

TEAM 2025107



The CFO finds last year's marketing spend ineffective and suggests cutting or reallocating the budget. As a data analyst, you must assess the impact of marketing levers to recommend an optimal budget for next year.

Objectives:

- *Data Dashboards: Visualize key metrics for actionable insights.*
- *KPI Evaluation: Identify revenue-driving factors and assess performance.*
- *Budget Optimization: Quantify marketing ROI and recommend optimal spending.*

Data Dashboards



Key Performance Indicators

2M

Monthly Units Sold

4bn

Total GMV

1M

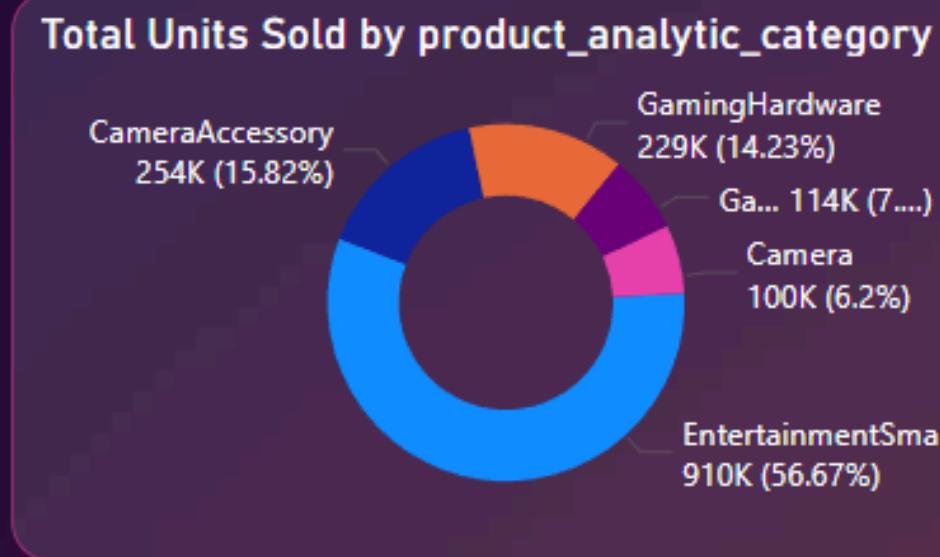
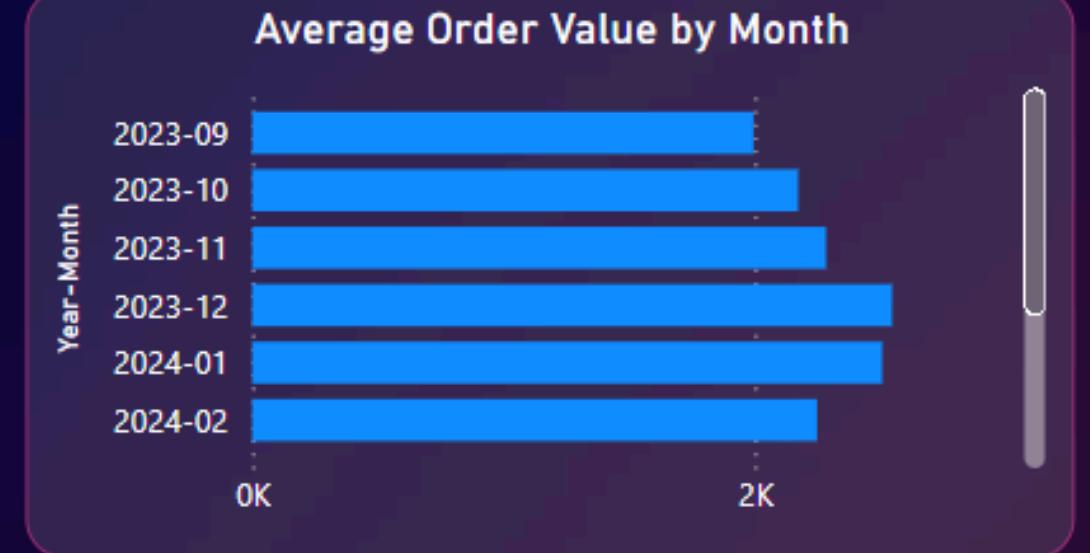
Total Orders

