Performance Evaluation of Marketing Campaigns to Support Acquisition Growth

Data-Driven Review to Enhance Marketing Decision-Making

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Executive Summary

Title

Analyzing Campaign Effectiveness to Uncover Key Customer Drivers and Business Impact.

Objective

This analysis aims to evaluate the performance of marketing campaigns and identify which initiatives deliver the strongest results, both in terms of conversion rate and cost efficiency.

The goal is to generate actionable insights to inform future marketing strategies, improve audience targeting, and enhance overall marketing efficiency.

Key Findings

- Customers who received the campaigns were identified as high-value customers. Despite relatively low conversion rates (below 10%), their average spending reached around USD 1,000, indicating strong purchasing power.
- Campaign 5 demonstrated the highest effectiveness and efficiency, achieving the best revenue-to-cost ratio (USD 86,670) and the lowest cost per conversion (USD 0.001). Campaigns 1 and 4 followed with ratios of USD 70,259 and USD 62,187, respectively.
- Customers aged 50 and above showed the highest responsiveness across all campaigns, with Campaigns 2 and 4 achieving conversion rates of 63% and 64%. In contrast, customers under 30 were the least responsive, with conversion rates below 10%.

Executive Summary

Business Implications

The analysis emphasizes that campaign effectiveness should not be evaluated solely based on conversion rate but must also incorporate cost efficiency and customer value.

Campaign 5 delivers the strongest business impact, achieving the highest ROI and an optimal cost-performance balance. Moreover, older customer segments (50+) and offline-oriented channels, particularly stores, demonstrate higher responsiveness and spending potential.

These findings suggest that marketing resources should be strategically focused on high-performing campaigns, responsive customer segments, and cost-effective channels to maximize overall return on marketing investment.

Recommendations

1. Prioritize Campaign 5 as the core marketing initiative, given its strong ROI and cost efficiency, while reassessing Campaigns 1, 3, and 4 for potential optimization.
2. Target customers aged 50+ through offline-driven campaigns to maximize responsiveness and spending potential.
3. Reallocate marketing budgets toward the Store channel, which delivers superior efficiency, and refine Catalog campaigns to improve cost-effectiveness without compromising revenue.

Data & Methodology

The dataset used in this analysis comes from a publicly available marketing campaign dataset on Kaggle, containing 2,205 customer records that include profile attributes, campaign outcomes, and channel performance metrics.

The analysis combines campaign evaluation, RFM analysis, and cost analysis to understand the relationships between customer characteristics, campaign effectiveness, and business outcomes.

Background

In today's highly competitive business landscape, marketing campaign effectiveness plays a critical role in driving customer conversions and sustaining long-term loyalty. To achieve optimal results, companies must understand how each campaign resonates across different customer segments and identify which strategies generate the greatest impact on purchasing behavior.

The dataset used in this analysis contains customer transaction and campaign participation data from iFood Brain. Although the dataset does not include a specific time period, it encompasses a range of metrics that enable the evaluation of campaign performance based on customer characteristics such as age group, spending behavior, and conversion rate.

Given the structure and scope of the dataset, this analysis focuses on addressing three key questions:

1. Which campaign is the most effective in reaching and converting customers?
2. Which customer segment demonstrates the highest responsiveness?
3. What factors influence customers' likelihood to convert?

By uncovering these insights, the analysis aims to help businesses design more targeted, data-driven marketing strategies that enhance efficiency and maximize overall return on marketing investment.

Objective

The primary objective of this analysis is to identify and understand the key factors that drive campaign effectiveness and customer responsiveness. Specifically, the analysis seeks to:

- Identify high-performing campaigns, not only in terms of conversion rate but also cost efficiency.
- Analyze customer conversion patterns to understand the underlying drivers of campaign success.
- Provide data-driven recommendations to improve the effectiveness of future campaigns and optimize marketing resource allocation.

