



**UNIVERSITY
OF LONDON**



ST2187 Business Analytics, Applied Modelling and Prediction

RFM ANALYSIS

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Executive Summary

This report's objective is to disseminate the key findings from the RFM (Recency, Frequency, Monetary) analysis I carried out with Tableau. RFM analysis is a strategy for segmenting customers based on their most recent purchase, how frequently they make purchases, and how much money they spend. The RFM metrics are important predictors of customer behaviours since retention is influenced by recency, while frequency and monetary value determine a customer's lifetime value.

According to Adeeko (2021), RFM analysis is an effective marketing technique that helps marketing teams answer the following questions:

- Who are the best overall customers?
- Who are the potential valuable customers?
- Which group of customers could contribute to the churn rate?
- Which customers could be retained?
- Which group of customers are likely to respond to engagement campaigns?

In this presentation we will be focusing on the “Who are the potential valuable customers?” and “Which customers could be retained?” questions. The Data source has 26 columns and 51290 rows, and using Tableau, we conducted RFM analysis and defined the following segments:

- Best Customers: Purchased Recently, Frequently and high spender
- Loyal Customers: Recent and Frequent Buyers
- Potential Loyal Customers: Purchased Recently and spends above average money
- Recent Customers : Recent Buyers
- Customers to Pay Attention: High and Frequent Spenders, but have not bought recently
- Customers at Risk: Low spenders, not frequent buyers
- Lost Customer: Low Spenders, not frequent buyers, and has not bought in a long time
- Cheap Lost Customer: Lowest recency, frequency, and monetary scores
- Regular Customers: Average recency, frequency, and monetary scores

In this report, not only will we be sharing the insights on the data, we will also present a recommendation to the senior management on which customer segment should the firm be targeting.

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1. Introduction

From the raw Excel data, we used Tableau to create 5 dashboards in order to learn more about our customers, and who and how we should target the firm's marketing efforts towards.

In this report, we will dive into each dashboard for deeper insights around business questions like:

- Are there any issues with our current customers?
- How are our customers segmented?
- How did different segments perform?
- How has the current promotions impacted performance?
- Who should the firm target?

To do so, we have chosen to conduct a RFM analysis to segment the customers into groups of similar traits. And to construct the RFM Analysis, according to Talha (2021), the RFM scores are weighted based on:

- **Recency:** Time since the last purchase made by a customer
- **Frequency:** Total number of transactions
- **Monetary:** Total Sales

Whatever segment the customer belongs in is determined by the RFM score. R-F-M scores are often obtained by dividing the customer's recency, frequency, and monetary values, which are graded from 1-4, by their percentile, for example:

- Purchased most recently (R=1)
- Purchased most quantity (F=1)
- Spent the most (M=1)

