



Customer Recommendation Engine

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NBC Tower, Downtown Chicago

Prepared By

River North Analytics

Meet the Team



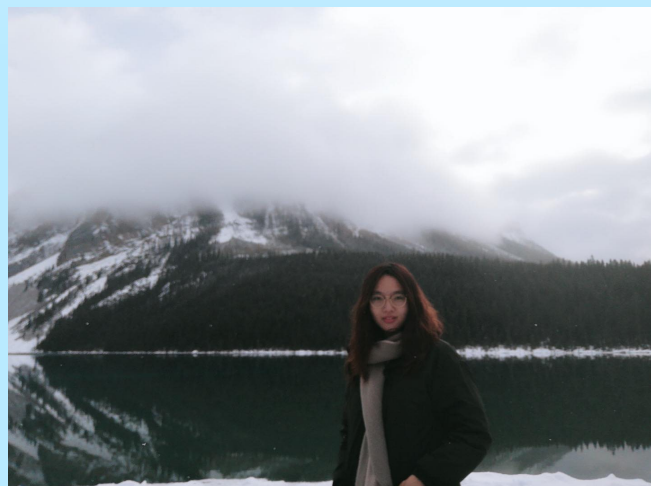
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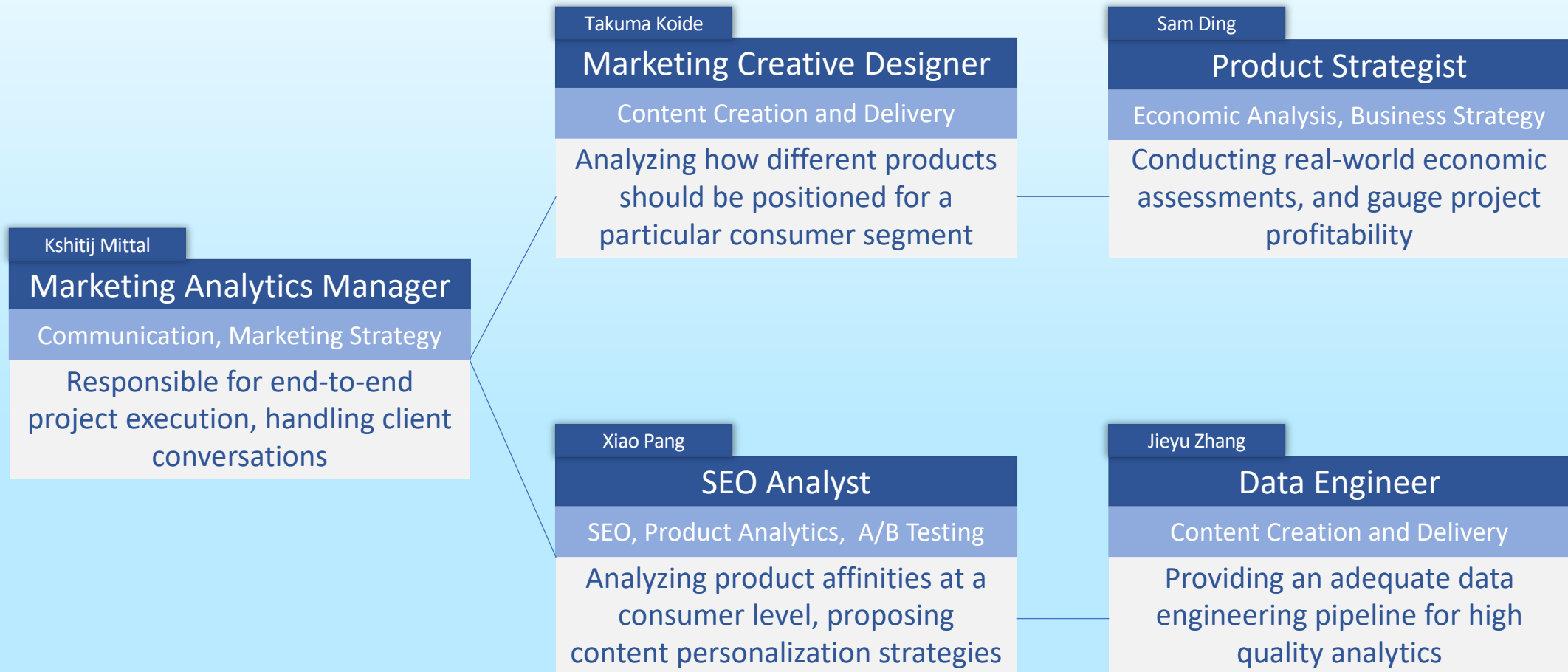


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Team Approach



Agenda

- Problem Statement
- Data Overview
- Opportunities
- Segmentation Deep Dive
- Recommendation Engine
- Economic Analysis
- Timeline and Future Scope

Problem Statement

Problem Statement

Situation

- Our client is an **online bookstore platform**
- Currently they recommend only the **most popular items for all customers**
- We aim to investigate if more personalized solutions can be developed to increase customer activity

Solution

- We propose a new customer segmentation based on **RFM Framework**
- Recommendations will be personalized based on users' **prior purchases** and **relationship** with the website

Outcome

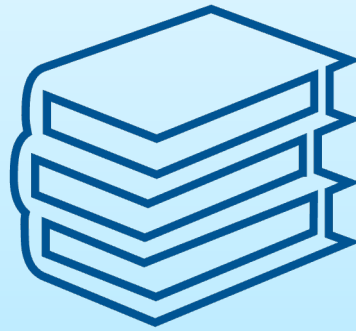
- **Expected 20%** plus incremental sales from the **most engaged segment** of customers (~15%)