47.77

Avg NPS

LaptopSpeaker

Top Category



Data Dashboards

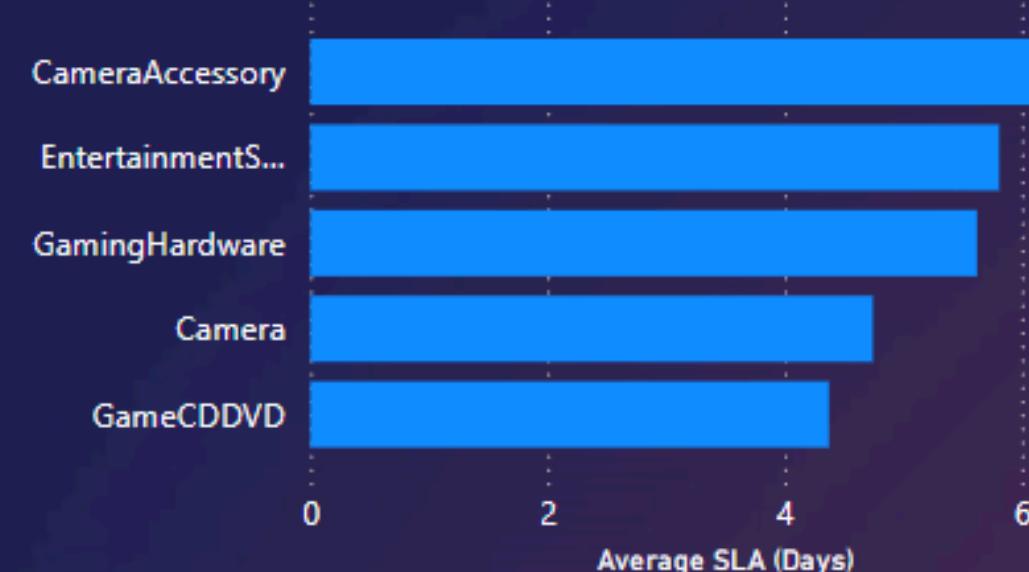


Sales And SKU Dashboard

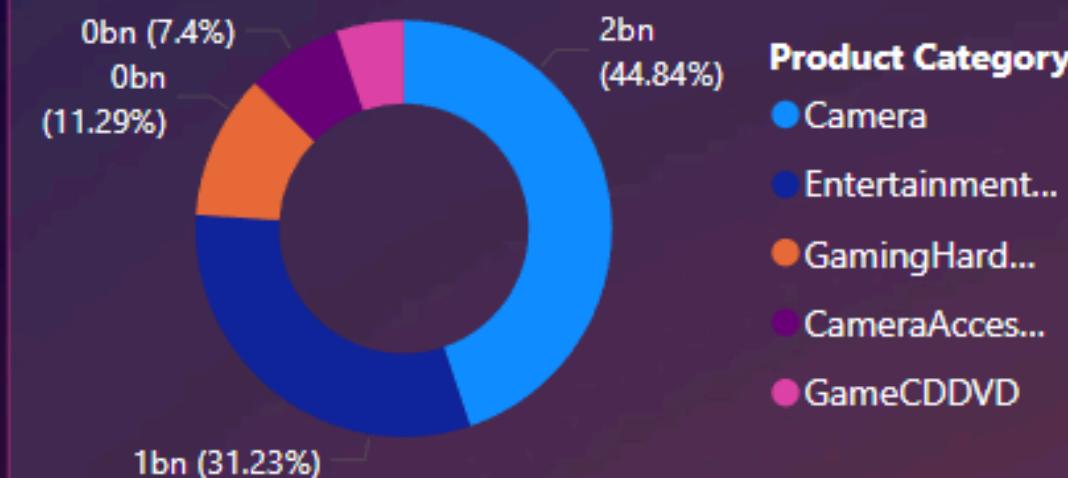
Year, Month

All

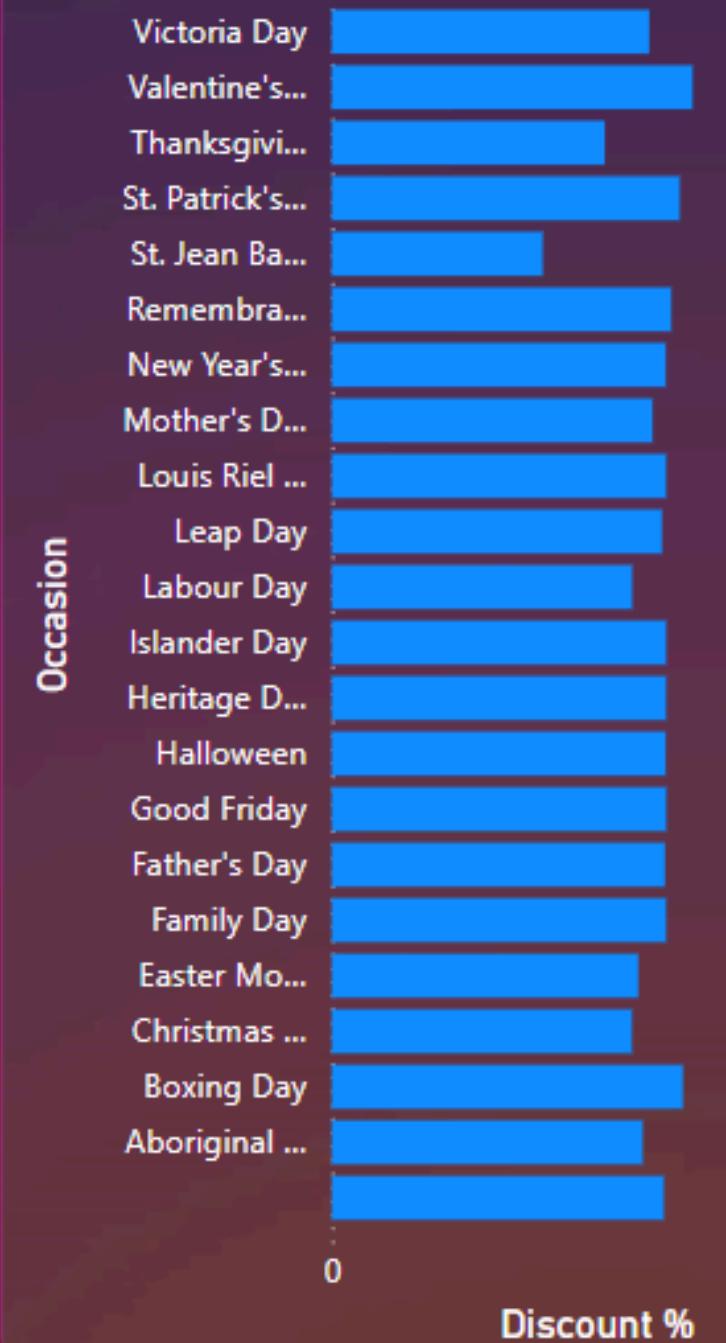
Top 5 Product Categories by SLA



GMV by Category



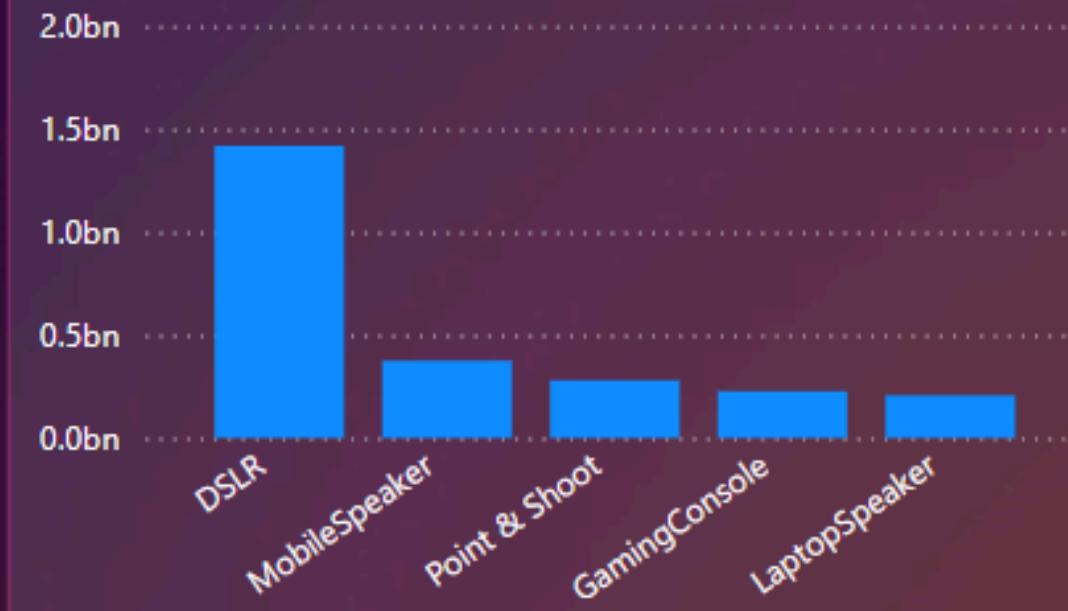
