

Treating Advertising as a Science

—Scientific Analysis of Advertising Using Single-Source Data—

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- I The Huge Change in Media Contacts over the Last Five Years
- II Single-Source Research to Enable the “Science of Advertising”
- III Optimization of Media Using Single-Source Data
- IV Effective Messages vs. Ineffective Messages
- V Discovery of New Consumer Insights
- VI Learning from Failures to Achieve Advertising Optimization

In recent years, the situation surrounding mass media contact has changed considerably. In the past, television commercials made up the majority of advertising media. However, currently, with the rapid growth of social networking services (SNS) such as Facebook and Twitter, online advertising is gaining in importance. Given such change, companies need to shift their advertising strategy from focusing on a single medium to leveraging multiple media (cross-media advertising).

In the past, how much a company would invest in advertising was a very important issue because the number of people reached increased in proportion to the amount of money spent on advertising. Those responsible for advertising in a company had no choice other than to rely on experience and intuition to determine the amount of television advertising. However, now that we have entered the era of cross-media advertising, communication has become much more complex, making it necessary to scientifically measure its effects. To this end, a technique known as “single-source data research” has been gaining attention.

Single-source data research involves identifying all consumer actions such as their contacts with media and their purchase intentions and actual purchases of given products/services through a survey of a single group of survey subjects. This method enables the measurement of the effect of each type of media through a simple cross-tabulation analysis.

By means of single-source data research, it is possible to scientifically prove the effect of advertising, which was previously ambiguous because it was examined using traditional survey methods. It is also possible to analyze the relationship between a specific advertising message and its impact on purchase intentions. That is to say, this new survey method is expected to contribute to the optimization of advertising in terms of both “quantity” and “quality.”

In the future, only companies that use single-source data to scientifically ascertain the effect of advertising and are able to learn from failures will survive. By moving away from “try and see” advertising that is based on experience and intuition, companies should apply the PDCA cycle for advertising through scientific measurements of advertising effects.

I The Huge Change in Media Contacts over the Last Five Years

A survey undertaken by Nomura Research Institute (NRI) examined television audience ratings at different times of the day. The results are shown in Figure 1. Although figures for daytime viewing have remained relatively stable, there have been drops in the number of viewers between 7:00 and 9:00 a.m., as well as after 11:00 p.m. The number of television viewers on Saturdays and Sundays has also fallen.

While families would often watch television news together over breakfast before heading to work or school, more and more families appear to leave the house without having watched any morning television.

With the decline in newspaper and magazine circulation, advertising contacts through such media have continued to decrease. On the other hand, because there has been little change in the ridership of rail networks, transit advertising, which centers on railway advertising, remains a media form having a relatively large number of contacts. However, there is no possibility of further increasing the number of contacts through this media in the future.

In contrast to these forms of media that are seeing a drop in the number of contacts, there has been a great increase in the number of contacts via Internet-based advertising.

In fact, a look at the transition in corporate advertising expenditures reveals that although overall spending has been decreasing, spending on online advertising is on the increase. As a proportion of overall spending, online advertising has already exceeded newspaper and transit

advertising, putting it in second place behind that of television.

Looking at the changes that have occurred over the last five years, social networking services (SNS) such as Twitter and Facebook have rapidly evolved, such that the number of people who are exposed to these forms of media has increased enormously. This trend has been reinforced by the rapid take-up of smartphones.

According to the results of an NRI survey, the number of people using Facebook on a daily basis rose from 4.9 percent of respondents in May 2011 to 17.9 percent in November 2013.