Methodology

The analysis was conducted through a structured, multi-stage approach designed to evaluate campaign performance and customer responsiveness. The process included data understanding and cleaning, exploratory analysis, feature definition, and comparative performance evaluation across customer segments.

1. Data Understanding and Cleaning

The initial phase focused on reviewing the dataset to identify relevant variables such as customer demographics, recency, monetary value, and campaign costs. Data cleaning was performed to ensure accuracy and consistency by removing duplicates and handling missing values appropriately.

2. Ekploratory Data Analysis (EDA)

This step aimed to gain an overall understanding of the dataset through summary statistics and distribution analysis of key variables. The EDA provided insights into general response trends and helped detect outliers that could potentially bias campaign performance evaluation.

3. Feature Definition

Key analytical metrics were defined to assess campaign effectiveness and customer behavior:

- **Conversion Rate:** The percentage of targeted customers who responded positively to the campaign.
- **Age Group:** Customer segmentation based on age categories: <30, 30–39, 40–49, and 50+.
- **Recency Group:** Classification based on the time since the last customer purchase — Very Recent, Recent, Mid, and Old.
- **Revenue to Cost Ratio:** The ratio between total revenue generated and campaign cost.
- **Cost per Conversion:** The average cost incurred for each successful conversion.
- **Cost to Revenue Ratio:** The proportion of cost relative to revenue to assess overall cost efficiency.

Methodology

4. **Analytical Approach**
The analysis compared conversion rates and cost efficiency across campaigns, age groups, and purchasing channels to identify top-performing areas.

Visualizations, including bar charts and segmented comparisons, were employed to highlight key performance differences and uncover actionable insights.
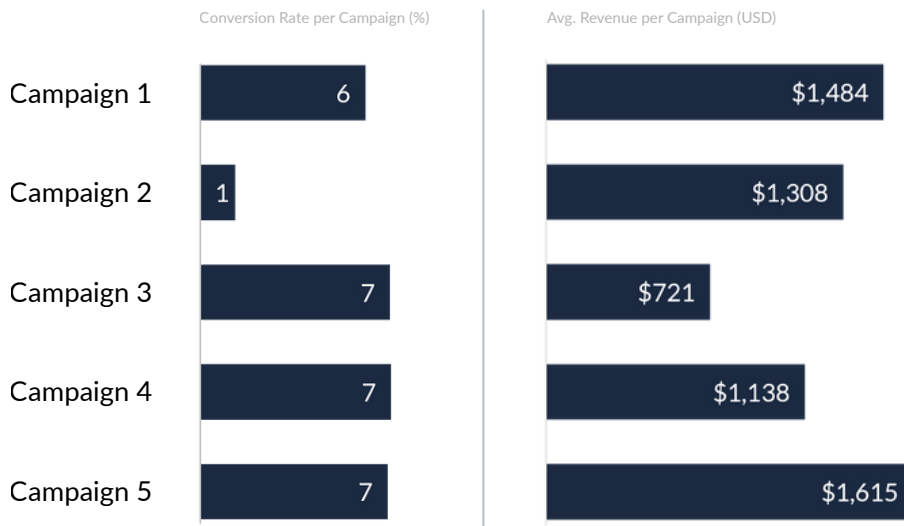
5. **Tools Used**
Python was utilized for exploratory and statistical analysis, while Microsoft Excel was used for supplementary data processing and visualization creation to support interpretation and presentation.

Insight Deep-Dive
Campaign Performance Across Conversion and Revenue Metrics

Campaigns Attracted Few Customers but High-Value Conversions.

While overall conversion remains limited, converted customers show strong purchasing power, indicating effective targeting of high-value segments.