Discount % by Occasion



First_Time Customers Over Time



GMV vs Product Vertical



Data Dashboards

Marketing Efficiency Dashboard

46.47

Marketing ROI

73.05

Avg Monthly Investment

33.94

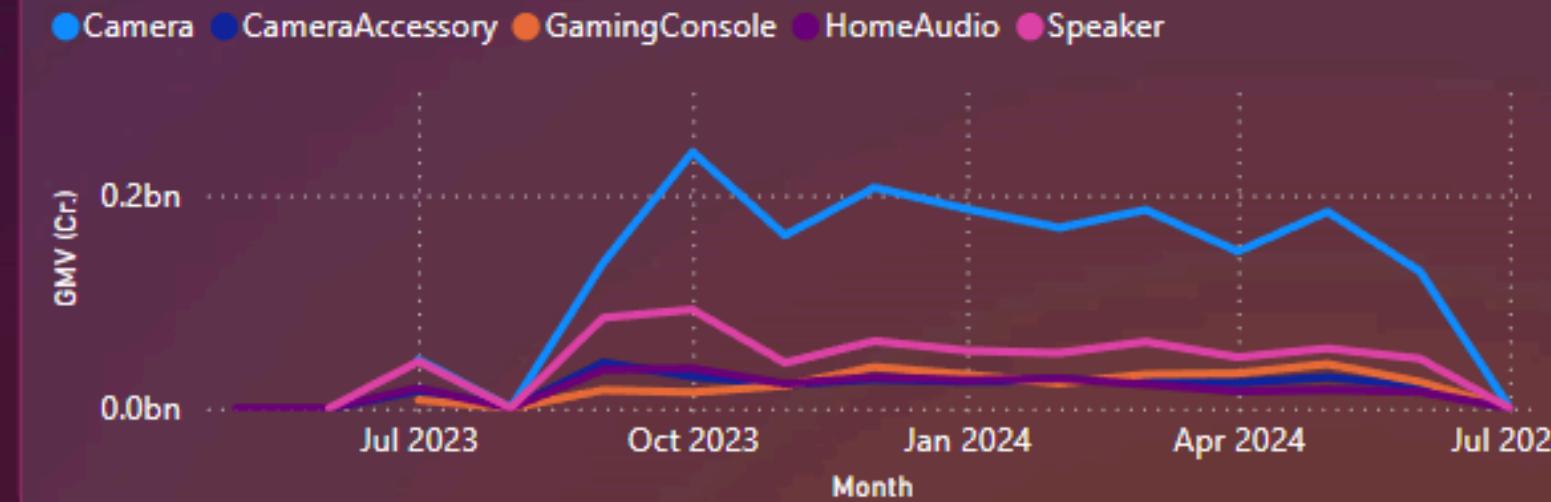
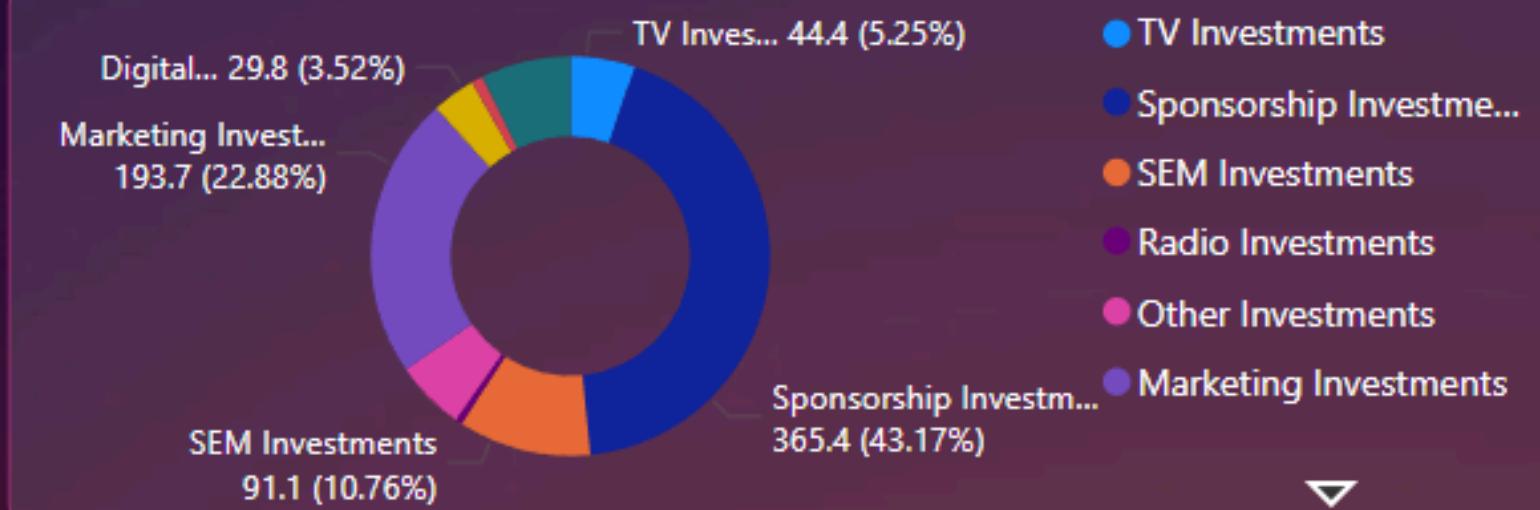
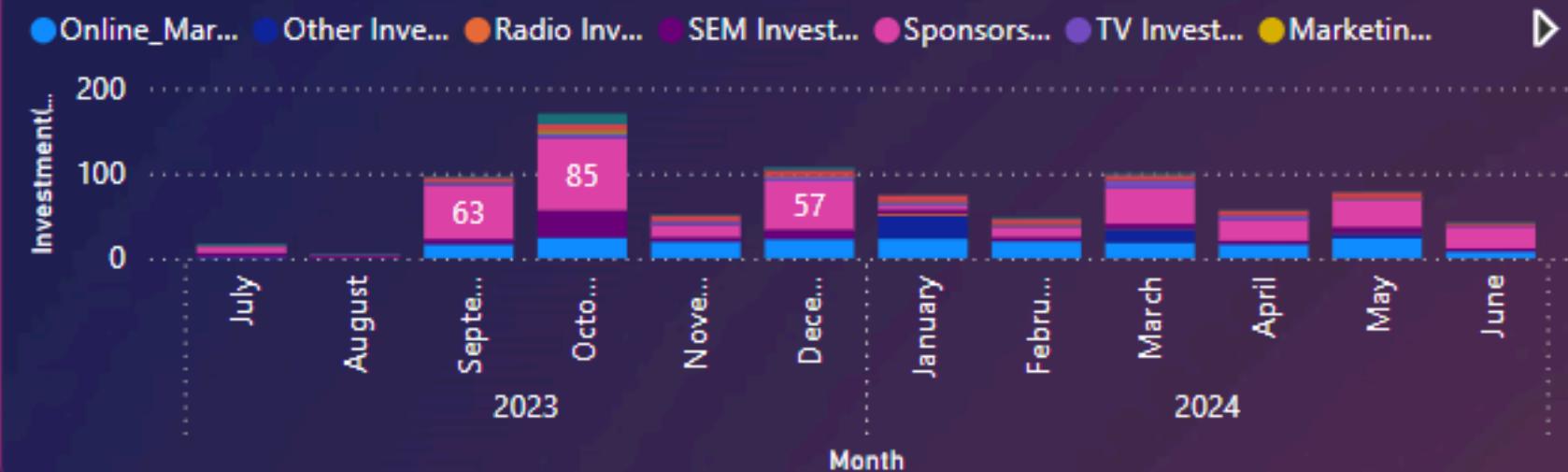
Avg Monthly GMV