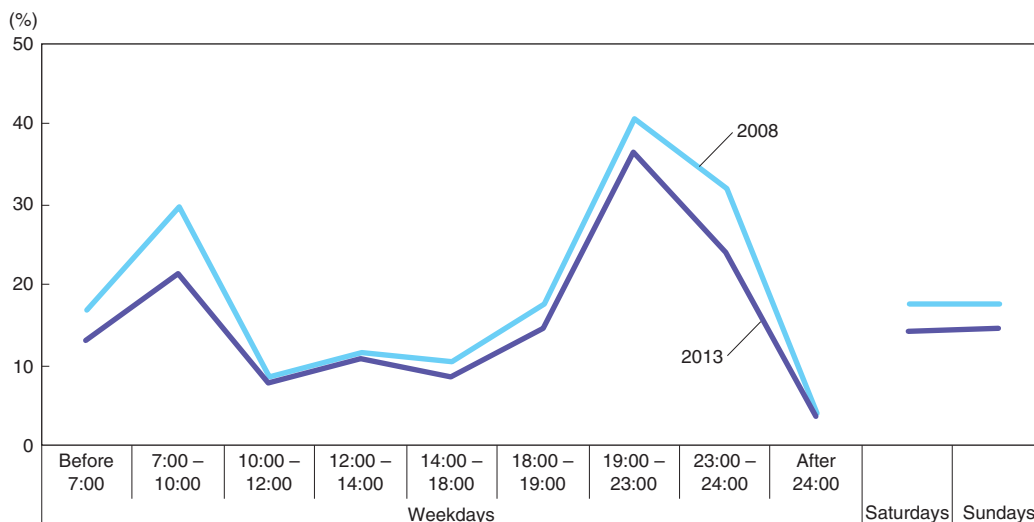
In this way, the primary media contact of consumers has shifted from television to the Internet. In other words, it is possible to say that for companies to more effectively communicate with consumers, they must shift from “television commercials” to “Internet advertising.”

In the past, upon announcing a new product, a company could reach the majority of consumers simply by using television commercials. However, in the future, the number of consumers who are unable to be reached only through television commercials will increase. Therefore, companies will be required to move away from single-medium advertising (usually television commercials) and instead move toward cross-media advertising utilizing the Internet.

II Single-Source Research to Enable the “Science of Advertising”

In the era when reliance on a single medium such as television was adequate for advertising, the only problem

Figure 1. Television audience ratings at different times of day



Source: Online Insight Signal survey conducted by Nomura Research Institute in Tokyo, Kanagawa, Chiba, Saitama, Ibaraki and Tochigi.

that companies faced was determining the appropriate amount of advertising. By virtue of the fact that the number of people reached increased in proportion to the amount of money spent on advertising, how much a company would invest in advertising was a very important issue. Those in charge of advertising within a company used their experience and intuition to determine television advertising expenditures.

However, now that we have entered the era of cross-media, the media has become so complicated that simply relying on experience and intuition alone no longer provides solutions. To deal with such complexity, emphasis is now placed on a scientific approach to advertising. That is, the need for objectively and scientifically measuring the effects of advertising has been growing rapidly.

Traditionally, the effects of advertising have often been measured by the amount of advertising (total number of audience ratings achieved by television programs carrying advertisements, etc.), reach (ratio of consumers who are exposed to advertising) and the popularity of advertising. In the era in which television commercials were the only form of advertising, these methods provided an adequate means of measuring the effects of advertising. By monitoring the correlation between the number of television commercials and the resulting sales, it was possible to measure the “degree to which television commercials have contributed to sales.”

However, now that we have entered the era of cross-media, it is necessary to simultaneously measure the effects of multiple types of media. Moreover, different types of media have specific characteristics, with some designed to lead directly to a purchase, while others are designed to increase consumers’ purchasing intentions and/or enhance brand awareness. Therefore, specific

measurements have become necessary to determine the stage at which a certain type of media generated effects and the degree of such effects.

As a means of objectively measuring the effects of each type of media as well as the effects of cross-media, a research technique called a “single-source data survey” has recently been gaining attention. This method conducts research from a variety of angles for a given group of survey subjects.

Figure 2 provides an overview of single-source data research ^{Note 1} conducted by NRI.