Data Overview

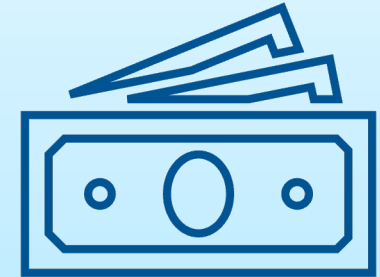
Sales Overview



33,713 Customers



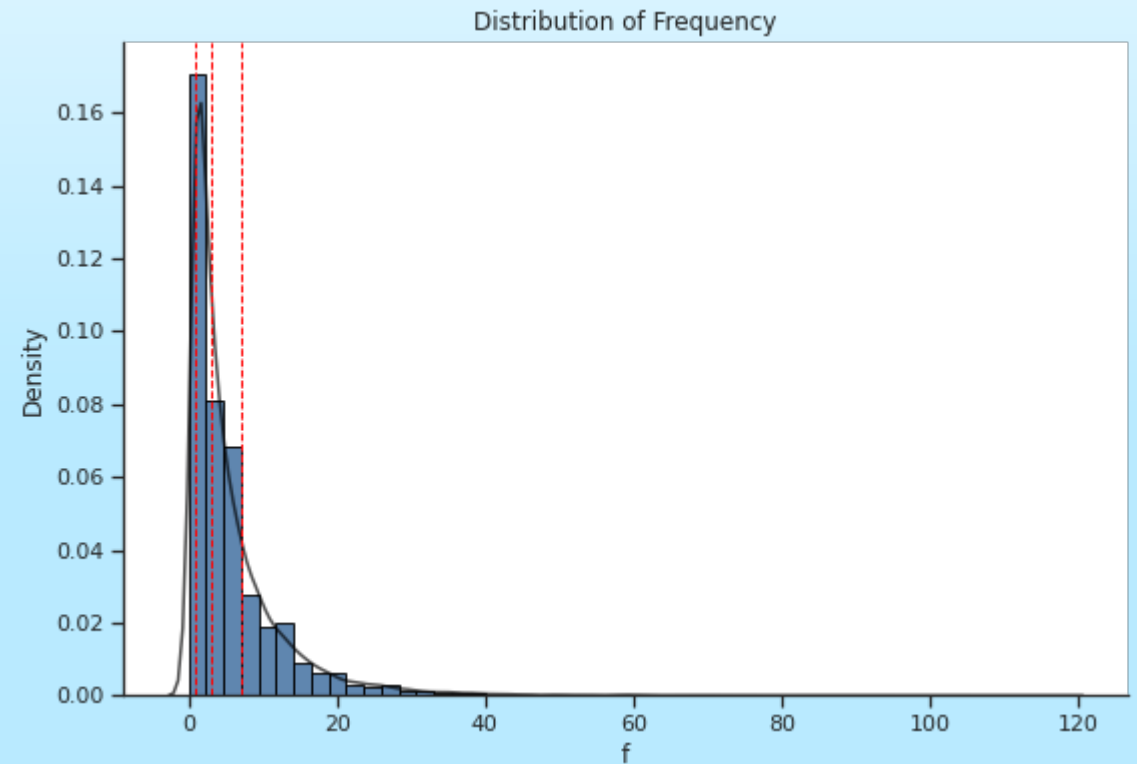
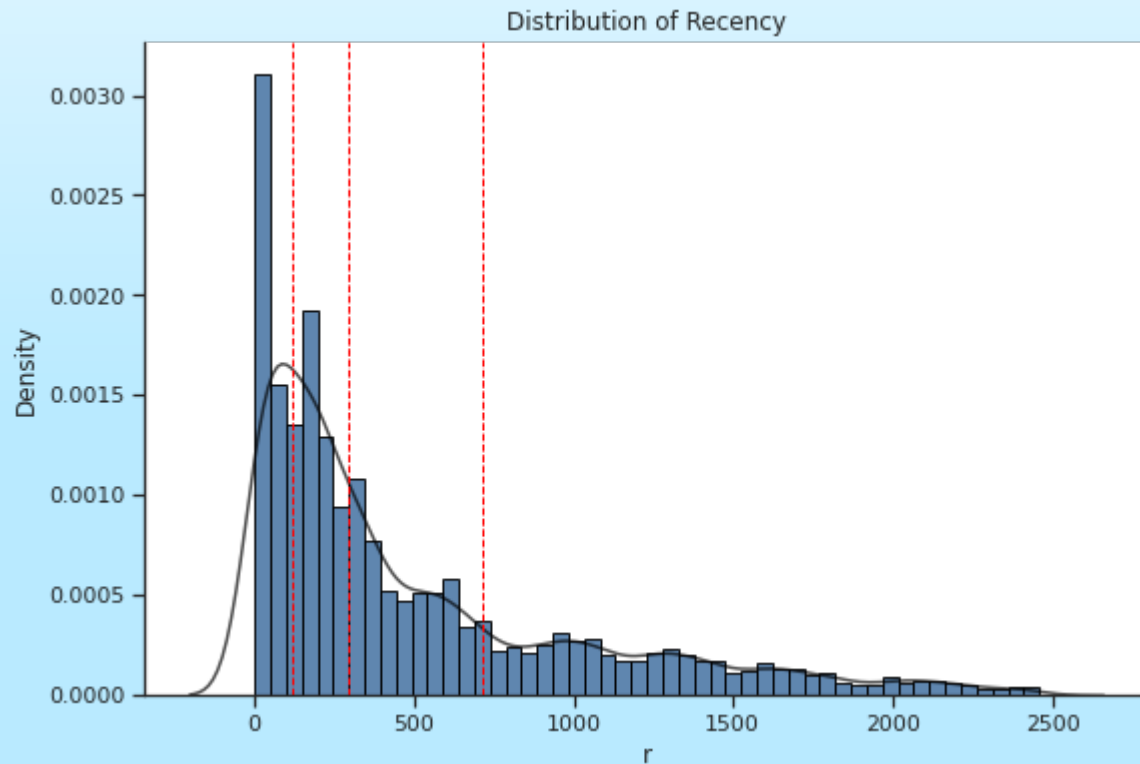
627,955 books sold
30 genres