876.60

Sum of Total_Investment

Year, Month

All



Data Dashboards



Customer Segmentation Analysis

Select Date

All

1M

NewCustomers

0.24

RetentionRate

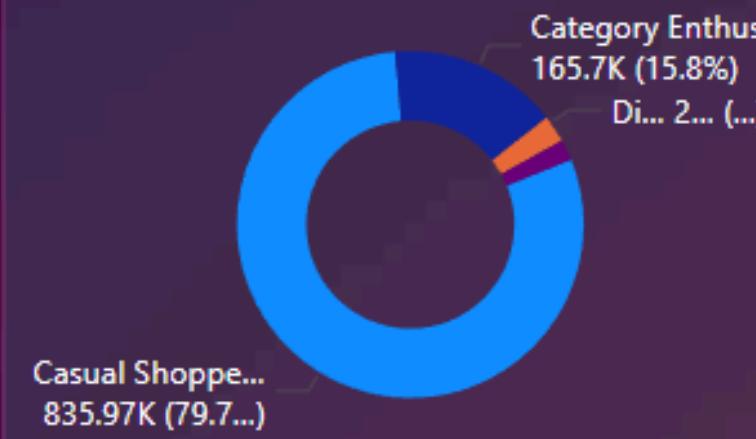
2.70K

AOV

Avg. Sale Ratio by Segment



Customer Segment Distribution



Average Order Value by Customer Segment



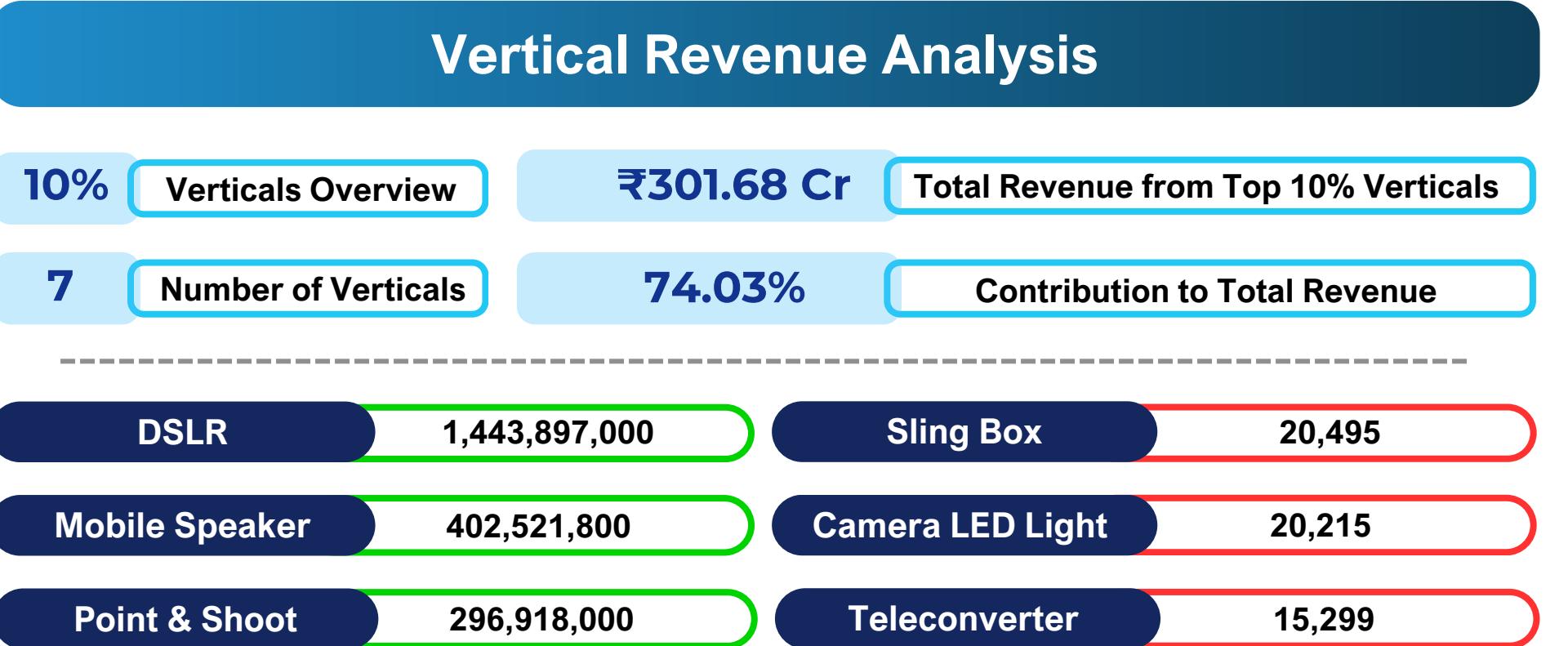
Avg. Orders per Customer by Segment



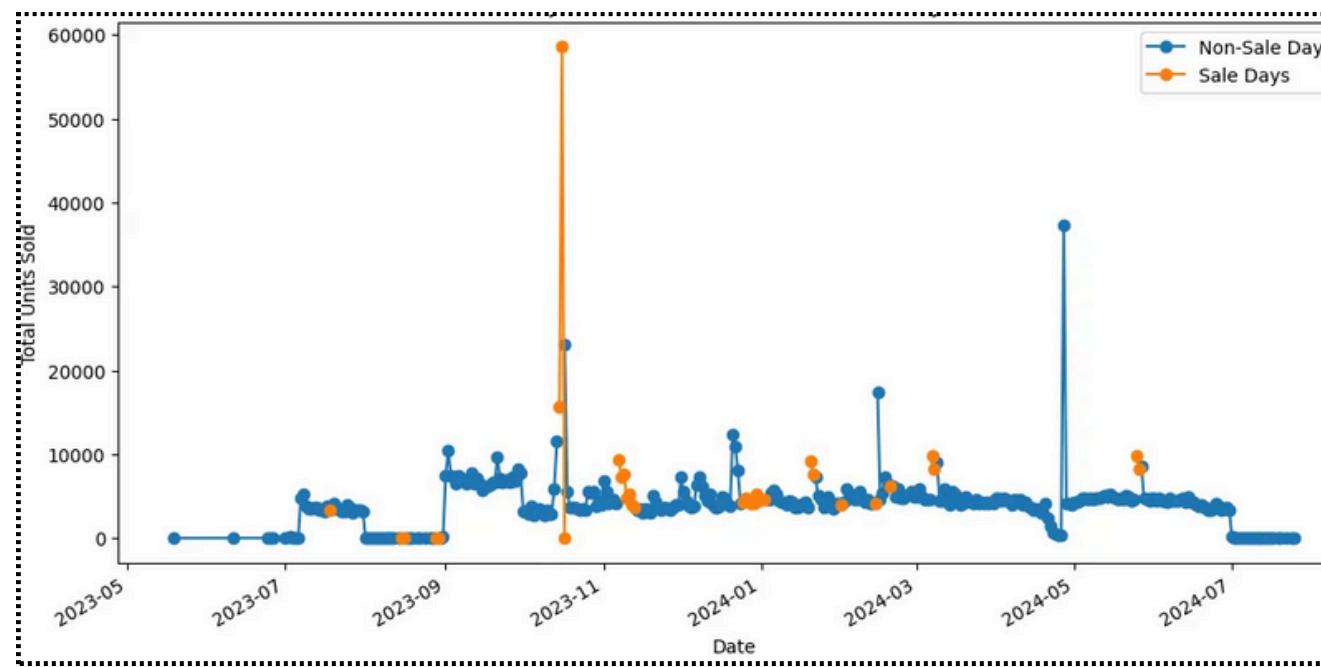
Cumulative Unique Customers Over Time



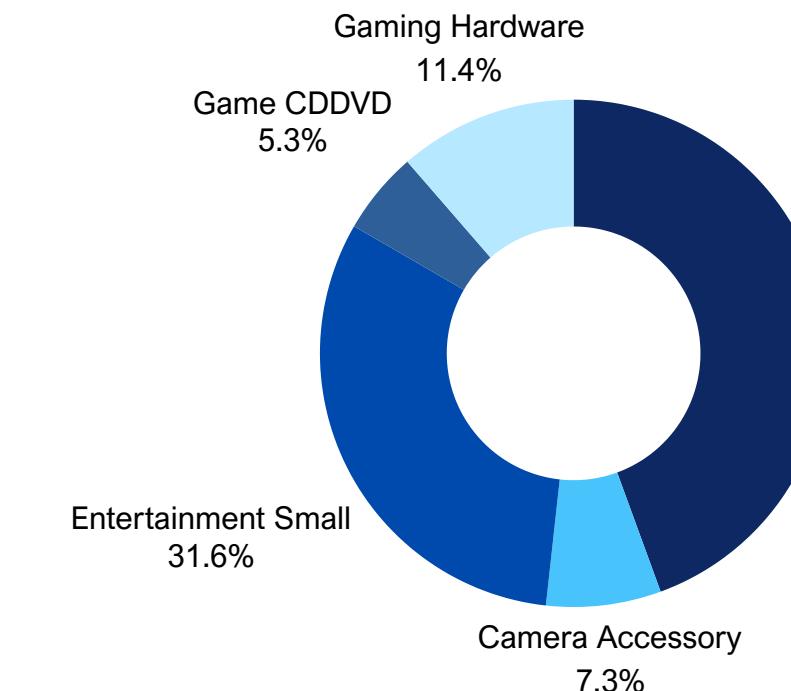
Sales and SKU Performance Analysis



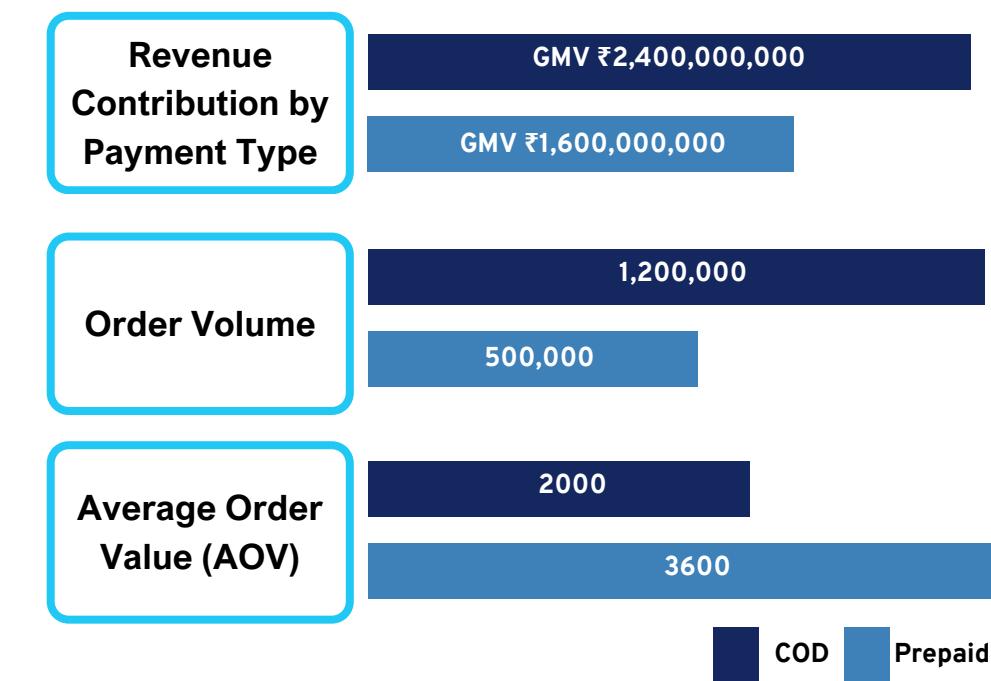
GMV Contributions by Category



GMV Contributions by Category



GMV Contributions by Category



Customer Behavior Analysis



Customer Behaviour Segmentation

Casual Shoppers

- Low Purchase Frequency: Customers place orders infrequently, averaging 0.8 orders per customer.
- High AOV: The average order value (AOV) is ~Rs2500, indicating high-value purchases.
- Low Sale Ratio: The sale ratio is 0.15, suggesting limited conversion success.
- High Churn Risk

78.3%

Category Enthusiasts:

- Prefer specific product categories.
- Moderate Order Frequency: ~2.5 orders/customer.
- High AOV: ~Rs2500.
- Highest Sale Ratio: 0.65, indicating strong purchase intent.
- Highly Responsive: Engage well with targeted recommendations.