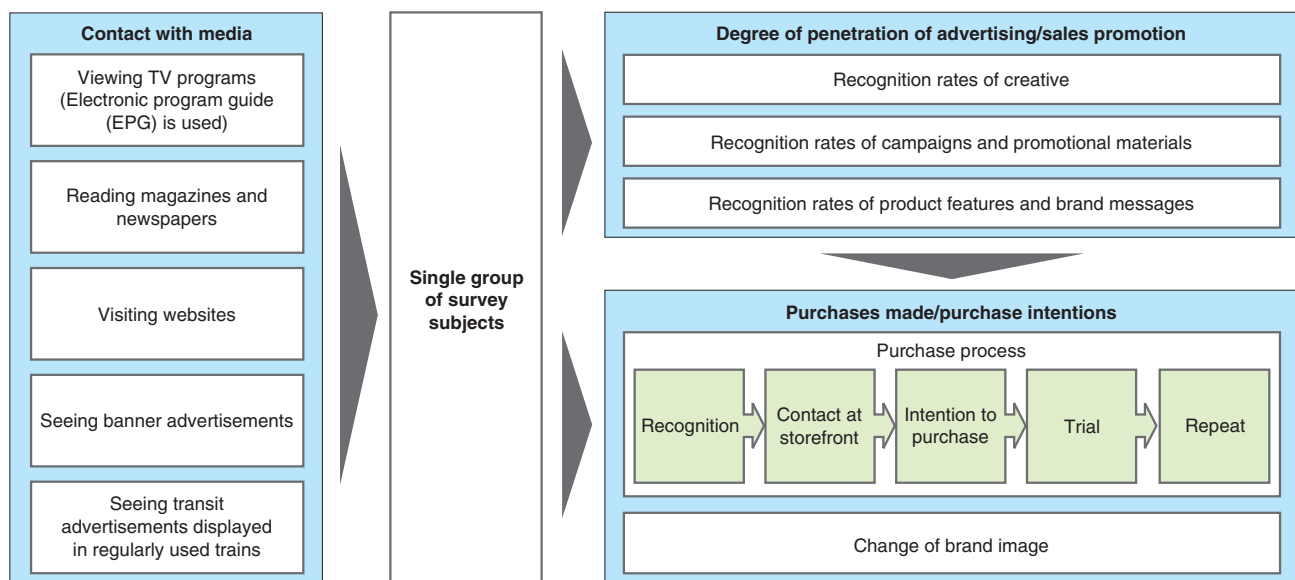
For the surveyed group, we first set out to determine the situation surrounding contacts with the mass media. Specifically, the survey asks the respondents about the television programs that they watched, the magazines and newspapers that they read and the websites that they visited.

Although a considerable amount of data is already available regarding contact with individual types of media, there are very few instances of such data being collected from a single group. With that data, it is easy to determine the degree of overlap between television and magazines, as well as how many respondents who see a particular television commercial subsequently visit that brand’s website.

In addition, for the surveyed group, research is also conducted on the effects of an advertising campaign. First, as indicators of the direct effects of advertising, recognition rates of the campaign, creative (advertising content), messages, etc. are examined. Furthermore, recognition rates of individual products, intentions to purchase and trial rates are also examined.

By examining the relationship between respondents’ media contact and whether they intend to buy or have actually purchased a product, the effects of a certain

Figure 2. Overview of single-source data research



type of media can be understood through a simple cross-tabulation analysis. Specifically, the effects of each type of media can be understood, for example, by comparing respondents who have been exposed to the relevant television commercials with those who have not in terms of intentions to purchase, and by comparing respondents who have accessed the relevant websites with those who have not in terms of trial rates.

Among existing survey methods, one method measures the effects of advertising by conducting a follow-up survey of the purchasers of a product. This survey tends to result in a large proportion of respondents who “answer wrong” by considering that they were influenced by a type of media for which the amount of advertising is large, such as television. As such, it is hard to say that the effects of each type of media are correctly measured. Given the lack of data on persons who did not purchase a product, it is difficult to determine whether the answered media actually contributed to purchases.

A single-source data survey is undertaken to measure the effects of advertising based on the concept illustrated in Figure 3.

To measure the effects of contact with television commercials, attention is given to the change (difference) from before exposure to television commercials to after exposure. Depending on a product’s characteristics, the criteria used to measure the effects can be set in a variety of ways. However, a common method involves the use of purchase intentions. In Figure 3, among those who had been exposed to television commercials (the effect measurement target group), a 3.5-point increase in their purchase intentions is seen.

However, it is likely that this increase may not be solely due to the effects of television commercials. Factors other than television commercials such as seasonal fluctuations could also be contributing to this increase. Therefore, these other factors should be subtracted in determining the effects of television commercials.