\$8.49M Sales

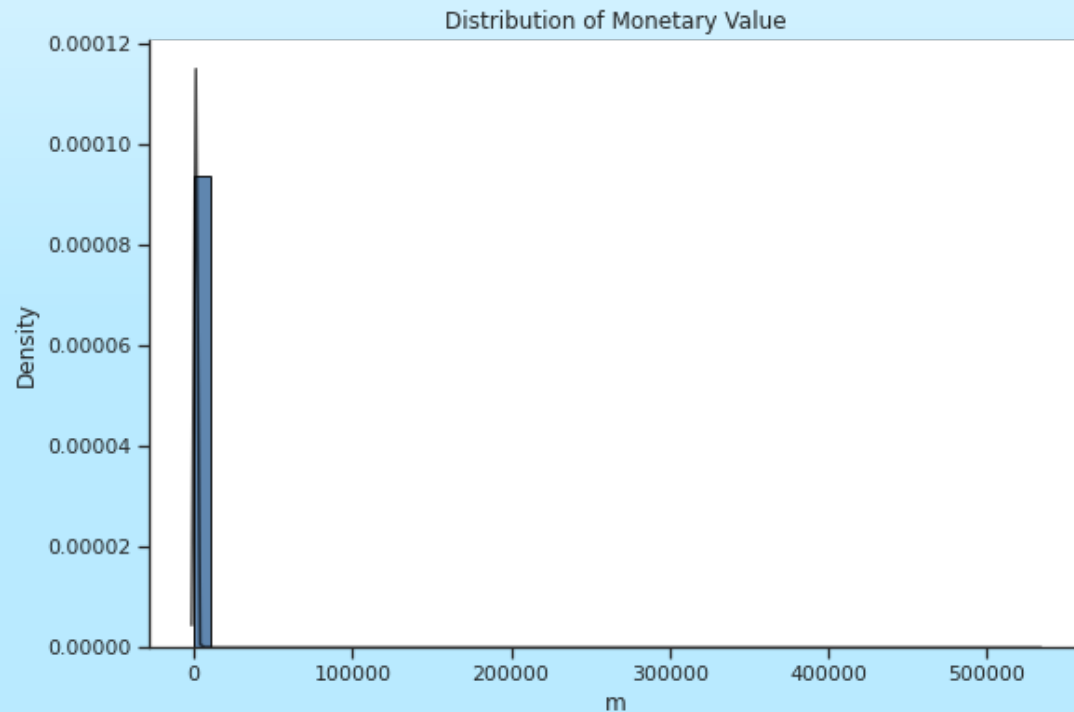
Recency & Frequency

~ 50% customers have a recency lower than 300 days and a frequency lower than 3 items in this time frame

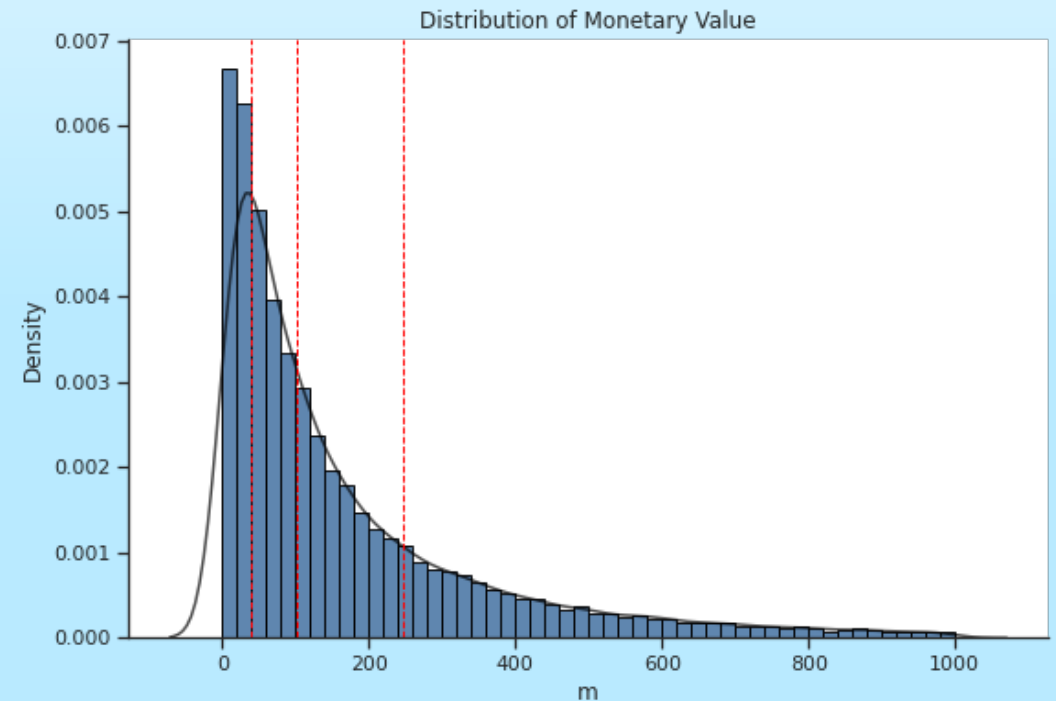


Monetary Value

The original data had many outliers.
These were eliminated during the analysis process