Conversion Rate per Campaign (%)	Avg. Revenue per Campaign (USD)

| Campaign 1 | 6 | $1,484 |
Campaign 2	1	$1,308
Campaign 3	7	$721
Campaign 4	7	$1,138
Campaign 5	7	$1,615

The analysis indicates that although overall conversion rates are low across all campaigns, the customers who do convert tend to be high-value buyers. Campaigns 3, 4, and 5 record the highest conversion rate at 7 percent, while Campaign 2 performs the weakest at 1 percent. Despite this, the converted customers from several campaigns show strong spending power. Campaign 5 delivers the highest average revenue at USD 1,615, followed by Campaign 1 at USD 1,484, while Campaign 3, despite strong conversions, generates the lowest customer value at USD 721.

This pattern highlights that conversion volume alone is not a reliable measure of campaign effectiveness. The campaigns are successfully attracting high-value segments even if reach remains limited. Campaign 2 further illustrates that a low conversion rate does not necessarily equate to low customer value, as the few customers who respond still contribute meaningful revenue.

Spending Profile of Converted Customers

Converted Customers Are Predominantly High-Value Spenders.

The majority of campaign conversions come from high spenders, who generate the highest purchase value despite representing a smaller customer base.
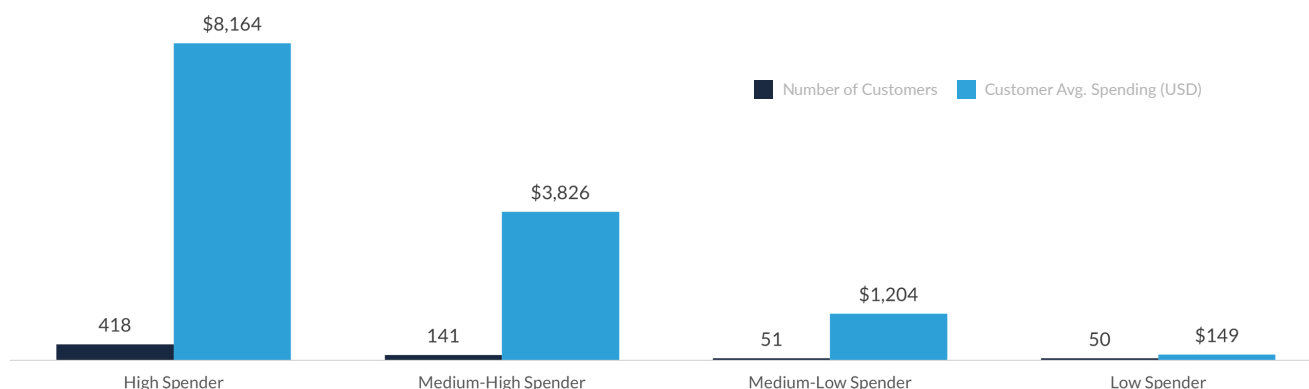
This chart categorizes customers into four spending segments — High Spender, Medium-High Spender, Medium-Low Spender, and Low Spender — to evaluate the value composition of converted customers.

The data reveals a clear concentration of value among High Spenders, who not only represent the largest customer group (418 customers) but also generate the highest average spending at USD 8,164. This indicates that, despite the relatively low conversion rates observed across campaigns, the campaigns effectively attract high-value customers who make substantial purchases once engaged.

In contrast, Medium-Low and Low Spenders contribute minimally both in number and value, emphasizing that campaign-driven conversions are skewed toward wealthier segments. This aligns with previous findings that showed modest reach but significant customer value per conversion.

Campaign Performance Review Based on Cost Efficiency Metrics

Campaign 5 Shows the Best Balance Between Growth and Efficiency.

With the highest revenue and lowest relative costs, Campaign 5 demonstrates effective budget utilization and superior ROI compared to other campaigns.

