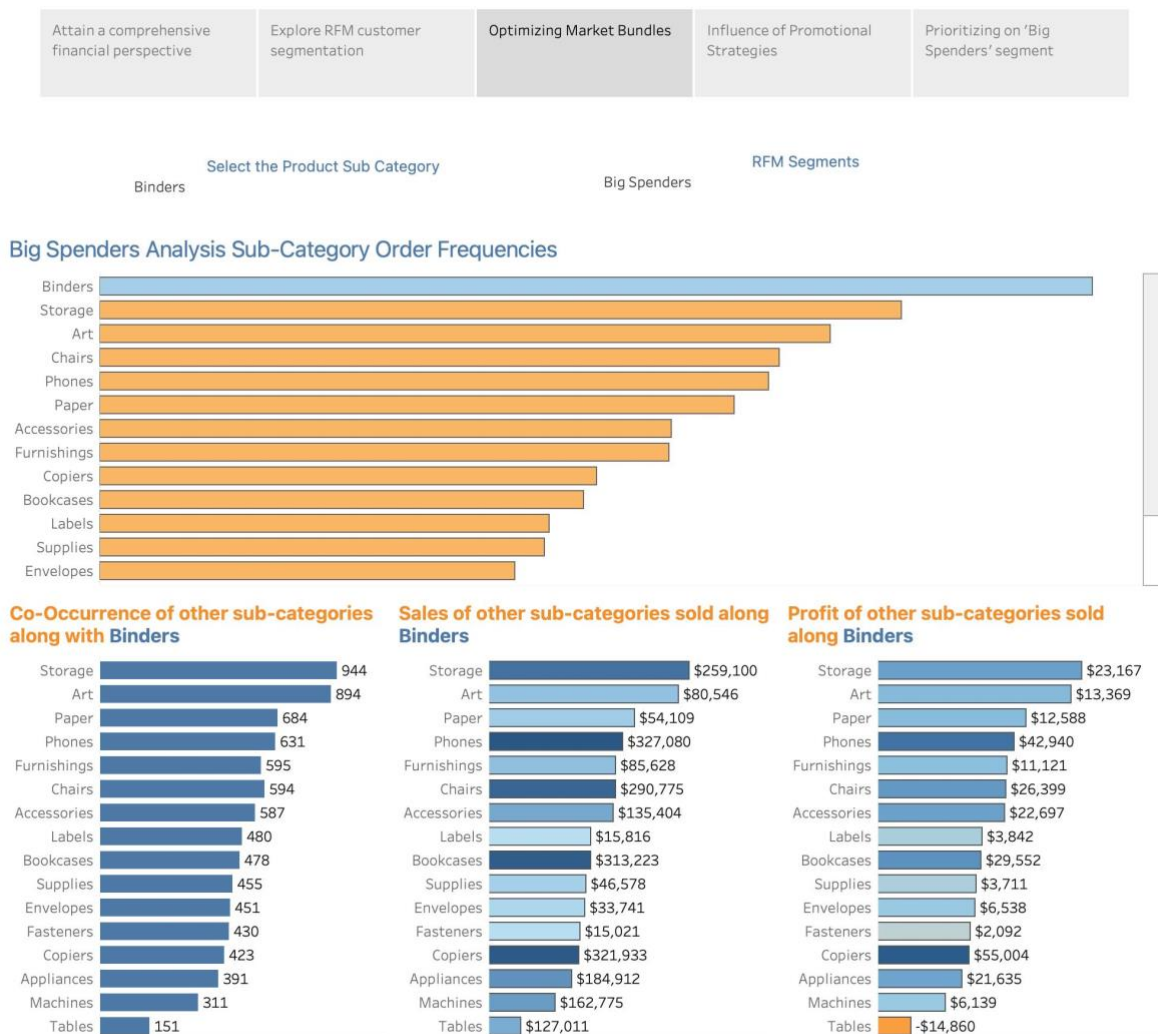


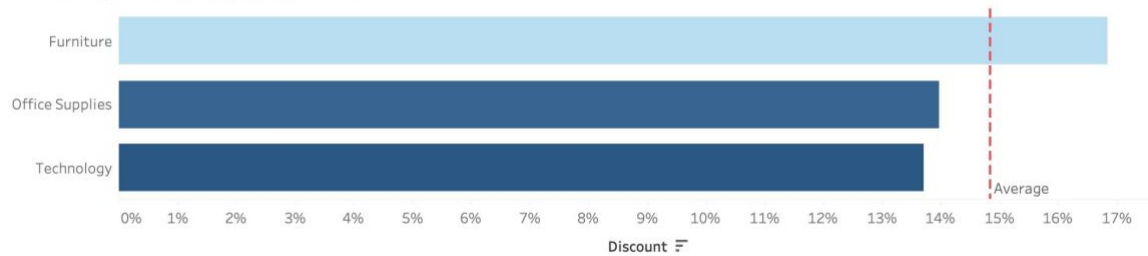
Figure 11. Market Bundle Analysis

In our third dashboard, we shift our focus to Big Spenders, who have shown the highest average sales and profit. The top product category in terms of the number of orders is Binders, with 698 orders. Hence, we will analyse about binders with the combined product order is Storage where it has the highest number together, totalling 994. This translates to a combined sales value of \$259,100 and a profit of \$23,167.

2.4 Discounts Analysis

Attain a comprehensive financial perspective	Explore RFM customer segmentation	Optimizing Market Bundles	Influence of Promotional Strategies	Prioritizing on 'Big Spenders' segment
