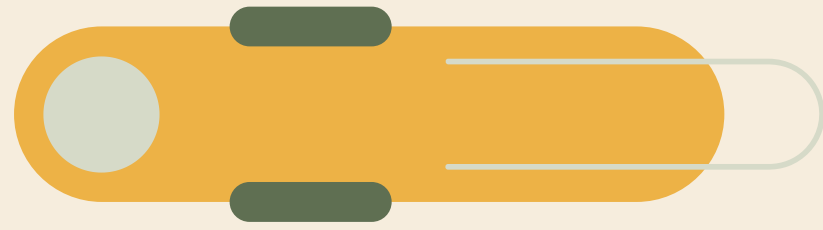


FINAL PROJECT DATA ANALYST

**Optimizing Customer Engagement Using RFM Segmentation
in Pakistan's E-Commerce Market**

By Raditya Erlang Arkananta



OVERVIEW



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Previous Projects

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Insight & Recommendation

ABOUT ME

Raditya Erlang Arkananta

Experience

- **PT Hekikai Indonesia - QA QC** **2024 - 2025**
Japanese Translator
- **PT Indonesia Indicator - HR Officer** **2024**
Staff

Education

- **Institute Technology of Sepuluh Nopember** **2019 - 2023**
Bachelor of Science in Industrial Engineering
- **Dibimbing Data Science** **2024 - 2025**
Currently Learning Data Scientist Skills

 **LinkedIn**



**"To Bring Value by Turning
Complex Data into Actionable
Insights"**



PREVIOUS PROJECTS

Overview

- E-Commerce Customer Analysis
- Advertisement A/B Testing
- Customer Sentiment Analysis



Product & Customer Analysis in E-Commerce

- Identified the most popular item overall and during peak hours,
- Uncovered a clear seasonal trend
- Discovered a promising potential foreign market
- Found that most revenue comes from the top 20% customer



Advertisement Impact A/B Testing

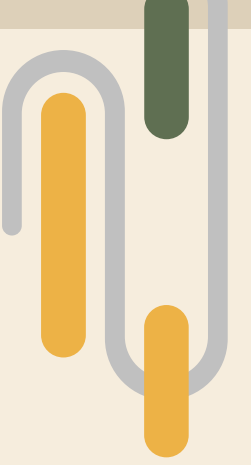
- Analyzed the test results of two groups, each exposed to different ads, and identified the one with significantly better performance
- Calculated the duration and sample size for the A/B test to be held reliable.



Customer Sentiment in Ticketing System

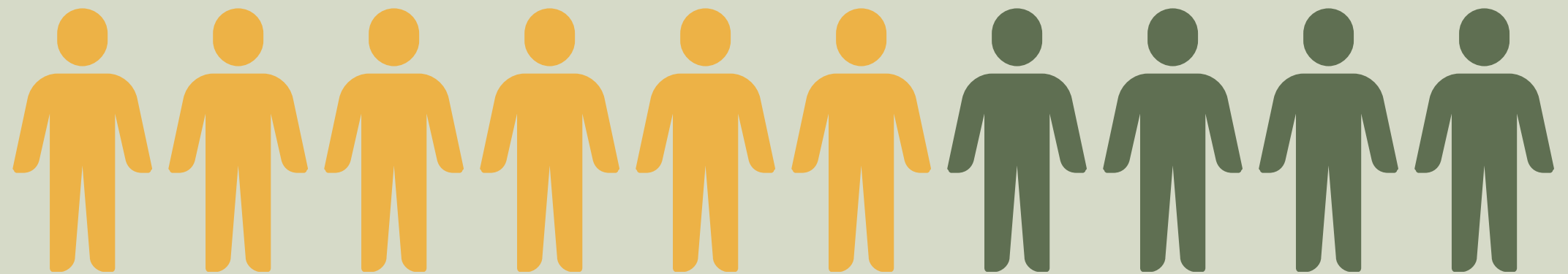
- Analyzed customer satisfaction using key metrics such as CSAT, CES, and NPS
- gathered insights on customer sentiment and feedback by Analyzing comments
- Found that customer service area need improvement
- Found the need to make more people recommend the product

MAIN PROJECT



Optimizing Customer Engagement Using RFM Segmentation in Pakistan's E- Commerce Market

All The Script and other Technical Documentation
can be Accessed Here



PROJECT OVERVIEW



This project aims to analyze the largest Pakistan e-commerce dataset to gain a deeper understanding and insights into customer behavior.


Background

- The Dataset is from Kaggle about the Pakistan E Commerce Data from 2016 - 2018
- E-Commerce Market is Pakistan is Rapidly growing
- Businesses struggle to understand diverse customer behaviors and preferences.

Problem Statement

Without clear segmentation, marketing efforts are often generic, leading to inefficient resource allocation, lower customer engagement, and missed opportunities for personalized strategies.

What We Will Do

- Determining customer segmentation.
 - Identifying customer habits and suggesting tailored strategies for each segment.
 - Enhancing personalized marketing to increase sales.
 - Optimizing resource allocation to improve customer acquisition and retention.
- 

OBJECTIVE



Main Objective

This project aims to perform RFM Analysis on e-commerce data to identify distinct customer groups based on behaviors, preferences, and purchasing patterns. Using these insights, businesses can tailor marketing strategies, optimize customer engagement, and enhance retention efforts. The recommendations hopes to drive personalized marketing, improve customer satisfaction, and ultimately boost sales.



Key Questions

- 1.How do sales trends evolve over time?
- 2.How are customers segmented based on transaction data?
- 3.What is the profit contribution of each customer segment?
- 4.What is the most popular product category?
- 5.Which payment method is used most frequently?
- 6.How many orders have been canceled?
- 7.What is the relationship between payment methods and order status?
- 8.Which payment method generates the highest sales revenue?



DATA UNDERSTANDING



This Dataset from Kaggle contains transaction records from the largest retail e-commerce platform in Pakistan, covering approximately half a million orders, Collected from various e-commerce merchants as part of a research study.

This Dataset Contains :



584K Data



21 Columns



March 2016 - August 2018



DATA PRE-PROCESSING



1

**Removing
Duplicates**

2

**Handling Missing
Value**

3

**Handling Illogical
Future Transaction
Dates**

4

**Removing Negative
Values in Order
Quantity and Discount**

5

**Adjusting Incorrect
Data Types**

6

**Dropping Irrelevant
Columns**

7

**Saving the Pre-Processed
Data for Power BI Analysis**



PRE-PROCESSING RESULT

```
graph LR; A["584523 Data  
21 Columns"] --> B["Data Cleaning"]; B --> C["584445 Data  
15 Columns"]
```