	Revenue Cost Ratio (USD)	Cost per Conversion (USD)	Cost Revenue Ratio (%)
Campaign 1	70,259	0.021	0.14
Campaign 2	13,080	0.100	0.76
Campaign 3	39,149	0.018	0.26
Campaign 4	62,187	0.018	0.16
Campaign 5	86,670	0.019	0.12
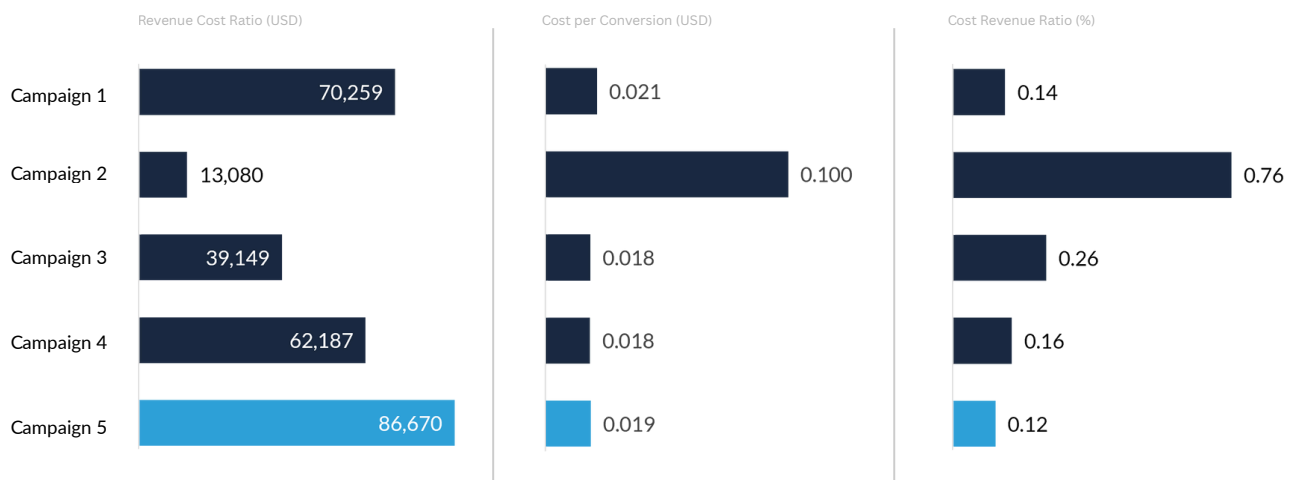
Campaign 5 stands out as the strongest performer in terms of both growth and efficiency. It delivers the highest total revenue at USD 86,670 while keeping the cost per conversion low at USD 0.019. The campaign also operates with a cost level equal to only 12 percent of the revenue generated. This combination indicates strong budget discipline and a superior return compared to the other campaigns.

Campaigns 1, 3, and 4 can serve as viable alternatives. Although their total revenue is lower than Campaign 5, they maintain solid cost efficiency, particularly in cost per conversion and the proportion of cost to revenue.

Campaign 2 shows the weakest performance. It generates only USD 13,080 in revenue and requires a significantly higher cost per conversion at USD 0.1. In addition, its operating cost reaches 76 percent of the total revenue. These results suggest that Campaign 2 needs a thorough review because the outcomes do not justify the investment.

Conversion Performance by Age Group

Customers Aged 50+ Are the Most Responsive, While Younger Segments Drive the Highest Spending.

While the 50+ segment leads in conversion across campaigns, the < 30 and 30–39 groups drive the greatest value through the highest average spending.

Conversion Rate per Age Group (%)

	Campaign 1	Campaign 2	Campaign 3	Campaign 4	Campaign 5
50 +	54	63	41	64	49
30-39	23	20	33	23	22
40-49	19	13	24	11	23
< 30	4	3	2	2	6

Avg. Spending per Age Group (USD)