2. Analysis

2.1. Dashboard 1: Cohort Analysis

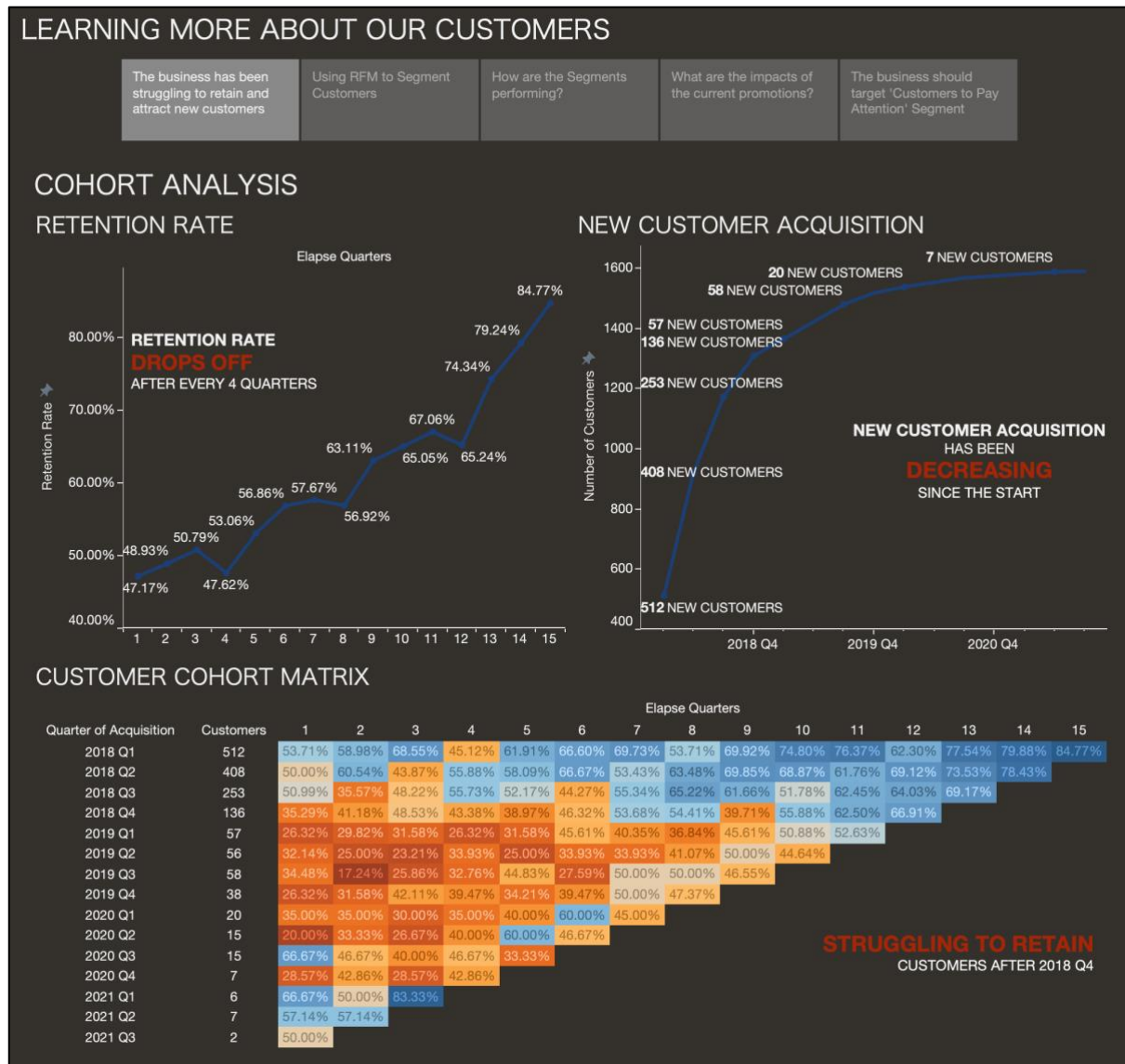


Fig. 1: Cohort Analysis on Customers

To understand what kind of customer related issues the firm has been facing, we decided to conduct a cohort analysis to explore the data.

Using Tableau, we conducted the cohort analysis, and found out that the firm has been able to retain loyal and long standing customers, but has been unable to attract and retain new customers.

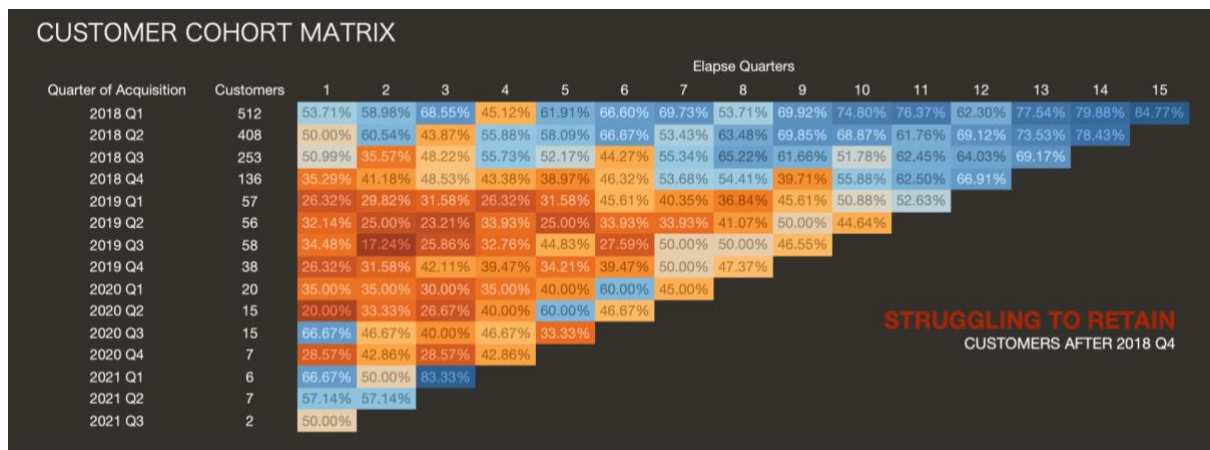


Fig. 2: Customer Cohort Matrix

The Customer Cohort Matrix (Fig. 2), helps us easily identify which cohort of customers the firm has been struggling to retain, and where the majority of the customers are from. Highlighted in orange are the quarters elapsed where the retention rate dropped below 50%, and in blue otherwise. The cohorts that the firm is struggling to retain are the ones that come after 2018 Q4, which means that new customers after the first year of operations have high churn rates. We can also identify that most of the firm's customers are usually customers from the first year of operations.

