



MADT Hackathon

BUSINESS PROPOSAL

Prepared for Alice's Supermarket

Group 3





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- 02** Data Insight
- 03** 1st Draft : Customer Data Platform (CDP)
- 04** Data Analysis and Results
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EXECUTIVE SUMMARY

ABOUT OUR COMPANY

Our company, a highly experienced professional consultant specializing in data analysis and insight generation. Our company brings a wealth of expertise in assessing analytical skills and evaluating the performance of consultant teams.

With a robust background in data analytics, Our company is adept at understanding complex datasets and deriving actionable insights. This collaboration aims to leverage these skills to evaluate and enhance the analytical capabilities of all consultant teams involved.

Our company will play a pivotal role in ensuring that the teams not only understand the data thoroughly but also excel in analyzing it to provide valuable insights.



EXECUTIVE SUMMARY



Alice's Supermarket has experienced significant **success over the past 18 months**. To build on this momentum, it is essential to deepen our understanding of customer behavior and preferences. This proposal presents a strategic plan to utilize data analytics for enhanced customer insights, optimized marketing strategies, and improved overall business performance.

By developing a robust **Customer Data Platform (CDP)** that integrates data from various sources, we will gain valuable insights into purchasing patterns and customer feedback. This will enable us to tailor marketing campaigns and improve customer satisfaction.

- The challenges is to understanding customers' behavior and preferences comprehensively. This lack of insight makes it difficult to tailor marketing strategies effectively, optimize inventory management, and enhance customer satisfaction.

Key Issues:

- **Limited Customer Insights:** Insufficient understanding of customer demographics, purchasing patterns, and preferences.
- **Ineffective Marketing Strategies:** Current marketing efforts are not data-driven, leading to suboptimal engagement and conversion rates.
- **Customer Satisfaction and Retention:** Lack of personalized engagement, impacting customer satisfaction and loyalty.

OBJECTIVES



- Develop a Customer Data Platform (CDP) to integrate and analyze customer data from various sources.
- Gain insights into customer behavior, preferences, and purchasing patterns.
- Implement targeted marketing strategies based on data-driven insights.
- Enhance customer satisfaction and loyalty through personalized engagement.
- Optimize inventory management based on demand forecasting.

ACTIVITIES



- Kickoff meeting to establish objectives.
- Review existing data sources and systems.
- Develop a detailed project plan and timeline.



RECOMMENDATION SUMMARY

Improve Marketing Strategy

Customer Segmentation

Market Basket

Churn Prediction

7 clusters of customer
Define each customer group to understand their characteristics and plan effective marketing campaign to them

Recommend customer using market basket by focus to cross-sell with beverages to increase beverage revenue

15% Revenue gained back from Churn Customers

Improve Operational Efficiency

Voice of Customer

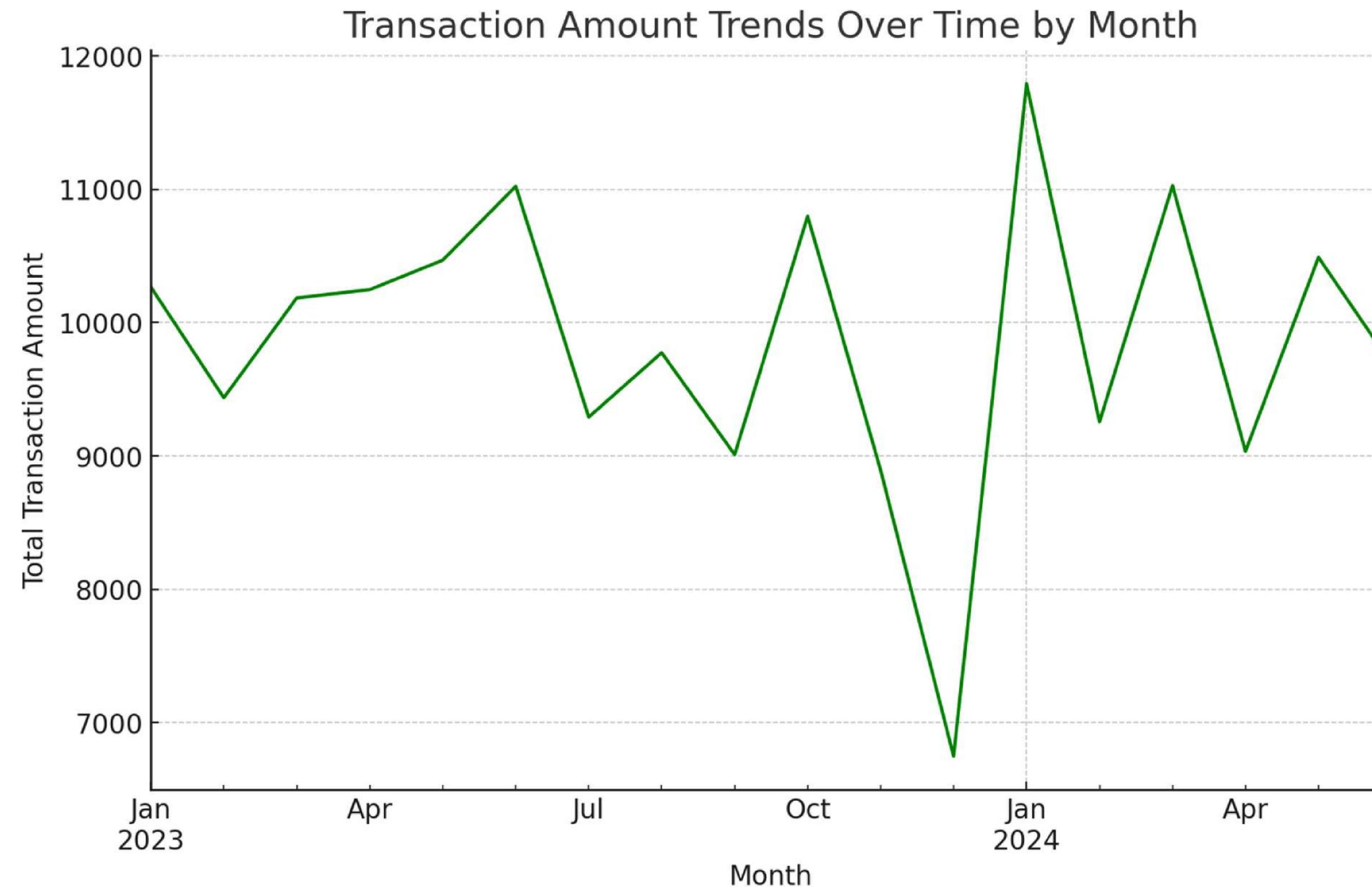
- Increase revenue by price optimization
- Better Inventory Management (Root Cause)
- Easier product search



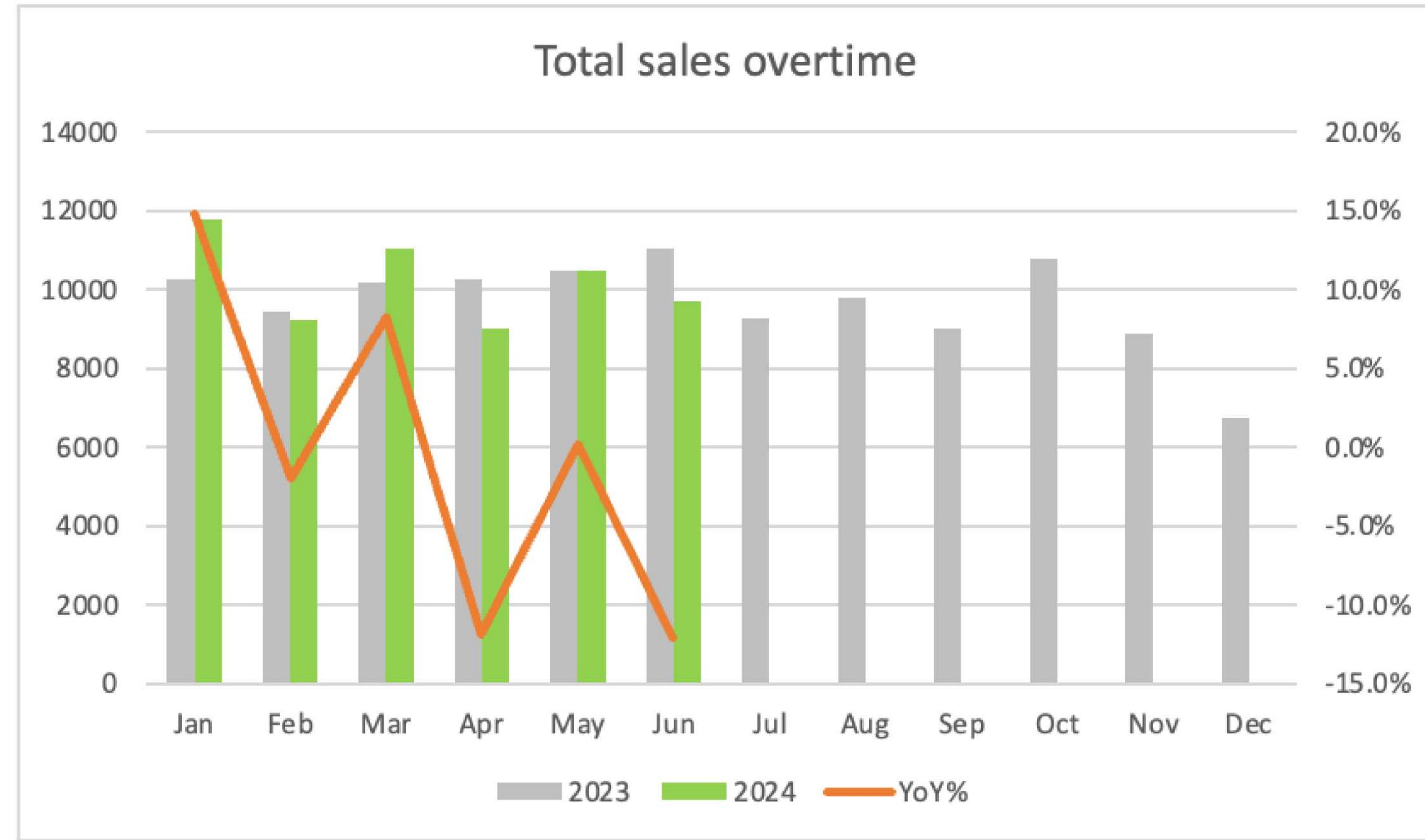
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DATA INSIGHT