30-39	$6,829
< 30	$6,795
50 +	$6,210
40-49	$6,174
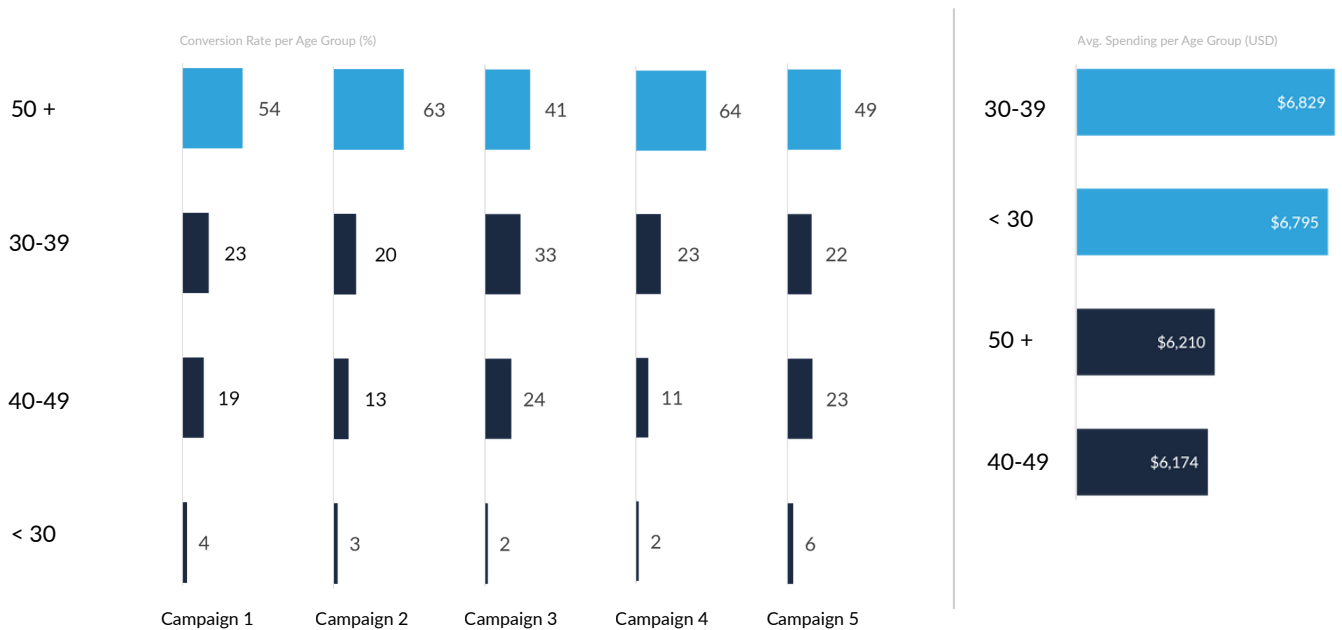
This analysis examines how customer responsiveness and spending behavior differ across age groups, identifying which segments exhibit the highest engagement and value potential.

Across all five campaigns, the 50+ age group consistently demonstrates the highest conversion rates, reaching 63% in Campaign 2 and 64% in Campaign 4. This strong and stable performance indicates that older customers are significantly more responsive to promotional offers, potentially due to higher brand familiarity, purchasing confidence, or preference for structured campaign formats.