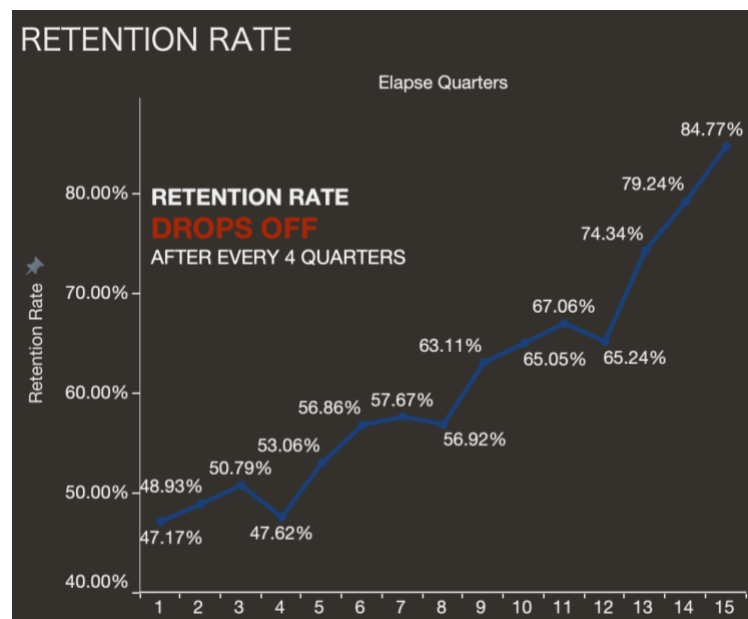


Fig. 3: Retention Rate

Next, we visualized retention rate and elapse quarters. And through this we were able to identify a cyclical pattern. It seems that after every 4 quarters, retention rate seems to decline sharply before climbing up again.

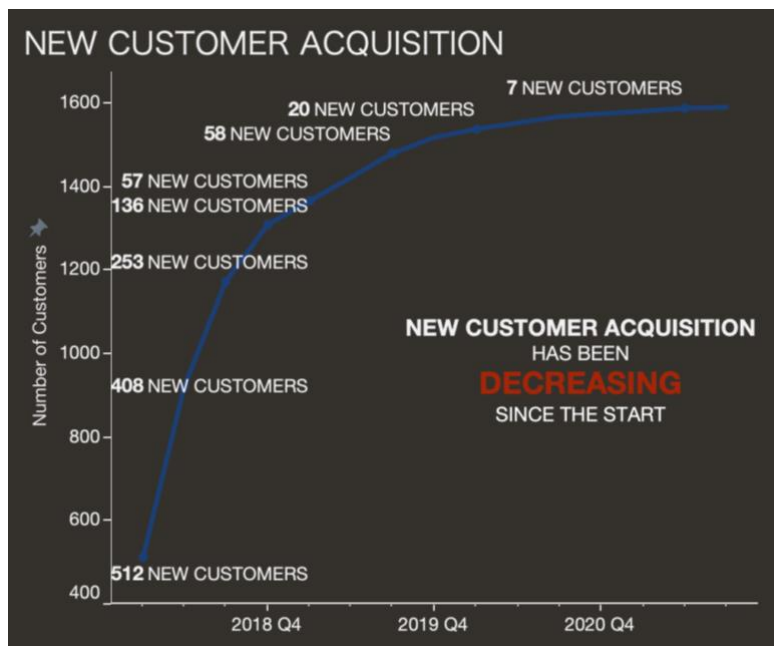


Fig. 4: New Customer Acquisition

Lesser new customers are coming in to the firm as seen in the New Customer Acquisition Graph (Fig.4), from this we can see that the firm has been struggling to attract new customers.

2.2. Dashboard 2: RFM Segmentation



Fig. 5: RFM Analysis

To find out more about the customers' behaviours, we used RFM (Recency, Frequency, Monetary) Analysis to segment the customer data. RFM analysis allows marketers to target specific clusters of customers with personalized marketing campaigns based on the different segments curated from the RFM scores.

