Specifying the Saturation Point of Advertising Budget Using Ideal Planning Model

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Abstract

The goal of the current study is to determine the optimal level of advertising beyond which advertising expenditure will not be justified by revenues. To achieve the goal first different types of media were rated by experts as to the degree of their importance. Then data ware collected by interviewing the managers and reviewing different media resources. The collected data were then analyzed using the ideal planning model. The results indicated that the best media for advertising is TV and that companies should consider the target market characteristics, product type and life cycle, analysis of advertising costs, available budget and finally, after summing up all these factors, select the best media for advertising. Considering all the above-mentioned factors will enable companies to increase their profit by means of ads.

Introduction

Today, because of increased consumer demand and due to the advances in technology various solutions have been created to increase consumers' awareness about the product they need. Any manager is aware of the importance of consumers' awareness in competitive market. Methods that are used to attract consumers reflect the messages that organizations want to send to their customers. Advertising is one of such methods.

Advertising has undergone such great improvements in recent decades that has become a separate scientific discipline. Retailers and manufacturers have always taken it for granted that, although they cannot tell which part of their advertising is wasted, they had better spend at least as much as their competitors do to protect the market share they have. They tacitly accept this as a necessary cost of doing business.

What if there was an optimal level of advertising spending and the expenditure beyond that would be considered a waste? Economists often speak of price elasticity, which reflects changes in demand based on price changes. Accordingly, when the price is raised, the total revenue increases, and vice versa. However, it is not always the case and increase in prices does not always lead to rise in revenues. The same kind of elasticity exists between advertising and revenues. For any given brand in any given market, there is a saturation point of advertising expenditure. Saturation point means the point up to which increase in the ad budget will generate results; but once the market for a product or service is saturated, no matter how much a company spends on advertising, it will not produce enough added sales to justify the cost. Companies that follow this principle will

optimize their overall profitability because they will spend on advertising only what they can recoup in revenue.

What is important is to evaluate the efficiency and effectiveness of the media methods to choose the right media and method of advertising, considering the characteristics of the target market. Otherwise, these methods and mediums may attract customers, increase sales and profitability in short term, but may result in waste of resources in long term.

Each product advertising costs should be calculated according to its life cycle. Some ads are targeted at existing customers, others at new ones. Therefore, every detail should be considered for advertising the product. The winner in competitive market is the one who offers a combination of advertising models and matches all these dimensions with the company funds. The increasing development of the commercial advertising industry has made it one of the most important phenomena of modern societies and it is discussed on various scientific fields.

The goal of the present study is to determine the optimal allocation of advertising expenditure. The results of this study may lead the companies to lower costs, increased profitability, thus increased salaries, job satisfaction and most importantly, outstanding in competitive market. In the competitive market, advertising strategy plays a major role. However, management often faces problem with the limited budget. This study tries to offer an optimal solution to that problem.

Literature Review

Several authors have tried to give a solution to this problem offering different models and criteria.

Ayoubi et al (1376), investigated the effectiveness of advertising based on the case of BUTAN Co and identified the most effective advertising tool for this and other companies. The results of their research indicated that advertising on the one hand is important way to promote sales and increase customer awareness and on the other hand, it requires huge costs. According to their study, the most effective media for advertising is TV with the focus on poetry and music.

In another study, Dariani (1384) tried to determine the price (cost) and the role of advertising in sales promotions. He tried to investigate the types of advertising costs, sales strategies and their application in the studied company TAKDANEH. The results showed that advertising had a direct and significant effect on the company's sales as well as costs in the short term. However, in the long run sales increased justifying costs.

Khamenei (1383) assessed the impact of commercial media on public awareness in the customers' decision making process. He classified the public media into three categories, transmitter, print, display, and studied the impact of each category on the customers' decision-making. As a result, he concluded that transmitter media advertising has the highest influence on influence on the perception and behavior of buyers.

Finally, the results of the study conducted by Dashti (1386) showed that TV is the best media to increase consumer awareness, and then specialized publications come next.

Research Methodology

The first goal in the study was to evaluate the efficacy of various media using hierarchical model. The second goal was to evaluate the importance and the benefits of advertising. The data were collected through two stages: first, deferent media resources were studied; second interview was conducted among managers.

Then, using the ideal planning model the optimal level of advertising was determined. The figure below describes the steps towards determination of the optimal level of advertising.

