Generalizations About Advertising Effectiveness in Markets

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Abstract

Research on over 400 estimates of advertising elasticity leads to the following important generalization. If advertising changes by 1%, sales or market share will change by about .1%. (That is, advertising elasticity is 0.1.). The advertising elasticity is higher in Europe relative to the US, for durables relative to non-durables, in early relative to late stages of the product life cycle, and in print over TV. The advertising elasticity is lower in models that incorporate disaggregate data, advertising carryover, quality, and promotion relative to those that do not. The advertising elasticity is lower in multiplicative models relative to other model forms, such as the additive model. The advertising elasticity is invariant over the measure of the dependent variable or the method of estimation.

Introduction

"Advertising effectiveness in markets" refers to market response to a firm's (or a brand's) advertising. We define "market response" as the firm's (or brand's) choices, sales, or market share in real market contexts. Researchers also have also examined the effects of advertising on consumer awareness, attitudes, beliefs, and intentions. These effects typically have been examined in laboratory contexts are not the focus of this review.

Researchers probably have examined the effect of advertising from the time mass advertising first began more than a hundred years ago. Scientific research, however, began to accumulate in the last 50 years (Tellis, 2004; Tellis, 2007). We can classify this work into two broad paradigms of research: behavioral research and field research. Behavioral research typically uses theater or lab experiments to address the effects of advertising on mental responses of individuals such as awareness, attitudes, beliefs, and intentions. Field research, on the other hand, uses field experiments or econometric models to assess the effects of advertising on such market responses as brand choice, sales, or market share. This review summarizes what has been learnt from this latter paradigm of research.

For this essay, I define the meaning of six terms: "product," "firm," "brand," "consumer," "market," and "sales." Specifically:

- "Product" refers to any good, service, idea, or person being advertised.
- "Firm" refers to any organization that advertises, whether a for-profit commercial organization, governmental agency, or not-for-profit organization.
- "Brand" refers to the label used for the product being advertised.
- "Consumer" refers generically to the audience of the advertising—buyers, voters, members of organization, citizens, etc.
- "Market" refers to the aggregate of consumers.
- "Sales" refers to the object of transaction that the advertiser desires from the consumer, such as product purchases, votes, attendance at organizational meetings, good citizenship, etc.

I classify field research into five groups, depending which aspect of advertising it researches: advertising elasticity, weight, frequency, wear-in/wear-out, and content. Studies are most abundant and rigorous on elasticity, abundant but not as rigorous on weight, reasonably abundant but not as rigorous on wear-in/wear-out, limited on frequency, and very limited on content. The last section describes some limited findings about advertising in a recession.

RESEARCH ON ADVERTISING ELASTICITY

"Advertising elasticity" is the percentage change in sales of a brand for a one-percent change in the level of advertising. It is free of any units. Studies in this area try to estimate the statistical relationship by which sales respond to advertising. To do so, the studies define a model with sales as the dependent variable and advertising as the independent variable. As far as possible the studies try to control for the effect of other independent variables such as price, quality, distribution, promotion, or brand name. The effect of advertising on sales is captured by a statistic called the coefficient. When the variables in the model are all measured as percentage changes or transformed by taking the logarithm of their actual values, then the estimated coefficient of advertising is an elasticity as defined above. Such a model, which relates sales to advertising, is called an econometric model (Tellis, 1988). The statistical field of science that carries out such studies is known as econometrics (Dekimpe and Hanssens, 2007).

There are more than 260 estimates of advertising elasticity carried out in numerous studies using a variety of models and data across many countries, product categories, brands, and time periods. We restrict this summary only to brand-level—not product-level elasticities. That is those that deal with brands, such as Tide or Toyota, not corresponding products such as detergents or automobiles). There also are two types of elasticities, current and carry-over. The current elasticity is the percentage change in sales for a 1% change in advertising in the concurrent time period. Carry-over elasticity, alternatively. refers to the percentage change in sales for a 1% increase in advertising in subsequent time periods, after or beyond the concurrent one.

A meta-analyses is a higher level study of such primary studies that seeks to summarize the mean advertising elasticity and explain its differences across various characteristics of primary studies, such as authors, models, and ecological contexts (firm, products, or markets). There are several meta-analyses done to date (Assmus, Farley, and Lehmann, 1981; Clarke,1976; Leone, 1995; Sethuraman and Tellis, 1991).

Generalizations from Elasticity Studies

Research on advertising elasticity leads to the following important generalizations:

About Current Effect

- If advertising changes by 1%, sales or market share will change by about .1%. In other words: advertising elasticity is 0.1.
- The advertising elasticity is higher in Europe relative to the US, for durables relative to non-durables, in early relative to late stages of the product life cycle, and in print over TV.
- The advertising elasticity is lower in models that incorporate disaggregate data, advertising carryover, quality, and promotion relative to those that do not
- The advertising elasticity is lower in multiplicative models relative to other model forms, such as the additive model.
- The advertising elasticity is invariant over the measure of the dependent variable or the method of estimation.