In a single-source data survey, persons who had not been exposed to television commercials (the control group) are also examined based on the same criteria such as the degree by which their purchase intentions had increased. In the case illustrated in Figure 3, their purchase intentions had increased by 0.4 points. That is to say, even without exposure to television commercials, the control group’s purchase intentions had increased by 0.4 points.

The ultimate effects of television commercials are measured by subtracting the increase (difference) in purchase intentions arising even without exposure to television commercials from the increase (difference) in purchase intentions arising as a result of exposure to such commercials. This is called “difference in differences” analysis.

By using this analysis, the actual effects of television commercials can be scientifically calculated. While this calculation involves a very simple concept, it is the single-source data survey that enables this calculation.

III Optimization of Media Using Single-Source Data

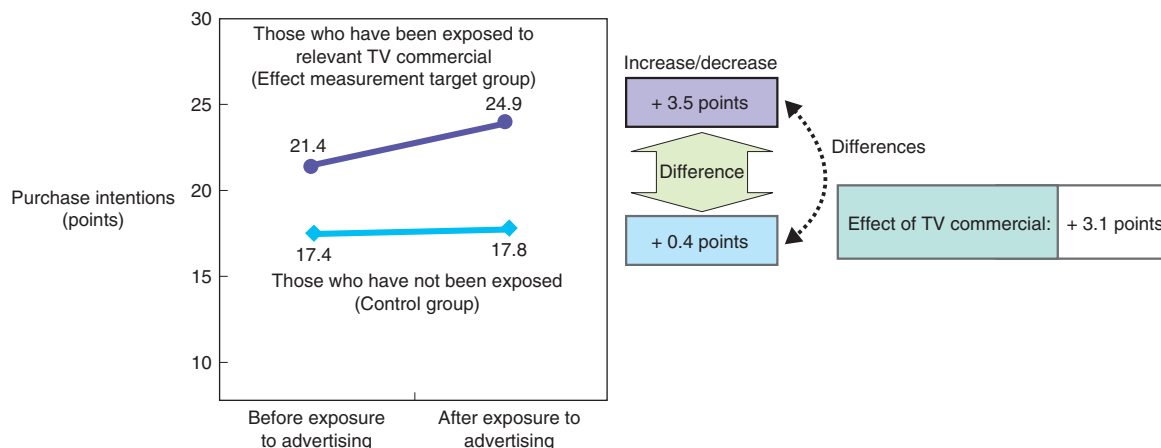
This chapter introduces cases in which single-source data is used for the scientific analysis of advertising.

Corporate advertising personnel are almost always faced with the challenge of determining the optimal amount of television advertising. As the amount of advertising increases, the reach (the number of viewers) also increases. However, the challenge is to determine the optimal amount of advertising (advertising budget).

Figure 4 shows the relationship between the amount of television advertising (gross rating points (GRP) ^{Note 2}) and the reach of television commercials, as determined using single-source data.

First, the term “reach” must be defined. As a point of reference, NRI assumes that a television commercial

Figure 3. Concept of advertising effect measurement



will be viewed at least ten times. This standard is set as the result of measuring the recognition rate of a commercial in relation to the number of times that the commercial is viewed. Because the recognition rate tends to peak after a commercial has been viewed around ten times, it is thought that it is desirable to strive for ten exposures to a commercial as the standard.

When we see the proportion of people who are exposed to a commercial at least ten times (reach) in relation to the amount of television advertising, we find a steadily increasing relationship between the two. As the amount of advertising increases, so too does the reach of that advertising. However, considering the reach per unit amount of spending (1,000 yen), the

greatest efficiency is attained when the household GRP is around 1,300 percent to 1,500 percent.

Through the use of single-source data, it has been possible to scientifically determine that the most efficient amount of television advertising is that which is equivalent to around 1,500 percent in terms of the household GRP. However, there may be cases where even though the efficiency is adversely affected, it is necessary to achieve greater reach. As such, it would be desirable to determine the amount of television advertising by striking a balance between a household GRP of 1,500 percent (which enables maximum efficiency) and the level of reach that a company wants to attain.

