

Decrypting the Antecedents of Advertising Budget allocation under the Ascendancy of New Media

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Abstract

In the wide ambit of marketing activities, all complicated and all complex; some activities have always been part and reason of very strong research. One amongst many is advertising budget allocation. Several models have been proposed and devised which help simplify this mystery under various contexts of industry, company size etc. But owing to the large number of factors involved advertising budget allocation is still not completely demystified into an equation or formula. To further enrich the situation the various techniques of advertising are increasing by the day. With new media and its high potential marketing applications like social media marketing, search engine marketing, advergaming and many more, the number of buckets into which the advertising budget needs to be split is only increasing. This decision can be delegated to an MKDSS (Marketing Decision Support System). This paper tries to enlist the various potential uses of an MKDSS in the field of advertising viz a viz the presence of new media in the advertising landscape.

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Half the money I spend on advertising is wasted; the trouble is I don't know which half.

--John Wanamaker

1. Introduction to DSS

Information systems of all kinds are the backbone of almost all flourishing organizations today. The presence of tools such as new media and social networking has just given data a new dimension and meaning by calling it Big Data. As the name suggests Big Data is not only big in its volume but also its variety and velocity (Tech America Foundation, 2012)⁵⁰. Processing such large amounts of data is way beyond human capacity and that's where information systems of all types, sizes and magnitudes are becoming a necessity. The ability of the system to understand past trends and predict the future (Goyal, 2006)¹⁹ is the main reason for its indispensability. DSS or Decision Support Systems are a class of information systems which take inputs from transaction processing systems to support the decision making activities of managers and knowledge workers of an organization. (Sprague and Carlson, 2006)⁴⁷. Though these systems are robust and accurate, they are ancillary or auxiliary and are not meant to replace

skilled decision makers. (Power, 2002)⁴¹. While various frameworks of a DSS exist, these interfaces are mostly used by the industry on a model driven framework. Here an econometric, statistical, financial etcetera model is already fed into the system and the data analyst enters the data to understand the decision options. Various linear programming models as well as probabilistic and time based simulations are used to understand the output of a model in a given situation. The most alluring effect of a DSS is the synergistic effect between the user and the computer. Technology is used to compensate the weakness of human reach, thus the synergy and the robustness is required to bring efficiency and effectiveness both in the most competitive business environment.

2. Need for DSS in Marketing and Advertising

Marketing is a complex science of trying to understand the customers' needs and helping to cater to these needs. Marketing itself is divided into its four basic core components of Product, Price, Place and Promotion. These components of a marketing mix are further governed by large number of factors each. Here a DSS which supports marketing and sales activities of an organization is called Marketing Decision Support System (MKDSS).

(Little, 1979)²⁹ defines an MKDSS as 'a coordinated collection of data, system, tools, and techniques with supporting software and hardware by which an organization gathers and interprets relevant information from business and environment and turns it into a basis for marketing action'. Its presence helps in the marketing mix related decisions such as channel management, procurement, distribution etc.

Amongst all the marketing mix, promotions mix is the face of the organization as well as the product. A good promotion can help sell a bad product and a bad promotion can even doom a good product by spoiling the positioning of the product in the mind of the customer. While the components of promotion mix are further divided into Advertising, Direct Sales, Sales Promotion and Public Relations, most of the time the amount of money which is invested by an organization on these activities is limited. Hence a profound budgeting is planned before investing into any such activities. Today there is larger number of places to invest in for the purpose of promotions, since the avenues for customer to look for a product or service have widened exponentially. With the presence of new media such as internet and social networking, the visibility of a product is not restricted by proximity of its seller or buyer. Hence the amount of money to be suitably spent of digital marketing, direct marketing and search engine marketing is not anyone's intelligent guess or simply based on years of experience. It is a far more complex decision and can be better supported by the use of an MKDSS.