17.2%

Discount-Driven Shoppers

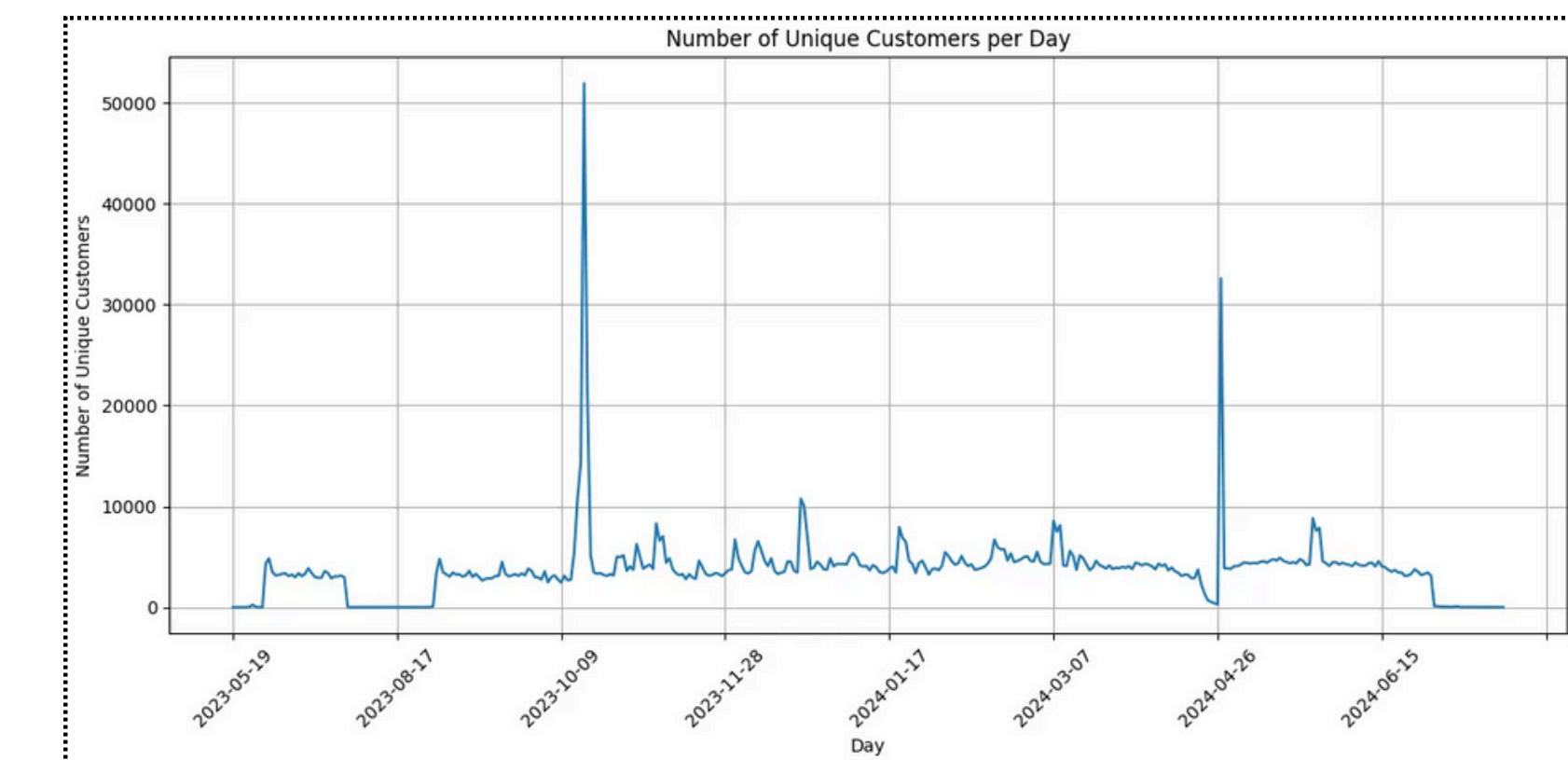
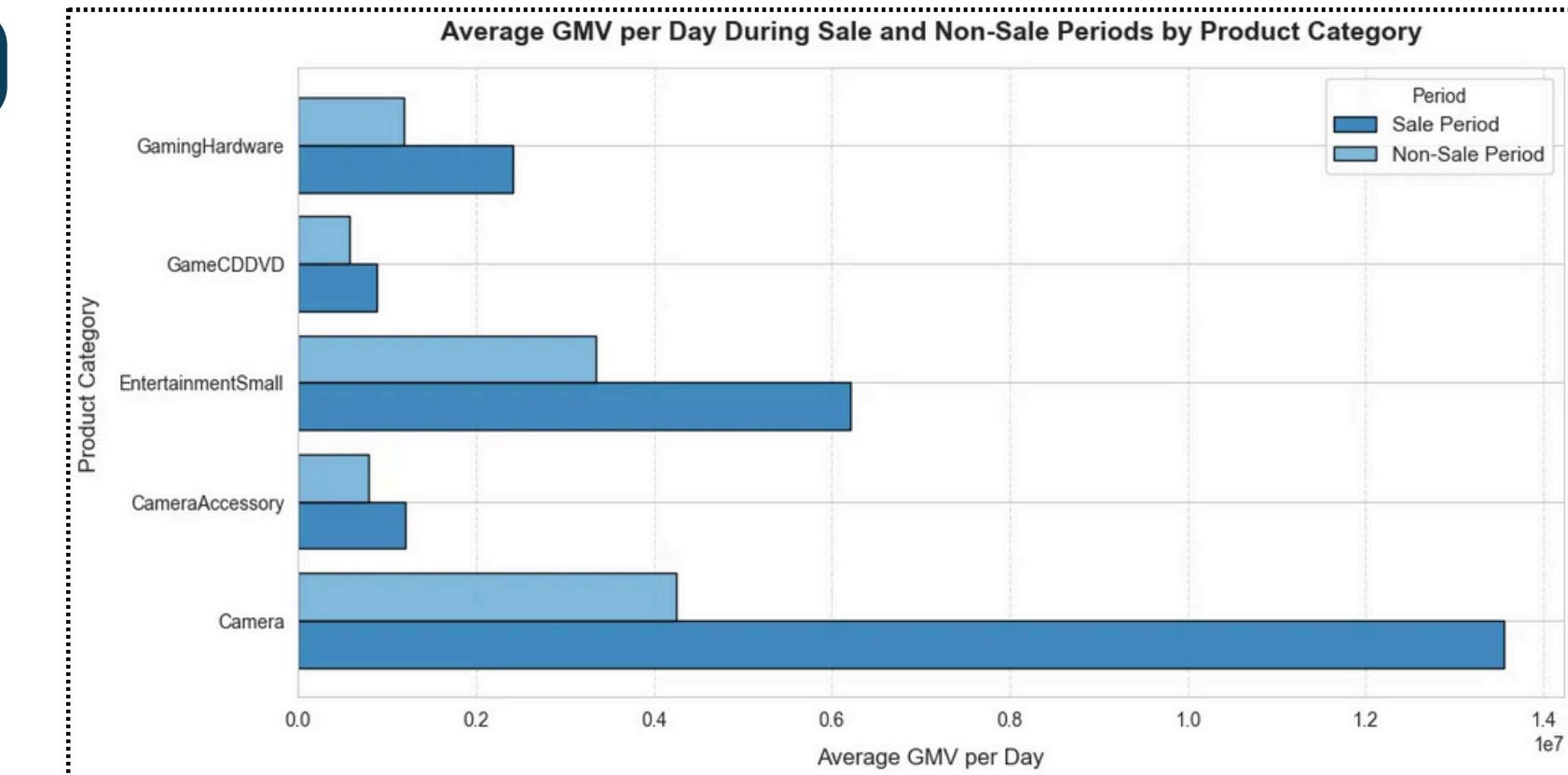
- Order Frequency: They place ~2.2 orders per customer, mainly during promotions.
- Lowest AOV: Their average order value is \$1800.
- Low Sale Ratio: With a sale ratio of 0.05, they show weak purchase intent.
- Discount Dependent: Their buying behavior heavily relies on promotions.