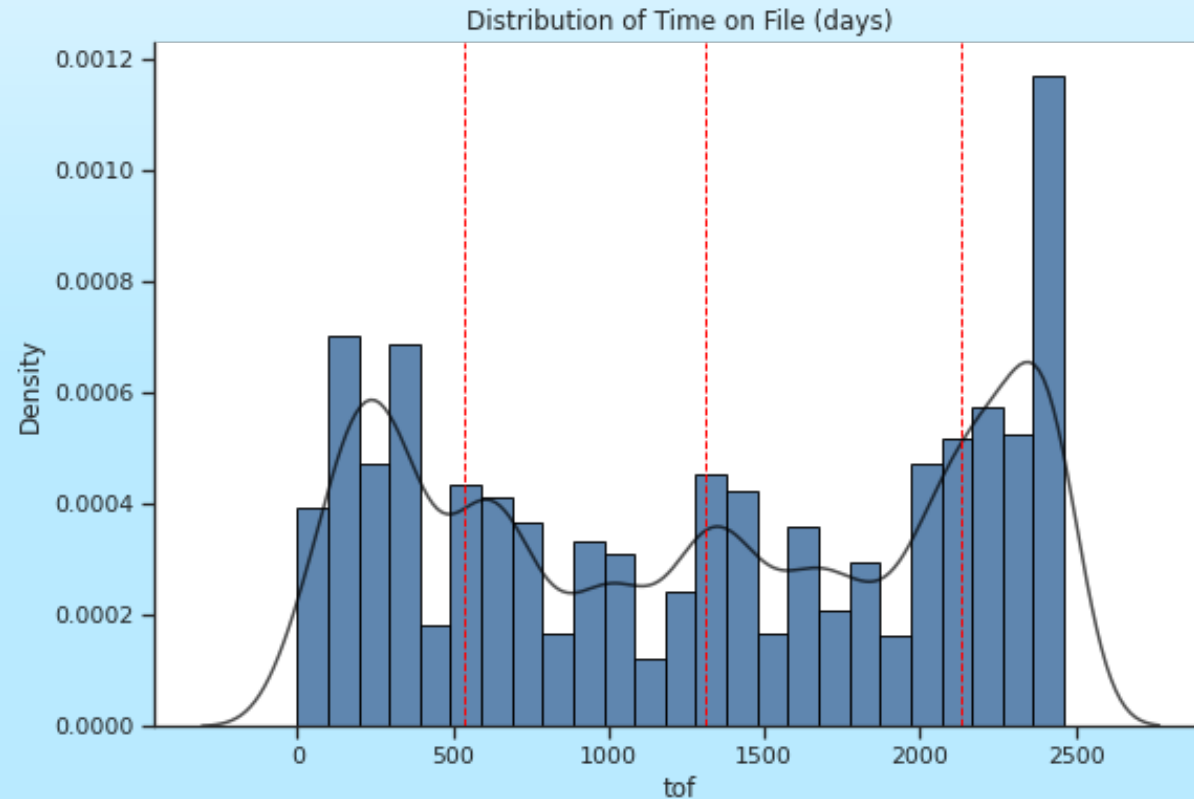


We are identifying that close to 75% customers
have a monetary value < 250\$



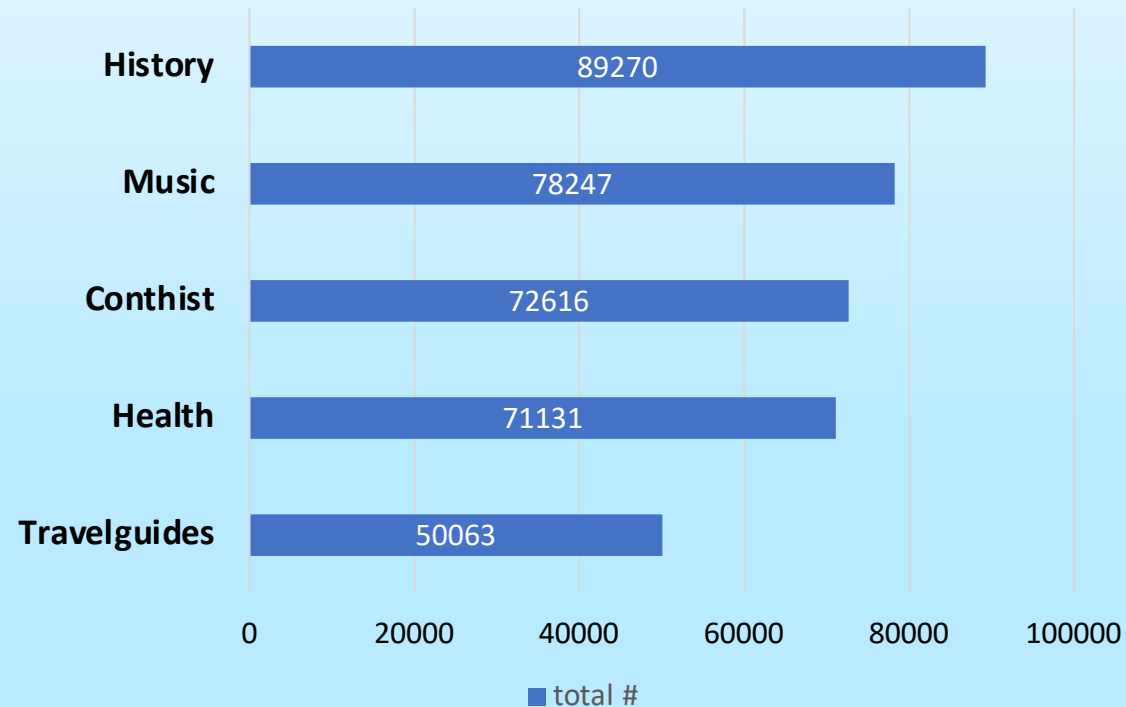
Time on File (Days)

There is a healthy balance between new and old customers, with close to 50% ranging between 1.5 to 6 years



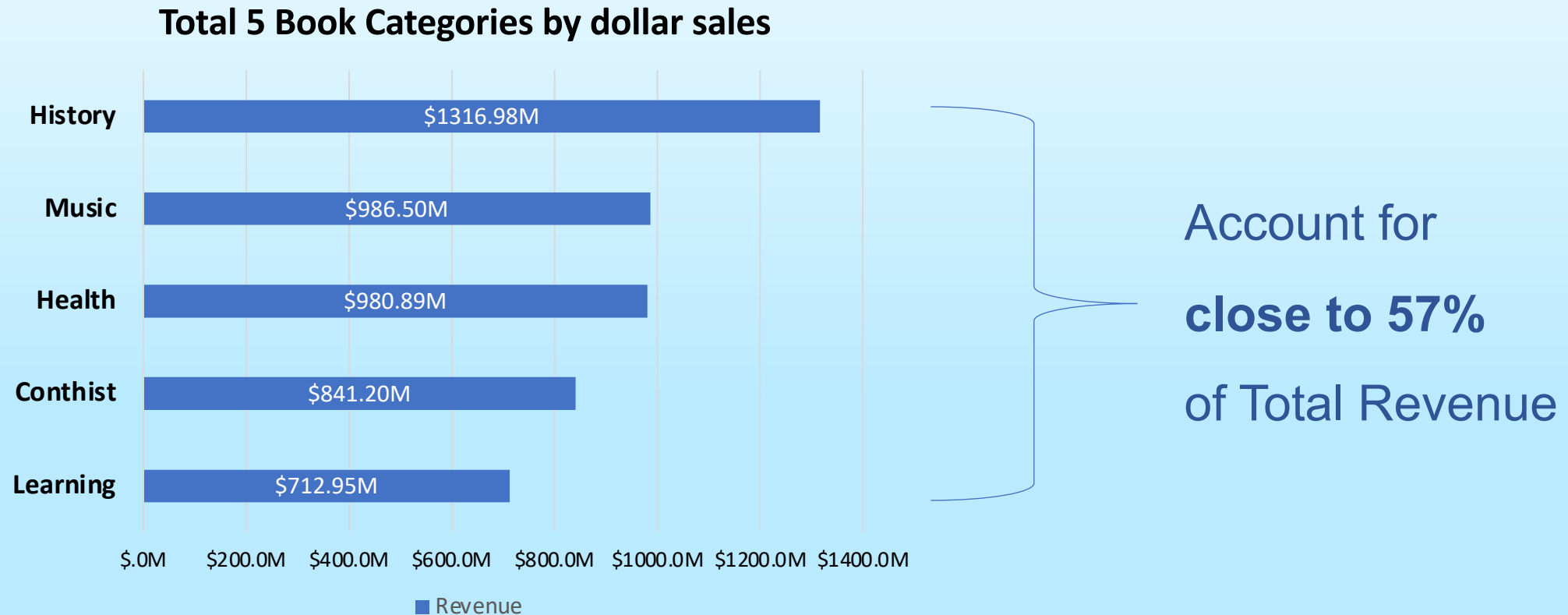
Popular Categories of Books

Top 5 Book Categories by units sold



Account for
more than 57%
of total transactions

Book Categories with highest dollar sales



Opportunities

Opportunities



Product Recommendation Engine

- Increased the **overall revenue by 35%**
- Activated more than **one-third of total unit sales**