584523 Data
21 Columns

Data Cleaning

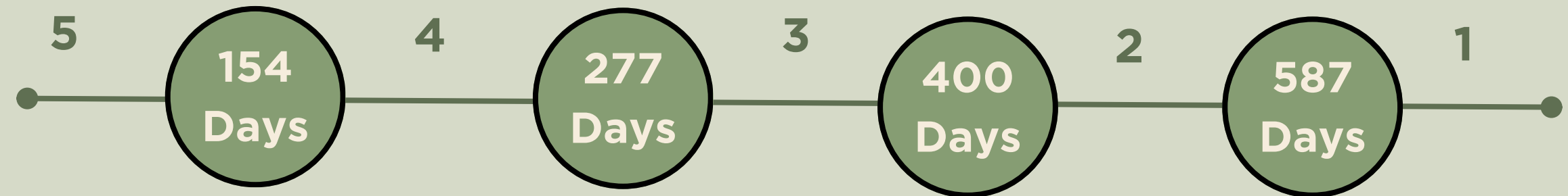
584445 Data
15 Columns

RFM SEGMENTATION



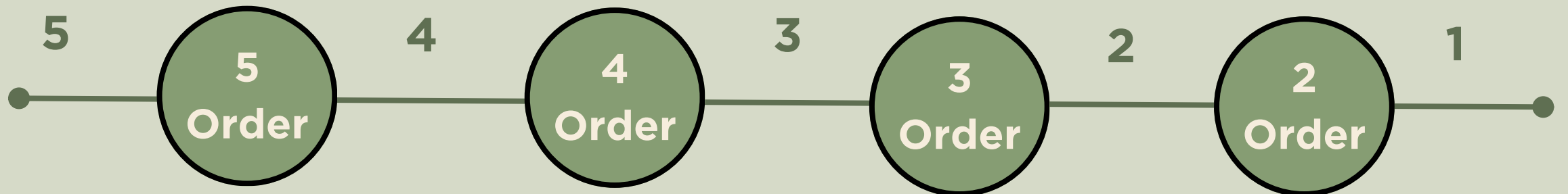
Recency

Number of days since customer's last purchase



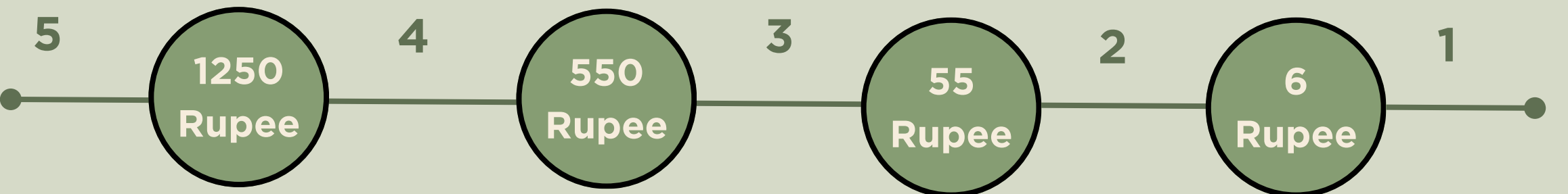
Frequency

Count of Transaction Per Customer



Monetary

How much Money has a Customer Spent



SEGMENT EXPLANATION



Champion

Top customers with frequent purchases, spend the most, and shop recently.

Exclusive deals, Personalized Recommendation,



Emerging Champ

Customers whose high in all category but just a little lower than the top

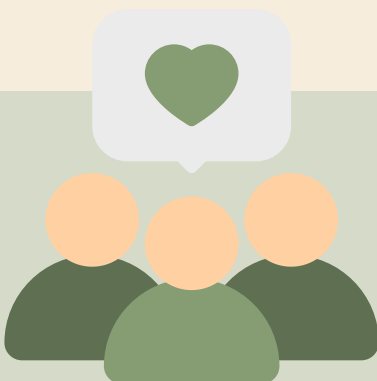
Push Incentives or Bonus To Push Into Champion



Bulk Spender

Recent customers that buy less frequently, but in high amount

Push for Repeat Purchases



Loyalist

Frequent Customer in varying order value

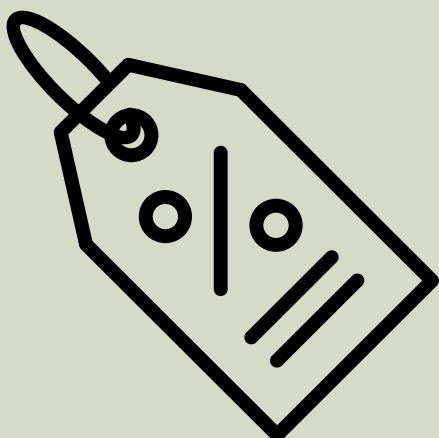
Keep Engaged, Subscription Bonus



High Potential

High spenders with lower frequency and potential for growth

Targeted Promotion & Reminders



Average

Average shoppers who prefer budget-friendly options.

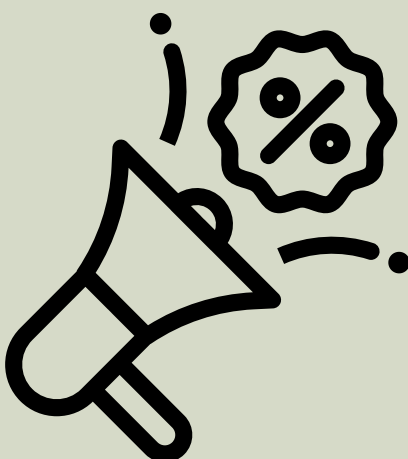
Highlight Discounts & Bundle Deals



Casual Spender

Seldom buyer, low spender but recently shopped

Push for Purchase, Limited Time Offers



Active Savers

Frequent and Recent Customer with low spending

Combo Deals, Bonus After Certain Spent

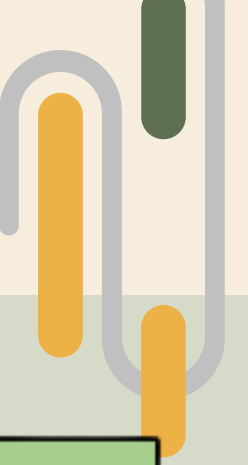


Slipping Away

Irregular Buyer with Varying shopping habits

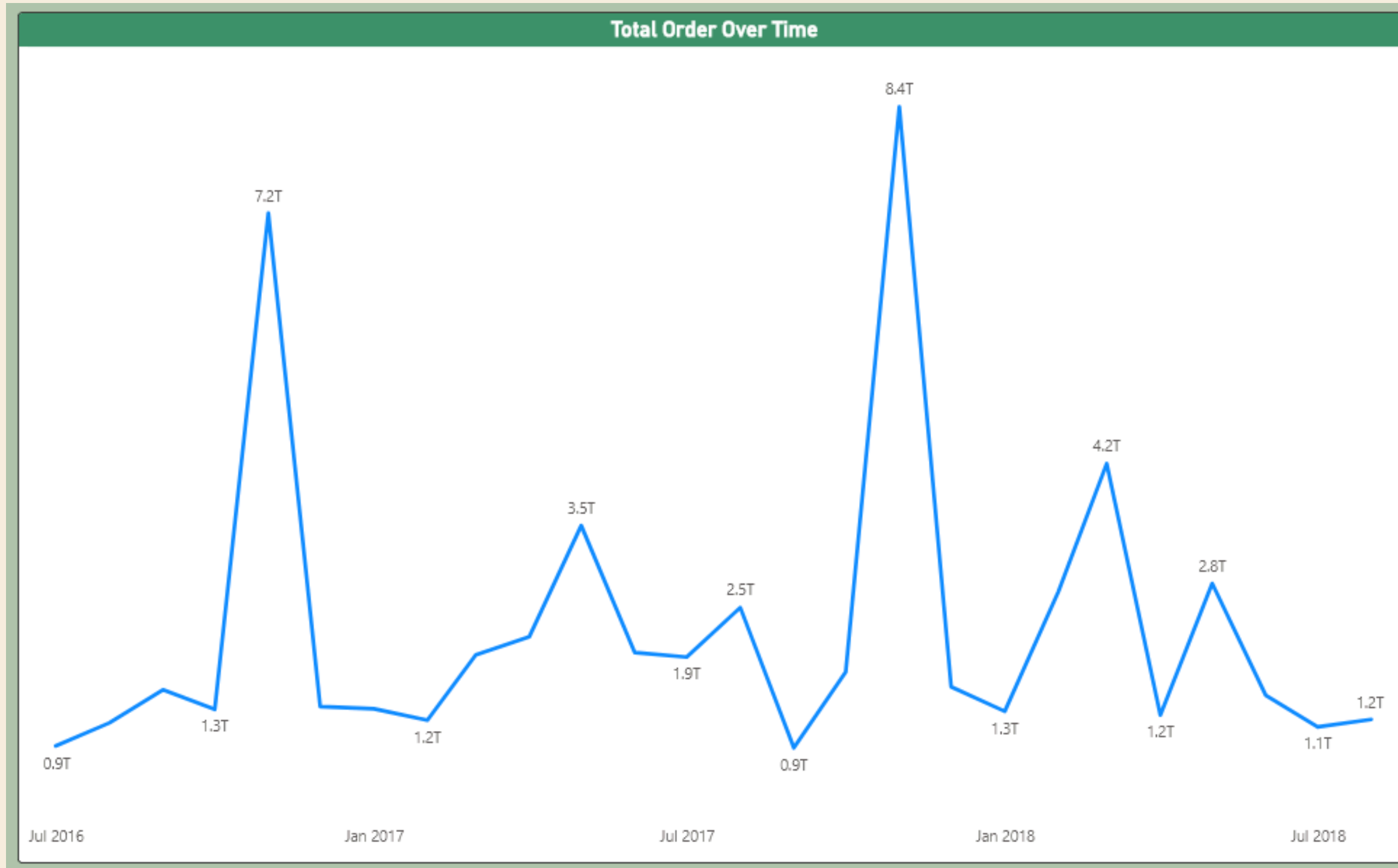
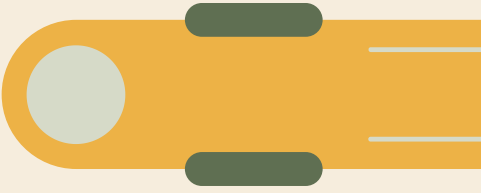
Push Notifications, Comeback Promos & Reminder