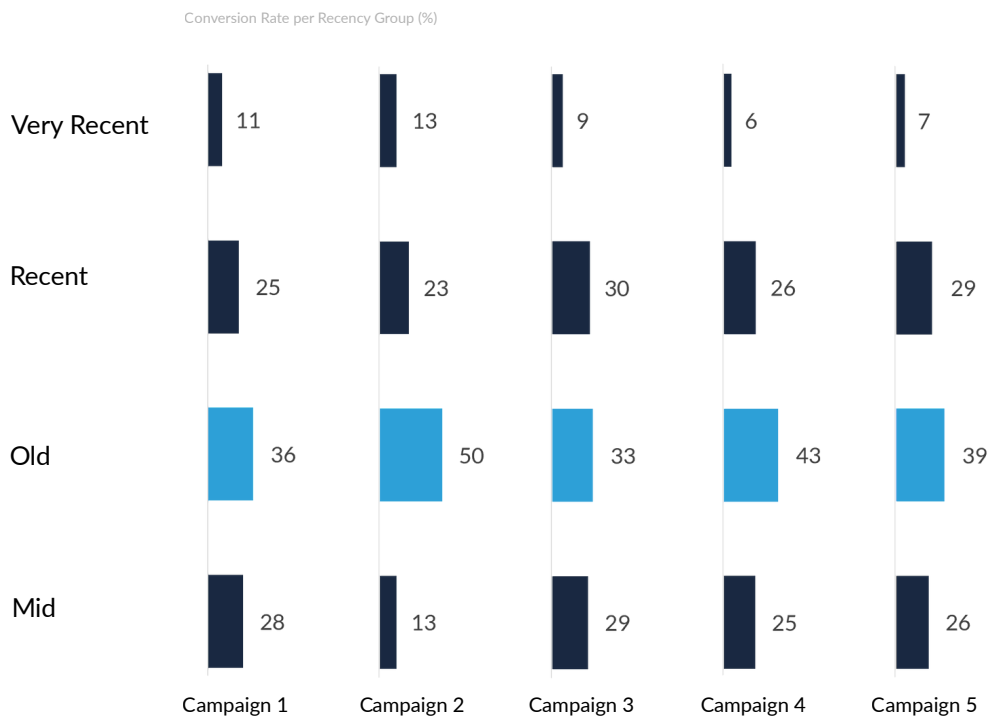In contrast, younger segments show lower conversion rates, particularly customers aged below 30, who register minimal responsiveness (2–6%). This indicating that conventional campaigns may be less effective in engaging younger audiences who tend to prefer personalized or digital-first approaches.

When viewed from a spending perspective, average spending across all age groups remains relatively similar (around USD 6,000), yet customers aged 30–39 emerge as the highest spenders (USD 6,829), followed closely by the <30 group (USD 6,795). This pattern suggests that while older customers respond more frequently, younger segments contribute strong spending value when successfully converted.

Conversion Performance by Customer Recency

Inactive Customers Show the Strongest Response to Campaigns.

Customers who have not made purchases for a long period exhibit the highest conversion rates, indicating that the campaigns effectively reactivated dormant buyers.

Conversion Rate per Recency Group (%)

	Campaign 1	Campaign 2	Campaign 3	Campaign 4	Campaign 5
Very Recent	11	13	9	6	7
Recent	25	23	30	26	29
Old	36	50	33	43	39
Mid	28	13	29	25	26