Movie Recommendation Engine

- Saves the company **\$1 billion per year**
- Close to **80% of subscriber video** choices come from these recommendations



Proposed: Book Recommendation Engine

- Can assist in activating **20% additional sales** from the highest usage segment

Segmentation Deep Dive

Four segments were developed using RFM

1010
1010

Segment 1: 15-16%
"Can't Lose them"

Segment 3: 24%
"Potential and Promising"

Segment 2: 32%
"Loyal Champions"

Segment 4: 28%
"Requires Attention"

All segments show distinct behaviors

Segment 1



- Highest importance segment
- Spends the most time with the platform
- Engages in high value transactions

Segment 2



- Active platform users
- Motivated to spend time on the platform
- Buy items whenever the need arises

Segment 3



- Use platform on specific need-to-need cases
- Do not have a high affinity for the online bookstore, but use it as need arises

Segment 4



- Least frequent users for the platform
- Do not spend any time or money on the platform

Segment 1 provides more areas of opportunities

Segment 1



- Highest importance segment
- Spends the most time with the platform
- Engages in high value transactions

Segment 2



- Active platform users
- Motivated to spend time on the platform
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Segment 3



- Use platform on specific need-to-need cases
- Do not have a high affinity for the online bookstore, but use it as need arises

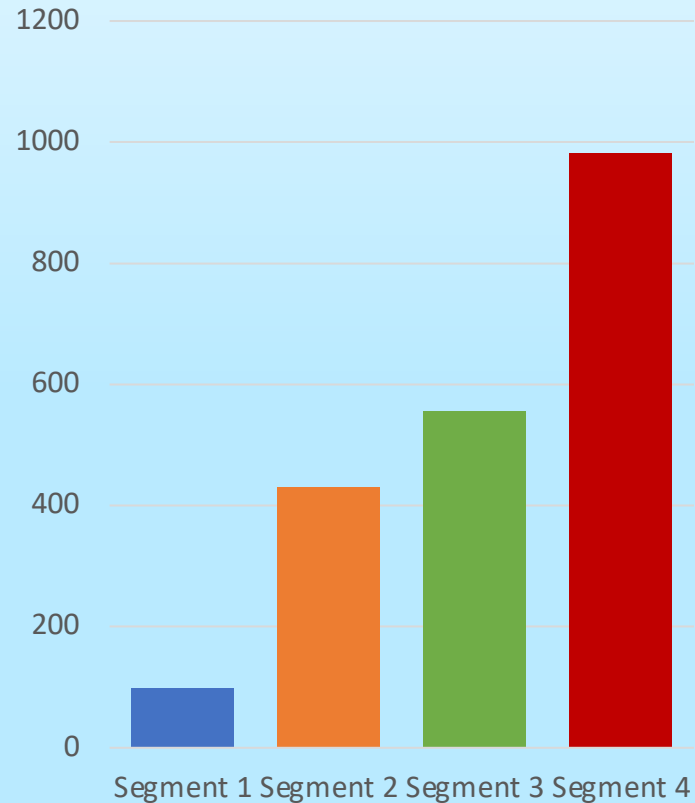
Segment 4



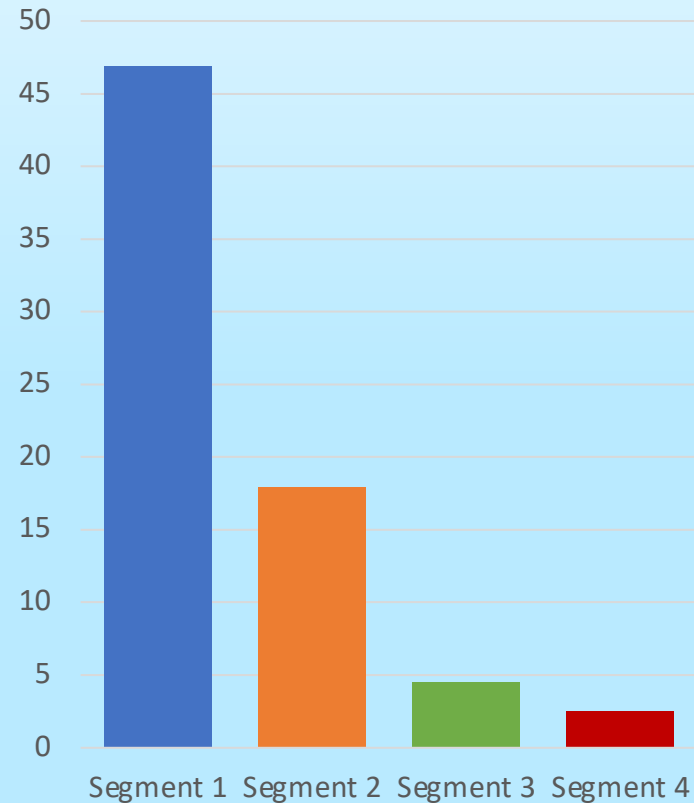
- Least frequent users for the platform
- Do not spend any time or money on the platform