SEGMENT EXPLANATION



Customer Segment	Recency Score	Frequency Score	Monetary Score	Description	Personalized Strategy
Champion	≥ 4	≥ 4	≥ 4	Top customers with frequent purchases, spend the most, and shop recently.	Exclusive deals, Personalized Recommendation,
Emerging Champions	≥ 3	≥ 3	≥ 3	Customers whose high in all category but just a little lower than the top	Push Incentives or Bonus To Push Into Champion
Bulk Spender	≥ 4	≥ 3	≥ 4	Recent customers that buy less frequently, but in high amount	Push for Repeat Purchases
Loyalist	2 - 4	≥ 3	≥ 1	Frequent Customer in varying order value	Keep Engaged, Subscription Bonus
High-Potential Customers	2 - 4	≥ 1	≥ 3	High spenders with lower frequency and potential for growth	Targeted Promotion & Reminders
Average	≥ 3	≥ 2	≥ 1	Average shoppers who prefer budget-friendly options.	Highlight Discounts & Bundle Deals
Casual Spender	≥ 3	≥ 1	≥ 1	Seldom buyer, low spender but recently shopped	Push for Purchase, Limited Time Offers
Active Savers	5	≥ 4	≥ 1	Frequent and Recent Customer with low spending	Combo Deals, Bonus After Certain Spent
Slipping Away	1 - 2	≥ 1	≥ 1	Irregular Buyer with Varying shopping habits	Push Notifications, Comeback Promos & Reminder
Uncategorized	Other	Other	Other	Other Customer Segment not Covered	