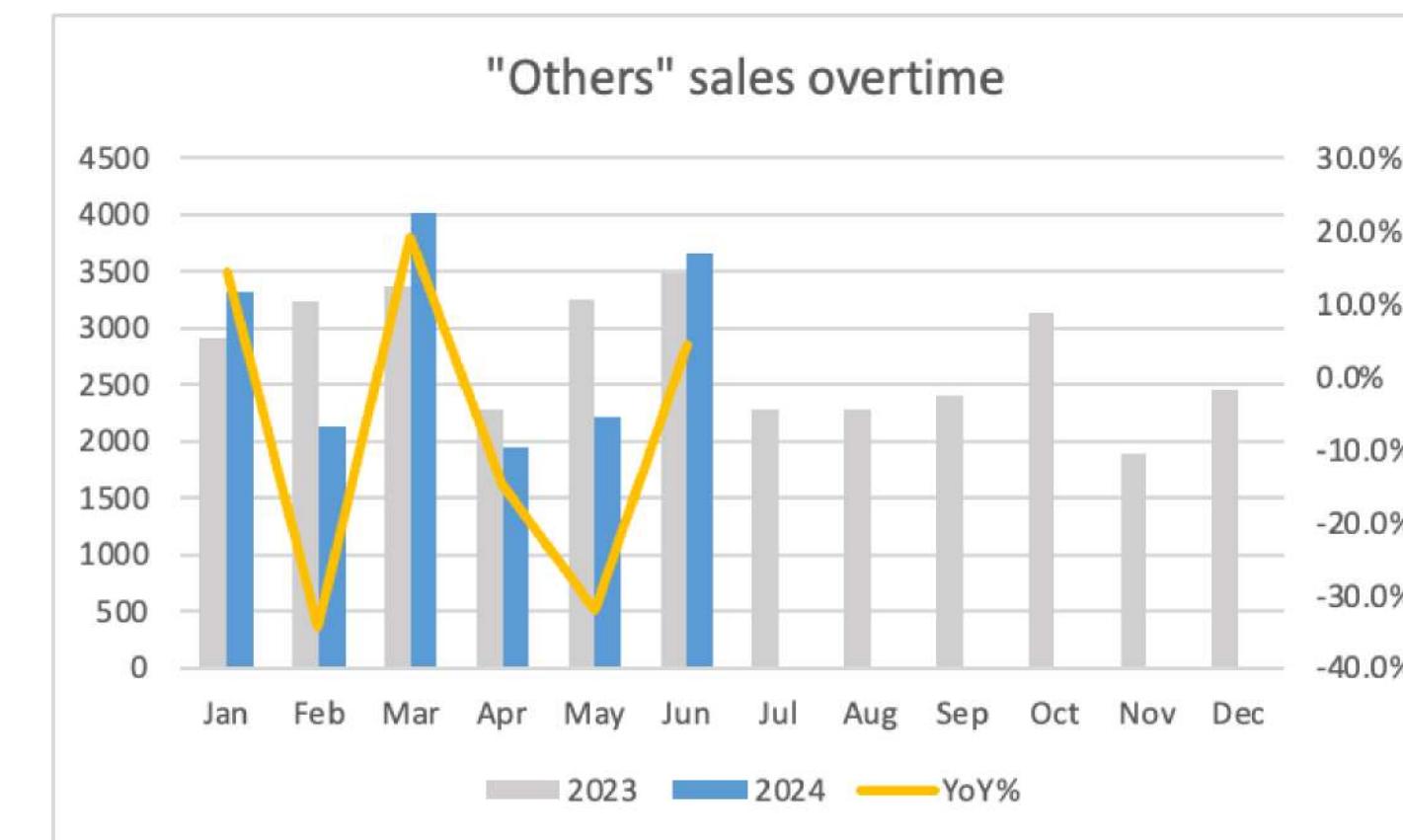
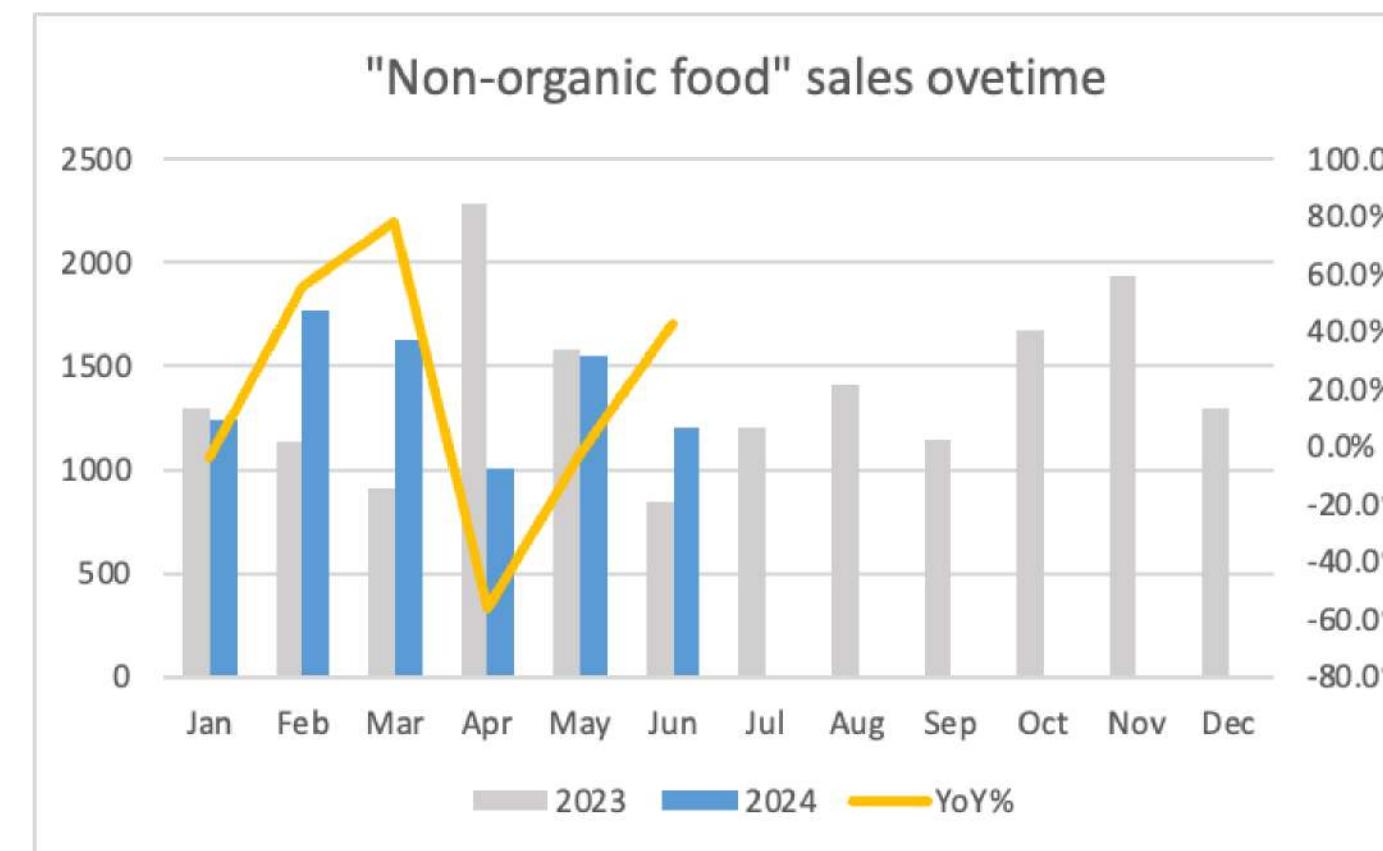
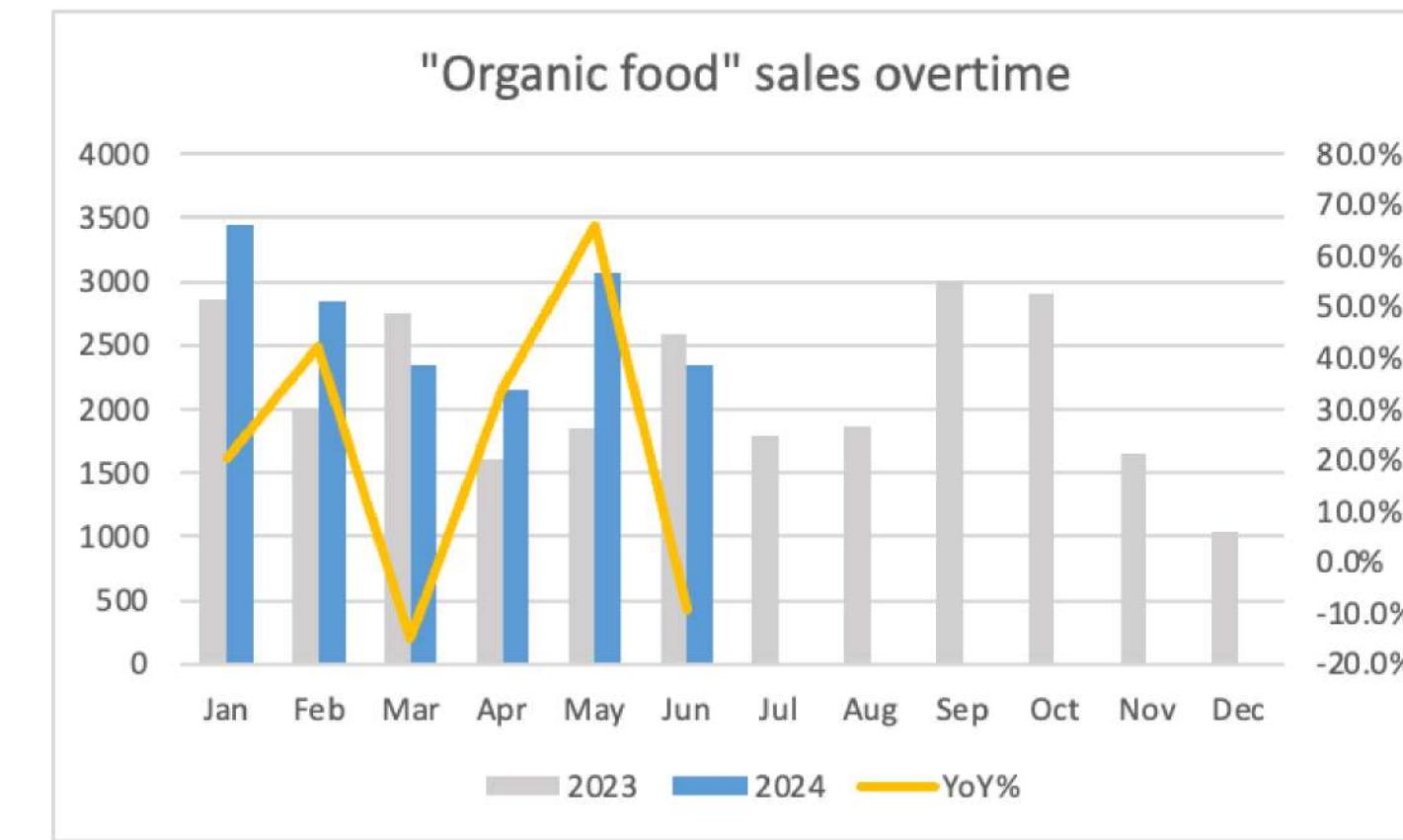
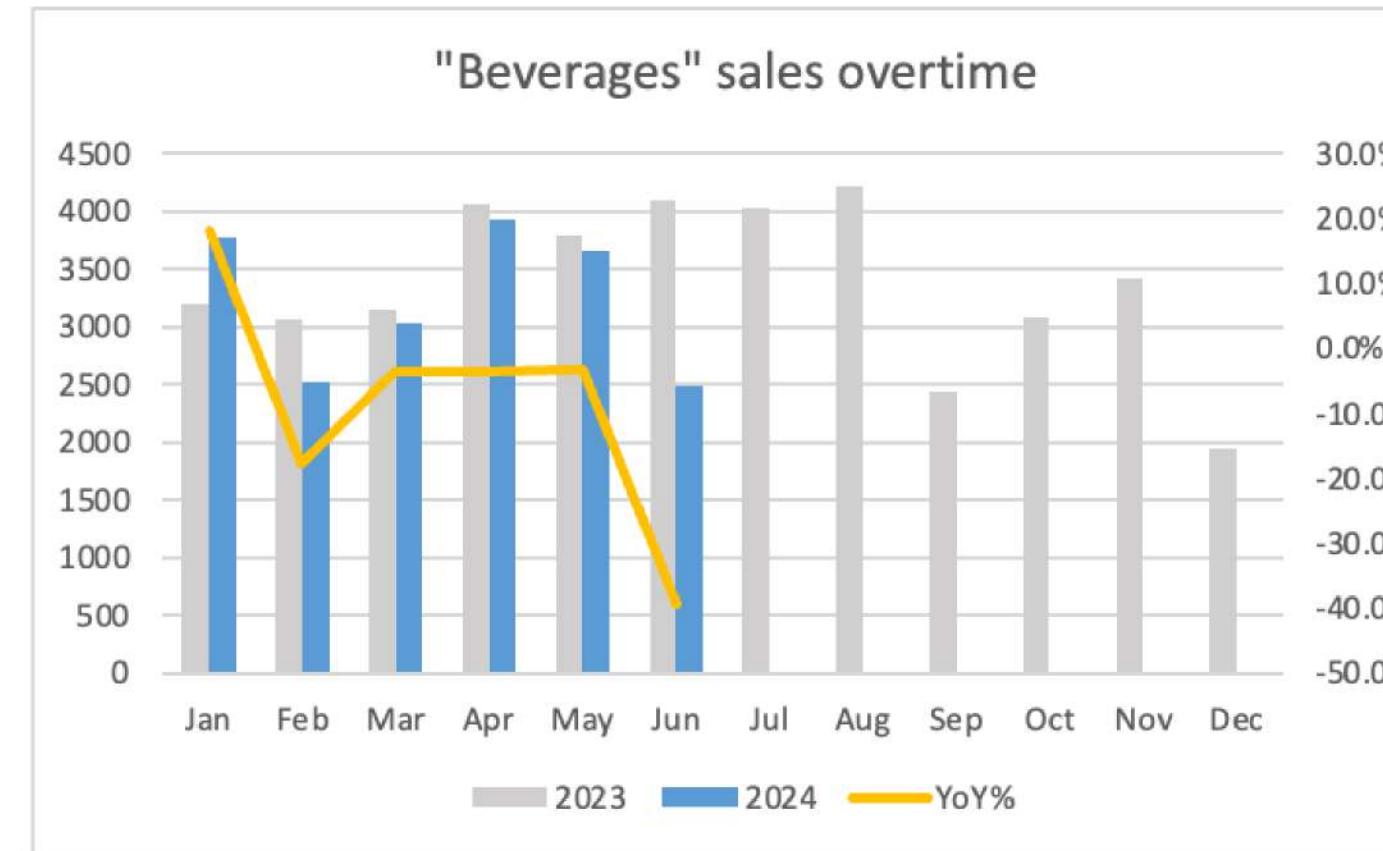
TOTAL SALES OVERTIME