About Carryover Effect

- The carryover elasticity of advertising seems twice as large as that of the current effect.
- The estimates of the carryover effect of advertising decrease with the interval of the data used to estimate the carryover.

Implications

These results suggest the following four implications. First, advertising is not be variable of choice for increasing sales. Second, there are distinct circumstances when advertising is effective in increasing sales. Third, researchers need to be cautious about modeling advertising response. They need to properly control for independent variables, carryover effects, and multiplicative models. Fourth, researchers need to use data at the unit exposure time, and correct for estimates of elasticity if they use more aggregate data (Tellis and Franses, 2006). The unit exposure time is the largest calendar period in the time frame being studied, such that advertising exposure occurs at most once in that period, and if it occurs, it does so at the same time in that period.

RESEARCH ON ADVERTISING WEIGHT

"Weight" refers to the level or intensity of the advertising budget. Typically, the studies in this group examine the effect of differences in ad budget across time periods or regions. The main focus of such studies is to determine whether an increase in weight translates into a proportional or profitable increase in sales of the advertised product. Alternatively, the studies assess whether a decrease in weight results in a proportional decrease in sales of the advertised brand. While weight studies involve discrete changes in advertising levels, elasticity studies explore the relationships between sales and advertising for numerous changes in advertising that normally occur over time. Thus, research on advertising elasticity allows a more fine-grained analysis of advertising effectiveness than research on advertising weight. The large number of weight studies, nevertheless, provides many interesting generalizations that complement those from elasticity studies.

Researchers have carried out more than 450 market or field experiments to assess the effectiveness of advertising. In such experiments, researchers compare two or more comparable markets, each of which differs by a particular advertising weight. In most cases, the experiments last for several time periods to enable the researchers to get a baseline sales before the change in advertising weight and assess carryover sales after the change has been made. Six sets of experiments are probably the most important: experiments at Anheuser-Busch (Ackoff and Emshoff, 1975), Grey and D'Arcy Advertising (Aaker and Carmen, 1982), AdTel (Aaker and Carman, 1982), Campbell Soup (Eastlack and Rao, 1989), Information Resource Inc (Lodish et al, 1995a, 1995b) as well as miscellaneous studies reported by Aaker and Carmen in 1982. These experiments varied widely in time period, markets, product contexts, advertised brands, and changes in weight. Some time periods were short; others lasted for years. Some experiments had small changes in weight; others used large changes in weights (Tellis, 2004; Tellis, 2007).

Generalizations from Advertising-Weight Studies

Research from weight studies lead to the following six important and surprising findings:

- Even if advertisers make a big increase or decrease in weight, sales do not increase or decrease by much.
- If advertisers make cuts in weight, sales do not immediately decrease..
- If advertising is effective, its effects are visible early in the life of a campaign.
- Conversely, if advertising is ineffective early on, then repetition will not create or enhance its effectiveness.
- If advertisers make changes in media, product, target segments, scheduling, and especially content of the adverting, they are more likely to cause changes in sales than if they merely change weight.
- Where profitability of the advertising has been assessed, advertising seems to be profitable less than half the time.

Implications

These results suggest three implications. First, firms could be over-advertising, not only in the amount of advertising they do but also in using the same content, positioning, product, media, and schedule too long. Second, advertising may have carryover or permanent effects, so that continued advertising at the same level not always is necessary. If the carryover effect is present, however, it starts to occur immediately and does not build up over time. Third, a firm's budget increase or original budget itself is more fruitfully enhanced by changes in media, content, target segments, product, or schedule rather than on weight alone. In other words: Variety in advertising is likely to yield better results than increases in weight.

RESEARCH ON ADVERTISING FREQUENCY

A firm's advertising budget normally affects consumers through the exposure of consumers to ads through the media. "Frequency," in this context, refers to the number of ad exposures each consumer receives in a particular time period. The advertising budget in a time period ultimately translates into a sequence of individual exposures targeted to one or more consumers. Similarly, sales is an aggregate of "brand choice" —consumers' choices of brands. Research on frequency normally examines the effect of ad frequency on consumer choice (Deighton and Neslin, 1994; Gibson, 1996; Jones, 1995; Pedrick and Zufryden, 1991; and Tellis, 1988). Such research provides a more fine-grained and insightful analysis of advertising response than comparable studies on advertising elasticity or advertising weight. In particular, such research can indicate the optimal level of exposures an advertiser should target to a particular market segment or even a particular consumer. Research on ad frequency, however, is not without limitations. Knowing the optimal frequency does not immediately translate into ascertaining the optimal budget. The advertiser would still need models that relate advertising frequency to budget and consumer choices to sales. So the tradeoff here is between detail and insight versus managerial usefulness.