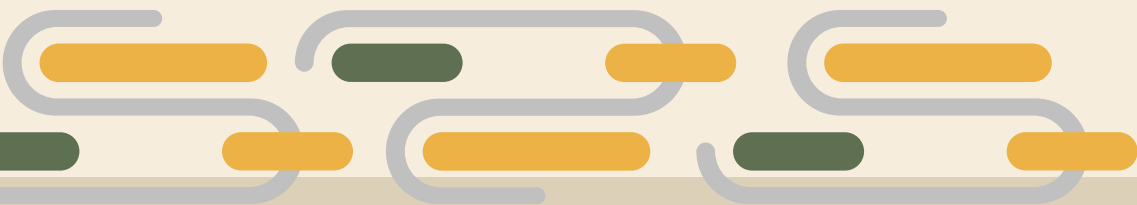
ORDER OVER TIME



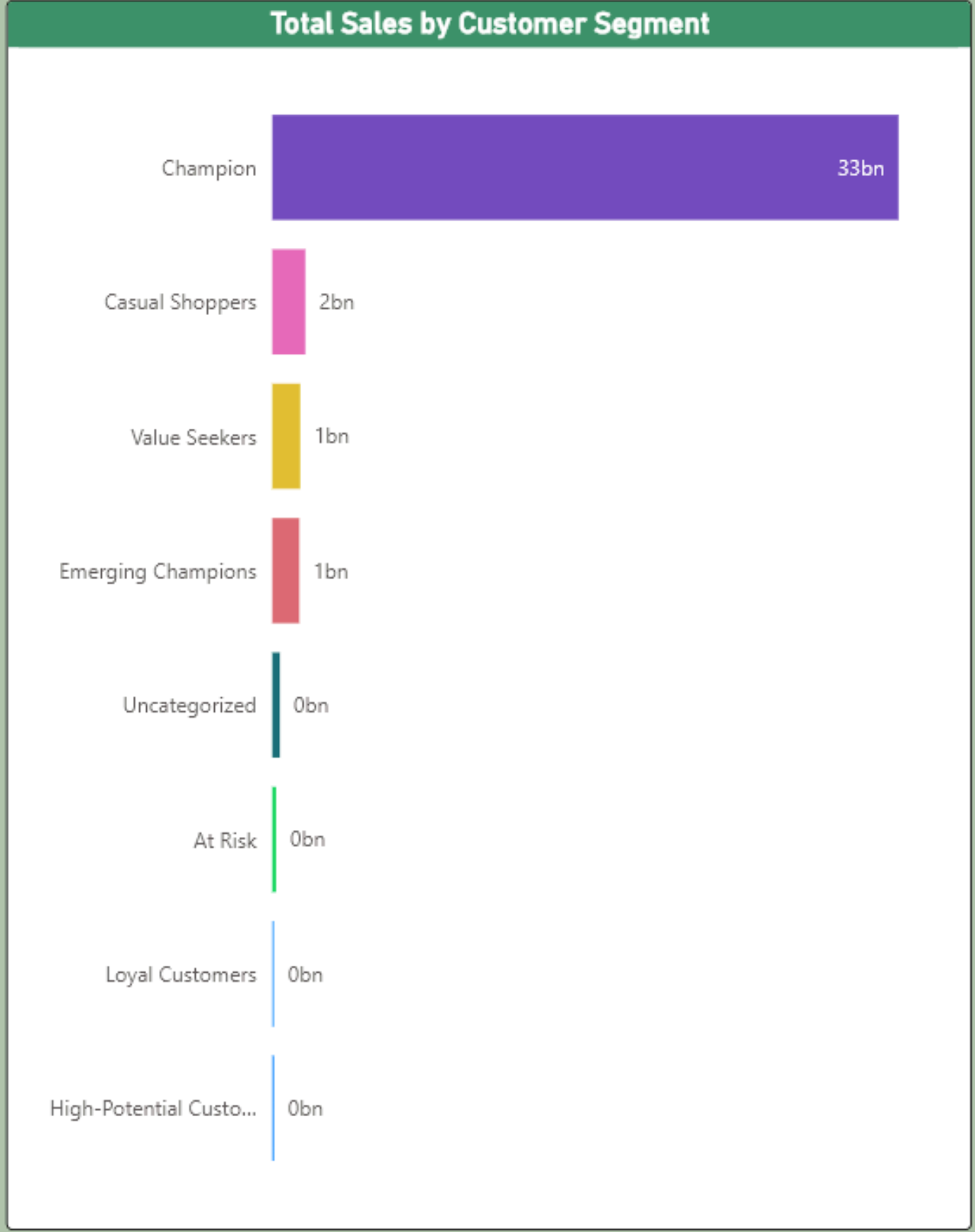
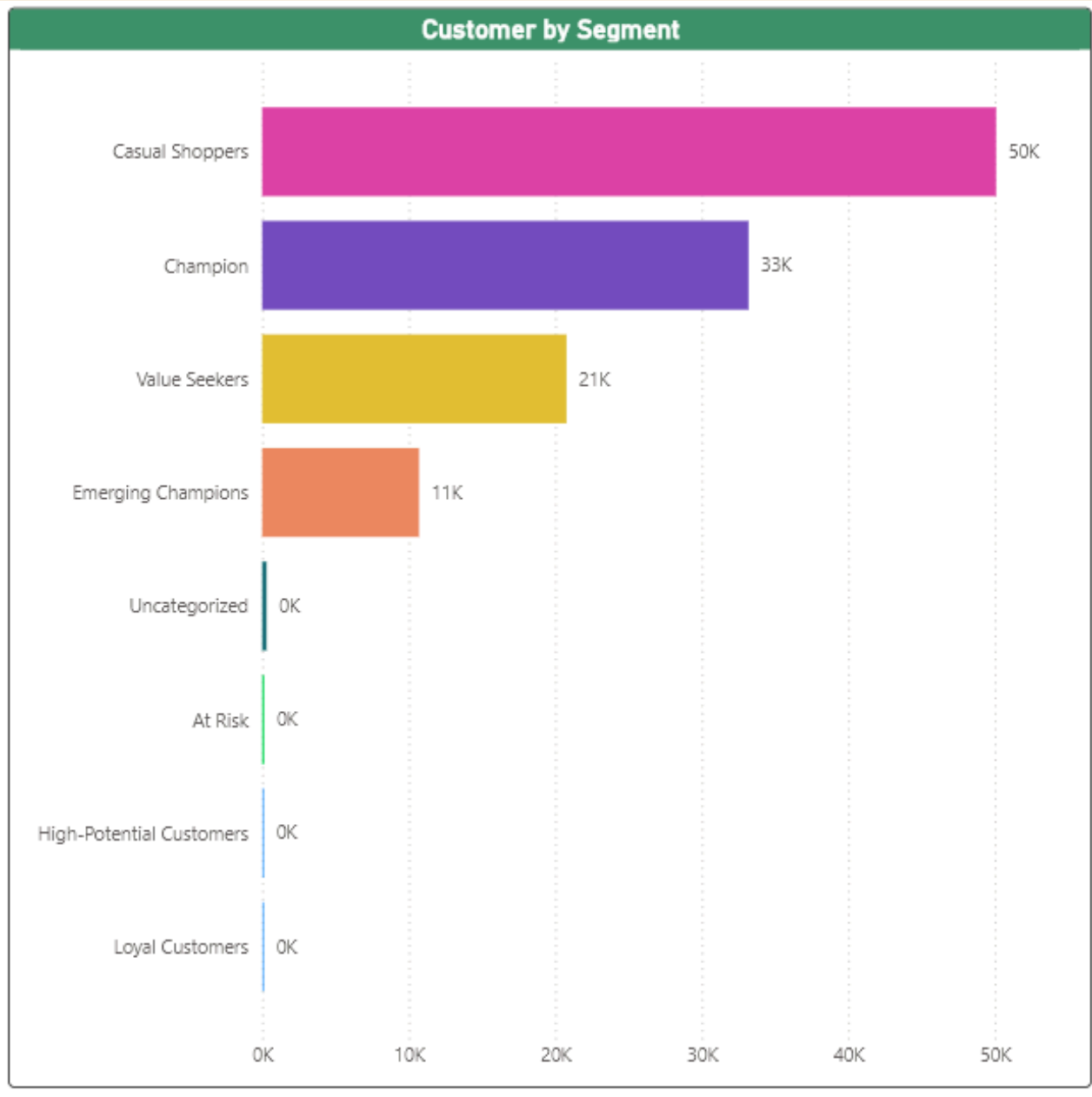
There is a noticeable peak in November, likely due to:

- Islamic Holiday
- Wedding Season in Pakistan
- The End-of-Year Sale Period

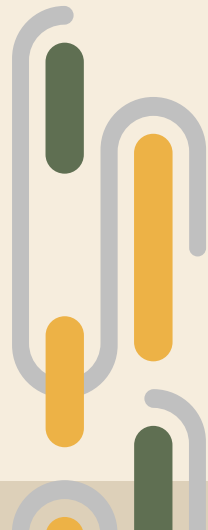
September and October showing notably low activity. There's also some noticeable activity growth between March and May, which may have potential for growth