3. Analysis of Advertising Budget Allocation: Literature Review

Advertising spend is also an investment of sorts (Yunjae, Kihan, and Hyuksoo, 2013)^{54,55} and would reap benefits only if invested well. Even though advertising budget allocation is a tedious task with large amount of stakes involved (Bass, 1979)³ best of organizations use marketing models and tools just to aid the rules of thumb (Farris, Shames, and Reibstein, 1998)¹⁵. A detailed study of Advertising budget planning along with the media plan has been done by various researchers which focus on every minute detail like the type of audience, the amount of exposure, the frequency of exposure to the advertisement etc. (Sissors, Baron, and Smith, 2010)⁴⁶

Advertising spend is governed by several macro and micro economic factors (Gillian, 1976)¹⁷. Various researches have even suggested that advertising budget follows the trends of GDP of the country especially in countries where a large amount of GDP is spent on advertising (Wurff, Bakker, and Picard, 2008)⁵³ (McCombs, 1972)³². Minor changes in the ratio of advertising spend is to economic revenues can leave media organizations reeling under a huge impact. (Lacy and Noh, 1997)²⁷. In recent times the impact of overall economic recession has been stud-

ied well on advertising. (Bhargava, 2011)⁵ (Broadbent, 2008)⁸ (Picard, 2001)³⁷ (Srinivasan, Rangaswamy, and Lilien, 2005)⁴⁸. These studies have reflected in more than one ways that increasing the spending on advertising during recession actually pays off better in the long run. (Wills and Wills, 1993)⁵². Hence even if economic business cycle is headed negatively it would only impact the advertising budget positively and with higher magnitude.

If we look at micro level factors impacting the advertising budget, we would see that number of market players, impacts the overall advertising spend by each organization. (Wurff, Bakker and Picard, 2008). A large number of marketing models use a theoretical market state such as monopoly or oligopoly (Heil and Helson, 2001)²⁰. On the other hand in real world, competition, plays an important role and can make or break the impact of an advertisement which can not only disturb the objective but also require an overall change of strategy in the middle of a fiscal year (Iyer, Soberman, and Miguel, 2005)²⁵. Hence identifying and freezing the advertising budget at the onset of a fiscal year as a percentage of sales or profit may not be a practical technique. (Miller and Pazgal, 2007)³³. Several products reach a stage where product based differentiation is difficult and hence enter price wars. Under such a situation, advertising offers to provide a non product based differentiation by altering the perception of the consumer (Boulding, Lee, and Staelin, Mastering the Mix: Do Advertising, Promotion, and Sales Force Activities Lead to Differentiation?, 1994)^{6,7}. The conceptual framework given in Figure 1 highlights the same.

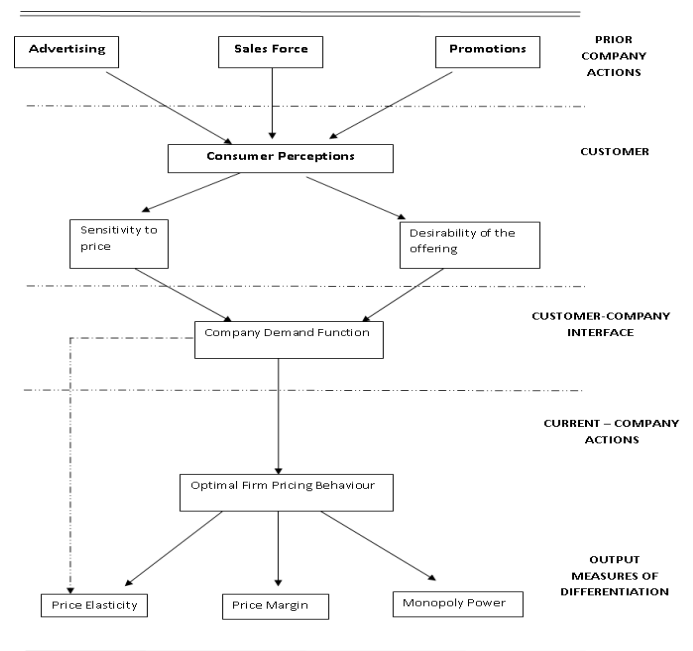


Figure 1. A Conceptual model of non product based differentiation [Source: (Boulding, Lee, and Staelin,

Mastering the Mix: Do Advertising, Promotion, and Sales Force Activities Lead to Differentiation?, 1994)].

