ALANKAN SOLUTION TEAM T-Rex

Members:

1) *Maitree Rawat (maitreerawatts@gmail.com)*
2) *SurabhiKuriyal (surabhi14kuriyal@gmail.com)*

CASE

Rahul Ads, an advertising company is planning a promotional campaign for theclient's product, i.e., sunglasses. The client is willing to spend Rs. 5 lakhs. It was decided to limit the campaign media to a weekly magazine, a daily newspaper andTV advertisement. The product is targeted at middle-aged men and women, and the following data was collected.

Table: Data Collected

Campaign Media	Cost per advertisement (Rs.)	Expected Viewers
Weekly Magazine	30,000	1,15,000
Daily Newspaper	45,000	2,05,000
TV Advertisement	1,25,000	7,00,000

The client is interested to spend only Rs. 1 lakh on the ads in the weekly magazine which expecting a viewership of a minimum of 21 lakh people in the case of the television advertising.

Problem Statement

Maximize the viewers to the advertisements by appropriate investments in the three campaign routes. Please state the value of the investments and the maximum possible viewers.

Solution

Key Decision here is to determine the number of advertisements by Weekly Magazine, Daily Newspaper and TV Ads using Linear Programming.

Let x, y and z be the number of advertisements on Weekly Magazine , Daily Newspaper and TV ads respectively.

The objective is to maximize the views throughout, this can be explained by the equation:

Z_{max}= 115000x + 205000y+700000z

Constraints

The client is willing to spend Rs. 500000, therefore the total cost of all three cannot exceed this number.

30000x+45000y+125000z<=500000

At least 2100000 people are targeted via TV ads therefore

700000z>=2100000

Finally, the client is interested only to pay rupees 1 lakh for weekly magazine therefore:

30000x<=100000

Summarizing the Linear Programming model here:

Z_{max}= 115000x + 205000y+700000z

Subject to constraints,

30x+45y+125z<=500 ……(i)

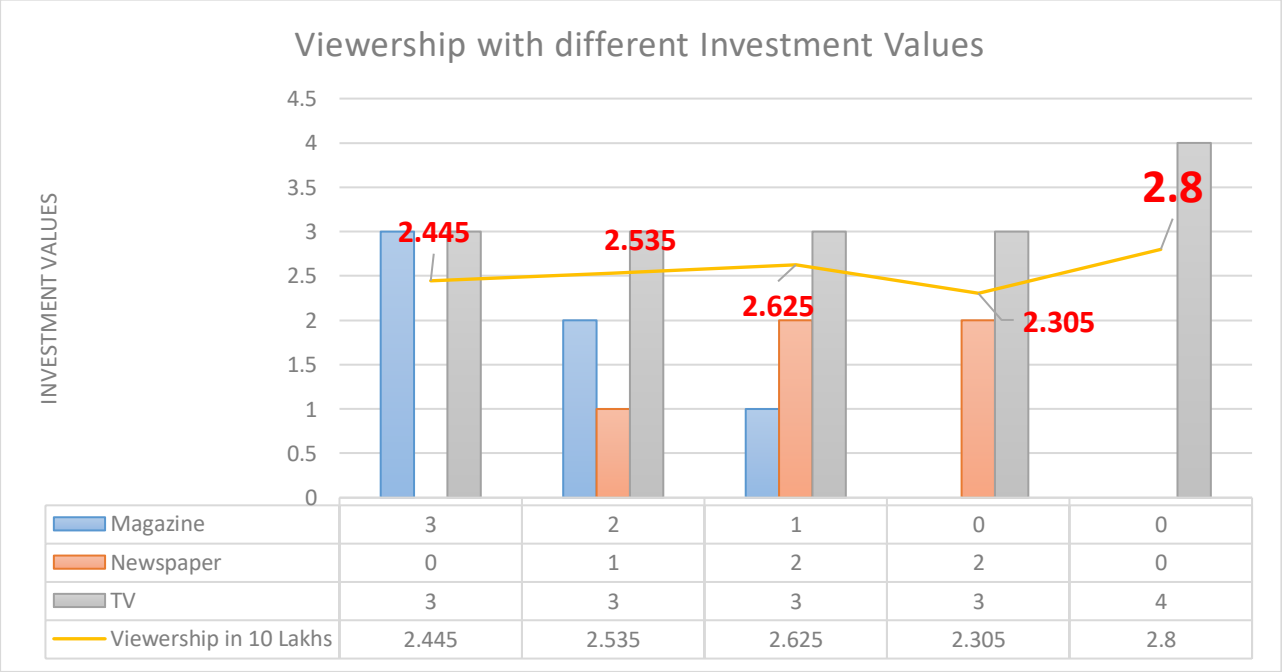
z>=3 ……(ii)

3x<=10 ……..(iii)

Where x, y>=0

The investment values

The problem statement as I quote *"The client is interested to spend only Rs. 1 lakh on the ads in the weekly magazine"* does not specifies if the client wants to compulsorily spend the 1 lakh rupees in the weekly magazine or that he wants to spend at a maximum of 1 lakh on the ads therefore to compute the value, I will assume both the cases here.



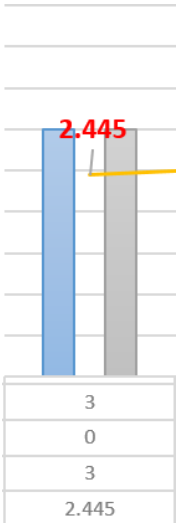
Magazine	3	2	1	0	0
Newspaper	0	1	2	2	0
TV	3	3	3	3	4
Viewership in 10 Lakhs	2.445	2.535	2.625	2.305	2.8

Case 1: The client wants a maximum of 1 lakh rupees on the magazine and the rest constraints remains as it is.

From the table-graph it's clearly visible that case in which the investment values of magazine and newspaper are 0 and TV is 4 we have the maximum viewership of 28 lakhs, therefore the maximum viewership in this case can reach up to 28 lakhs with the investment values 0, 0 and 4.

Case 2: The client wants only 1 lakh rupees on the magazine to be spent.

From the table-graph it's clearly visible that the case in which magazine occupies 1 lakh at max is the one in which the investment values of both TV and magazine is 3 and the newspaper is 0 giving us the viewership of 24 lakhs appx.



BOTTOM LINE

Comparing the situation with a real-life scenario the investment value which consists of Magazine: 1, Newspaper: 2 and TV: 3 with the viewership of 26 lakhs approx. can also be considered because according to "Indian Youth-Demographics and Readership" survey there are 78% people who watch television, 53% people who read newspaper out of which 46% are rural readers and 8% people who read magazines, therefore this situation consists of all three media in a good ratio and different kind of public can be attracted towards the ad.