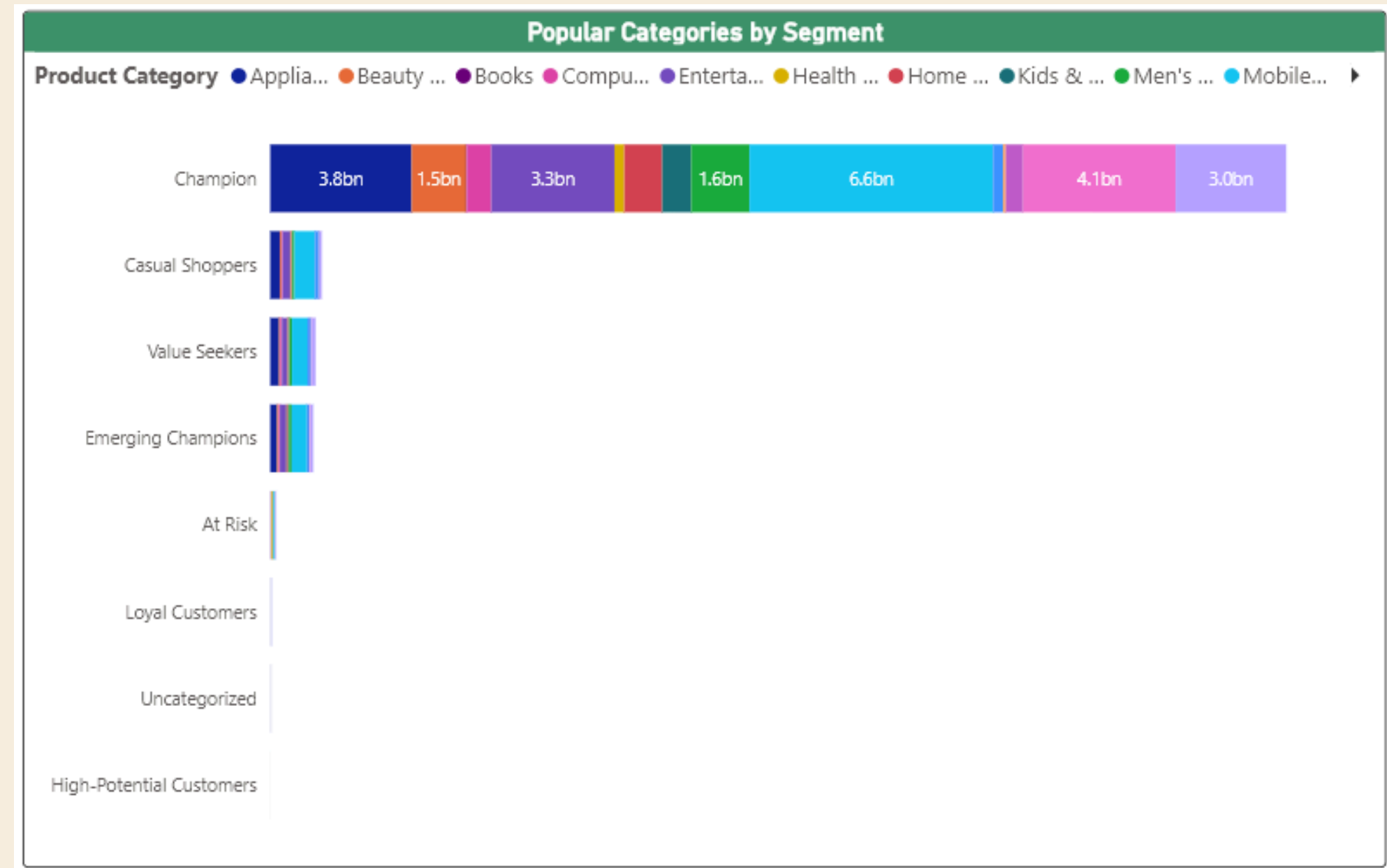
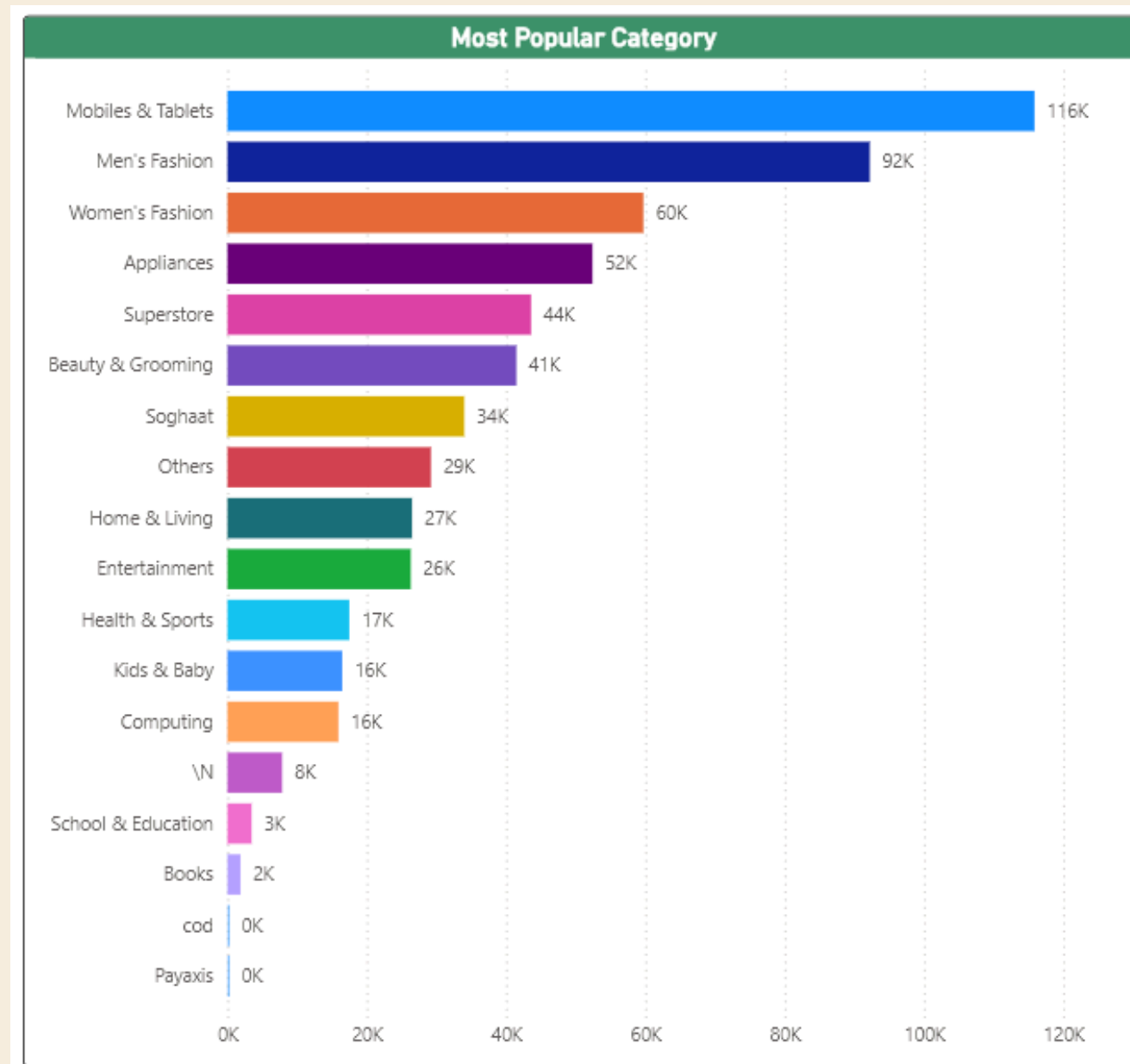
CUSTOMER & SALES BY SEGMENT



86% of total sales come from the **Champion segment, which is 28%** of the customer base. This indicates the need to highlight the importance of **targeting and retaining this high-value segment**



