Media Impact: Effectiveness Of Reach & Frequency In Media Buying Pattern And Audience Analysis

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ABSTRACT

For many years media practitioners have been trying to answer some important questions about advertising repetition, questions, such as the following, whose answers are all related to the effective frequency concept. How much exposure is enough? How many times must a media message (eg: advertising/paid/PR/Communications campaign) be repeated for it to effectively communicate'? How much reach and frequency are ideal for a media plan'? And, how can planners improve the art of media planning? This paper express a practical example of how effective frequency might be used to judge the impact of three alternative media plans. Impact is defined as providing the largest number of responses to media campaign/advertising/public relations/communications activities at various frequency levels.

Media planning often involves decision on how to deliver the message to the prospective audience. In a good media plan (Sissors, Jack & Bumba 1990; Goodrich & Sissors 1993) will requires development of specific media objectives and specific media strategies (Belch & Belch 2004) designed to create a positive media impact. Media impact (Krugman 1965) is one aspect which is very important to ordinary people like us but it is also important to every media planner. This paper express a practical example of how effective frequency might be used to judge the impact of three alternative media plans. Impact is defined as providing the largest number of responses to media campaign/advertising/public relations activities at various frequency levels (Goodrich & Sissors 1993).

CASE STUDY A
USING THE EFFECTIVE FREQUENCY CONCEPT TO DETERMINE THE IMPACT OF ALTERNATIVE MEDIA PLANS

1. Reach, frequency, and target GRPs of three media plans:

	Monthly GRP	Reach	Frequency
Daytime only plan	296	52	5.7
Nighttime only plan	142	71	2.0
Day + magazine plan	296	80	17

2. Subjective judgements are made about effectiveness of three media:

Daytime network TV	6-5 index of value
Nighttime network TV	100 index of value
Women's magazines	50 index of value

3. GRPs are multiplied by index of values:

Daytime plan	296 x .65	=	192 net delivery
Nighttime plan	142 x 1.00	=	142 net delivery
Day (157 GRPs)	157 x .65	=	102 net delivery}- TOTAL
Magazine (139 GRPs)	139 x .50	=	70 net delivery}- 172

4. Gross reach and frequency are converted to net delivery:
    Example: Daytime network TV

Gross Delivery			**Net Delivery**		
GRPs	**Reach**	**Frequency**	**GRPs**	**Reach**	**Frequency**
296	52	5.7	192	48	40

Effective frequency (Naples 1979) has been determined to be from 2 to 7 exposures. Therefore, a frequency distribution has been given an index effective response for every frequency level (Ostrow 1981, 1984). These indices are subjectively made here, but they could be objectively measured in test marketing situations.

5. Subjective judgements about indices of responses:

Frequency levels	**Index of Response**
From I to 3 exposures	50
Front 4 to 7 exposures	100
From 8-plus exposures	100

A frequency distribution (from computer analysis) is now performed to show percentage of net delivery reach for each frequency level. These reaches are multiplied by the index responses.

6. Frequency distribution x Index of Responses:
    Example: Daytime network TV

Frequency Levels	**Net Reach**	**x**	**Index of Responses**	**=**	**Net Impact**
1 to 3 exp.	28.8%	x	50	=	14.4
4 to 7 exp.	11.8	x	100	=	11.8
8 + exp.	7.2	x	100	=	7.2
Totals	**47.8%**				**33.4**

7. Now, all net impacts (or three alternatives are calculated):

Media Plan Alternative	Net Impact	Original Gross Reach	Frequency
Daytime plan	33	52	5.7
Nighttime plan	39	71	2.0
Day + magazine plan	39	80	3.7

8. Results:

The nighttime plan and the day plus magazine plan are equivalent in impact. This was not evident by studying reach and frequency alone. The daytime plan is clearly the one with less impact potential. The most critical points in these analyses were the subjective judgements of media values, arid index of responses.

These judgements can be improved by taking a consensus vote and averaging scores of a number of media experts within organization. Or, they can be measured objectively through test marketing where variable weights can be determined.