This analysis evaluates how customers with different recency levels, from Very Recent to Old, respond to marketing campaigns, providing insight into which customer segments offer the highest reactivation potential.
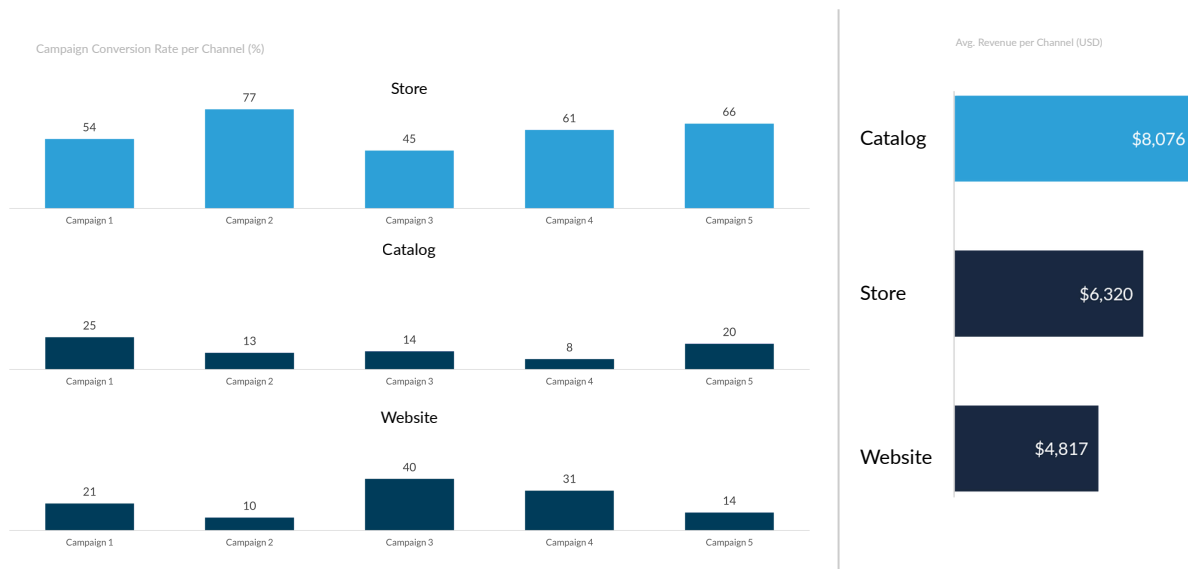
Across all five campaigns, customers classified as Old demonstrate the highest responsiveness, with conversion rates ranging between 33% and 50%. This trend strongly indicates that long-inactive customers are more receptive to promotional outreach, making them a strategically valuable target for reactivation-focused campaigns.

Meanwhile, the Recent and Mid segments show moderate responsiveness, with conversion rates between 23%–30%, suggesting stable but less enthusiastic engagement. In contrast, the Very Recent group (customers who have made recent purchases), exhibits the lowest conversion rates (6%–13%), likely due to offer fatigue or reduced urgency to engage with new campaigns.

Conversion Performance Across Sales Channels

Stores Drive the Highest Conversions, but Catalogs Generate the Most Revenue.

While physical stores record the strongest conversion rates across campaigns, customers shopping through catalogs deliver the highest average spending, highlighting distinct channel strengths.

Campaign Conversion Rate per Channel (%)

Avg. Revenue per Channel (USD)

Store

Campaign 1	Campaign 2	Campaign 3	Campaign 4	Campaign 5
54	77	45	61	66

Catalog

Campaign 1	Campaign 2	Campaign 3	Campaign 4	Campaign 5
25	13	14	8	20

Website

Campaign 1	Campaign 2	Campaign 3	Campaign 4	Campaign 5
21	10	40	31	14

Channel	Avg. Revenue
Catalog	$8,076
Store	$6,320
Website	$4,817

The analysis highlights a clear contrast between customer engagement and spending behavior across shopping channels. Store campaigns achieved the highest conversion rates—particularly Campaign 2 (77%) and Campaign 4 (61%), showing that offline experiences and in-store promotions remain strong engagement drivers. Meanwhile, Website campaigns in periods 3 and 4 performed notably well (40% and 31%), suggesting that personalized and digitally optimized campaigns can effectively capture online customers.

Although the Catalog channel recorded lower conversion rates, it generated the highest average spending (USD 8,076), followed by Store (USD 6,320) and Website (USD 4,817). This indicates that catalog shoppers, while fewer in number, tend to be high-value customers with larger transaction sizes.

Evaluation of Campaign Costs Across Channels

Store Channel Delivers the Highest Efficiency in Campaign Performance.

Among all shopping channels, stores achieve strong conversion rates and solid revenue with the lowest campaign costs, making them the most cost-efficient driver of sales performance.

	Revenue Cost Ratio (USD)	Cost per Conversion (USD)	Cost Revenue Ratio (%)
Catalog	32,427	0.0095	0.09
Store	11,322	0.0031	0.04
Website	10,519	0.0088	0.14

Beyond being the most preferred channel for customer purchases, the store also demonstrates the highest cost efficiency. With a revenue-cost ratio of USD 1.283, each dollar spent generates USD 1.283 in revenue, reflecting strong financial leverage. Its cost per conversion of USD 0.0031 further indicates that the store channel drives customer conversions at the lowest possible cost. Additionally, a cost-revenue ratio of 0.04 shows that only 4% of total revenue is spent, reinforcing its operational efficiency.