Figure 4. Efficiency of television commercials

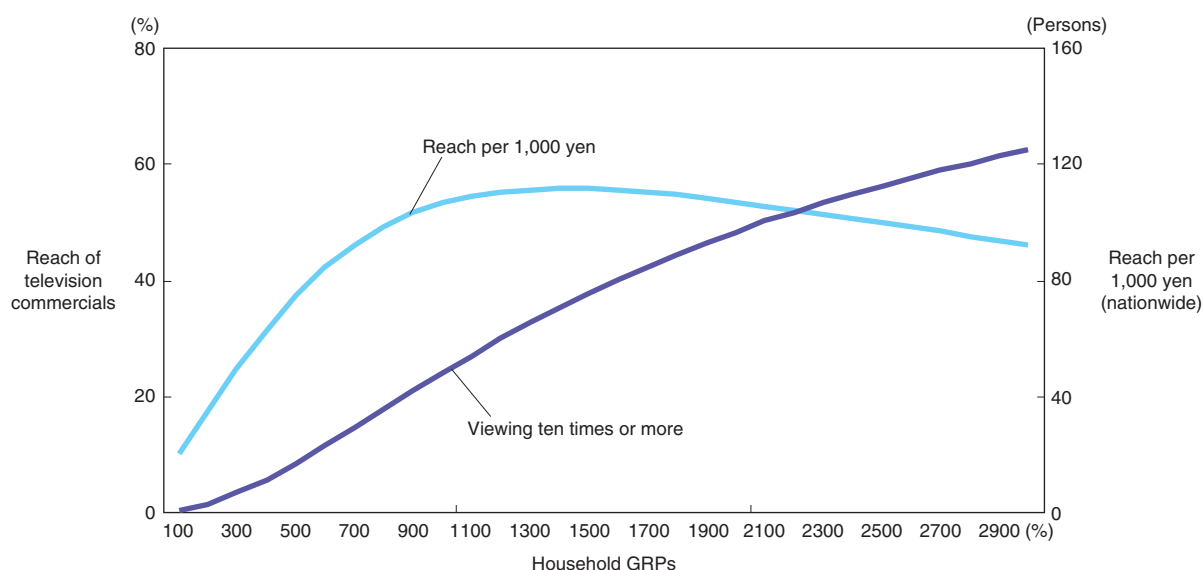
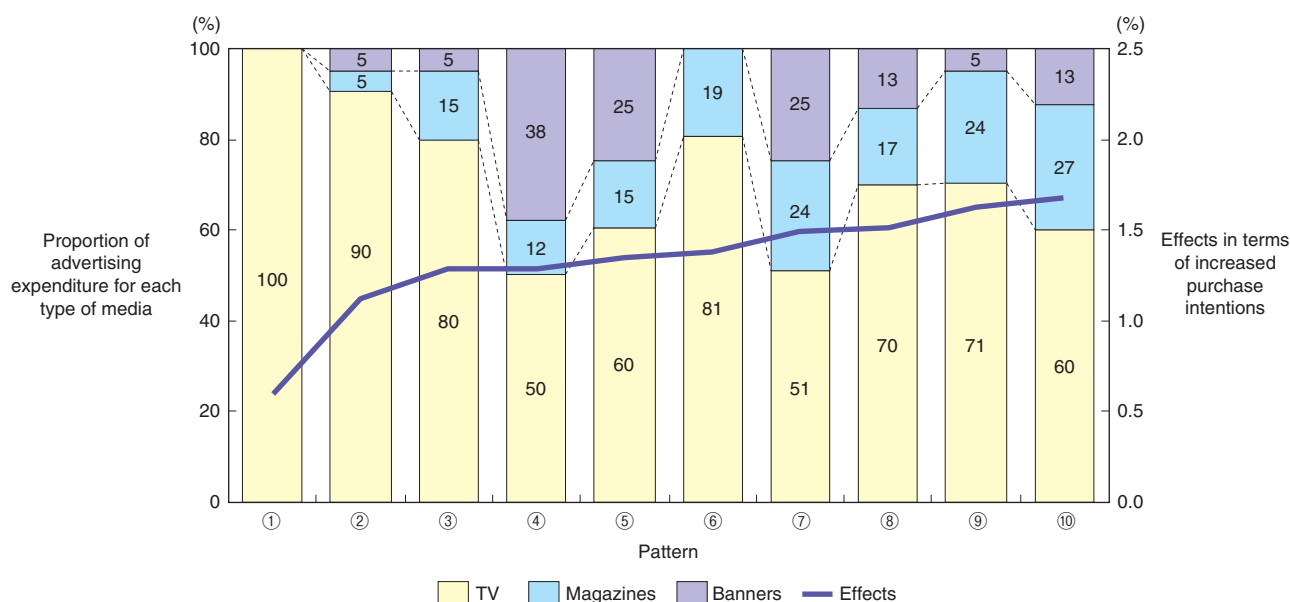