CUSTOMER SEGMENTATION BASED ON RFM SCORE					
R	F	M			
		1	2	3	4
1	1	Best Customers	Loyal Customers	Loyal Customers	
	2	Loyal Customers	Loyal Customers	Recent Customers	Recent Customers
	3		Potential Loyal Customers	Recent Customers	Recent Customers
	4		Recent Customers	Recent Customers	Recent Customers
2	1	Loyal Customers	Potential Loyal Customers		
	2	Potential Loyal Customers	Potential Loyal Customers	Regular Customers	
	3		Regular Customers	Regular Customers	Regular Customers
	4		Regular Customers	Regular Customers	Regular Customers
3	1	Customers to Pay Attention	Customers to Pay Attention		
	2	Customers to Pay Attention	Customers to Pay Attention	Customers at Risk	
	3		Customers at Risk	Customers at Risk	Customers at Risk
	4		Customers at Risk	Customers at Risk	Customers at Risk
4	1	Customers to Pay Attention	Customers to Pay Attention		
	2	Customers at Risk	Customers at Risk	Customers at Risk	
	3		Lost Customer	Lost Customer	Lost Customer
	4		Lost Customer	Lost Customer	Cheap Lost Customer

Fig. 6: RFM Segmentation

We segmented the RFM groups into 9 customer segments, namely:

- **Best Customers:** Purchased Recently, Frequently and high spender
- **Loyal Customers:** Recent and Frequent Buyers
- **Potential Loyal Customers:** Purchased Recently and spends above average money
- **Recent Customers :** Recent Buyers
- **Customers to Pay Attention:** High and Frequent Spenders, but have not bought recently
- **Customers at Risk:** Low spenders, not frequent buyers
- **Lost Customer:** Low Spenders, not frequent buyers, and has not bought in a long time
- **Cheap Lost Customer:** Lowest recency, frequency, and monetary scores
- **Regular Customers:** Average recency, frequency, and monetary scores

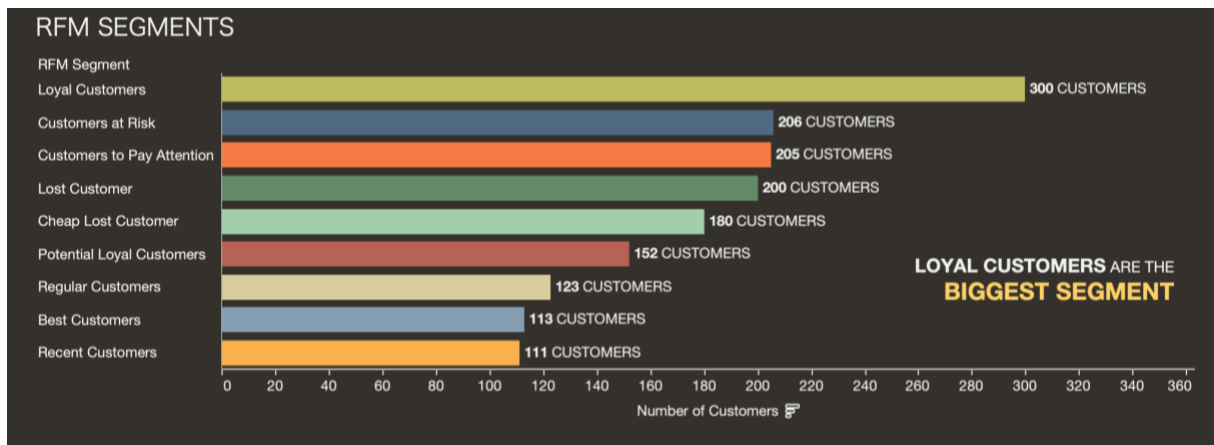


Fig. 7: Distribution of RFM Segments

We can see from the RFM Segments (Fig. 7), that Loyal Customers is the largest Segment, with Recent Customers being the smallest Segment. It is surprising to see Customers at Risk and Customers to Pay Attention so high up in third place.

2.3. Dashboard 3: Deeper Dive into the Segments



Fig. 8: Overview of the Segments

Moving on to the next dashboard (Fig. 8), we look at how each segment has performed. We can see that by far Loyal Customers is the best performing Segment in terms of sales and profits, and Cheap Lost Customer is the worst performing despite having the fifth most number of customers. It is surprising to see that Customers to Pay Attention is the third best performing segment in terms of average sales per customer, as this segment has not been active in recent times.