Although this technique seems somewhat arbitrary, especially in the value judgements that have to be made, such judgements are usually made in media planning outside the confines of the data. In other words, data is collected oil reach and frequency, cost-per-thousand (Goodrich & Sissors 1993),[1] etc., but eventually someone has to make judgements about their values. This technique formalizes the judgement process.

Effective Frequency and Reach

One of the most significant changes in media planning (Sissors, Jack & Bumba 1990; Goodrich & Sissors 1993) is the development of the concepts of effective frequency and reach (Hofman, 1966).[2] These concepts help planners understand a number of important facts that effect media planning such as which of two plans is better, or how much repetition is needed to achieve communication objectives. Strategically, these concepts are also attempts by planners to go beyond and improve regular reach and frequency data.

Effective Frequency

Effective frequency (Ostrow 1981, 1984) may be defined as the amount of frequency (or repetition) necessary for advertisements/PR campaign to be effective in communicating. The underlying assumption, of course, is that average frequency used in most media plans is not effective. Therefore, effective frequency represents a great improvement over ordinary reach and frequency numbers used in traditionally created media plans.

The problem with ordinary reach and frequency is that they are not directly related to the effects that media plans may produce (Naples 1979). They do not help a planner determine the adequacy of alternative plans. An ordinary reach number simply represents opportunities for audiences to see advertisements/PR campaign. There is no guarantee that those who are reached actually see any of the ads/campaign because exposure measurements used to compare media do not cover exposure to ads or campaign. Even if audiences see ads/PR campaign in a vehicle, there is no way to know whether the ads/campaign were effective or not simply by noting the reach of a media plan. Ordinary frequency generated by a plan is an average number of target audiences exposed (Sissors, Jack & Bumba 1990) to the media vehicles selected. Average frequency, too, is not related to the plan's effectiveness.

But, planners who use effective frequency attempt to correct both situations by the number of repetitions that are needed to attain communication goals such as achieving brand awareness, attitude changes, brand switching, and recall of messages, to name a few.

If, for example, someone sets a communication goal of building 70 percent attitude change, a media planner should ask, how much repetition will help accomplish the task? Through test marketing, or studying responses to ads/campaign done in the past, all estimate may be made of the vehicle level needed. One unusual aspect of making an effective frequency decision is that it represents a technique of media planning that is different from those used in the past.

In the first place, building an attitude change is usually thought to be a communication goal—not a media goal. So, by using effective frequency, planners are enlarging the scope of their work, combining media and creative activities. That combination in itself is a relatively new idea in media planning,

Second, there often is no data by which to determine objectively how much repetition is necessary to accomplish the task. Therefore the answer to the planner's question mentioned earlier may have to be based on either experience, or specialized research. If experience is used as a basis for the answer, then it may be rather subjective, because it is difficult to parse out a media vehicle's contribution to building an attitude change.

If research is used to find the answer to the attitude change problem, then it will take both time and money, and the end result may not be conclusive, because it is difficult to prove conclusively. The key point to be made is that it is not easy to prove the relationship between effective frequency and 70 percent goal of an attitude change, the relationship is not an obvious one.

Response Curve and Effective Frequency

An important point in understanding the meaning of effective frequency is that the number at which point frequency is called "effective" (Ostrow 1981, 1984) is based on ideas of how much repetition is needed to communicate with consumers. This numbers has been found or estimated by observing what has happened at varying repetitive levels to achieve communication goals in the past. The results, plotted on fig. 1 is known as "response functions" or "response curves".

Figure 1: S-Shaped Response Curve
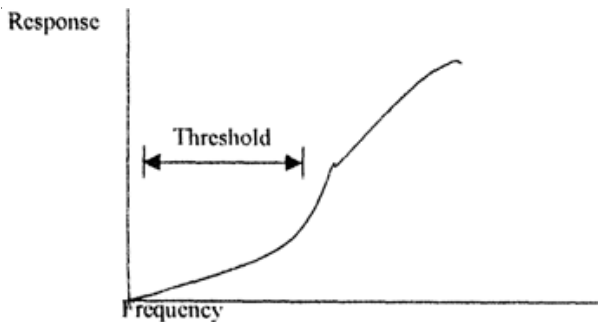
(Response Curve: Refer Sissors, Jack & Bumba, 1993)