Figure 5. Simulations for cross-media optimization



Notes: The bar graph (left axis) indicates the proportion of advertising expenditure for each type of media. The line graph (right axis) indicates the effects in terms of increased intentions to purchase a product.

The strength of the use of single-source data lies in the ability to optimize the amount of advertising not only for a single type of media, such as television, but also for multiple types of media (cross-media). Figure 5 shows the results of simulations for each pattern of media mix consisting of television commercials, magazine advertising and banner advertising.

These simulations were made to analyze the optimal proportion of each type of media (television commercials, magazine advertising and banner advertising) when the total advertising budget is 200 million yen. Based on a “difference in differences” analysis as determined by the use of single-source data, the effect of each type of media was measured such as the effect of television commercials and that of magazine advertising. At the same time, the cross-media effect when placing both television commercials and magazine advertising was also measured. By correctly measuring the effect of each type of media, it has become possible to simulate the optimal mix across different types of media.

The simulation results indicate that spending a total advertising budget of 200 million yen solely on television commercials brought about the smallest effect in terms of increased purchase intentions. However, the effect soared simply by allocating a small portion of the budget to magazine and banner advertising. The simulations also revealed that the optimal mix is 60 percent for television commercials, 27 percent for magazine advertising, and 13 percent for banner advertising.

The results brought about by this analysis are not limited to just simulating an optimal advertising budget allocation. This analysis also gave us some interesting insights.

The analysis involved simulations for cosmetics aimed at female consumers. Because the time spent watching TV has been decreasing greatly among female consumers in their 20s, many segments in this demographic group are difficult to reach solely through television commercials. Therefore, allocating even a small amount of advertising budget to other advertising vehicles such as magazine and banner advertising, rather than spending 100 percent of such budget on television commercials, could lead to a sharply enhanced effect. The analysis revealed that magazine and banner advertising is essential for optimizing advertising for cosmetics.

In addition, the proportion of magazine advertising in the simulated optimal media mix is high at 27 percent. This high proportion suggests that in the case of cosmetics, simply publicizing a brand name through television commercials is not sufficient to increase purchase intentions, and that it is also important to communicate the benefits and value of cosmetics in detail through printed media such as magazines.

In this way, if the effects of advertising are scientifically determined by using single-source data, consideration can be given to the optimum media

combination. As such, we are entering an era where we should adopt a scientific approach to advertising, rather than relying on experience and intuition as in the past.

IV Effective Messages vs. Ineffective Messages

Recently, a scientific approach has been adopted not only for the items that are suitable for quantitative measurement such as “amount of advertising,” but also for qualitative factors such as “quality of advertising.”

A representative example of a scientific approach adopted to evaluate the quality of advertising is a method called neuromarketing, which measures the effects of advertising by monitoring people’s brainwave activities. However, this experiment is conducted under a situation that is different from the actual market environment, such that it is difficult to assume that the results of the experiment could show actual effects in the market.

Here again, the use of single-source data enables the evaluation of the quality of advertising. This is because the “difference in differences” concept can also be applied when the effectiveness of each advertising message is measured.

In evaluating the quality of advertising, there is no point in simply examining whether the relevant advertising message was effective or ineffective. Without knowing the reasons for being effective, it is not possible to provide feedback for the creation of messages from next time onwards.