Data Analysis and Findings

First, the media was rated by experts as follows:

1. TV
2. Radio
3. Billboard
4. Head boards in the shop
5. Stadium

The experts rated the media:

- According to the importance of the media in comparison to the benchmark price for each weight shown. The incompatibility rate is 0.08:
- According to the importance of the media in comparison with each other. The incompatibility rate is 0.02:
- According to the importance of the media in comparison to other criteria than availability. The incompatibility rate is 0.09:
- According to the effectiveness of media in comparison to the benchmark price. The incompatibility rate is 0.06.

As it is clear in all cases of TV is the best media for advertising.

Second, the optimal level of advertising for each product was analyzed and determined using three approaches: optimistic, realistic, and pessimistic.
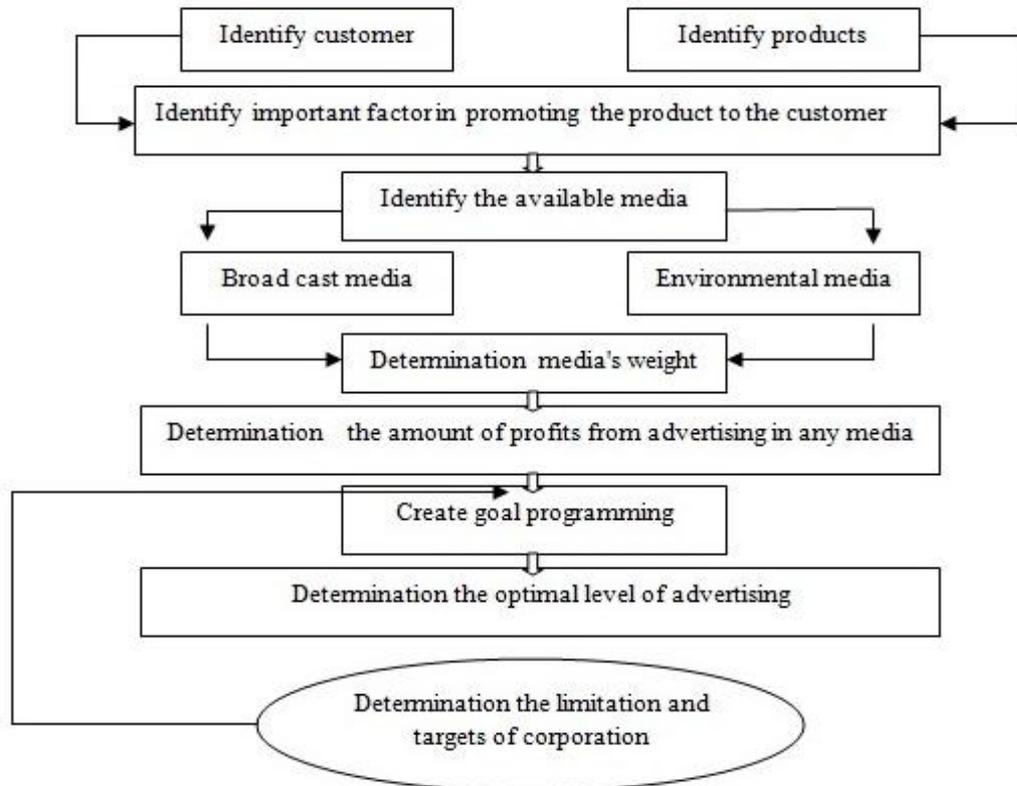
Figure1. Conceptual model

Optimistic Approach

In this table, the optimal amount of ads is shown. For example, the amount of publicity for the bleach in the stadium is 69.

Table 1. The optimal amount of ad for optimistic approach

	STADIUM	HEADBOARD IN THE SHOP	BILLBOARD	RADIO	TV
SHAMPOO	50	100	100	100	100
BODY SHOWER GEL	70	100	100	100	100
SOFTENER	51	98	100	100	100
LIQUID HANDWASH	30	100	100	100	100
Dish washing LIQUID	54	98	100	100	100
WHITEX	69	100	100	100	100

Table 2. Table of the deviation and the deviation of individual goals

The total deviation	10202
The standard deviation of the objective function	2000
The standard deviation of the second objective function	9231
The third objective standard deviation	0
The fourth objective standard deviation	17328
The fifth objective standard deviation	13576
The sixth objective standard deviation	19928