As one can observe that advertising plays a key differentiator in the mind of the customer especially in markets where products are undifferentiated. Media firms encash this opportunity during situations of duopoly and price wars (Godes, Ofek, and Sarvary, 2009)¹⁸ and hence the advertising budget of a firm increases. Thus, a lot of factor has to be kept in combination while advertising budget is being evaluated. Various techniques of budgeting have been evaluated to fully understand the functioning of overall budget of an organization.

4. Techniques for Allocating Budget

Advertising budget can be allocated through various techniques and methods. (Aaker, 2009)¹. The most commonly used methods have been categorised and classified in Table 1. The five major categories which have into which these techniques are classified are Judgement, Competitive, Sales, Marginal Analysis and Objective/Task. (Hung and West, 1991)²³ (Prendergast, West, and Shi, 2006)⁴²

Table 1. Table with details of advertising budget allocation adapted from (Yunjae Cheong, 2013)

Method	Category	Description
Arbitrary	Judgement	Based on what is 'felt' to be necessary
Affordable		An 'all you can afford' approach
Competitive/Absolute	Competitive	The budget is set in line with the market share
Competitive/Relative		The budget is set in line with that of your closest rival
% of last years' sales	Sales	Set % of sales from the previous financial year
% of anticipated sales		Set % of the firm's anticipated sales
Unit Sales		A fixed % of the unit price multiplied by the projected sales volume
Measurement	Marginal Analysis	Use of mathematical techniques to estimate the point above which the incremental expenditures in marketing are exceeded by the marginal revenue they generate
Objective/Task	Objective/Task	Spending is in accordance with what is required to meet the marketing objectives

This allocation of advertising budget can follow a top-down approach or a bottom up approach and sometimes a blend of the two techniques. (Piercy, Advertising budgeting: process and structure as explanatory variables, 1987) (Piercy, The marketing budgeting process: marketing management implications, 1987)^{38,39} (Belch and Belch, 2001)⁴.

Irrespective of the budgeting technique which has been used a strong positive relationship between product quality and advertising has been established through various studies (Nelson, 1970)³⁴ and converted later into a formal model (Schmalensee, 1978)⁴⁴. Businesses with high product quality and high advertising obtain the highest prices and correspondingly, low product quality and low advertising leads to low pricing (Farris and Reibstein, 1979). Thus we can comfortably say that the quality of the product impacts the advertising spend directly.

Looking into other aspects impacting advertising spends we can notice that the stage of products' life cycle plays an important role. (Perreault, Cannon, and McCarthy, 2008)³⁶

In the introduction phase, the product needs to penetrate into the market and hence the promotional and advertising expenditure is extremely high. This promotional drive has to pioneer the acceptance of the product amongst the users. This high expenditure remains till the product captures at least 30 % of the market. (Tabucanon and Islam, 1981)⁴⁹. At growth stage these expenses tend to come down, while Advertising spends increase heavily in the maturity stage of the product life cycle as this is the stage when sales volumes are levelled, competition increases and margins begin to suffer (Sharma, 2013)⁴⁵. A probable graph depicts this relationship in Figure 2.

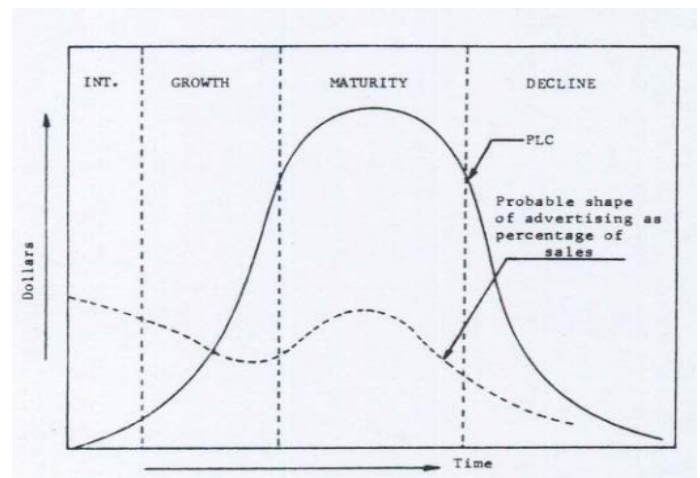


Figure 2. Probable relationship between advertising and PLC Source: (Tabucanon and Islam, 1981).