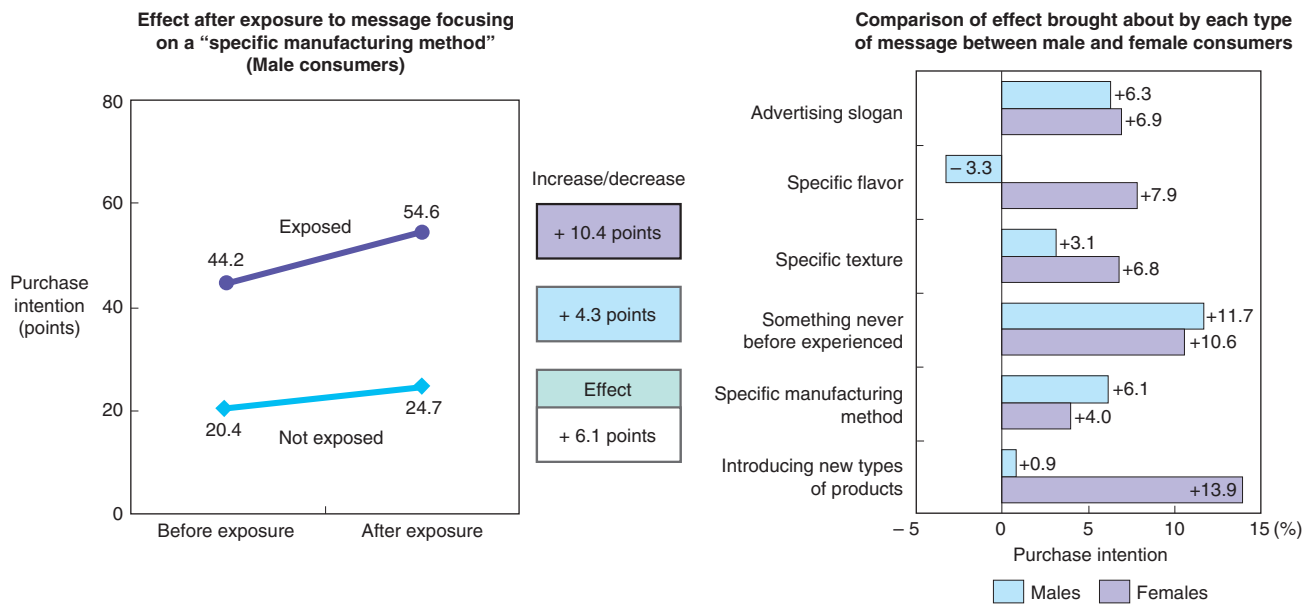
By using single-source data to examine the recognition rate of each message, it is possible to analyze the relationship between each message and purchase intention. Figure 6 introduces the case where the levels of purchase intentions in response to each message were analyzed.

In this case, a variety of messages that an advertiser (Food Brand A) presented to consumers were evaluated. The graph on the left side of Figure 6 shows a large increase in purchase intentions among male consumers who were exposed to an advertising message that was designed to draw attention to a “specific manufacturing method,” whereas only a small increase was seen among those who were not. When the “difference in differences” analysis is applied in the same way as in the case of measuring the effect of each type of media, it is reasonable to assume that exposure to the message focused on a “specific manufacturing method” brought about the effect of “plus 6 points.”

The graph on the right side shows the results of similar analyses. This graph compares the effects brought about by each type of message between male and female consumers.

The advertising slogan was almost equally effective for both male and female consumers. However, although a message attracting attention to a “specific flavor” was

Figure 6. Message-specific evaluations for Food Brand A



effective for female consumers, it had no effect on male consumers. Messages such as those putting emphasis on a “specific manufacturing method” have had greater effect on male consumers.

Taken together, these findings suggest that in an effort to convince consumers that Food Brand A is better than its competitors, messages that attract attention to “logic” such as a “specific manufacturing method” have greater effect on male consumers. For female consumers, messages focusing on “benefits” such as flavor and texture are more effective.

The results of similar analyses on some other types of products reveal that messages drawing attention to “convenience of small-lot packaging” are more effective in urban areas, while those focusing on “flavor and cooking methods” are more effective in rural areas. The effectiveness of attracting attention to “convenience of small-lot packaging” in urban areas is considered to be attributable to the fact that there are spatial restrictions in urban areas for storage. The use of single-source data enables distinction between effective and ineffective messages based on gender, age and location.