Generalizations from Advertising-Frequency Studies

Research on advertising frequency leads to the following five findings:

- The effects of advertising exposure are less prominent and immediate and more fragile than those for price or promotion on brand choice.
- In general, increasing frequency of exposures increases probability of brand choice at a decreasing rate.
- For mature, frequently purchased products, the optimum level of exposure is relatively small, ranging from one to three exposures a week.
- Brand loyalty moderates response to ad exposures, in that established brands have an earlier and lower peak response to ad exposures than newer brands.
- Brand choice is more responsive to the number of consumers the ad reaches than to frequency with which it is repeated.

Implications

These findings suggest two implications: First, advertisers need to target loyal and non-buyers of their products with differing levels of exposures. Second, consistent with findings from prior sections, heavier exposures need to be reserved for new consumers and brands.

RESEARCH ON WEAR-IN/WEAR-OUT

What are the varying effects of advertising over the life of a campaign? This research focuses on two aspects of advertising's effects: wear-in and wear-out. An "advertising campaign" is a series of exposures of an ad. Wear-in transpires when the effect of an ad keeps increasing with repetition of the ad within the campaign. In contrast, wear-out occurs when the effect of an ad continues to decrease as the ad is repeated within a campaign. If they occur, wear-in normally happens early in the life of a campaign; wear-out normally takes place later. This summary is based on individual studies or research reviews by (Blair, 2000; Greenberg and Sutton, 1973; Masterson, 1999; Pechmann and Stewart, 1992; Pieters, Rosbergen and Wedel, 1999; Sawyer, 1981; Sawyer and Ward, 1976; and Tellis, Chandy and Thaivanich, 2000. Some of the research reviews did include a mix of field and laboratory studies.

Generalizations About Wear-In

Research on wear-in and wear-out leads to the following important findings:

- Wear-in either does not exist or occurs quite rapidly.
- Wear-in occurs more slowly:
    - when exposures are spread apart.
    - when consumers are not forced to attend to the ad;
    - with ads that contain emotional appeals rather than arguments.
    - for consumers who are not highly motivated to attend to the ad or actively process the ad content.
    - in markets than in theatre or lab settings.
- Wear-in may be stronger with ads that have higher persuasion scores than those with lower persuasion scores

Generalizations About Wear-Out

- Ad campaigns wear-out if run long enough.
- Wear-out occurs more slowly:
    - with ad content that is complex, emotional, or ambiguous.
    - with ads that are less effective.
    - with infrequently purchased products.
    - when exposures are spread apart.
    - with light viewers of TV.
    - with campaigns that offer a richer variety of ads and executions.
- A break in a campaign leads to an increase in effectiveness of an ad; if that happens, the ad wears out even faster than it did the first time around.
- In rare cases (with new products, for instance), advertising seems to have permanent effect; the effect of advertising persists even after the advertising is withdrawn.

Implications

These findings have several implications for advertisers. Most importantly, an ad whose early performance is ineffective should be discontinued. It is futile to assume that an initially ineffective ad still needs to wear in; wear-in either happens quickly or it doesn't happen at all. Second, the findings suggest typical types of wear-in and wear-out that advertisers may expect for their campaigns. Whenever resources and time permit, however, advertisers should test their ads for wear-in and wear-out and accordingly decide on the duration of the ad campaign.

RESEARCH ON AD CONTENT

"Content" refers to what is *in* an ad as opposed to such external characteristics as weight or frequency. Aspects of content include the appeal (argument, emotion, and endorsement), the duration or length of the advertisement, the use of color, sound, or video, the amount/type of text, etc. While a vast number of theater and lab studies have examined the effectiveness of various aspects of ad content, only a few market studies have done so (Chandy et al, 2001; MacInnis, Rao and Weiss, 2002). Thus, generalizations of findings in this area need to be made cautiously.

Generalizations about Advertising Content

Research on ad content seems to suggest the following preliminary findings:

- Changes in the creative, medium, target segment, or product itself sometimes lead to changes in sales, even though increases in the level of advertising by itself does not.
- Informative appeals are more important early than late in the product's life cycle.
- Conversely, emotional appeals are more effective late rather than early in a product's life cycle

Implications

These findings have two important implications for advertisers. First, to increase effectiveness, advertisers should modify content by doing more than increasing weight or frequency. Second, advertisers need to test and typically vary the content of their advertising within the life stage of the product.

RESEARCH ON ADVERTISING IN A RECESSION

There are over 40 articles that study the effectiveness of advertising in a recession (Tellis and Tellis 2009). A review of these articles suggest that only about ten of them provide primary empirical evidence of the phenomenon. These studies differ somewhat in the choice of independent and dependent variables and models used to analyze the data. A critical review of their findings suggest three broad findings. First, advertising expenditures are quite sensitive to economic expansions and contractions with systematic variances across countries. Second, the share of private label brands relative to national brands behaves counter-cyclically and asymmetrically to economic expansions and contractions, probably due to advertising strategy. Third, advertising effectiveness may be higher in recessions than in non-recessions. Thus, firms should carefully evaluate the effectiveness of their advertising in a recession before making decisions on cutting or expanding their advertising budgets. Detail results and implications are available in Tellis and Tellis (2009).

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