It has also been identified in various studies that advertising spends directly impacts the tangible as well as intangible firm value (Joshi and Hanssens, 2010)²⁶.

While we discuss the advertising spends, one can notice a liberal use of the word product. Many at times the term implies both products and services and yet at the same time the entire marketing mix for the two is completely different. Several sources of literature in the form of case studies and industry reports were picked up to understand the pattern of budget allocation for services. It was found that the overall factors governing budget allocation remained same across products and services. (Powell, 2014)⁴⁰ (CMO Council, 2015)¹².

Thus one can easily summarize that the advertising budget for both products as well as services is impacted by

- Business cycle (recession / boom)
- Intensity of competition
- Stage of PLC
- Quality of Product

By putting together all the above factors and methods we get the following equation

$$\text{Advertising Budget } \beta(t) = \xi(t) + \alpha(n) + \rho + \mu + \delta$$

The discussion of this equation would be incomplete without discussing its assumptions and constraints. Firstly, here we are considering physical goods instead of services so that product quality is a more tangible and measurable aspect. Secondly we assume that the products are not differentiated against the competitors. This increases the impact of advertising as advertising then is one of the chief differentiations, especially under circumstances of large number of competitors.

Let us look at each factor in detail.

- i. $\xi(t)$ is a macroeconomic variable and represents the business cycle of boom or recession. While using it we need to be aware that it would not impact advertising expenditure as a simple sinusoidal positive negative cycle. Its value will be positive even during recession as that is the time when more advertising can uplift the mood of the market and convince buyers to spend the money. During growth phase as well it is a positive entity though of a smaller magnitude. However, for the current equation we are assuming that we are not in situation of war or global crisis.
- ii. $\alpha(n)$ is the intensity of competition, where n refers to the number of competitors in the market. In case of monopoly the value of n becomes zero and hence the advertising budget is minimal as there is no threat from competitors. On the other hand if the value of n is small which means it's a duopoly, or oligopoly the spending on advertising would increase. Yet if the value of n is large, the advertising budget would not increase proportionately and would depend on the going rate amongst competitors. Here we also need to assume that the market dynamics remain constant and there is no new product line or customization added by the competitors.

- iii. ρ : This variable reflect the stage of PLC the organization and its product is in. Two spikes have been observed in the advertising spend, one in the introduction phase and the other in the early maturity phase as is understood in Figure 3. Here we need to assume that the product would not go into reengineering, repackaging, or restructuring after the decline phase.
- iv. μ : This variable refers to the quality of the product. It is inversely proportionate to the advertising expenditure. The better the quality of the product the lesser would be the spending on advertising and the greater would be the pricing of the product as it creates a positive perception in the mind of the customer. This variable can never be zero and would always have an impact on the advertising expenditure.
- v. δ : This is a small variable which has been added to keep in mind unavoidable and natural uncertainties (Lorenz, 1963)³⁰ due to natural disasters, political mayhem and manmade disasters. Under normal conditions the value of δ will be zero or tending to zero.

While these factors could have sufficiently expressed and addressed advertising budget allocation issue, new and upcoming market trends, like entrance of new media have brought about changes in the scenario.

5. Emergence of New Media, Digital Advertising and its Impact on Budget Allocation

Just as all the above components impact the advertising budget a major change was brought about by presence and emergence of new media. New media is often confused with the internet based communication. Media have been placed into three categories: Interpersonal Media (one to one), Mass Communication Media (one to many) and New Media (many to many) (Crosbie, 20). In this media, internet and World Wide Web play an important role of carriers. New media is also defined by some authors as a media which can be represented by mathematically and modified using algorithms (Manovich, 2003)³¹. As new media combines the best of interpersonal communication and mass communication along with digital manipulation, it has now become an attractive medium from advertising. By the year 2010, new media surpassed newspaper advertising and rose to the overall second place in list of revenue by medium. (Interactive Advertising Bureau, 2011)²⁴. It is important for every industry and its organizations to evaluate the effectiveness of the advertising spend so as to invest funds in the right direction. Under conventional media resources, evaluation of effectiveness is comparatively difficult due to various factors involved (Tellis, 2003)⁵¹. (Rust, Lemon, and Zeithaml, 2004)⁴³ have even presented a complex model to calculate the return on investment on the basis of customer equity,