Given these results, prioritizing store-based campaigns offers the most efficient allocation of marketing resources. Meanwhile, the catalog channel, despite its relatively lower conversion rate, delivers the highest overall revenue, suggesting its effectiveness in engaging high-value customers. Leveraging catalog promotions in parallel with store campaigns can therefore balance efficiency with value generation.

Summary:

The analysis reveals that campaign effectiveness should not be evaluated solely on conversion rates but must also account for customer value and cost efficiency.

Key insights include:

1. The analysis shows that overall conversion rates remain low at 1 to 7 percent. However, customers who convert tend to be high-value segments with substantially higher spending levels.
2. Campaign 5 emerges as the strongest initiative, performing well across both effectiveness and cost efficiency. It generates the highest average revenue while requiring the least cost per conversion, making it the most attractive option for future investment.
3. Customer responsiveness varies across segments. Customers aged 50 and above show the highest level of engagement, while those under 30 remain the least responsive. Recency analysis reinforces this pattern, as customers who have not transacted for a long period still demonstrate strong reactivation potential. This indicates clear opportunities for targeted retention and win-back strategies.
4. Channel performance further highlights differences in customer behavior. Store shoppers exhibit the highest conversion likelihood, while the catalog channel generates the highest average revenue despite lower conversion levels. These patterns suggest that in-store engagement, high-value spending behavior, and long-inactive customers represent the segments with the strongest probability of conversion.

Summary & Recommendations

Recommendations:

Based on these findings, the following strategic recommendations are proposed to enhance campaign performance and maximize business impact:

1. Prioritize Campaign 5 as the core marketing initiative, given its superior ROI and cost efficiency. In parallel, reassess Campaigns 1, 3, and 4 to identify improvement opportunities and cost optimization measures that could elevate their overall performance.

2. Focus reactivation and engagement strategies on older customers (50+), particularly through offline-driven initiatives such as in-store promotions or direct catalog offers. This approach leverages segments with proven responsiveness and higher spending potential.

3. Optimize marketing investment toward the Store channel, aligning with customer preferences and cost efficiency. At the same time, conduct a comprehensive cost-benefit review of Catalog campaigns to determine opportunities for budget reallocation or pricing adjustments that sustain revenue while improving operational efficiency.

Clarifying Questions, Assuptions, and Caveats.

Clarifying Questions:
- Does the "channel" variable refer to the shopping channel (e.g., store, web, catalog) or the marketing channel where the campaign was delivered?
- Is the USD 3 campaign cost defined as a per-customer cost per campaign, or as the total cost per channel?
- Were all campaign offers identical in type and structure, justifying an assumption that each campaign had the same implementation cost?
- Is there any distinction between the communication strategy or media used across channels (e.g., printed catalog, in-store promotion, or email marketing)?

Assumptions:
- The total campaign cost per channel is calculated as the sum of costs across all campaigns. For example, for the store channel, the total cost equals USD 15 (five campaigns × USD 3 each).
- Each observation in the dataset represents a unique customer, even though no explicit customer ID is provided. Therefore, creating a synthetic ID for analytical purposes is considered appropriate.
- Campaigns are assumed to have comparable duration and execution intensity, ensuring that performance comparisons remain valid across campaigns.

Caveats:
- The dataset lacks unique customer identifiers, limiting the ability to detect duplicate records or track longitudinal behavior.
- There is no detailed information about the campaign content, offer type, or delivery channel, which restricts interpretation of campaign effectiveness to response and spending behavior only.
- The dataset does not specify the exact timing of each campaign, so the analysis focuses on relative performance rather than time-based effectiveness.