--	-----------------------------------	---------------------------	--	--

Discounts per Category (Big Spenders)



Discount and Profit per Order



Discount vs Sales

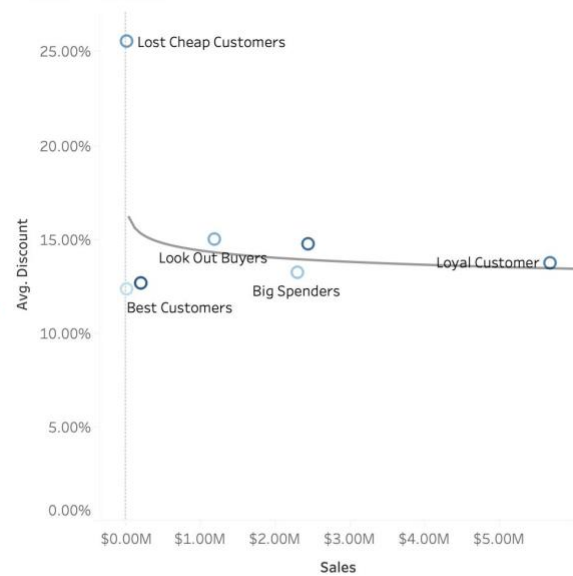


Figure 12. Discount Analysis

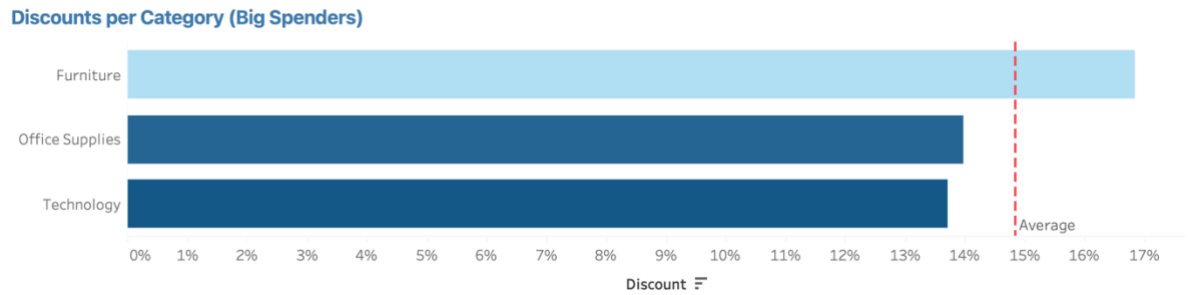


Figure 13. *Discount per Category under Big Spenders*

In figure 13, we delve into the analysis of average discounts per category. Surprisingly, the highest average discount is found in the Furniture category and not Office Supplies as we have found that the highest number of orders in Big Spender is binder.