Table 3. The optimal level of ads for realistic approach

	STADIUM	HEADBOARD IN THE SHOP	BILLBOARD	RADIO	TV
SHAMPOO	50	100	100	100	100
BODY SHOWER GEL	12	25	100	100	100
SOFTENER	8	98	100	100	100
LIQUID HANDWASH	29	100	100	100	100
Dish washing LIQUID	54	98	100	100	100
WHITEX	20	19	100	95	63

Table 4. The total amount of the deviation and the deviation of individual goals

The total deviation	134616
The standard deviation of the objective function	2000
The standard deviation of the second objective function	291230
The third objective standard deviation	3175
The fourth objective standard deviation	19028
The fifth objective standard deviation	13276
The fifth objective standard deviation	543130

In this table the total amount of the deviation and the deviation of the individual targets is shown. For example, for the optimistic case, the total amount of 10,202 units of deviation and the deviation from the target is 2000 units.

Realistic Approach

This table shows the optimal amount of ads for realistic approach. For example, the amount of publicity for the bleach in the stadium is 20.

In table below the total amount of the deviation and the deviation of the individual targets is shown.

Cynical approach

This table shows the optimal amount of ads for the pessimistic case. For example, the amount of publicity for the bleach in the stadium is 21.

Table 5. The optimal amount of ads for the pessimistic

	STADIUM	HEADBOARD IN SHOP	BILLBOARD	RADIO	TV
SHAMPOO	10	100	61	100	99
BODY SHOWER GEL	12	25	29	55	74
SOFTENER	8	19	21	53	69
LIQUID HANDWASH	13	100	36	45	73
Dish washing LIQUID	16	27	34	100	65
WHITEX	20	18	40	49	63

Table 6. The total amount of the deviation and the deviation of individual goals

The total deviation	779307
The standard deviation of the objective function	245000
The standard deviation of the second objective function	968530
The third objective standard deviation	973780
The fourth objective standard deviation	792830
The fifth objective standard deviation	769210
The fifth objective standard deviation	100640

In this table, the total amount of the deviation and the deviation of the individual targets is shown. For example in the case of a cynical deviation of 779,307, 973,781 units will be deviated from the third goal.

Discussion and Conclusion

This study examined five different media, then verified the weight of each media, finally the weights obtained were entered into the model to specify the optimal level of promotion of any product in any medium to maximize profits according to three approaches: pessimistic, realistic and optimistic.

The findings show that companies need to understand the budget available for advertising and promotional practices for a product. In addition, they should select the right media for advertising. According to our study, priority is given to TV followed by other types of media as shown below:

1. TV with a priority factor of 0.492
2. Radio with a priority factor of 0.256
3. Billboard with a priority factor of 0.140
4. Into the store with a priority of 0.075
5. Stadium with a priority factor of 0.036

In this study, we have shown that proper selection of advertising budget, target audience, and product life cycle is the first and most important step to consider for increasing the profitability from advertising. In addition, the companies should carefully analyze the cost of advertising so that expenditures and profit increase proportionally. Finally, considering the above mentioned factors, the companies should select the best media.

References
1. Assael, H. (1998). Consumer Behavior. Ohio, ITP, 6th edition.
2. Bass F.M., and Lonsdale R.T. (1996). An Exploration of Linear Programming in Media Selection. Journal of Marketing Research, 12, 179-188.
3. Bhattacharya, U.K. (2009). A chance constraints goal programming model for the advertising planning problem India. European Journal of Operational Research, 192, 382-395.
4. CharnesA., Cooper,W.W., DeVoe,J.K, Learner,D.B., and Reineck,W. A. (1968). Goal Programming Model for media planning. Management Science,14, 422-430.
5. Ching W., Ng M.,Yuen W., Zhang S. (2006). A Linear programming approach for determining optimal advertising policy. IMA Journal Management Mathematics,17,83-96.
6. De Kluyver ,C.A. (1978). Hard and soft constraints in media scheduling. Journal of Advertisement Research, 18, 27-31.
7. Kotler, P. and Armstrong, G. (2000). The principles of marketing. Prentice–Hall, International Edition.
8. Lee.K, C.W., and Kwak, N. (1999). Information resource planning using AHP-based goal programming model. Journal of Operational Research Society, 51, 1-8.