2.4. Dashboard 4: Current Promotional Effects

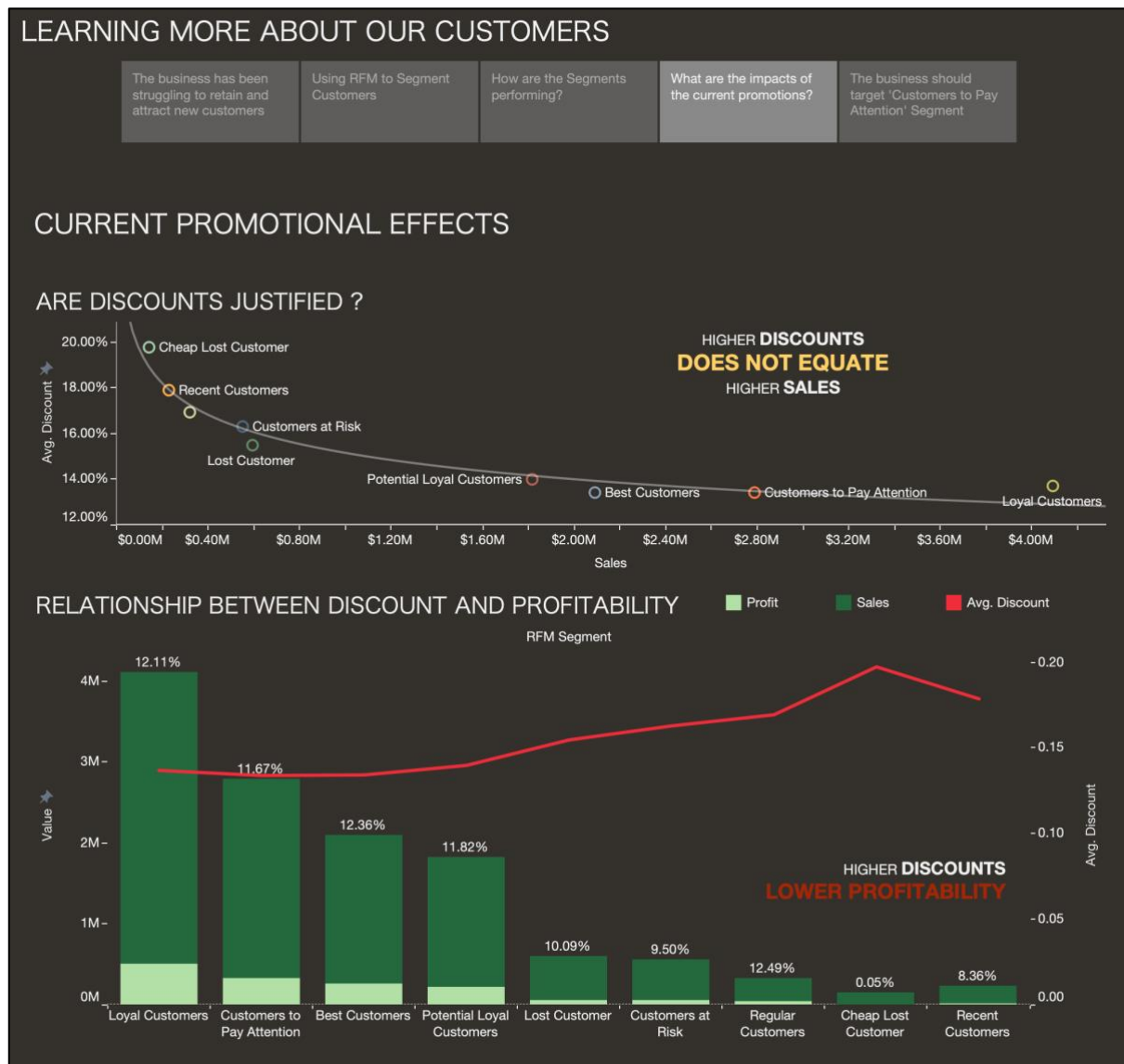


Fig. 9: Analysis on Discounts

To figure out how discounts has impacted the segments, we made the following dashboard (Fig. 9). In this dashboard, we analysed whether discounts had impacted sales, as well as visualised the relationship between discounts and profit ratio.



Fig. 10: Does Discounts affect Sales?

In the first visualization of this dashboard (Fig. 12), we plotted the segments onto Average Discounts and Sales. Looking at the plot, we can see that despite receiving high amounts of discounts, Cheap Lost Customer, Recent Customers, Regular Customers, Customers at Risk, and Lost Customer did not generate high amounts of sales. On the other hand, despite Potential Loyal Customers, Best Customers, Customers to Pay Attention, and Loyal Customers receiving lower amounts of discounts, they generated significantly higher amounts of sales. This visualization shows that higher discounts has not encouraged higher sales.