TOTAL SALES OVERTIME

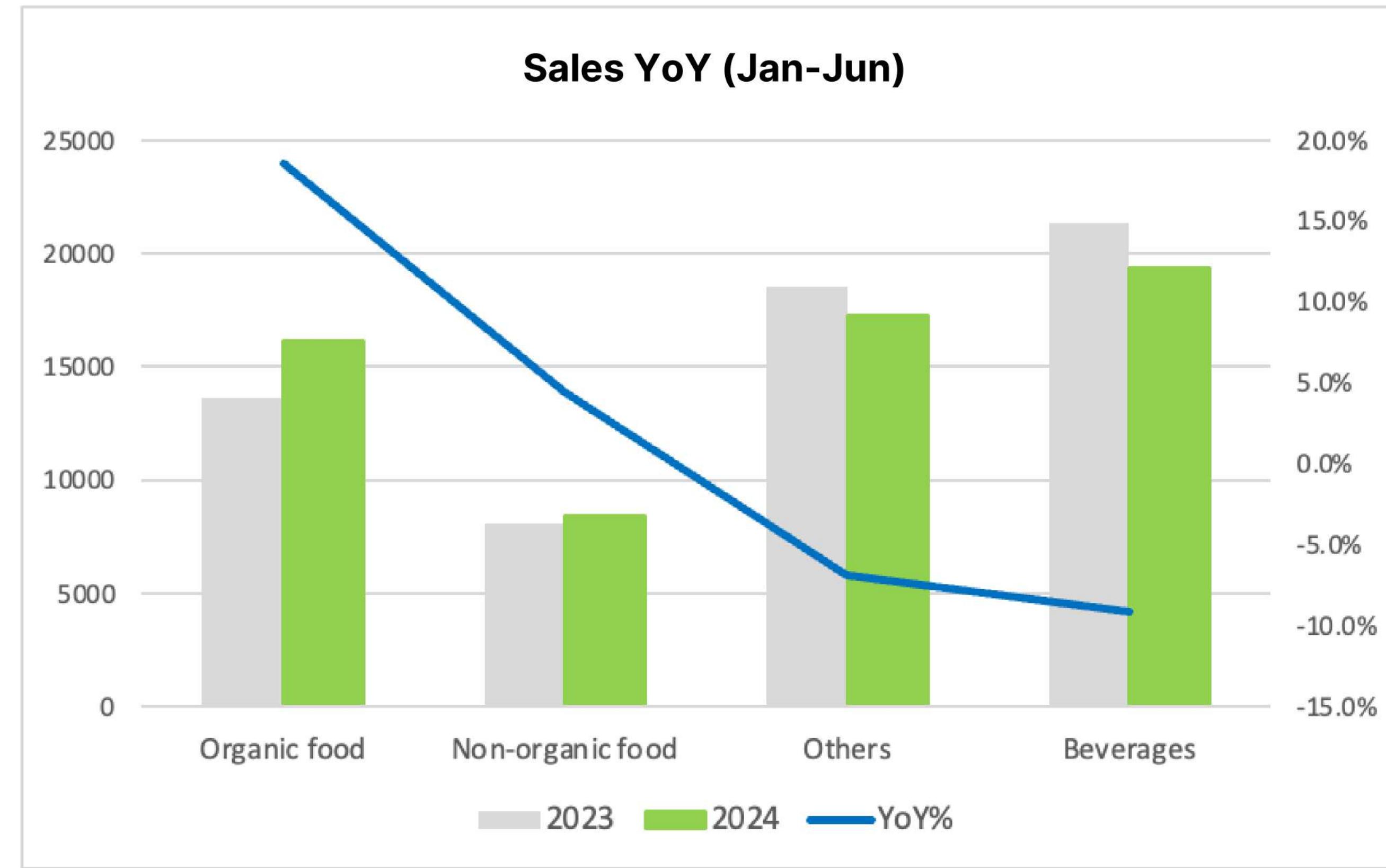


SALES OVERTIME BY CATEGORY



SALES YOY BY PRODUCT CATEGOLRY

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1. Declining Demand for Beverages: Increase total sales:

- Action: Beverages have large amount of sales. However, sales trend keep dropping when consider year-to-year for first half year. We need to up-sell beverages since it's largest value category.

2. Investigate Sales Dips:

- Action: Analyze reasons for lower sales in certain months (e.g., June and December 2023) and implement strategies to boost sales during these periods.

3. Promotional Campaigns:

- Action: Plan and execute promotional campaigns ahead of peak sales periods to maximize revenue.

4. Trend Monitoring:

- Action: Continuously monitor sales trends to identify emerging patterns and adjust business strategies accordingly.

EXPECTED OUTCOMES



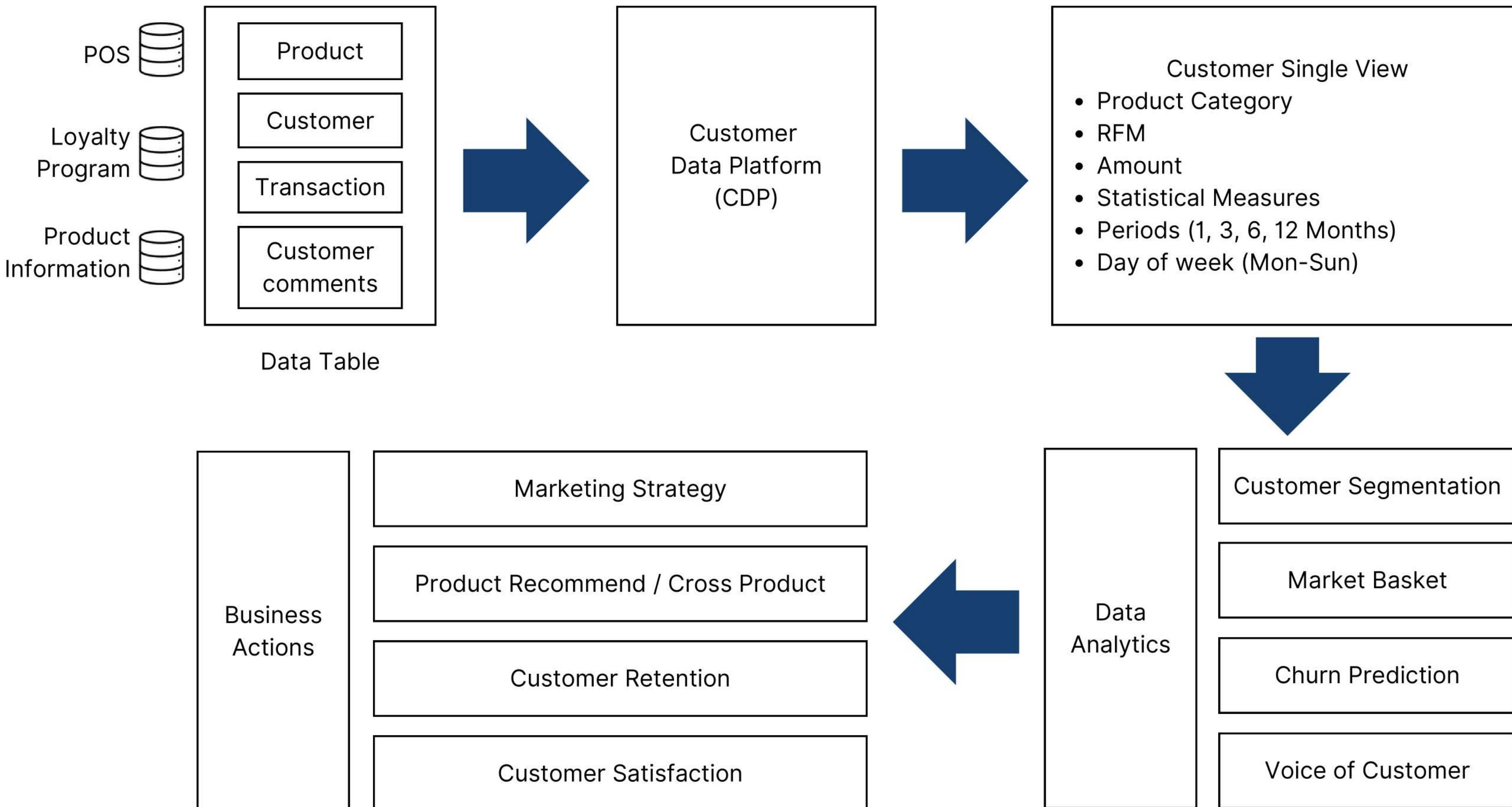
- Recommend products to target segement
- 15% gain back from Churn Customers Revenue
- Increase Customer satisfaction via Voice of Customer