TOP CATEGORY AND SALES BY SEGMENT

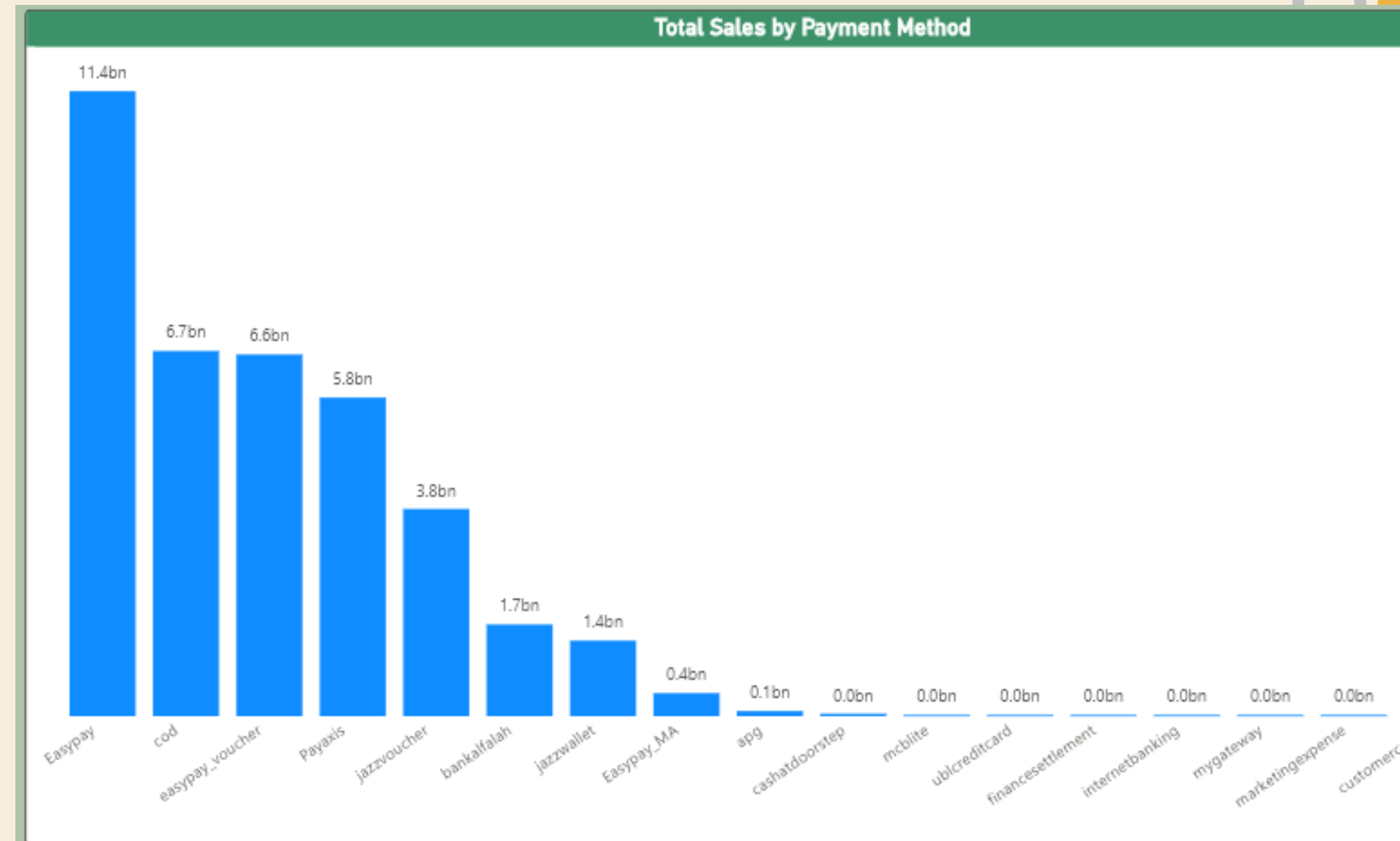
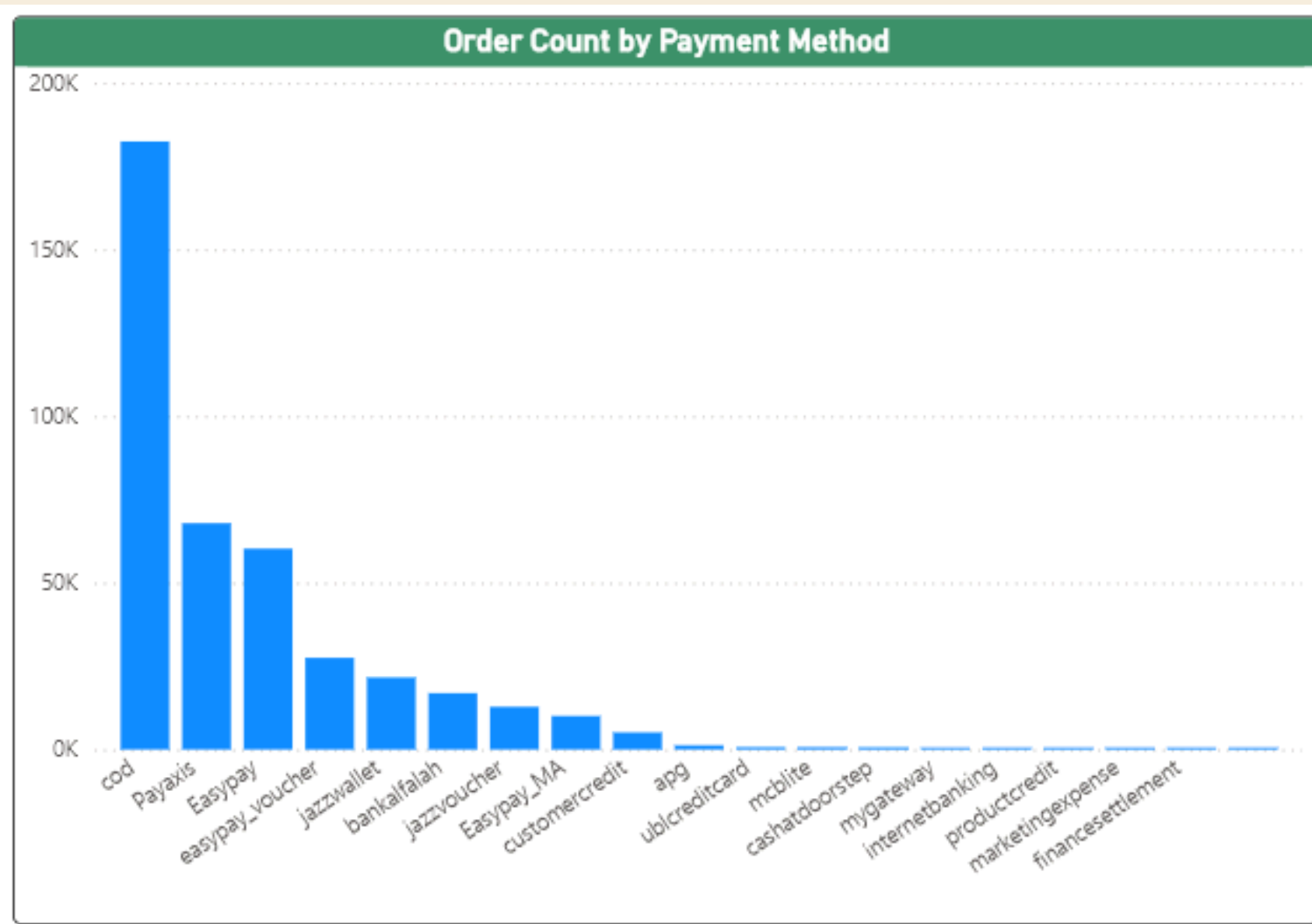


Mobile & Tablet is the most popular category overall and across all customer segments.

Notably, only the Champion segment purchases products from the 'Superstore' category.

Mobile & Tablet products are universally popular, so **broadening the offering in this category could cater to all segments effectively**