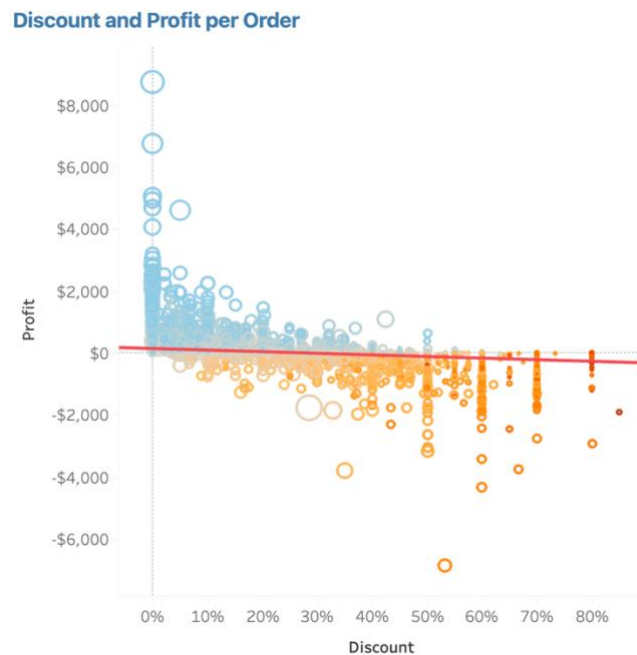


Figure 14. *Discount and Profit*

The trend line equation, $\text{Profit} = -517.181 \cdot \text{Avg. Discount} + 131.865$. The equation reveals a negative correlation between average discount and profit per order, as evidenced by the coefficient of -517.181. Essentially, as discounts increase, profits per order decrease. The intercept of approximately \$131.87 signifies the profit per order without any discounts.

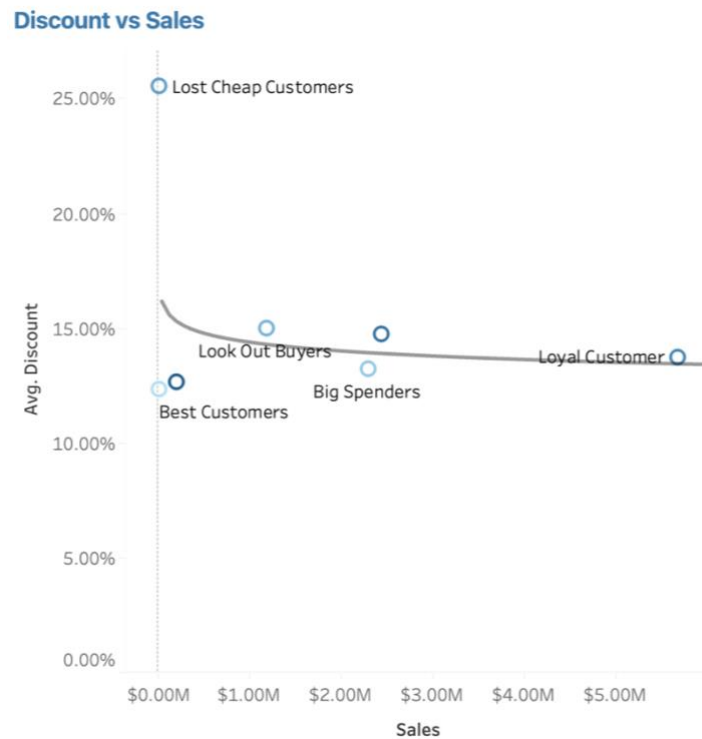


Figure 15. *Discount and Sales by RFM Segments*

For the "Lost Cheap Customers" segment, the average discount rate is significantly high compared to their sales which contributes only \$0.02M, however with the highest sales of \$5.69M, the discount is not proportional.