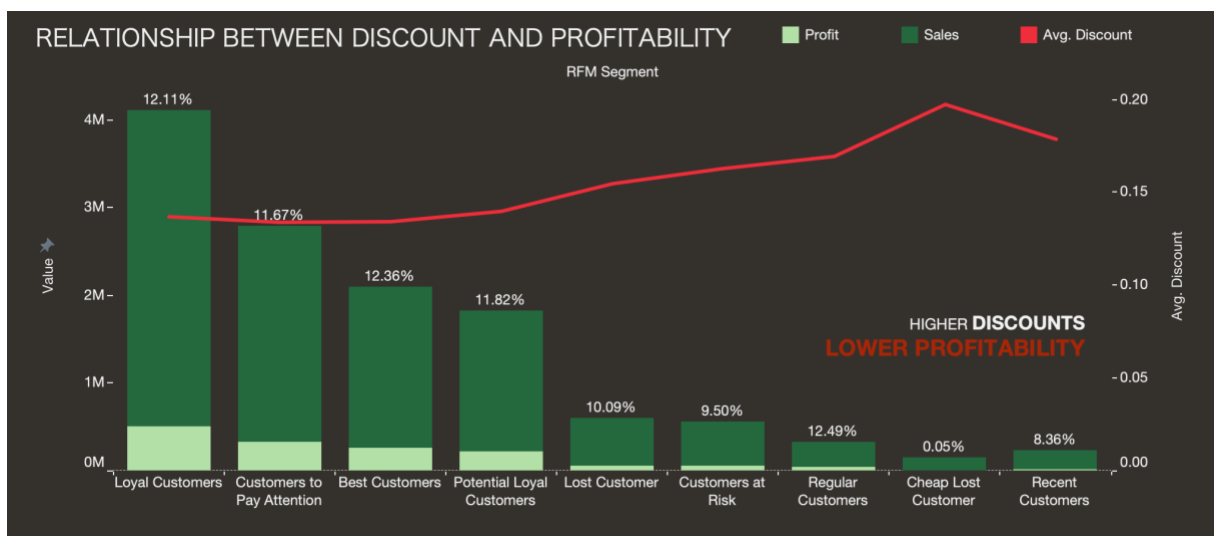


Fig. 11: Profit Ratio and Discount

In the next visualisation (Fig. 11), we visualised the profits as part of sales and average discounts, we also labelled the profit ratio on top of the bar plots. From this, we can see that the higher the average discount amount, the lower the profit ratio. However, we are not encouraging removing discounts entirely, but to show that discounts should be given in controlled amounts and not haphazardly given to encourage sales.

3. Findings & Recommendations

3.1. Findings

We will summarize our findings before we give our recommendations to the firm in the last dashboard (Fig. 13).

Findings:

- Firm has been struggling to retain newer customers
- Firm has a lot of Loyal Customers
- Loyal Customers are the most important segment
- Higher amounts of discounts has not encouraged higher sales

3.2. Recommendation

Who should the firm target:

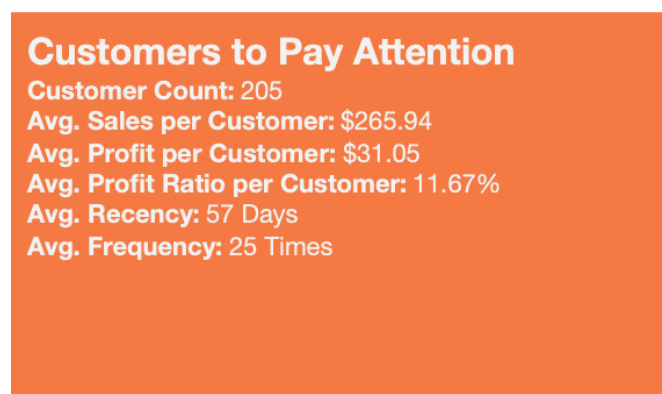


Fig. 12: Customers to Pay Attention

Through our analysis, we recommend that the firm should target its marketing resources at the Customers to Pay Attention Segment, as not only is it ranked third in terms of customer counts (Fig. 7), it is also third in terms of average sales per customer (Fig. 8). This Segment also amount to 22.07% of sales and 22.20% of profits.

This segment has high frequency and monetary scores, but has not purchased recently. And if the firm continues to ignore this segment, they could potentially lose it.