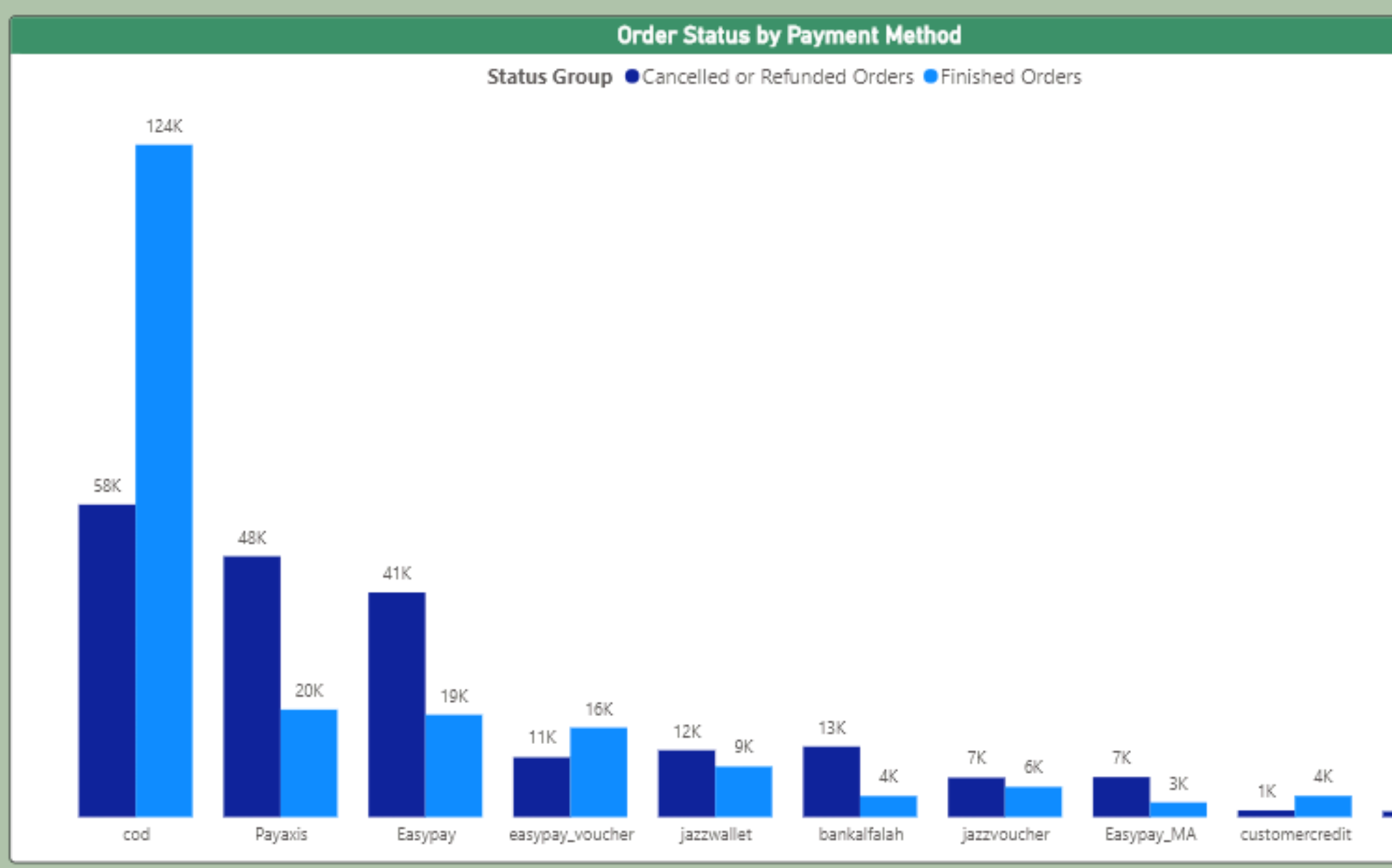
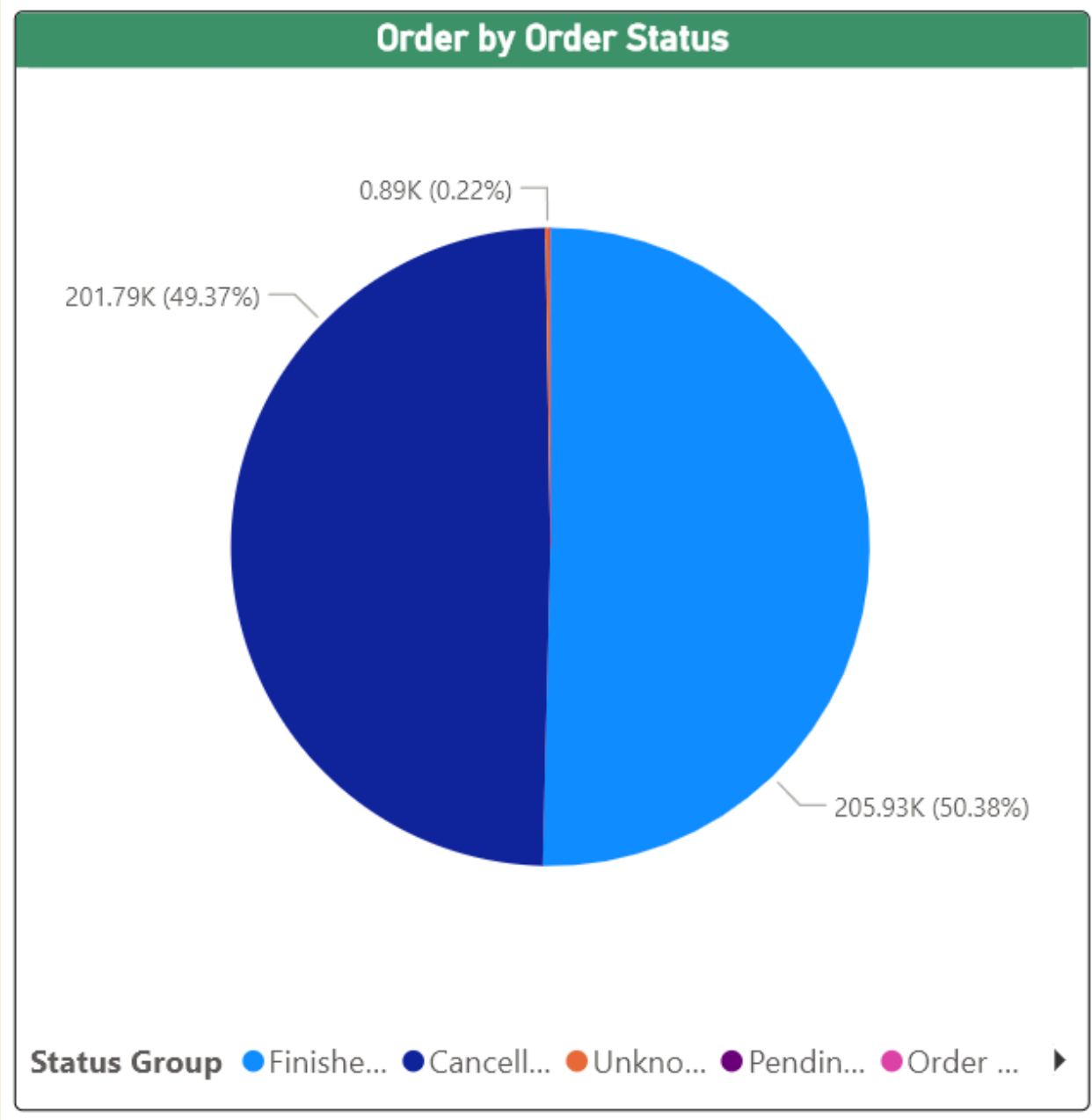
TOP PAYMENT METHOD & SALES



Despite Cash on Delivery being the preferred payment method for 44% of customers, **Easypay, used by only 14% of customers, contributes the most to revenue.** And the third highest contributor is Easypay Voucher, used by 6% of customers.