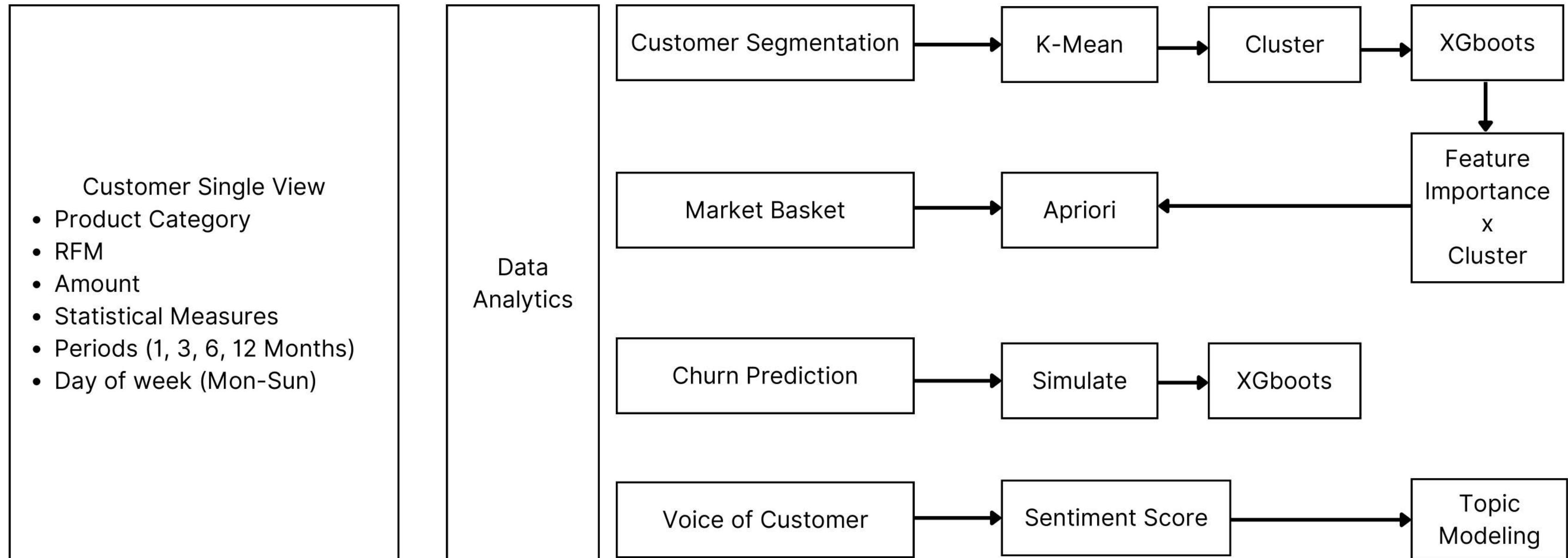
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1ST DRAFT CUSTOMER DATA PLATFORM

FLOW OF CDP TO BUSINESS ACTION



FLOW OF DATA ANALYSIS



SINGLE VIEW COLUMNS



- **Period**
 - weekend, weekday
 - time
 - Each day in week (Mon - Fri)
 - Quarter
- **RFM**
 - Recency (days)
 - Frequency in the range of 1, 3, 6, 12,18 months
 - Money
 - Total
 - Quantity
 - Statistic for Data Science
 - Sum
 - Mean
 - Median
 - Variance
 - SD
 - etc.
 - Average Order Value
 - CLV (ARPU)

- **Product Category**
- **Comment**
 - Sentiment (negative, neutral, positive)
 - Product x Category
- **Customer Scoring**
 - Churn Score
 - Loyalty Score
 - Interest Score
- **Periods**
 - Last 1 month (Last_1M)
 - Last 3 months (Last_3M)
 - Last 6 months (Last_6M)
 - Last 12 months (Last_12M)
- **Day of the Week**
 - Monday (Day0)
 - Tuesday (Day1)
 - Wednesday (Day2)
 - Thursday (Day3)
 - Friday (Day4)
 - Saturday (Day5)
 - Sunday (Day6)

SINGLE VIEW COLUMNS



- **Product Categories**

- Categories as available in the transaction data (e.g., Organic food, Beverages, etc.)

- **Statistical Measures**

- Amount
- Sum
- Min
- Max
- Mean
- Median
- Standard Deviation (std)
- Variance (var)

- **Cross-Features:**

- Temporal Periods + Statistical Measures:
 - Example: Amount_sum_Last_1M, Amount_min_Last_3M
- Product Categories + Statistical Measures:
 - Example: Amount_sum_Last_1M_Organic_food, Amount_mean_Last_3M_Beverages
- Day of the Week + Statistical Measures:
 - Example: Amount_sum_Last_1M_Day0, Amount_mean_Last_3M_Day5

- **Recency/Frequency Ratios:**

- Recency_Frequency_Ratio
- Monetary_Recency_Ratio
- Monetary_Frequency_Ratio

SINGLE VIEW COLUMNS



- **Summary of Generated Features:**

- Customer Demographics: Basic demographic details like age, gender, etc.
- RFM Features: Recency, frequency over various periods, and monetary values.
- Sentiment Analysis: Sentiment mean, min, max, std based on customer comments.
- Statistical Aggregations: Sum, min, max, mean, median, std, var of amounts over various periods, categories, days of the week, and parts of the day.
- Cross Features: Combining statistical measures with temporal features and product categories to provide a granular view of customer behavior.



RESULTS OF DATA ANALYSIS

RESULT

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1

Customer Segmentation

**Segment customers based on purchasing behavior.
Develop targeted marketing strategies for each segment.**



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PERSONA OVERVIEW

No.	Cluster	ARPU	Count	Average Age	Recency (days)	Frequency (purchases)	Monetary Sum	Product_cat preferred
0	Long time no see	\$9	54	44.8	136	5	\$500	Beverages
1	VVIPs	\$181	7	48.7	12	11	\$1,269	Beverages
2	Party squad	\$37	28	44.6	60	9	\$1,029	Beverages, Non-organic food
3	Utensils seekers	\$51	22	42.7	16	11	\$1,126	Others
4	Occasional hungers	\$26	30	40.9	70	8	\$788	Organic food, Non-organic food
5	Loyal supporters	\$70	18	41.8	26	12	\$1,267	Organic food
6	Thirsty folks	\$24	41	46.0	45	10	\$1,013	Beverages

Cluster 2

“Party squad”

“Party squad” tends to purchase beverages and non-organic food with moderate engagement. However, recency is quite high comparing to other clusters.

Evidence:

- Average Revenue per Customer: \$37
- Count: 28
- Average Age: 44.6 years
- Recency: 60 days
- Frequency: 9 purchases
- Monetary Sum: \$1,029
- Product category preferred: Beverages & Non-organic food

Recommendation:

- Cross-Selling: Implement cross-selling strategies to promote organic food alongside non-organic food purchases.
- Event Invitations: Invite these customers to in-store events or tasting sessions to increase their engagement and spending.
- Seasonal Campaigns: Create seasonal campaigns to boost spending during peak times.

Cluster 3

“Utensils seekers”

Frequently purchase Others product category (non-edible).

Evidence:

- Average Revenue per Customer: \$51
- Count: 22
- Average Age: 42.7 years
- Recency: 16 days
- Frequency: 11 purchases
- Monetary Sum: \$1,126
- Product category preferred: Others (non-edible)

Recommendation:

- Bundle Deals: Offer product bundles at a discounted rate to increase their overall spend.
- Social Media Engagement: Actively engage with this group on social media platforms where they seek deals and discounts.



Cluster 6

“Thirsty folks”

Thirsty folks are engaged customers who frequently purchase only beverages.

Evidence:

- Average Revenue per Customer: \$24
- Count: 42
- Average Age: 46.0 years
- Recency: 45 days
- Frequency: 10 purchases
- Monetary Sum: \$1,013
- Product category preferred: Beverages only

Recommendation:

- Beverage Loyalty Programs: Create loyalty programs focused on beverage purchases.
- Upselling Opportunities: Upsell related products such as snacks or desserts with beverage purchases.
- Seasonal Beverages: Introduce seasonal or limited-edition beverages to increase spending.

RESULT

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2

Market Basket Analysis

**Analyses patterns of co-
occurrence and determines the
strength of link between
products purchased.**



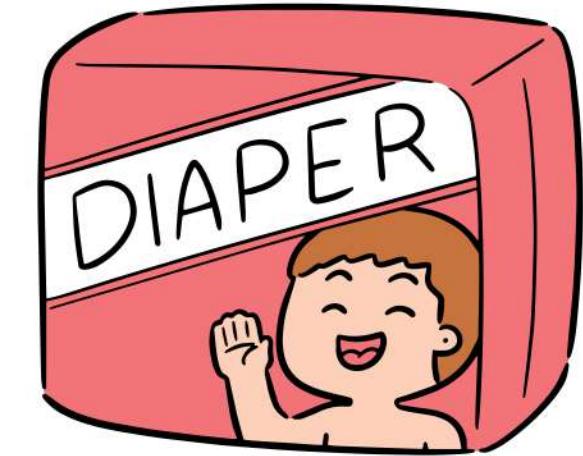
MARKET BASKET

Cluster 2

“Party
squad”