yet the measurement of customers' awareness after exposure to traditional media advertising is rather complex. New media advertising on the other hand provides a solution, to economically measure the effectiveness of the exposure (Helander and Paulsson, 2010)²¹. Several Studies have proven that not only is the calculation of ROI simpler, the ROI of advertising using the web is higher than traditional channels such as television. (Buvat and Srivastava, 2013)¹¹. The presence of new media now provides a high ROI and high efficiency medium for advertisers. Initially it was thought that new media advertising would be cheaper but it is infact more expensive as it has large number of intermediaries and vendors. Most digital campaigns have nearly 20 intermediaries and each carrying their own cost in fees and labour (Field, Rehse, Rogers, and Zwillenberg, 2013)¹⁶

The emergence of this new media also adds another variable to the advertising budget allocation equation. This would be the presence and outreach of customers on the new media [v]. While no industry is untouched by New Media in today's date, the greater the number customer base connected to the media the higher section of the budget would get allocated to this form of communication. This variable v will be a factor of number of customer connected online (N).

Table 2. Table representing Projections of Global Spending on Advertising. Source: (Bagchi, Murdoch, and Scanlan, 2015)

Category	2014	2009–14 CAGR ³	2015	2016	2017	2018	2019	2014–19 CAGR
Digital advertising	127.3	16.1%	146.6	168.5	190.8	212.0	231.4	12.7%
Broadband	429.3	12.9%	463.8	500.5	539.4	581.2	624.6	7.8%
TV advertising	183.5	6.1%	189.4	202.5	209.0	223.1	233.9	5.0%
In-home video entertainment	323.4	4.6%	331.9	347.8	359.0	370.2	381.6	3.4%
Audio entertainment	95.6	0.7%	97.0	98.8	100.7	102.8	104.6	1.8%
Cinema	37.1	4.3%	39.4	41.6	43.8	45.8	48.3	5.4%
Out of home	31.7	5.0%	33.2	34.8	36.5	38.3	40.3	4.9%
Consumer-magazine publishing	59.1	-2.1%	57.6	56.5	55.7	55.1	54.6	-1.6%
Newspaper publishing	142.4	-1.5%	140.6	140.0	140.0	140.8	142.0	-0.1%
Consumer books	72.4	0.8%	73.0	74.0	74.8	75.4	76.0	1.0%
Educational publishing	41.0	1.2%	41.6	42.1	42.6	43.2	43.9	1.4%
Video games	84.5	8.9%	94.1	103.5	111.6	118.7	124.5	8.1%
Total	1,604.0	5.8%	1,681.3	1,779.5	1,868.6	1,966.9	2,061.5	5.1%

This would revise the equation as follows:

$$\text{Advertising Budget } \beta(t) = \xi(t) + \alpha(n) + \rho + \mu + v(N) + \delta$$

This addition of new media factor updates the scenario in three ways. Firstly, it creates competitive pricing amongst other prevalent electronic media such as television and radio. Till now their pricing was more or less oligopolistic in nature, but the rising presence of new media is making the pricing more competitive. Secondly, new media provides an avenue to heavily invest in for the purpose of advertising as its effectiveness is much better measurable and quantifiable. And lastly, new media also provides a Market place or a market space where people are able to connect with the target customers far more easily and are able to make transactions and generate revenue without even stepping out of the house. Thus there is a trend shift which has increased the investment in new media and reduced the spending from other avenues. (Lightcap, Peek, and Fullenkamp, 2012)²⁸. Several reports suggest that the new media is growing at a strong pace (Bagchi, Murdoch, and Scanlan, 2015) (CMO Council, 2015). A global spending on online and digital advertising is expected to increase by 5.1% by 2019 and run into nearly \$2.1 trillion. A further detail of the same is shown in the Table 2 below:

Table 2 shows a clear and highest increase in the spending on digital advertising, which simply implies the increasing impact of new media on the choices of advertising budget allocation buckets. Thus the emergence of new media has not only increased the multi dimensional outlook budgeting process by adding new fields but also increases the volume of marketing data which has been collected. This is further highlighted in the Figure 3 which shows that by 2019 the spending on traditional media would stagnate while that on new and digital media would only increase steadily.