2.3%

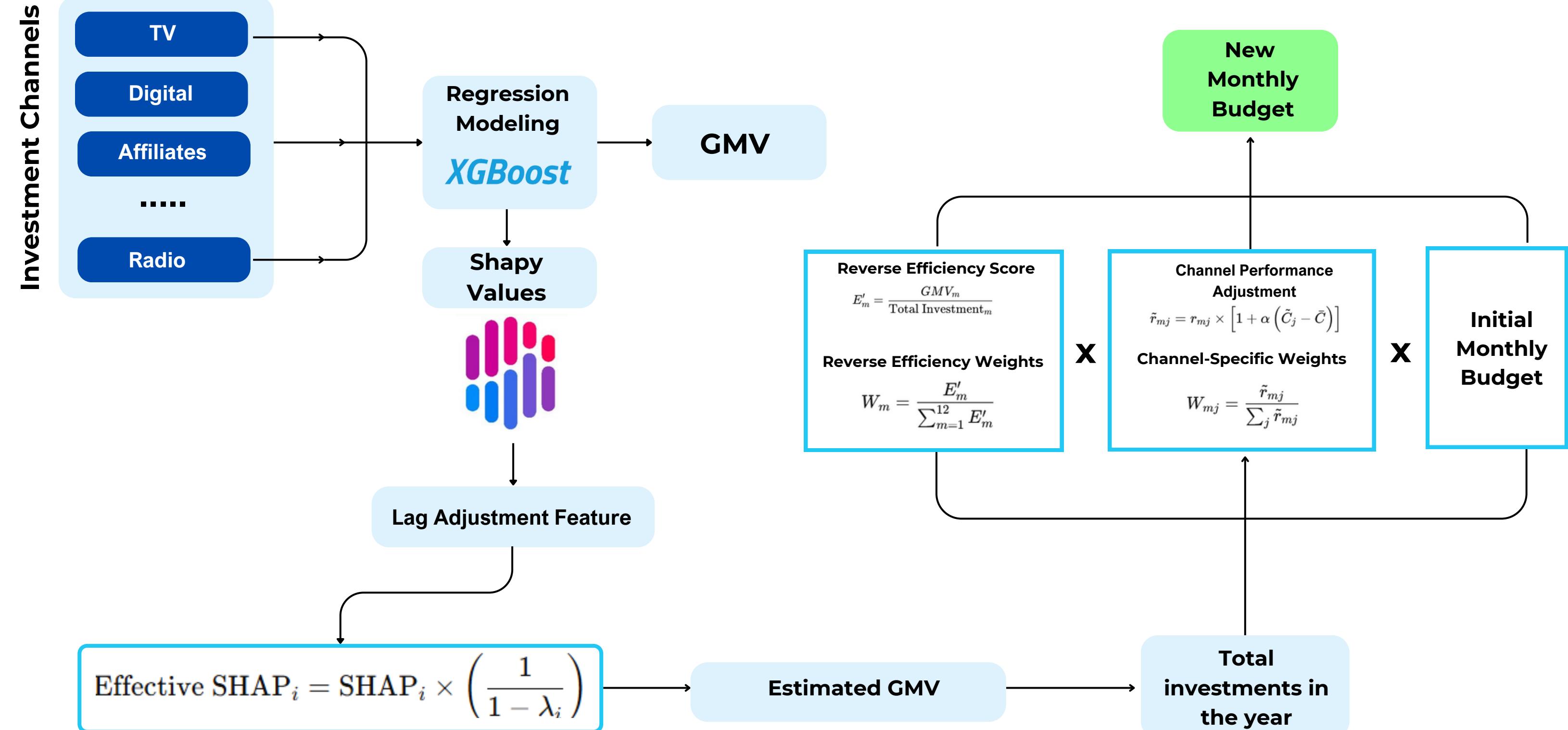
High-Value Loyal Customers

- Small Segment: Comprise only 2.2% of the customer base.
- High Revenue Contribution: Major drivers of overall sales.
- Frequent Purchases: Average 5 orders per customer.
- Highest AOV: Around \$2700 per order.
- Low Sale Ratio: 0.10, indicating potential for better engagement.

2.2%

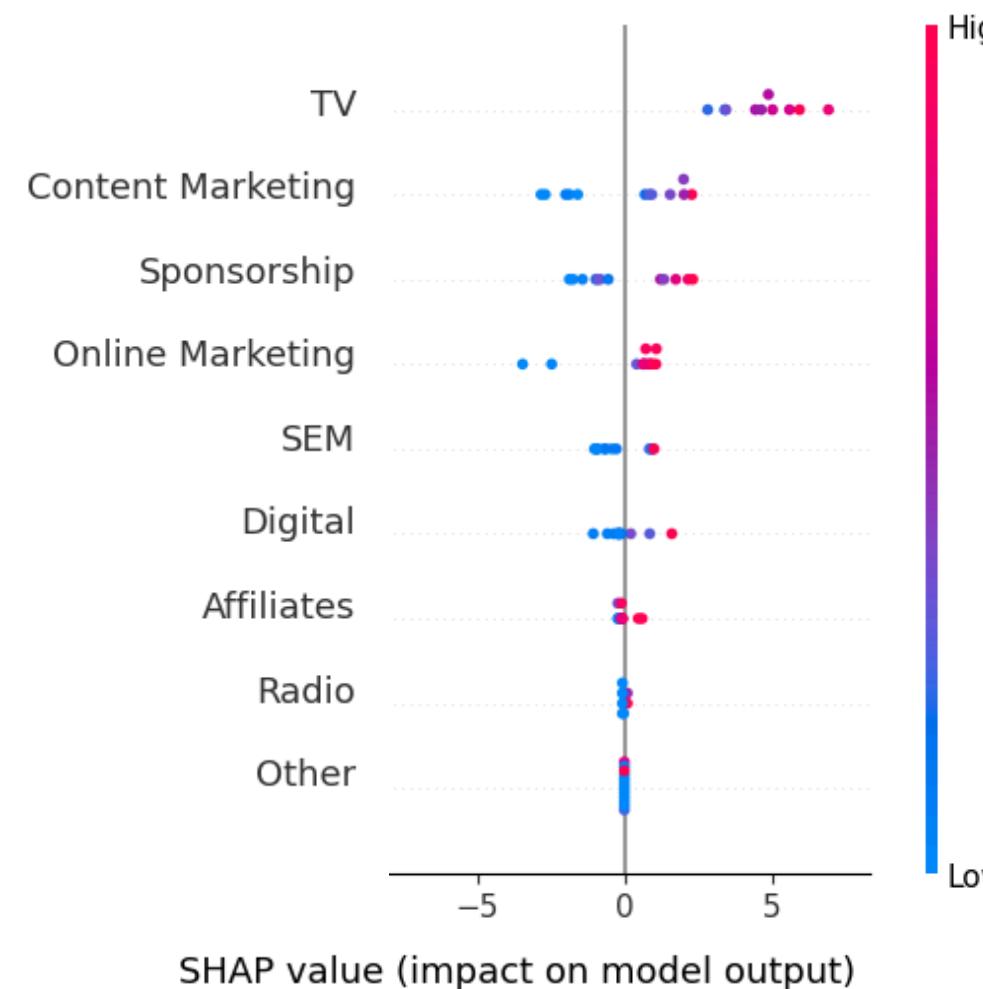
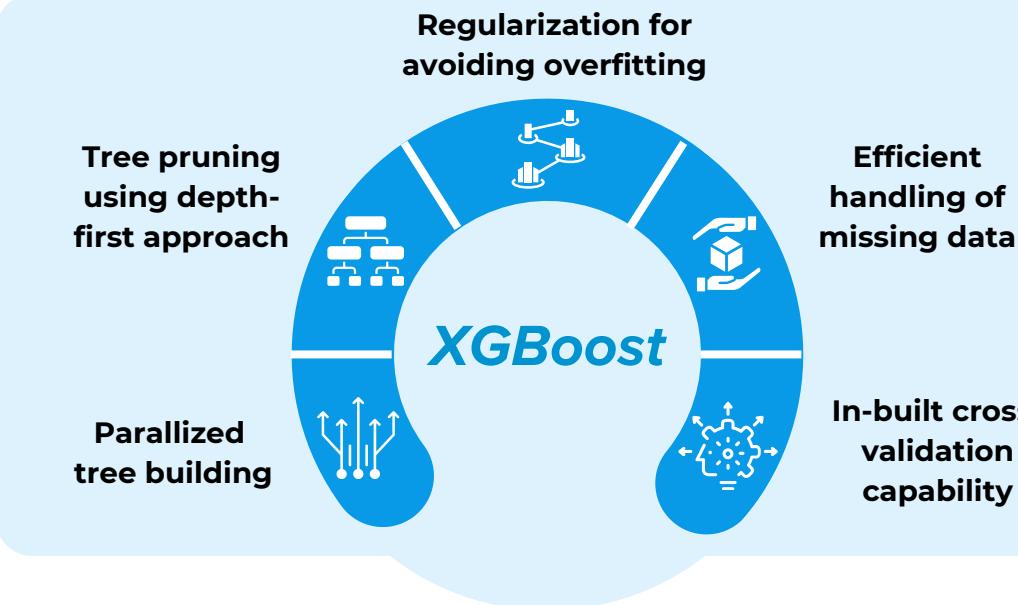