All segments vary widely

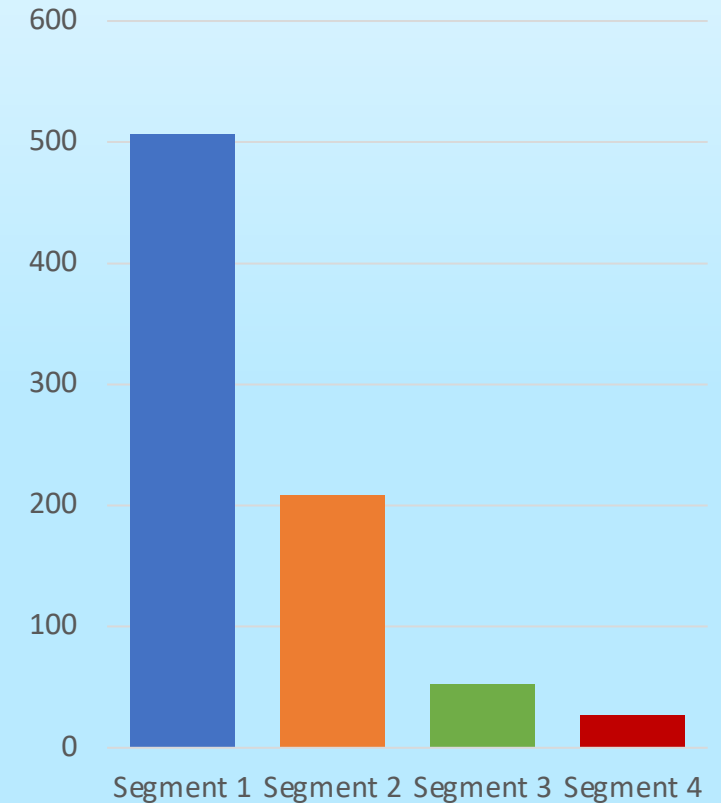
Recency Means
(in days since last purchase)



Frequency Means
(in number of items)

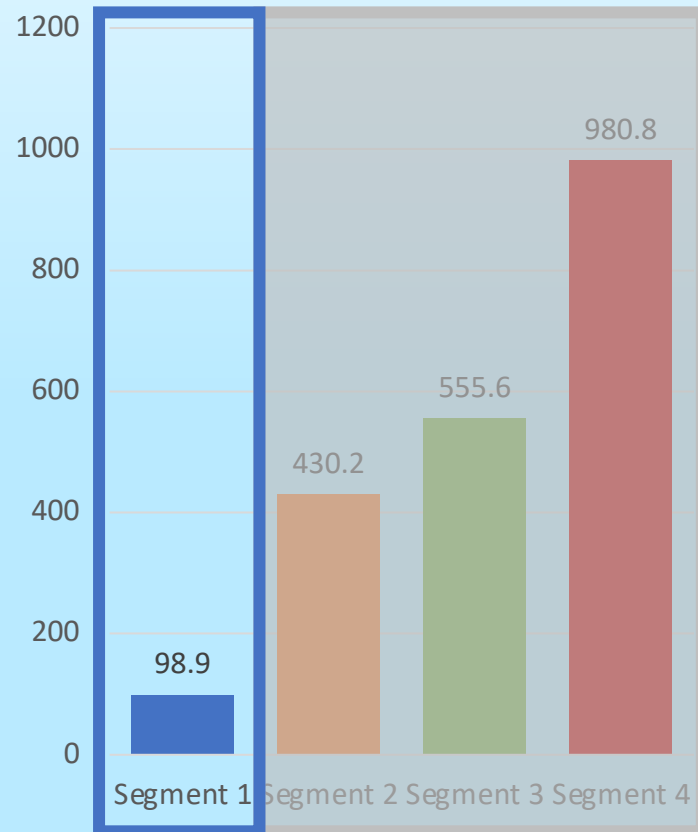


Monetary Means
(in dollar amount)

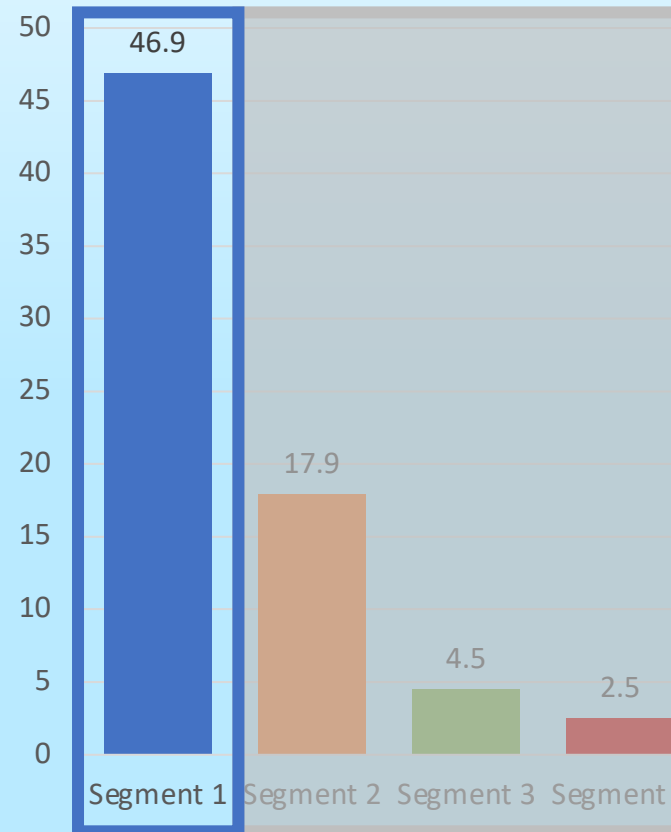


Segment 1 has the highest R,F,M values

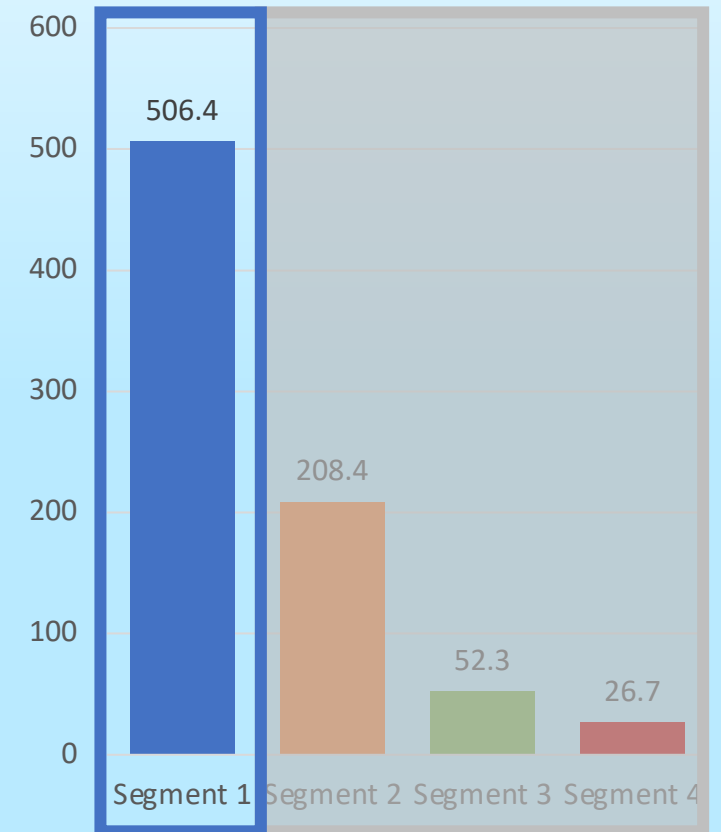
Average Recency Means
(in days since last purchase)