Children's cereal



Baby Diapers



Juice Boxes

Cluster 3

**“Utensils
seekers”**



Baby Diapers



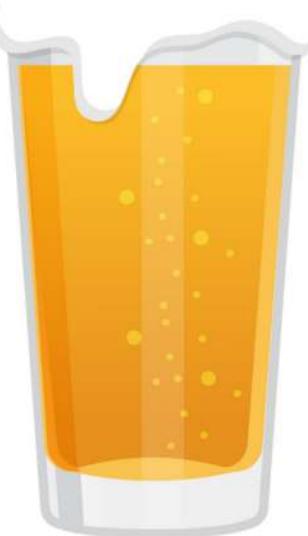
Children's cereal

Cluster 6

**“Thirsty
folks”**



Red Wine



Beer

Cluster 6

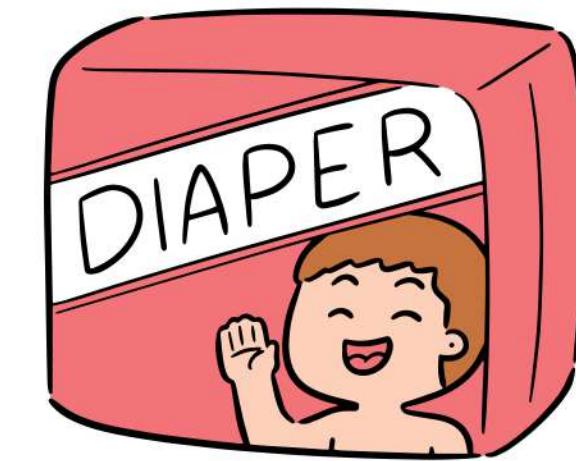
**“Thirsty
folks”**



Juice Boxes



Children’s cereal



Baby Diapers

RESULT

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3

Churn Prediction

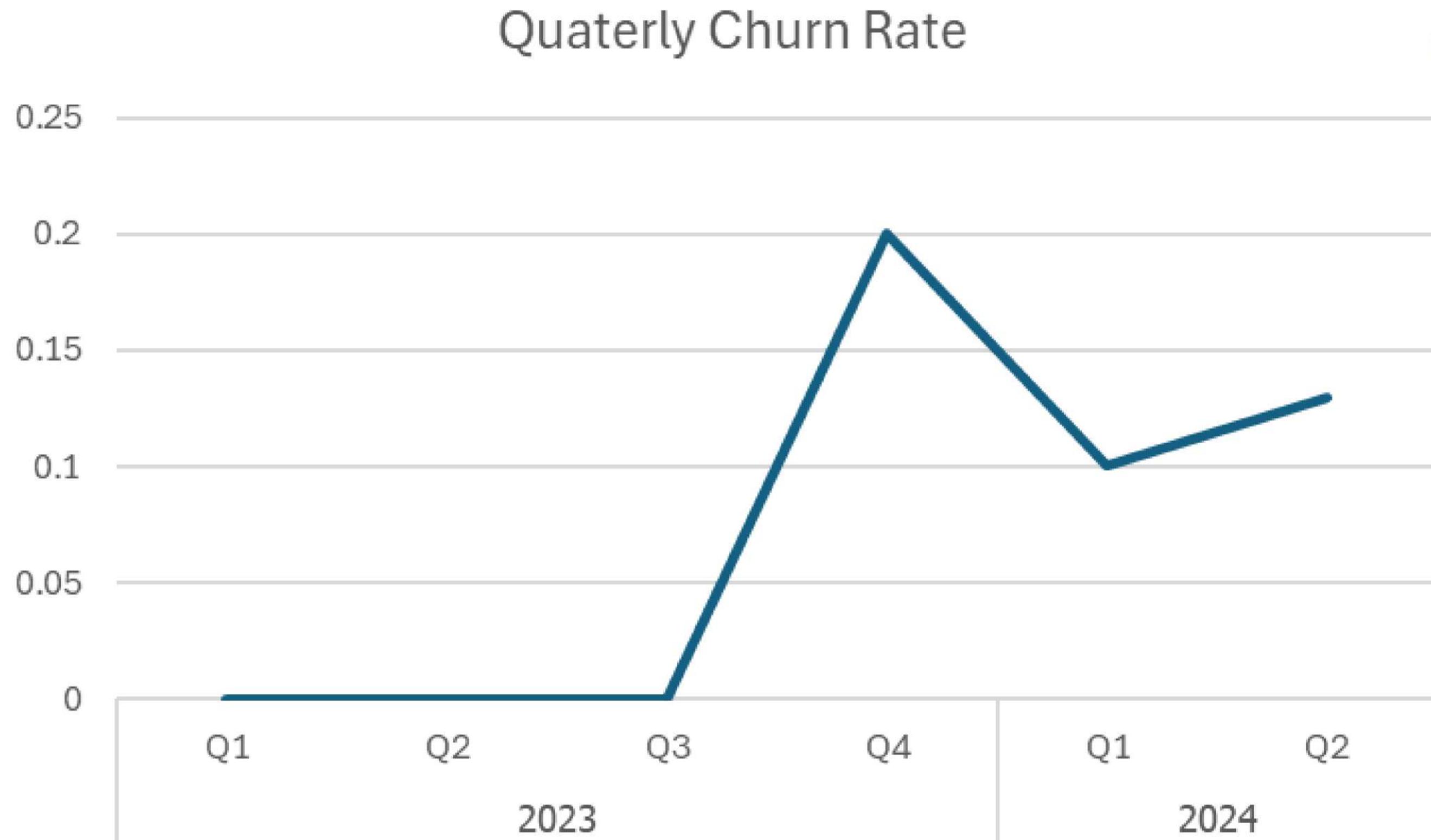
Build predictive models to identify potential churning customer.

Create strategy for customer retention.



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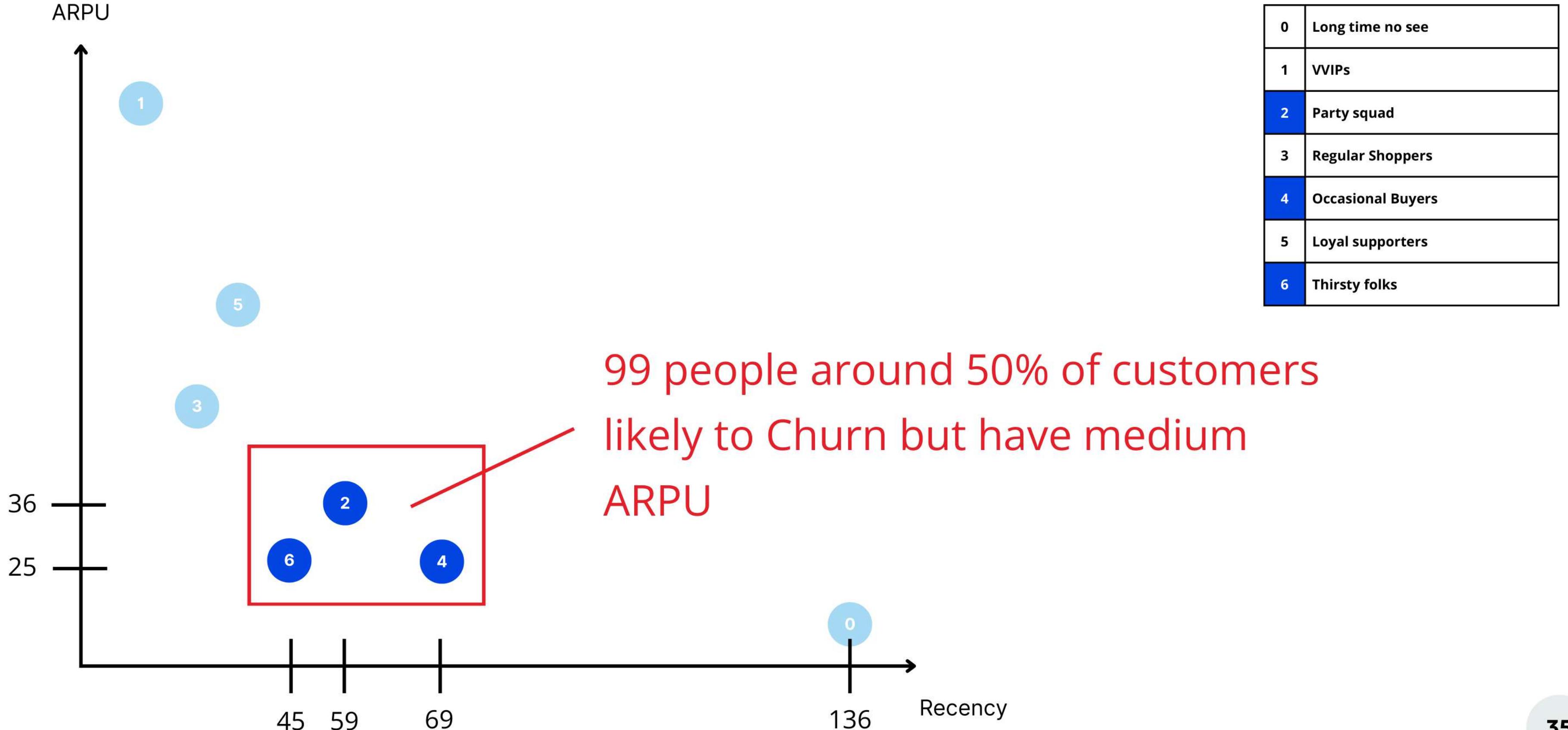
CHURN PREDICTION



Churn Trend

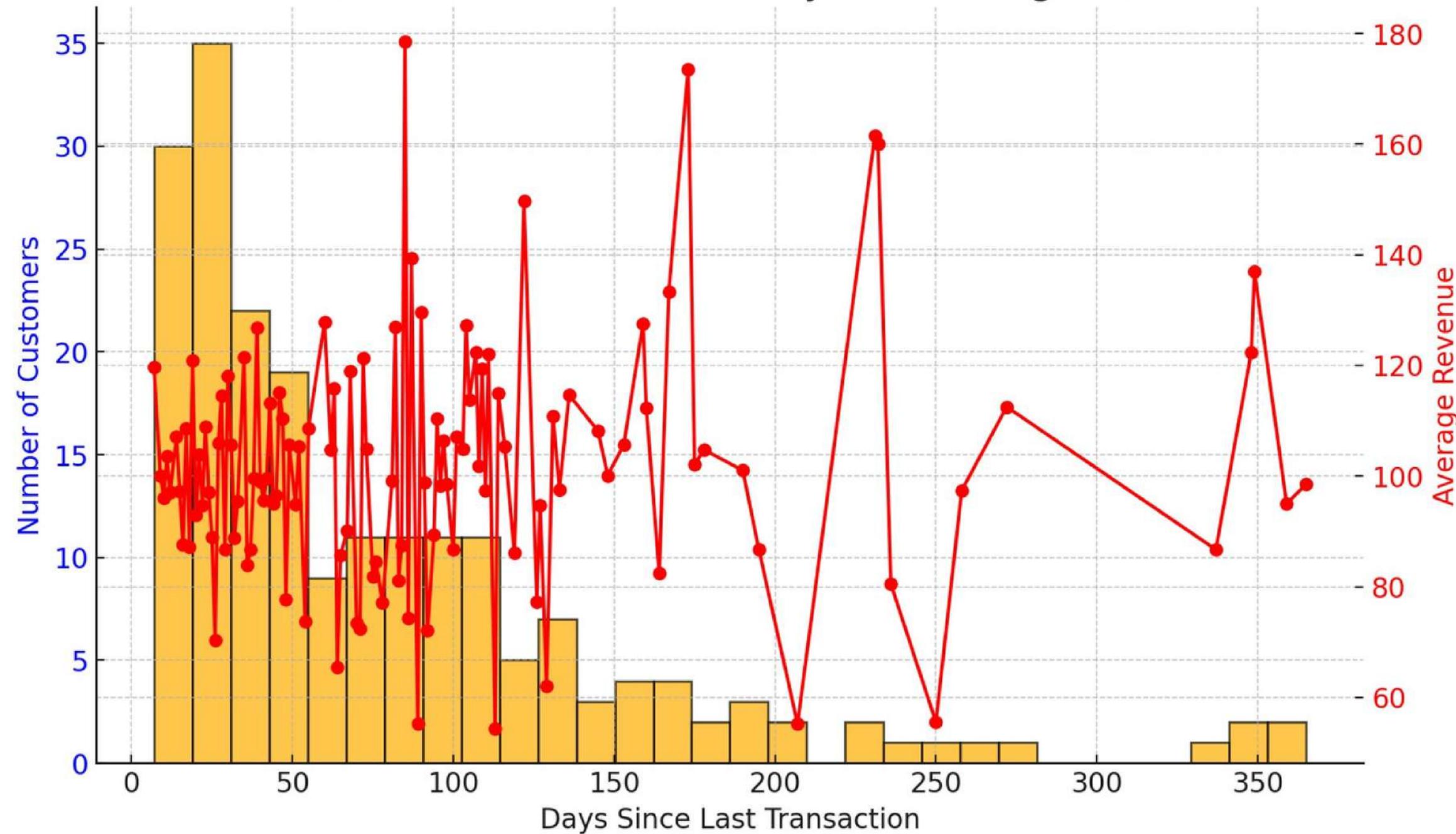
Churn rate
increasing over
time

CHURN PREDICTION



Distrubution of Customer Recency

Distribution of Customer Recency with Average Revenue



What we can see

- As you can see that number of transaction decrease after 100 days
- ARPU fluctuates significantly it's don't following with Recency
- Then we simulate the churn

CHURN PREDICTION

Recency (Days)	ARPU (No churn)	ARPU (Churn)
30	102	104
60	102	104
90	102	99
120	102	104
150	102	105
180	102	107
240	102	120

Simulation Result

From what can be seen, it is found that the Avg. ARPU of people who Churn at the cut-off at 240 days will have significantly more value.

CHURN PREDICTION



We can gain revenue if we achieve 100% of churn customer as 15% of total revenue
(\$1,077 from \$6,992)

No.	Cluster	ARPU	Recency (days)	Monetary Sum	%Churn rate (From Model)	Revenue from Churn
0	Long time no see	\$9	136	\$500	50%	\$250
1	VVIPs	\$181	12	\$1,269	14%	\$181
2	Party squad	\$37	60	\$1,029	25%	\$257
3	Utensils seekers	\$51	16	\$1,126	5%	\$51
4	Occasional hungers	\$26	70	\$788	24%	\$190
5	Loyal supporters	\$70	26	\$1,267	0%	\$0
6	Thirsty folks	\$24	45	\$1,013	15%	\$148

RESULT

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4

Customer Feedback Analysis

Analyze customer feedback to identify areas for improvement.