Budget Allocation



Introduction

Budget Allocation



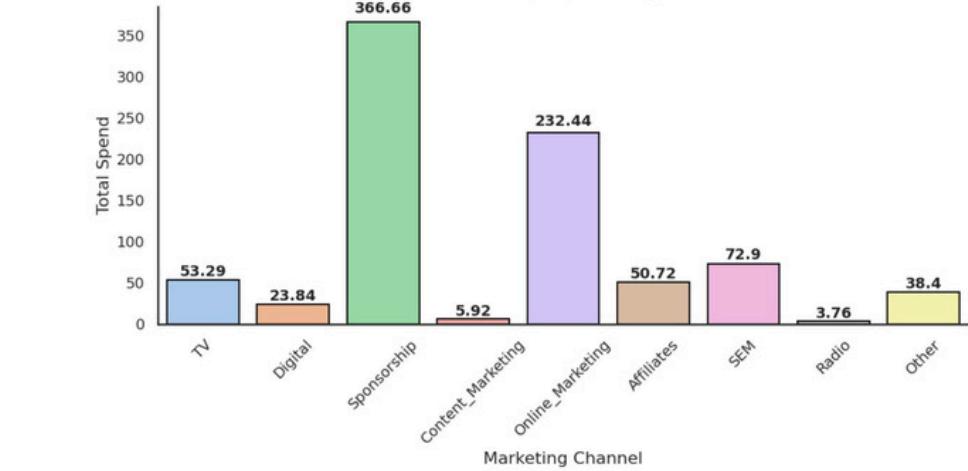
Lag-Adjusted SHAP

$$SHAP_i \times \left(\frac{1}{1 - \lambda_i} \right)$$

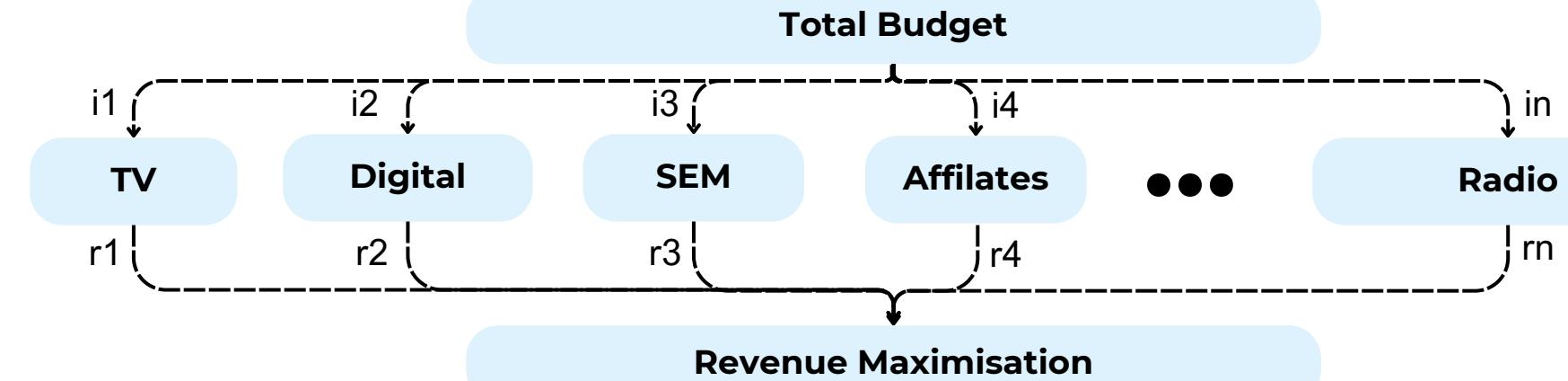
Where

λ_i lag coefficient for marketing channel i
Indicating how past investments continue to influence future GMV.

Total Monthly Spend By Channel



Multi Channel Budget Allocation



Objective Fn :

$$\hat{GMV} = GMV_{initial} \times \prod_i \left(1 + \frac{\text{New Budget}_i - \text{Initial Budget}_i}{\text{Initial Budget}_i} \times \text{Effective SHAP}_i \right)$$

Optimiser :

Differential Evolution Optimization

Constrains:

$$\sum_i \text{New Budget}_i = \sum_i \text{Initial Budget}_i \quad | \quad 0.8 \times B_i^{\text{initial}} \leq \text{New Budget}_i \leq 1.2 \times B_i^{\text{initial}}$$

$\pm 20\%$ of the initial budget

Budget Allocation

Revenue Increase

₹ 404.58 Cr

+12%

₹ 455.418 Cr

YM	TV	Digital	Sponsorship	Content_Marketing	Online_Marketing	Affiliates	SEM	Radio	Other
2024-7	2.52	4.74	38.57	2.06	9.4	2.67	12.86	0	0
2024-8	9.9	2.78	36.85	0.69	43	14.33	11.95	0	0
2024-9	2.95	1.54	34.1	0.88	11.44	4.43	5.96	0	0
2024-10	1.27	14.38	51.57	0	7.66	2.92	30.85	0	0
2024-11	0	0.29	0.29	0	0.02	0.02	0.59	0	0
2024-12	3.73	1.22	66.14	0.84	14.61	4.41	5.78	0	0
2025-1	5.69	0.59	5.98	1.71	27.56	8.81	5.29	3.68	25.72
2025-2	5.76	3.83	28.54	1.95	41.05	13.27	10.58	0	25.86
2025-3	7.91	1.62	38.97	0.75	14.57	4.86	4.31	0.81	0
2025-4	8.53	1.34	43.87	0	25.19	8.61	6.71	0	6.02
2025-5	1.4	0.73	34.88	0	22.05	6.26	6.72	1.16	0
2025-6	3.63	2.71	58.71	0	15.89	5.5	7.69	0	0

All values are in Cr