BUDGET ALLOCATION FOR MARKETING CAMPAIGNS

### **Introduction: The Importance of Budget Allocation**

In the dynamic landscape of modern business, effective budget allocation is a critical component of strategic planning and execution. It involves distributing financial resources across various segments, projects, or departments to maximize the organization's overall profitability and efficiency. This process is particularly vital in marketing, where budgets must be allocated to different campaigns and customer segments to achieve the highest return on investment (ROI).

* + **Targeted Investment**: By analyzing and allocating budgets based on metrics such as ROI, Conversion Rate (CVR), and Average Order Value (AOV), businesses can ensure that their financial resources are directed towards the most profitable segments.
  + **Data-Driven Approach**: Budget allocation decisions are often based on quantitative data and analytics. This data-driven approach ensures that decisions are objective and grounded in empirical evidence.

**Definations**

1. ROI

Return on investment (ROI) is a performance measure used to evaluate the efficiency or profitability of an investment or compare the efficiency of a number of different investments. ROI tries to directly measure the amount of return on a particular investment, relative to the investment’s cost.

ROI can be used to make apples-to-apples comparisons and rank investments in different projects or assets.



A close up of a text

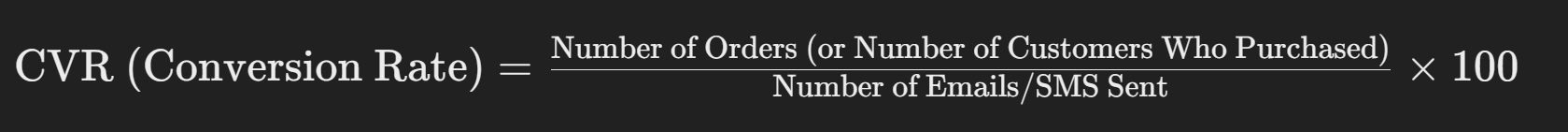
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In this report’s context, ROI = ((Total sales - cost of good) - advertisting cost)/advertisting cost (include cost of sent SMS/email and cost of coupons for purchased orders).

1. CVR

Conversion rate, or CVR, is a common metric used in digital marketing to denote the percentage of website visitors who ‘convert’ by taking a desired action, such as making a purchase, filling out an online form, or subscribing to a newsletter. CVR is a key indicator of how effectively a website is converting visitors into customers or leads.

In this report, CVR represents the percentage of customers who, after receiving an email or SMS from the company, proceeded to make a purchase. This metric is crucial for understanding the effectiveness of the company's email and SMS marketing campaigns.



1. AOV

Average order value (AOV) is a metric used in eCommerce to measure the average amount customers spend per order over a certain period of time. To calculate your company’s average order value, simply divide total revenue by the number of orders.

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AOV is a key performance indicator that online businesses measure to understand their customers’ purchasing habits.

**Problem Statement**

The company produces a new generation of electric men razor and registered an e-commerce site 1 month ago to sell its product online instead of the traditional supermarket channel. During the last month, it piloted advertising on 2 channels:

● Email Channel

● SMS Channel

Data are extracted from a centralized database and stored in the attached file called “mkt\_data.csv”.

**Dataset**

The schema for this dataset is as follow:

Financial Information

Together with the data above, I have additional information about the production cost and the marketing campaigns.

● Production cost for each razor is 18$.

● Cost per one SMS is $0.050, cost per one email sent is $0.075.

● Each email or SMS will be supplied a coupon which can have value of 2$, 4$ or 6$. Coupon is valid for up to 3 razors in each order. They have the option to wrap the items as gift. Ignore wrapping and shipping costs.

● The price without coupon is 40$ / razor.

● From experience (and some models), potential customers are divided into 4 age groups:

○ 18 - 30

○ 31 - 45

○ 46 - 60

○ 60 +

For the next quarter, the marketing department has a budget of $60,000 to spend on online campaigns. So how would I allocate it between SMS and Email?

Assume that the potential customer pool for each age group as below:

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***In summary, a company is planning to allocate its marketing budget across different customer segments for a targeted campaign. The budget needs to be distributed according to the priority of each segment and the cost associated with reaching each customer within those segments. The goal is to maximize the coverage of the marketing campaign without exceeding the total available budget.***

Methodology

**Objectives**

1. **Allocate Budget by Priority**: Distribute the marketing budget to the customer segments based on their given priority.
2. **Maximize Coverage**: Ensure the highest possible number of customers are reached within the constraints of the available budget.
3. **Avoid Budget Overrun**: Ensure that the total allocated budget does not exceed the available budget.

**Plan**

1. **Compute Metrics**:
   * Calculate ROI, CVR, and AOV for each segment.
2. **Rank Segments**:
   * Rank segments based on ROI, CVR, and AOV.
   * Determine the order of priority for budget allocation by computing and comparing ROI, CVR, and AOV.
3. **Allocate Budget**:
   * Allocate the budget to the highest-ranked segments based on the priority until the budget is exhausted.

Metrics Calculation

Input

Output

This approach ensures the budget is allocated to the most profitable and effective segments, maximizing the overall return on the marketing campaign.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **age\_range** | **channel** | **sum\_of\_net\_profit** | **ROI** | **CVR** | **AOV** |
| 18-30 | Email | 4408.5 | 90.421 | 0.006 | 56.791 |
| 18-30 | SMS | 11991.65 | 242.336 | 0.008 | 67.192 |
| 31-45 | Email | 12497 | 183.861 | 0.01 | 58.197 |
| 31-45 | SMS | 3507 | 80.676 | 0.003 | 71.805 |
| 46-60 | Email | 1418.925 | 61.132 | 0.005 | 53.948 |
| 46-60 | SMS | 8417.4 | 268.703 | 0.011 | 64.855 |
| 60+ | Email | -751.1 | -89.513 | 0 | 71 |
| 60+ | SMS | -467.6 | -68.005 | 0 | 61.667 |