2.5 Big Spenders target Customers

Attain a comprehensive financial perspective	Explore RFM customer segmentation	Optimizing Market Bundles	Influence of Promotional Strategies	Prioritizing on 'Big Spenders' segment
--	-----------------------------------	---------------------------	-------------------------------------	--

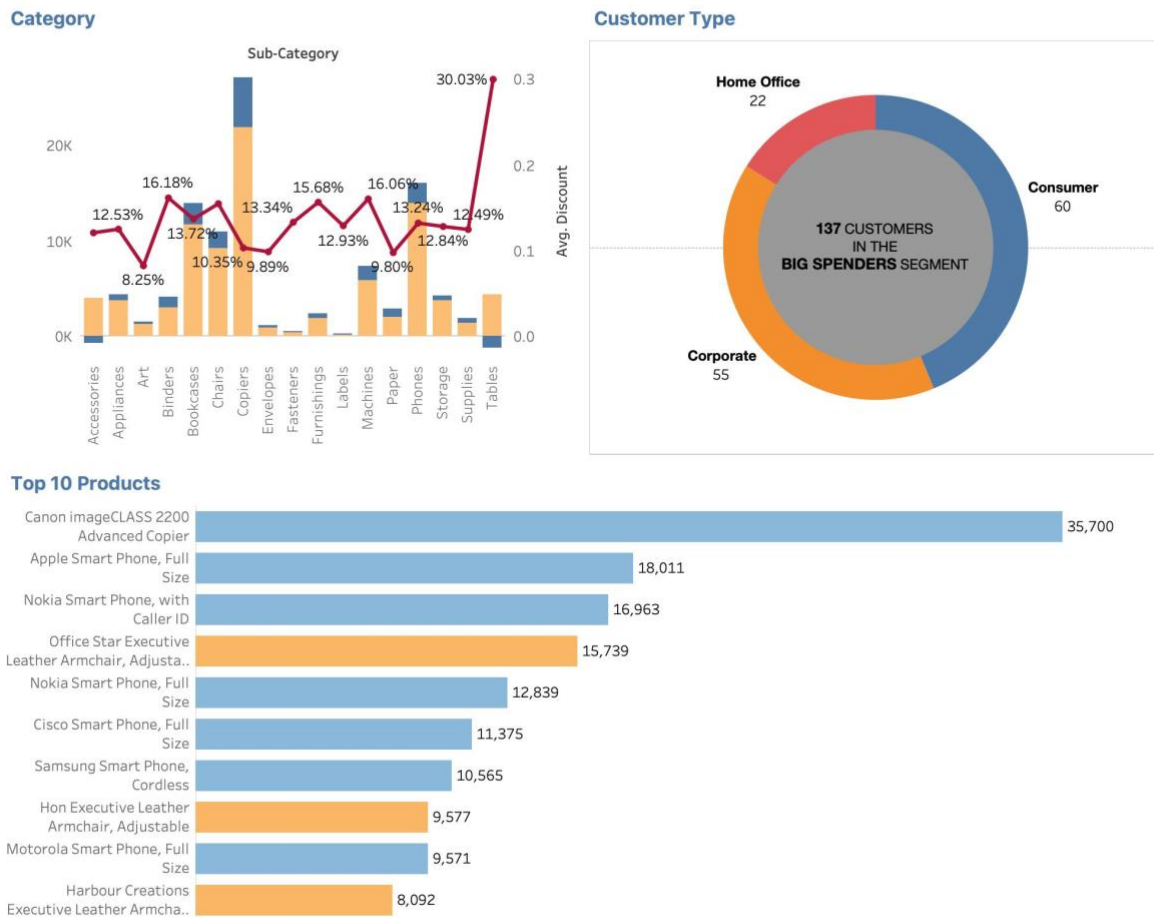


Figure 16. Big Spenders Analysis

Focusing on the "Big Spenders" segment and their preferences for technology products like Canon Copier and Apple Smart Phone can be highly beneficial. Offering targeted discounts on these preferred items can encourage more purchases and loyalty from this valuable customer segment. By tailoring marketing efforts to cater to the specific preferences of the "Big Spenders" segment, the business can effectively drive sales, increase profitability, and foster customer satisfaction and retention.