Enhance customer satisfaction through targeted actions.

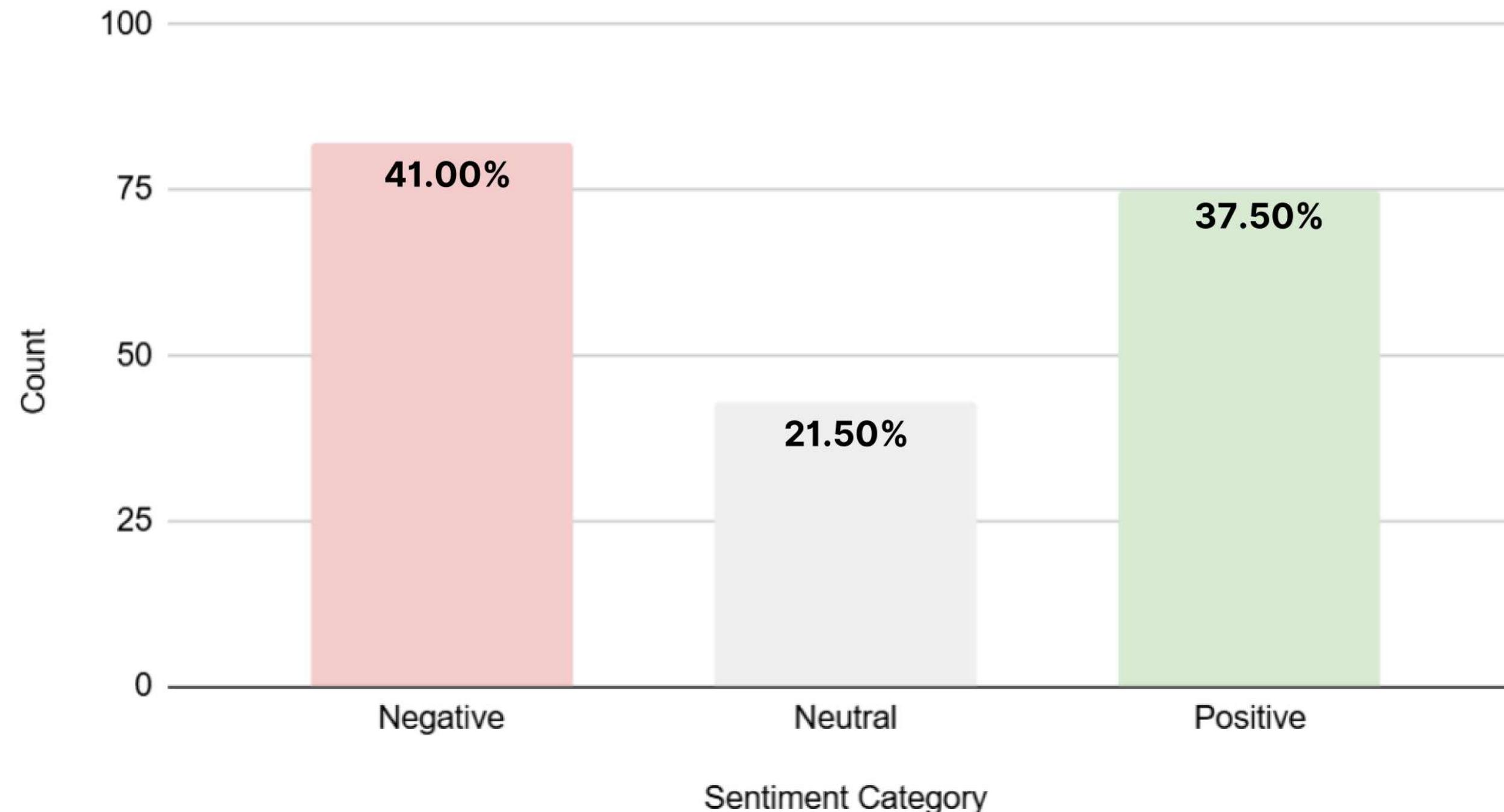




VOICE OF CUSTOMER (VOC)

SENTIMENT ANALYSIS

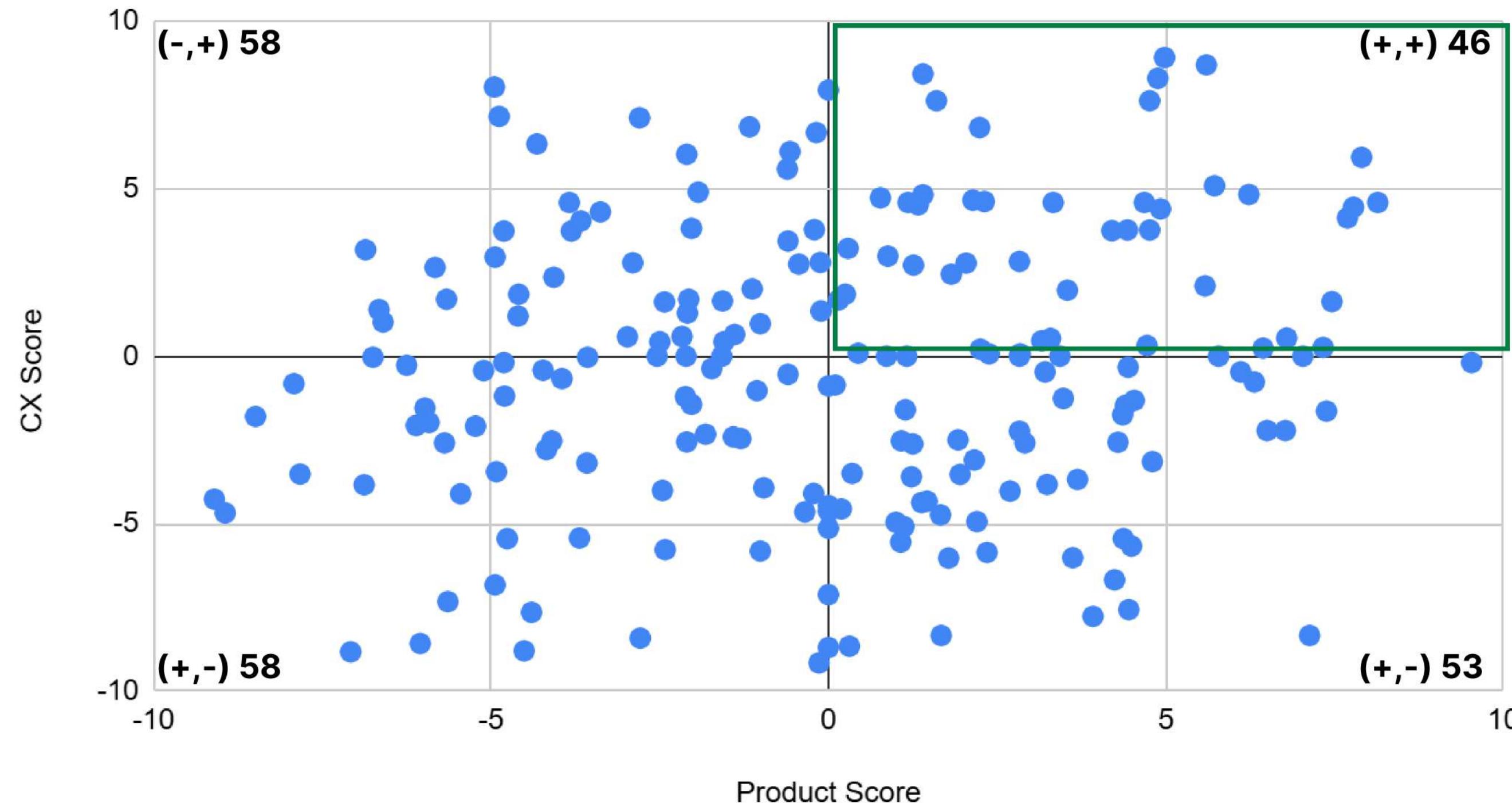
Sentiment Proportion



SENTIMENT ANALYSIS (GROUPS)



CX Score vs. Product Score



TOPIC MODELING (+,+): PRODUCT



Good Product Comments

Key Words: new, topnotch, needed, lovers, place, shopping

Insights:

- Product Variety and Quality: Customers appreciate the variety and top-notch quality of products available. Items such as alcoholic drinks and fresh produce are mentioned positively.
- Targeted Offerings: The store caters well to specific needs, such as products for kids and cooking ingredients.
- Positive Shopping Experience: Despite high prices, the overall selection and shopping experience are well-received by customers.

Bad Product Comments

Key Words: shopping, meals, options, prices, variety, fruits, meats

Problem:

- **Mixed Experiences:**
 - While some aspects of the product offerings are appreciated, the high prices overshadow the positive experiences for some customers.
- **Price Concerns:**
 - High prices are **leading some to consider shopping elsewhere.**

Solution:

- Price Optimization on specific category or product

Good Customer Experience Comments

Key Words: satisfying, perfect, fantastic, visit, meats, supplies

Insights:

- Consistent Satisfaction: Long-term customers find their shopping experiences satisfying and fantastic, indicating high levels of customer satisfaction.
- Quality of Specific Products: The quality of meats and supplies are frequently highlighted as contributing to a positive experience.
- Positive Overall Experience: Customers express a general sense of satisfaction with their visits to the store, suggesting that both the product offerings and service quality meet their expectations.

Bad Customer Experience Comments

Key Words: store, section, love, needs, longer, past
Problem:

- **Dissatisfaction with Current Store:** Some customers have moved to different stores, indicating a shift in loyalty due to unmet needs or dissatisfaction.
- **Unmet Needs:** Comments reflect unmet needs in specific sections of the store, such as Monthly Inventory Issue (out of stock) or they have a hard time searching for what they want

Solution:

- Better Inventory Management system and Product Search System

CONSULTANTS



Thanit. B
6610400001



Thamonwan W.
6610414005



Kawin A.
6610424007



Ajaree A.
6610424012



Surapat V.
6610424015



Thitiphorn T.
6610424017



Tipsuda P.
6610424020



Sorrapon M.
6610424022



Tawan V.
6610424024

THANK YOU

FOR YOUR ATTENTION

Group 3





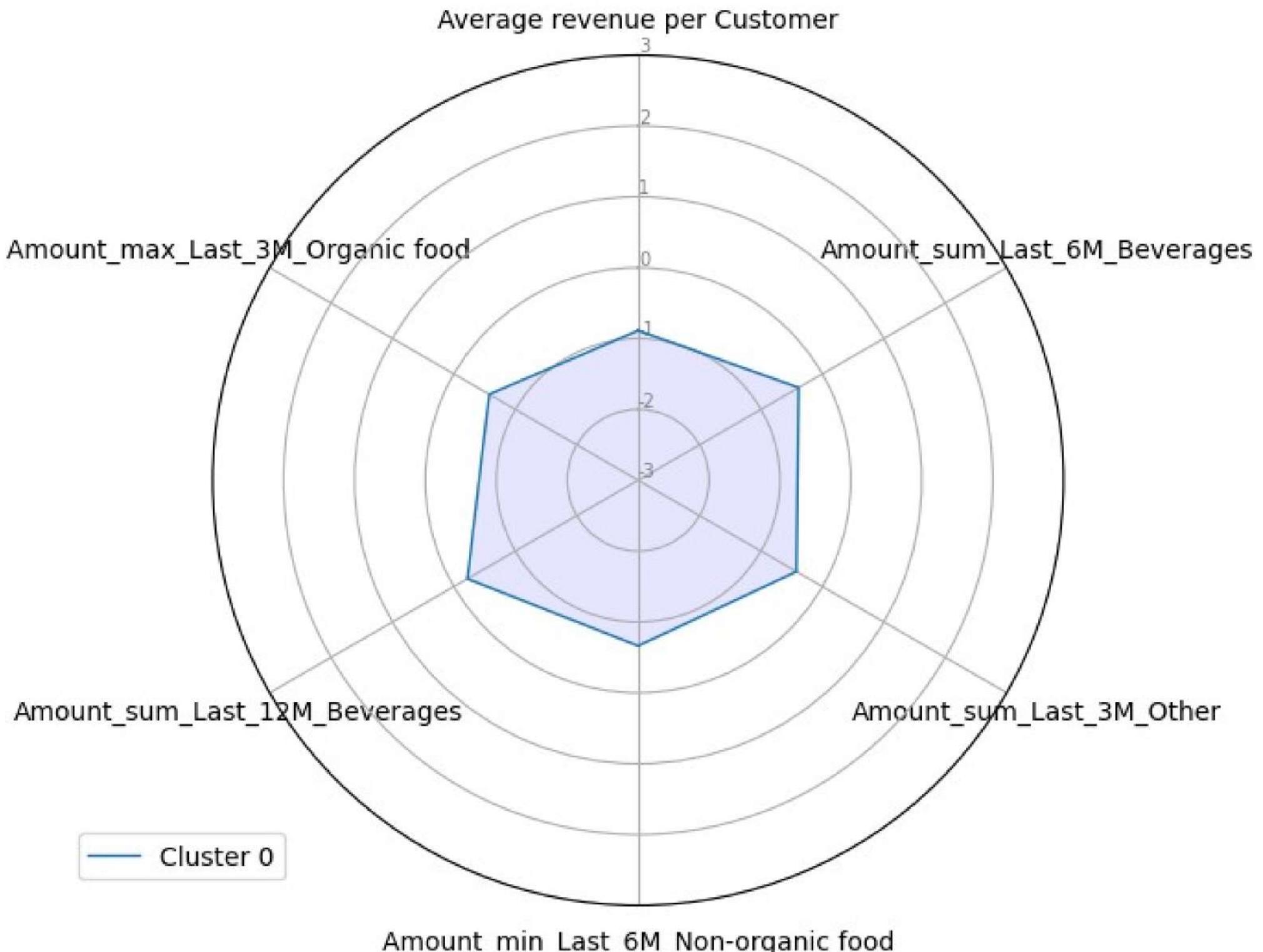
APPENDIX

EXPLAINING CLUSTER

Cluster 0

“Churned Folks”

Churned Folks tend to make infrequent, low-value purchases, with a moderate average age. They represent customers who occasionally buy items without high engagement. Recency more than 100 days.



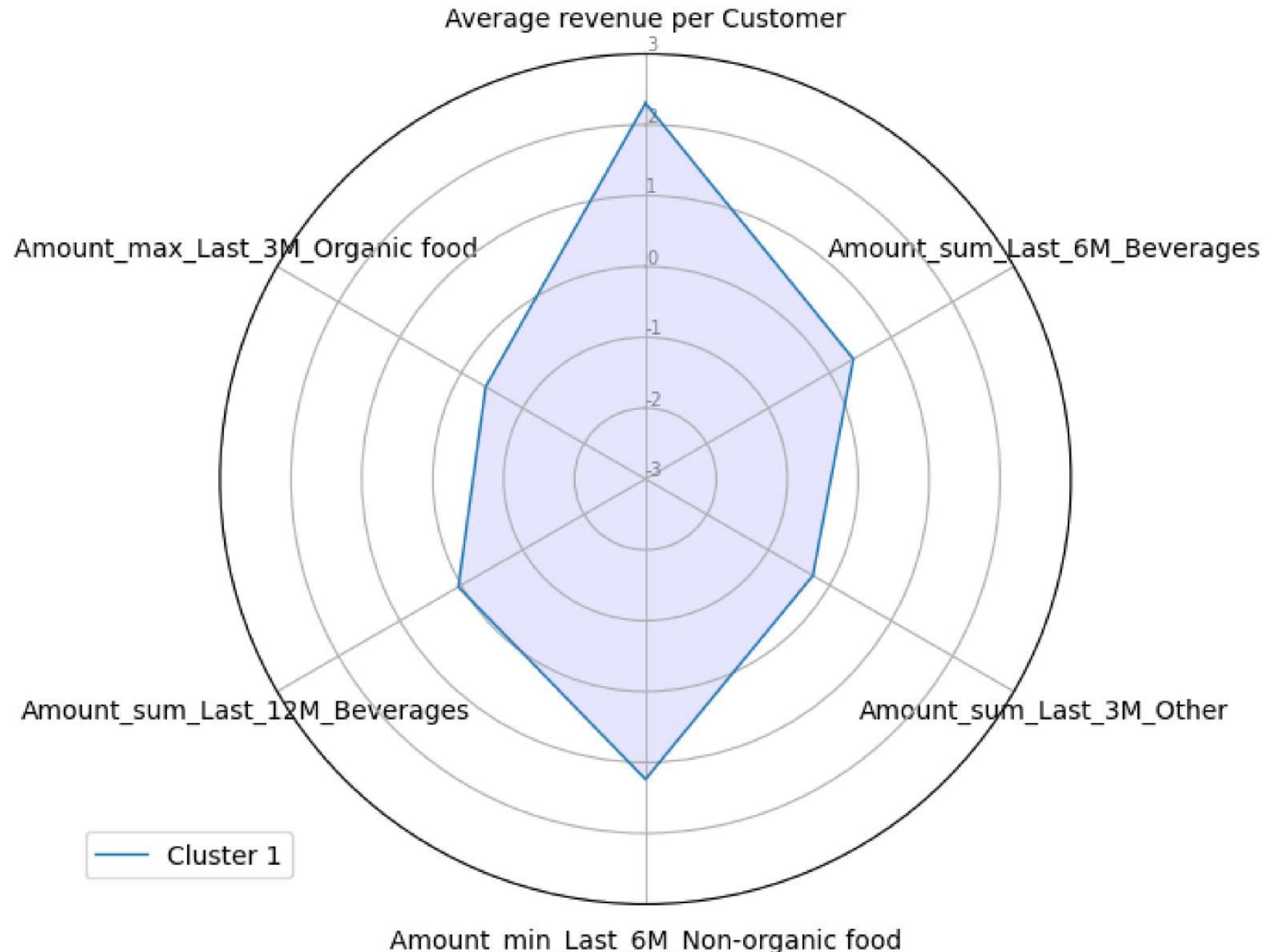
EXPLAINING CLUSTER



Cluster 1

“Premium Buyers”

Premium Buyers are high-value customers who make frequent, high-value purchases. They are slightly older and have a strong purchasing pattern.

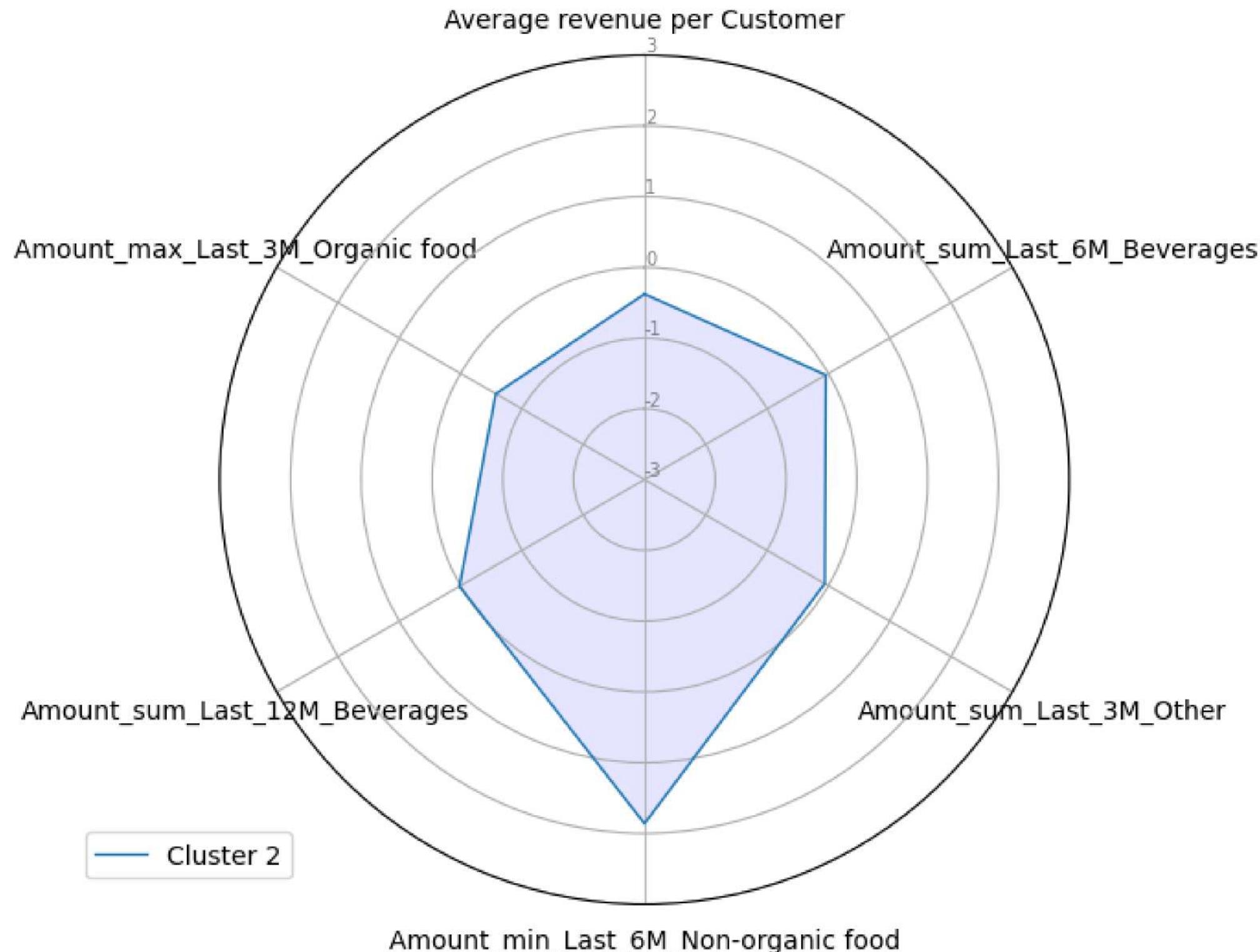


EXPLAINING CLUSTER

Cluster 2

“Distant Spenders”

Distant Spenders consistently purchase items and have moderate engagement. They represent a reliable segment with steady buying habits. However, recency is quite high comparing to other clusters.