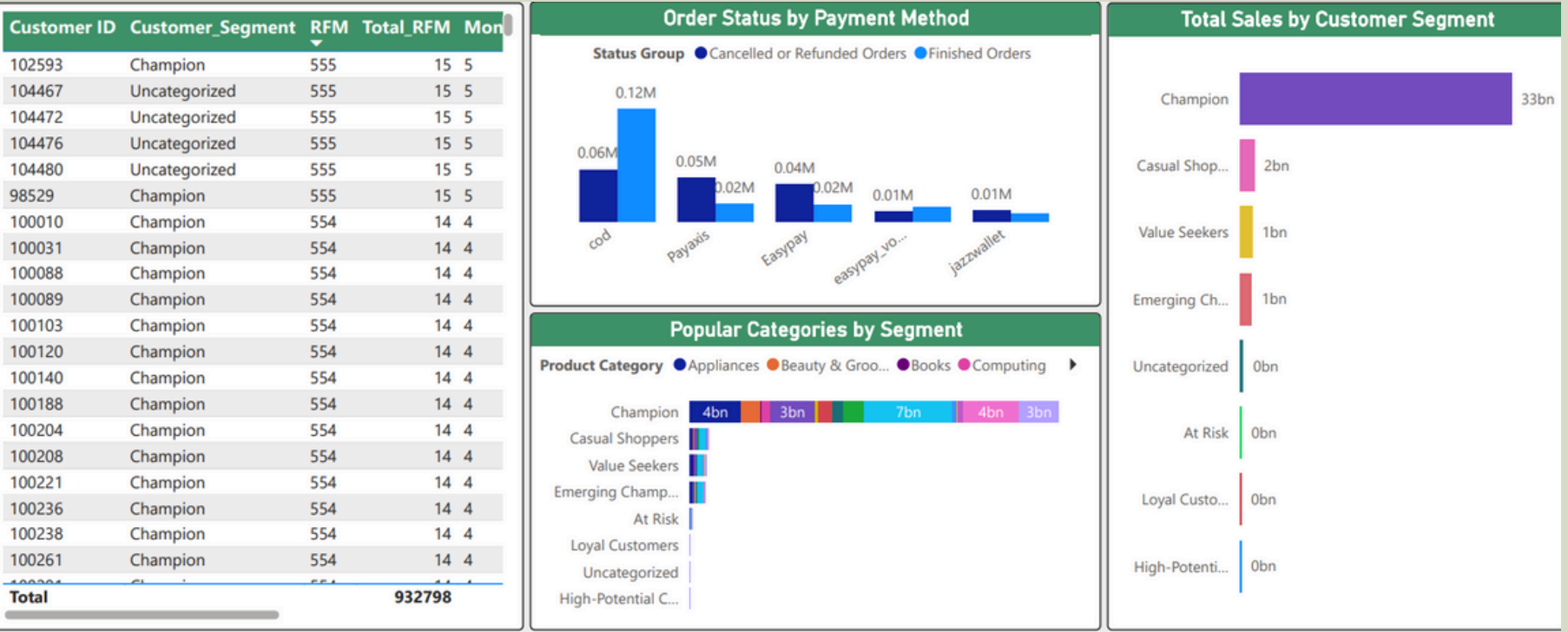
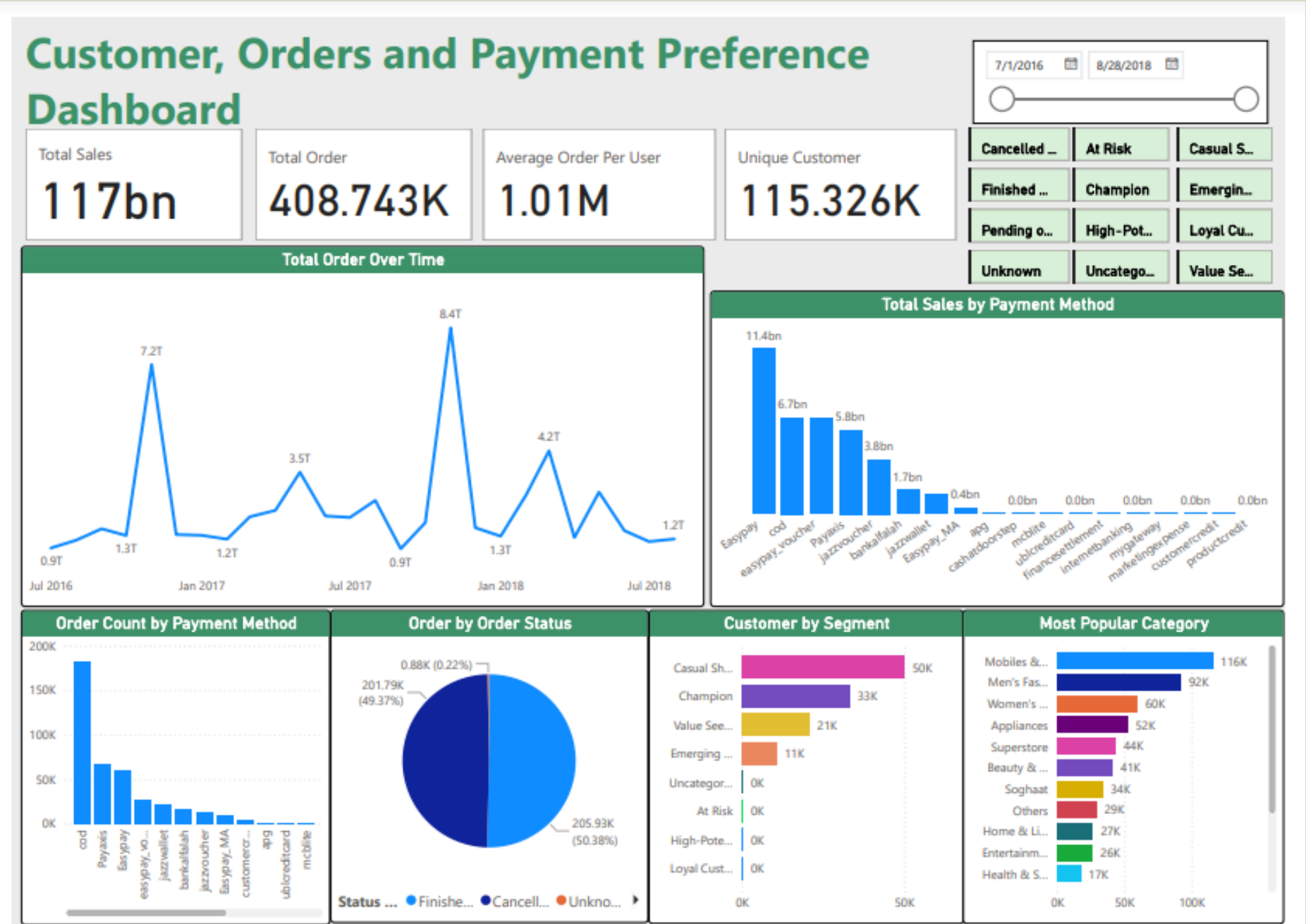
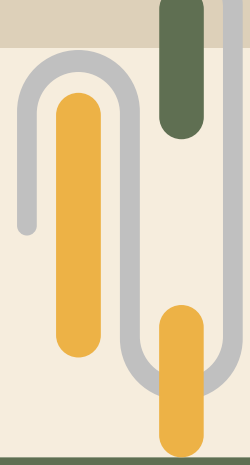
Customers using digital payment methods might have higher average transaction values, there might be value in **refining the digital payment options** to drive **higher revenue in spite of Lower Customer Base.**

ORDER STATUS BY PAYMENT METHOD



Almost all payment methods, **other than Cash on Delivery (CoD), have higher order cancellation rates than finished.** This could be **due to the convenience and ease of digital marketplaces,** where customers may change their minds or **face more payment issues.**

Dashboard



This Dashboard is made to **monitor and display customer status**, providing **Stakeholders** with an **intuitive and streamlined view** for easier **decision-making**



INSIGHT & RECOMMENDATION



Seasonal Optimization

There is a clear **peak in sales during November**, we can allocate **more staff and increase marketing efforts during this period to maximize profit**. Additionally, we can **push marketing between March and May to explore potential opportunities** and see whether it's **worth investing further** to boost sales during this timeframe.



Segment-Specific Marketing

While having a large portion of sales from one group is beneficial, we should **encourage other segments to contribute more by implementing targeted marketing strategies for each group**. We should also **keep the Champions engaged by loyalty program, personalized offers, premium support and such**.



Improve Payment Options

Since the **Easypay** payment method contributes the most to sales, we should **integrate it into the system and refine it for smoother transactions**. Additionally, we should **analyze why customers using this method tend to spend more and use those insights as a benchmark to enhance other payment options**.



INSIGHT & RECOMMENDATION



Optimizing the Most Used Payment

The number of **Customers** who still **prefer Cash on Delivery is the highest**. To optimize this, we can **enhance logistics and processes** to ensure timely delivery, reduce cancellations, improve customer satisfaction, and **ultimately boost sales**



Reduce Cancellation

The **high number of cancellations** calls for **improvement**. These cancellations could be due to **payment issues**. To address this, we can offer **multiple payment options**, **send reminders for pending payments**, and **provide real-time updates** on order status and tracking to **reduce cancellations**



Potential Segment

The **Casual Shopper segment** has the **highest number of customers**, so we can try to **focus our marketing efforts** on this group to **encourage higher spending** and increase overall revenue.



INSIGHT & RECOMMENDATION



Better Data Keeping

The **Missing Data of Product Names and Description** Makes it Difficult to Analyze what kind of Product is Popular as the Dataset only store its Internal SKU (Stock Keeping Unit) ID In the Dataset



THANK YOU



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**Slides & Graphic used
are Created Using Canva**