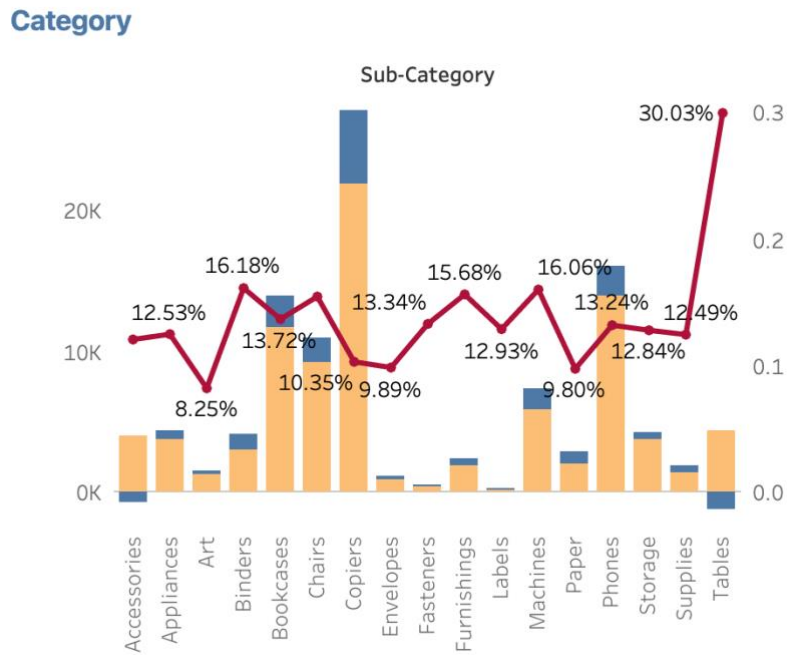


Figure 17. *Big Spender's Category and Discount*

Within the "Big Spenders" segment, "Copiers" show the highest sales and profit, but their discount levels do not seem to correlate with these figures. Conversely, despite "Tables" having negative profit, they receive the highest discounts. This indicates a need for adjusting discount strategies to better align with profitability within these segments.

3. Findings and Recommendations

Based on the analysis across the five dashboards, several key findings and recommendations emerge: Big Spenders, characterized by their high average sales and profit, emerge as a crucial customer segment. Targeting this group with personalized promotions and offers can drive sales and loyalty. Customers within the Big Spenders segment show a strong affinity for technology products like Canon Copier, Apple Smart Phone, and Nokia Smart Phone. Tailoring discounts and marketing efforts towards these items can yield significant sales and profit growth. Moreover, the analysis reveals a negative correlation between discounts and profitability, indicating that while discounts may boost sales volume, they can impact profit per order. Careful balancing of discount strategies is recommended to maximize both sales and profitability. Exploring market bundles, especially those involving Copiers and Phones, can lead to cross-selling and upselling opportunities to increase sales and profit margins.

4. Conclusion

RFM analysis-based consumer segmentation offers insightful information about various client behaviours. By using this segmentation, the company can better engage customers and increase sales by customizing marketing efforts to target particular client groups. It's best to offer targeted discounts rather than general reductions on particular goods or categories that appeal to Big Spenders. To be competitive, it is essential to regularly evaluate consumer preferences and market changes. Long-term loyalty can be promoted by establishing trusting bonds with Big Spenders through reward programs and first-rate customer care.

5. Reference

Singh, S. (2023). Customer segmentation using RFM analysis in Tableau. Analytics Vidhya.
<https://www.analyticsvidhya.com/blog/2022/12/customer-segmentation-using-rfm-analysis-in-tableau/> [Accessed 24 Feb.2024].