3.3. Dashboard 5: Who should the business target and how

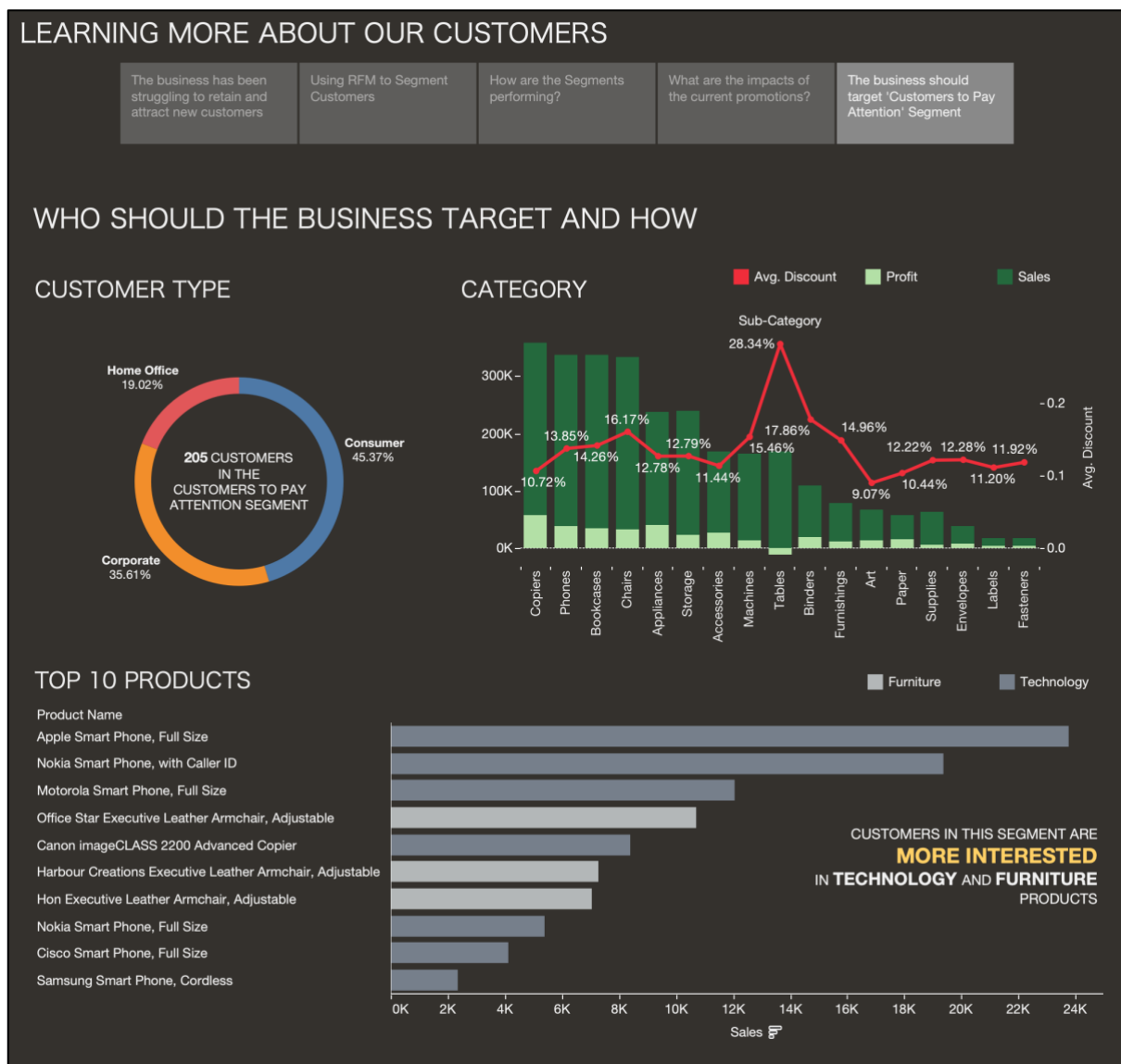


Fig. 13: Recommendations

Looking at the final dashboard (Fig. 13), we can see what kinds of customers makes up the Customers to Pay Attention Segment, and the amounts of discounts given to which sub-category of product when selling to this segment, as well as which products interests the customers in this segment the most.

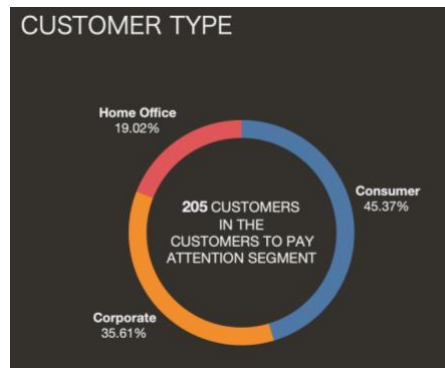


Fig. 14: What kind of Customer

Looking at the top left of the dashboard (Fig. 14), we further segmented Customers to Pay Attention, and found out that Consumers and Corporate Customers make up the majority of the customers. This information helps marketing teams to understand what kind customers they will need to deal with, so as to develop the messaging and strategy to market towards them.