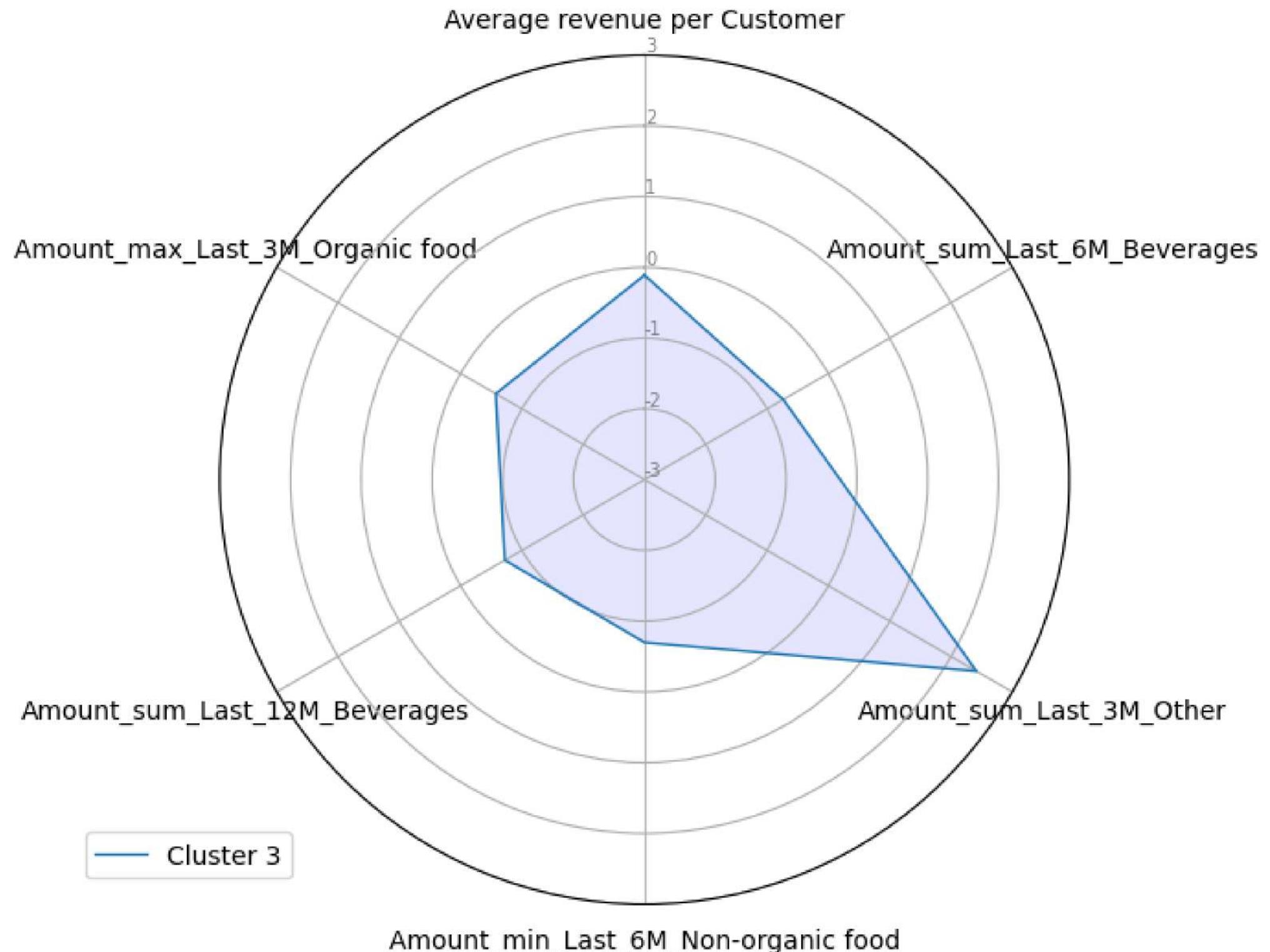
— Cluster 2

EXPLAINING CLUSTER

Cluster 3

“Regular Shoppers”

Frequently purchase items but spend moderately.

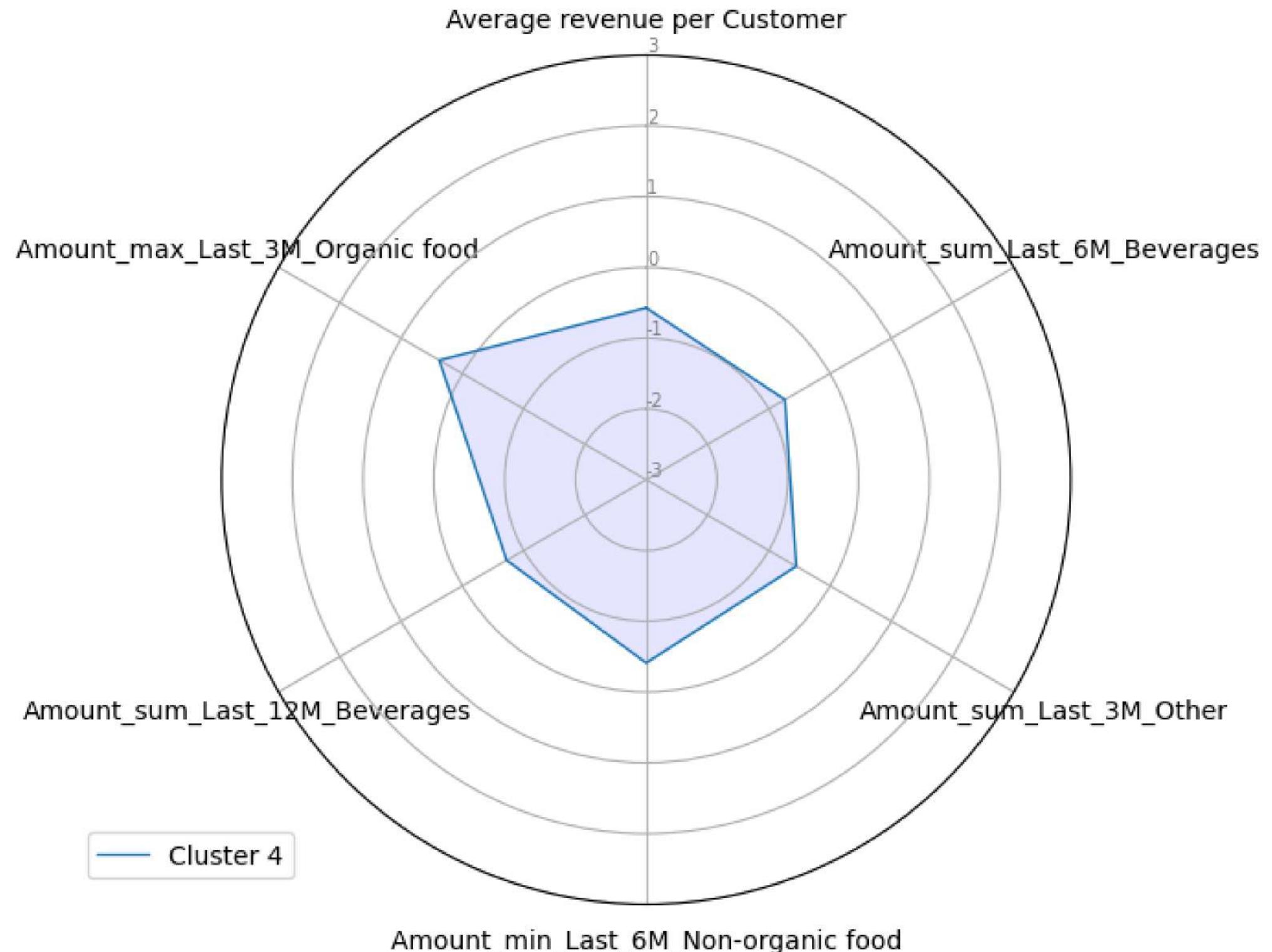


EXPLAINING CLUSTER

Cluster 4

“Occasional Buyers”

Occasional Buyers have a lower frequency of purchases with moderate spending. They tend to shop during specific times or seasons.



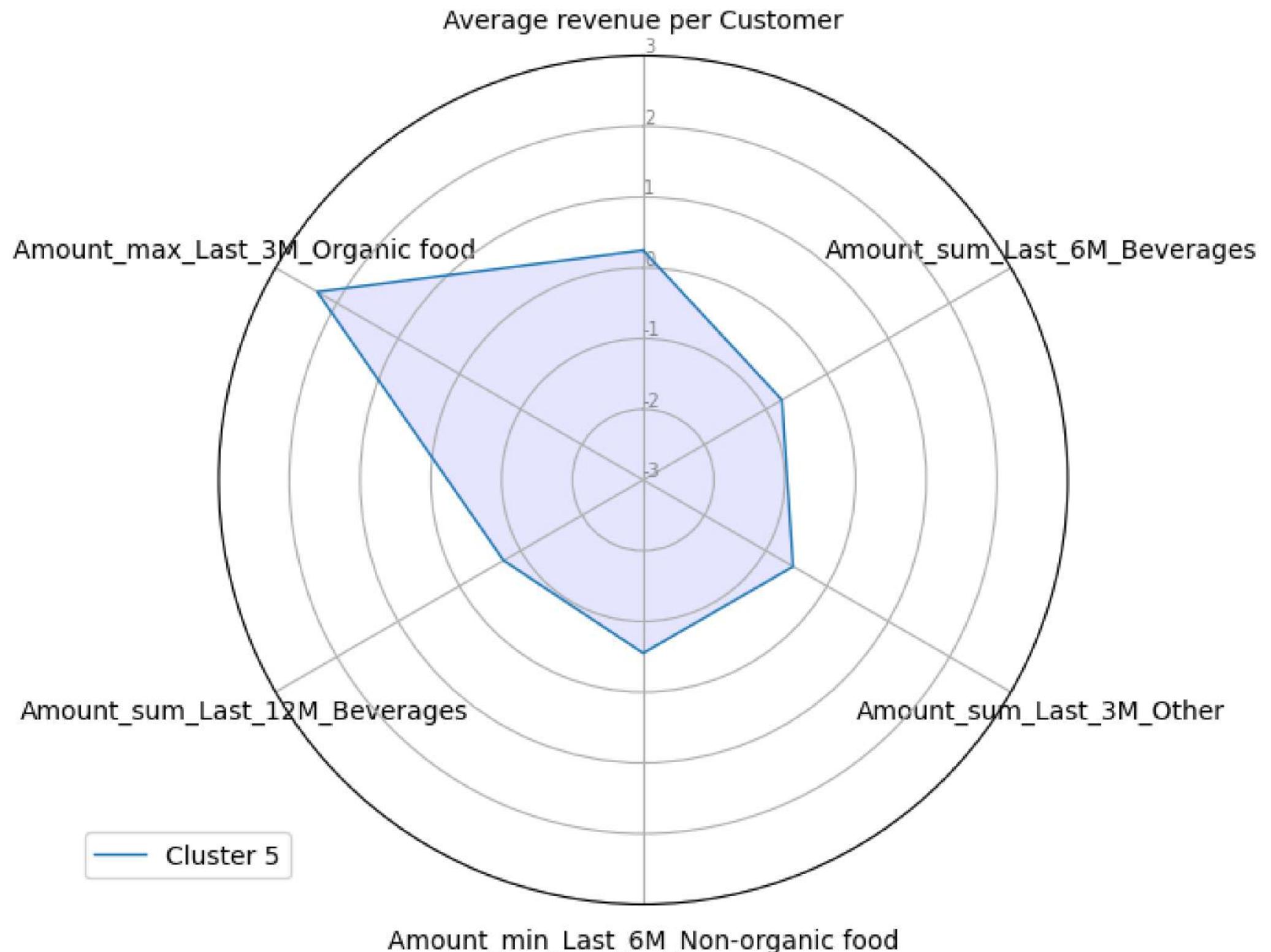
EXPLAINING CLUSTER

Cluster 5

“Young explorers”

Young explorers are customers who make frequent purchases and are exploring different products.

They represent a growing segment with potential for increased engagement.



EXPLAINING CLUSTER



Cluster 6

“Loyal Supporters”

Loyal Patrons are highly engaged customers who frequently purchase and have a high monetary sum. They are the backbone of the customer base with strong loyalty.