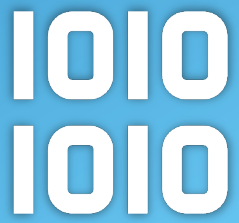


Average Frequency Means
(in number of items)



Average Monetary Means
(in dollar amount)

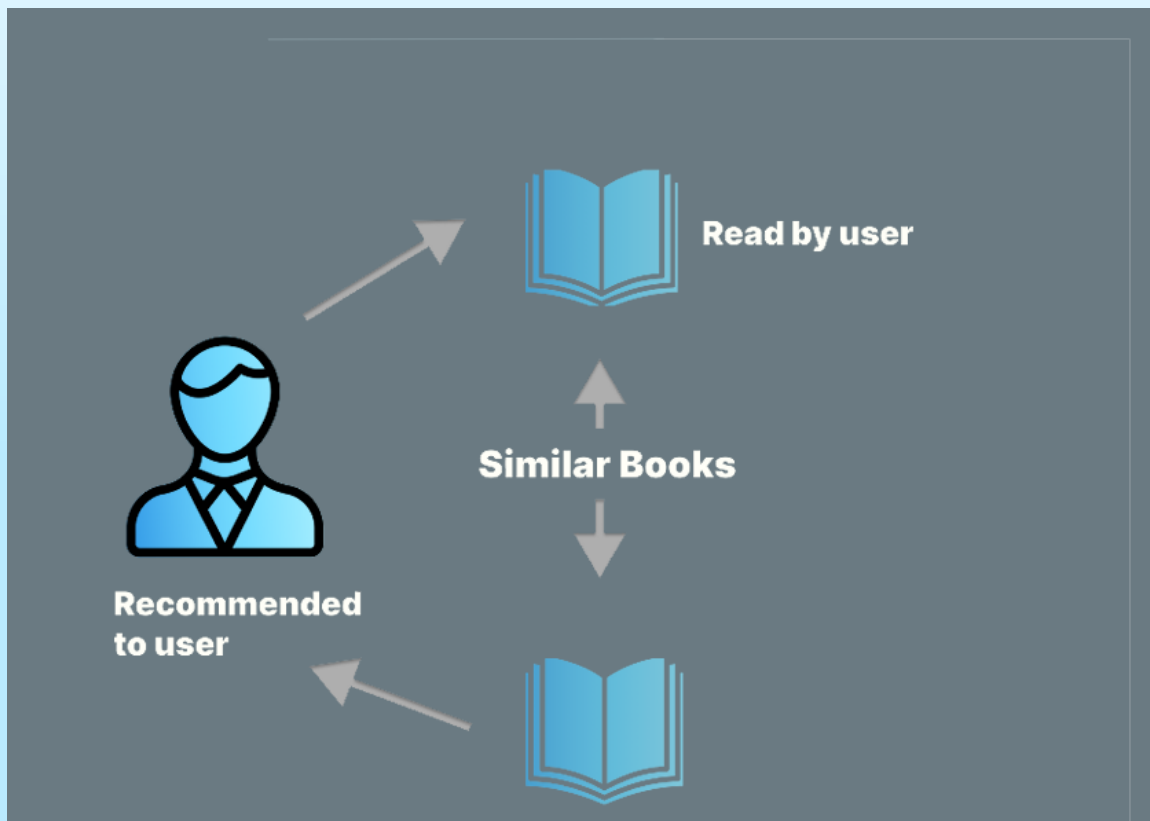




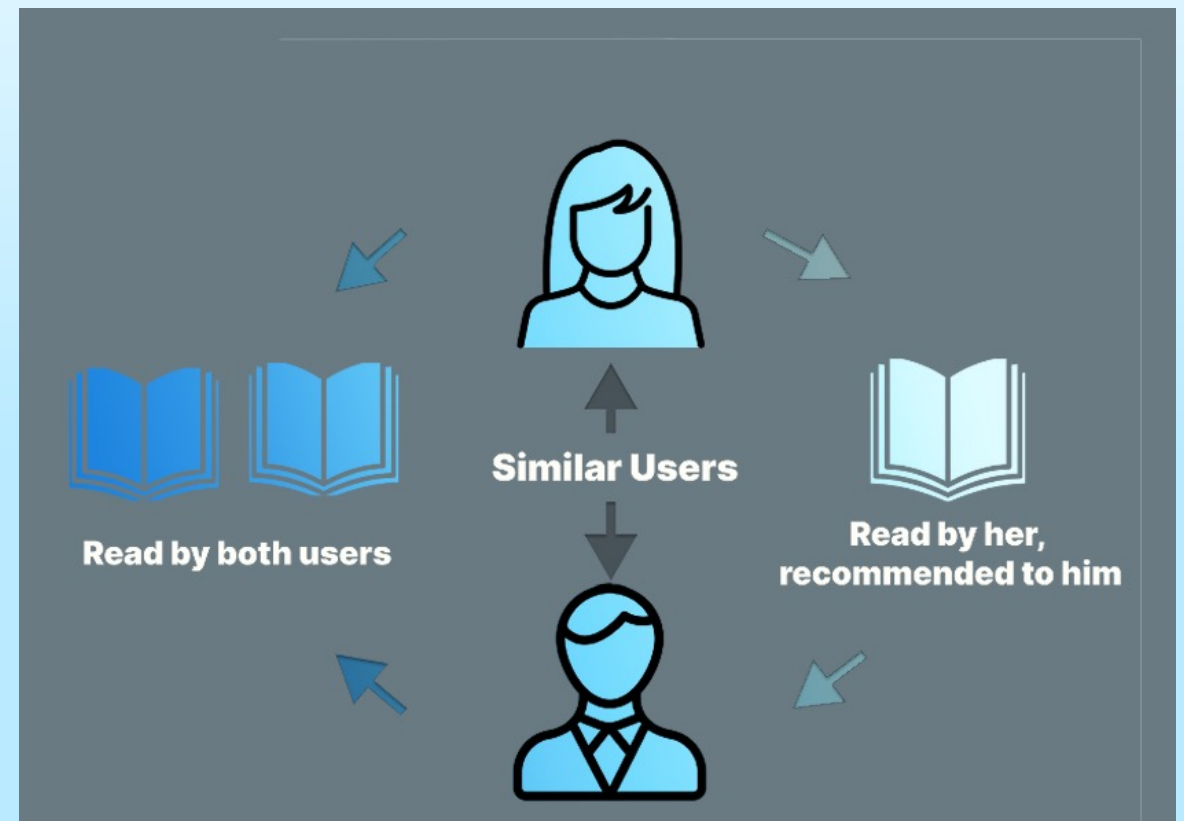
Recommendation Engine

Recommendation Engine Models

Content-based filtering



Collaborative filtering



Economic Impact

Focusing on the top 15% segment results in:

+20%

Monetary Increase for the
Top 15% Customers

\$500

Avg. Monetary Value per
Top 15% Customer

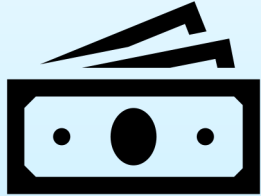
5100

Number of Customers
in the Top 15% Segment

Direct Economic Benefit: **+\$520K**

6% Increase in Sales

Focusing on the top 15% segment results in:



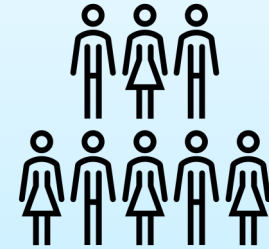
Monetary Increase

- **20%** monetary increase for the top segment
- Direct economic benefit: **\$520K+**



Increasing Customer Loyalty

- Recency **increase by 20%**
- Frequency **increase by 20%**
- Potential economic benefit: **\$1M+**



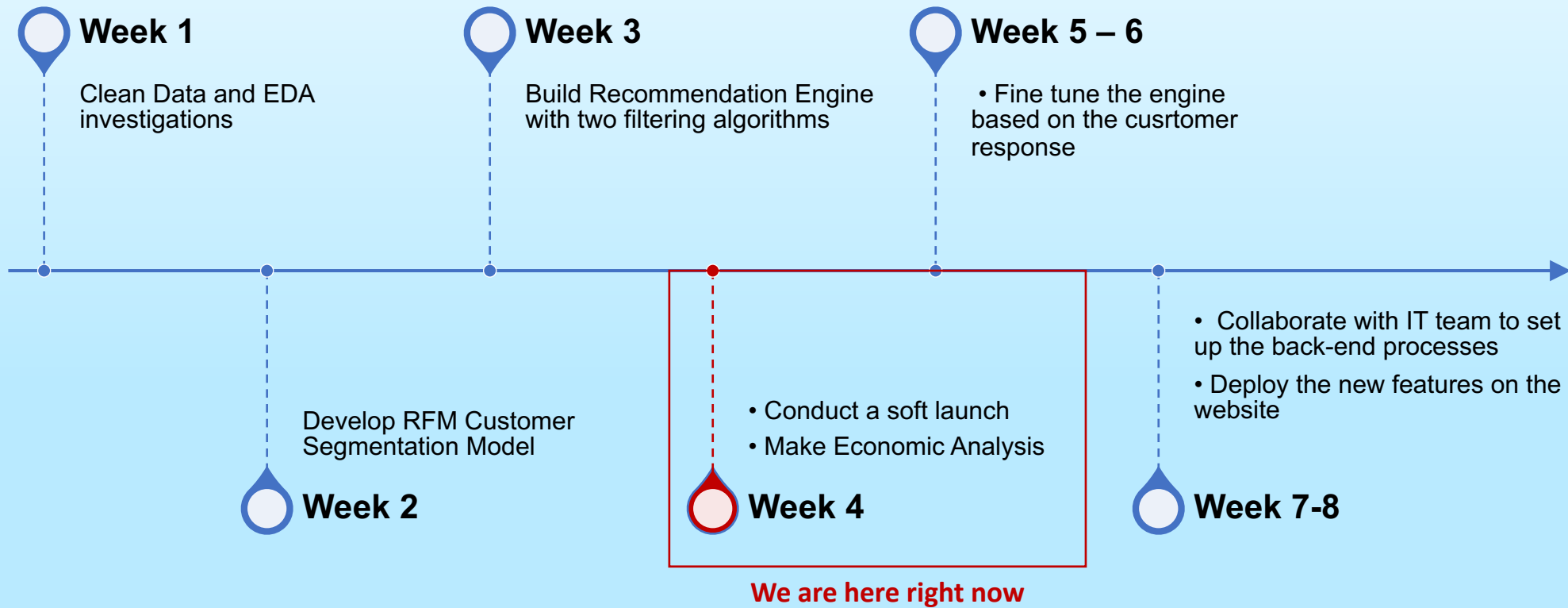
Higher Per Capita Profit

- Cut maintenance and unpredictable spending by **30%**
- Profit margin per capita **increase by 30%**
- Potential economic benefit: **\$1.5M+**

Total long-term economic benefit: **\$2M+**

Timeline and Next Steps

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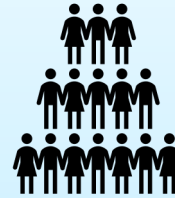


Future Scope



Model Improvement

- **Continue to improve** the recommendation engine based on the Top segment customer's behavior
- **Improve the User Interface** based on customer feedback



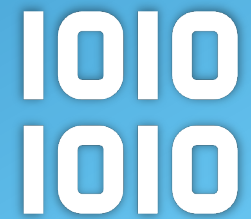
Strategy for the 85%

- Propose the **cost-effective recommendation model** such as simply recommending books from their favorite category instead of all books
- **Develop marketing strategies** to non-frequent users to encourage them to experience the new recommendation engine



Operation Improvement

- Explore more algorithms to **improve the efficiency of Supply Chain and Inventory**, meeting increasing customer demand
- **Develop big data strategies** for implementing the segmentation algorithm in real time for the entire customer base.



Thank You!

Questions?