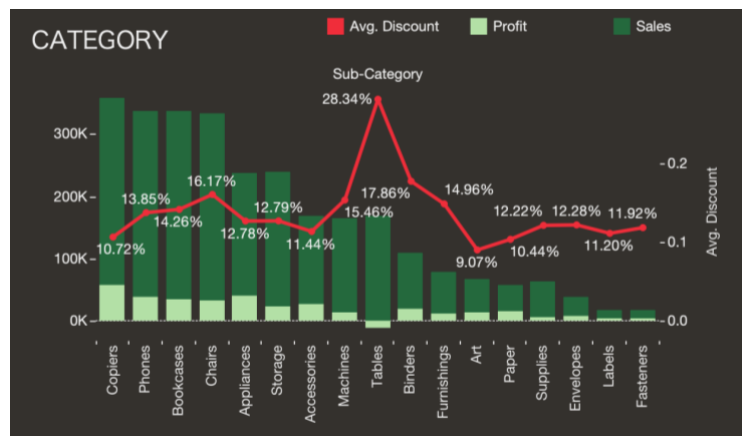


Fig. 15: Discounts and Sub-Categories

In the next visualization, we used a similar graph to Fig. 11 but this time round we labelled average discount rate instead of profit ratio. Through this graph we wanted to show the amount of discounts given to which sub-category when selling to this segment, as well as the sales and profit amounts as a result of it. This information should be able help marketing teams develop a baseline discount rate to give if they were to consider giving discounts.

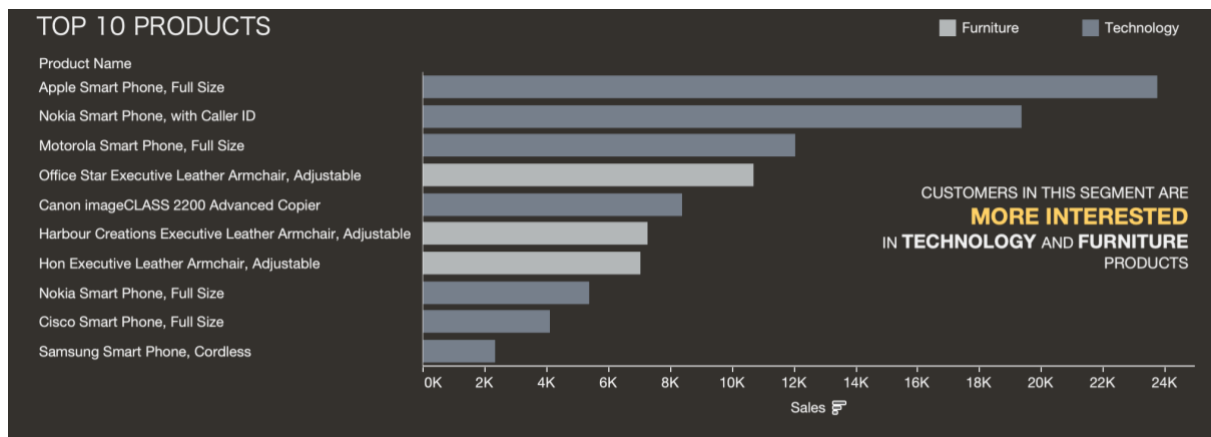


Fig. 16: Top 10 Products

In the final visualization, we showed the top 10 products in terms of sales that were sold to this segment, it is clear to us that this segment is only interested in the firm's technology and furniture products. This information should be useful to marketing teams, should they conduct a exclusivity deal based customer retention tactic.

4. Conclusion

Customers may leave for a variety of reasons, however, if we are able to understand their traits and behaviour patterns, we might be able to effectively allocate marketing resources to the right customer segment, and maximise our cross and up-selling opportunities.

----- End of Presentation -----

1429 words (Main Body)

Reference

Adeeko, F. (2021). *RFM Analysis: Customer Segmentation for Target Marketing Strategies*. [online] Medium. Available at: <https://funlola-adeeko.medium.com/rfm-analysis-customer-segmentation-for-target-marketing-strategies-e2d43d722a0b> [Accessed 28 Feb. 2023].

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