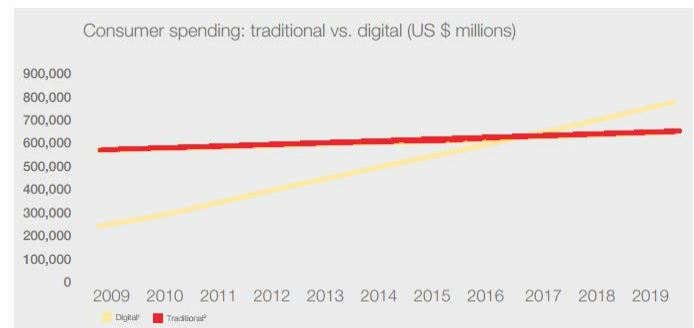


Figure 3. Consumer Spending traditional vs Digital (US \$ millions). Source (Bagchi, Murdoch, and Scanlan, 2015)².

The complexities brought about in making the budget allocation decision after the emergence of new media make the process difficult to handle by experts of various domains. This can now be more accurately, efficiently and effectively handled with the help of a decision support system.

6. Advertising Budget Allocated using DSS

(Bruggen, Smidts, and Wieranga, Improving decision making by means of a marketing decision support system, 1998)⁹ performed several experiments using MARKSTRAT software to understand the use of DSS and its impact on the decision making. It was found that specifically in the case of complex decision making, use of DSS is preferred as it eliminated the effects of anchoring and adjustment heuristics. A Decision support system principally works on various models and it has been observed by (Hoch, 1994)²² that there are potential advantages of using models over using expert opinions. Some of the drawbacks of using the knowledge and experience of experts have been enlisted below:

- Experts being humans are subject to various biases such as evaluation and perception
- Experts can get fatigued, bored with monotony of tasks which may lead to errors
- Experts may not consistently and regularly integrate evidences from each occasion
- Due to a social standing, the experts are also likely to suffer from overconfidence and other social pressures including politics

A DSS also has the capability to handle higher volumes of marketing data. The more the data the higher is the accuracy of the decision. (Payne, Bettman, and Johnson, 1993)³⁵. A strong relationship is shared between the amount of data and decision performance and its effect on managerial judgement and the availability of a marketing DSS as reflected in Figure 4.

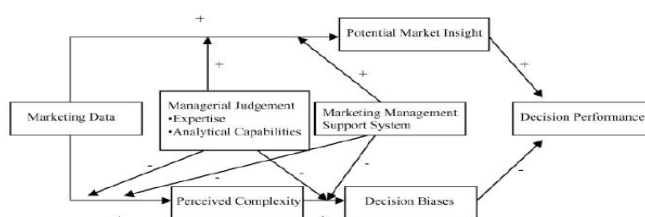


Figure 4. Affect of Marketing Data on Decision Performance . Source: (Bruggen, Smidts, and Wierenga, The powerful triangle of marketing data, managerial judgment, and marketing management support systems, 2001)¹⁰.

7. Discussion and Managerial Implications

The equation discussed above further opens up the scope of experimentation with strategy and simulation under different

scenarios and constant evaluation of effectiveness of decision making through DSS. Though a low number of DSS and MKDSS are published, still the managerial benefits and characteristics in the marketing environment is imperative. The usefulness of MKDSS in historical data evaluation, taking advantage of distinctive competencies of decision makers, problem solving models and reasonability and the valuable tool for strategic and effective marketing planning cannot be neglected. Because effectiveness of such tools is complex and multidimensional in the most dynamic new media age, future research should focus on determining the features and functions that enhance the overall performance, quality and relationship between these variables and principles theories of advertising.

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Annexure-I

Decrypting the antecedents of Advertising Budget allocation under the ascendancy of New Media

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