Traditionally, surveys often ask consumers direct questions such as “what motivated you to purchase the product.” To this question, respondents most often choose a reply focusing on the priority theme to which an advertiser wants to attract attention. However, a single-source data survey asks the single group of survey subjects “whether they want to buy the product” and “whether they know each of the different messages” separately. Through cross-tabulation analysis, the effect of each message becomes clear. Because the respondents are asked these questions separately, they are not influenced by a specific message. Furthermore, by adopting the “difference in differences” analysis, the factor that led to increased purchase intentions can be determined for each individual message.

V Discovery of New Consumer Insights

Thus far, the usefulness of single-source data has been explained in terms of the “quantity” and “quality” of advertising. This chapter introduces successful cases in which a single-source data survey led to the creation of more effective advertising strategies.

NRI’s single-source data research also examines the access logs of the survey subjects. Through the analysis of their access logs, it is possible to determine their online actions such as which website they visited and when. In addition to the websites visited, banner ads and video ads that they viewed can also be identified, making it possible to more accurately measure the effect of online advertising.

By way of example, when we analyzed the effect of access to websites of convenience goods, we found a brand whose site has a high number of visitors, but whose popularity did not lead to an increase in purchase intentions. The analysis revealed that in spite of an extremely higher number of visitors to the company’s website than to that of a competitor, access to the competitor’s website clearly had a greater effect in terms of increasing purchase intentions.

Solely from the perspective of the number of visitors, which is one of the traditional evaluation criteria, the company’s website is more successful than that of the competitor. However, if viewed from the access logs analyzed by the single-source data survey, the effect of access to the site was judged as being low.

The reason for the low effect lay in a big difference in the method of access to the website. The survey findings indicated that a competitor’s website has many pages for visitors to view, and that visitors have been acquiring a variety of information from the website. While the

number of pages viewed per visitor for the company was 3.1, it was 5.6 for the competitor.

A difference was also seen in the structures of the two websites. The competitor provides many varieties of content such that once consumers access its website, they can enjoy viewing many different pages.

These survey results suggested that to create an effective website, simply putting emphasis on the number of visitors is pointless. Rather, what is important is to encourage visitors to view many pages. The company immediately reviewed its website and enhanced its content so that viewers stay longer. As such, regardless of whether the advertising is good or bad, a single-source data survey enables a better understanding of why specific advertising is good or bad. Based on the reasons, it becomes possible to refine strategies for future endeavors.

VI Learning from Failures to Achieve Advertising Optimization

Advertising agencies tend to sidestep the results of the single-source data research conducted by NRI. This is because they have unpleasant feelings about the fact that ads they created are evaluated by a third party. Indeed, there are cases in which the findings of the single-source data survey indicate that “this ad had little effect.” Nevertheless, on the part of advertising agencies, these findings are not necessarily negative.

What many advertisers want to know is not simply whether an advertisement is good or bad. Rather, they want to know the reasons why the advertisement was considered good or bad. Even if the survey results show an unintended outcome, no advertiser would immediately change its advertising agency. As a result of bad survey results, most advertisers want to improve the advertising quality by learning from failure. They do not dislike advertising agencies that produce advertisements that fail, but they dislike advertising agencies that do not learn from such failure.

The single-source data survey is capable of measuring the effect of each individual marketing strategy. Furthermore, the survey can also ascertain the effect of cross-media marketing that involves multiple strategies. In the future, new management indicators should be established through the use of single-source data in an effort to optimize marketing strategies.

By moving away from “try and see” advertising that is based on experience and intuition, the PDCA (plan – do – check – act) cycle must be applied for advertising. Specifically, a plan must be formulated (Plan) and implemented (Do); the effect of such implementation must be measured from the scientific perspective (Check); and measures must be taken to increase the effect of advertising (Act). As we enter the era of increasingly diversified means of communication with consumers, it is important to learn from failures through running the PDCA cycle for advertising to continuously pursue more effective marketing.

Notes:

- 1 Since 2008, NRI has been conducting single-source data research among a single group of survey subjects to understand all consumer actions over the last two months such as their media contacts, product/service awareness and purchase intentions. NRI conducts this survey among about 3,000 respondents living in Tokyo, Kanagawa, Chiba, Saitama, Ibaraki and Tochigi ten times a year. Currently, more than 140 companies are using the resulting data.
- 2 Gross rating point (GRP) refers to the sum of rating points achieved by television programs. Household GRP is GRP in units of households.

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