A response function is a measurement of advertising/communication campaign effect (as is a response curve) (Goodrich & Sissors 1993). Over a period of many years, practitioners have hypothesized about how advertising/communication campaign works. Most have felt that advertising/campaign/programs does not work immediately. According to Herbert author of the "three hit theory" (Krugman 1965), the first time an ads/campaign is perceived may result in audiences raising questions about the band/messages such as, "What is it?" After audiences have perceived the same ads/campaign a second time, they may ask, "What of it?" The second exposure, then, is where consumers react to commercial by "personal responses and elevations—the 'sale'/ 'positive attitude change' so to speak occurs," according to Krugman (1965). The third exposure is a reminder of the other two, and is the beginning of a time where consumers pay little or no attention. Krugman hypothesized that when audiences are in the market to buy a product, they may return to that second repetition, but only when a consumer is ready to buy/use a given product/message.

Many other practitioners have hypothesized that audiences begin to respond to advertising/communication campaign messages at about third repetition. Beginning with the third repetition, the number of responses begin to grow with each additional repetition. In fact, responses rises, but a declining rate. If this hypothesis is plotted on a graph it will have an "S Shape." (Fig. 1) The first two repetitions are a "threshold" (the lowest limit at which a stimulus is perceptible) which audiences have to pass before advertisements/ communication campaign become effective (Goodrich & Sissors 1993).

Most researchers of advertising/communication campaign effect/responses curve, however, have not found the S-shaped curve to occur very often. In fact, a different kind of curve, often called a "convex-shaped" or "convex" curve, has been found more often. Nevertheless, many media planners, who have the effective frequency concept, believe that a convex curve represents a graphical picture of how repetition works in advertising/ communication campaign. (Fig. 2)

Figure 2: Convex Response Curve
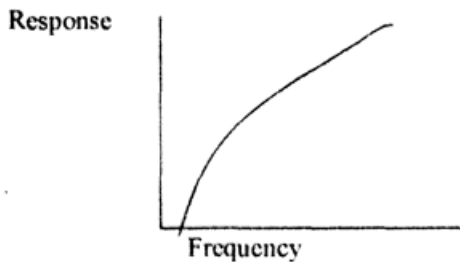
(Convex Curve: Refer Sissors, Jack & Bumba 1990)

Effective Frequency Numbers

Effective frequency (Hofman 1966; Ostrow 1981, 1984) is expressed as a number. This number may vary from one repetition to as many as ten or more. Some planners, at first, thought the optimum effective frequency number was from three repetitions on. This was called the "three-plus" concept. Later, however, there was much agreement that the optimum effective frequency number could be as low as one or as many as nine (or more), or that the number could even

be a range, such as a frequency level from two to seven. To date, this question has not been resolved, and more research on response functions may be needed to settle the argument.

What is Effective Reach?

Effective reach (Hofman 1966; Ostrow 1981, 1984) is the second part of the concept. It represents the percent of a vehicle's audience reached at each effective frequency increment. If the effective frequency is believed to be from to seven repetitions, then the reach is the sum of individual reach percentages for each frequency level. This can best be seen by the example in Table 1. This table shows that the effective reach number is dependent on effective frequency numbers, In this example, because effective frequency is defined as being from a three to a six frequency, then effective reach is found in the sum of percentages in the second column for frequencies 3, 4, 5, and 6, or 28.1 percent. Both effective frequency and reach are necessary part of the same concept. They are not independent of each other.

Table 1: How Effective Reach Is Calculated*

Frequency, or Number of Impressions	Percent Reached at Each Frequency Level	Percent reached at LeastOne or More Times
1	19.4	612
2	13.9	4TH
3	10.4	33.9
4	7.8} 28.1%	23.6
5	5.8}	15.8
6	4.1	10.5

* A frequency distribution far a reach of 67.2 and a frequency of 3.1.
** If effective frequency is from 3 to 6 repetitions, then effective reach is sum of all percentages reached from 3 to 6 or, in the example, 29.1%.

What is Effective Frequency?

Effective frequency, as an idea, existed prior to being given that name. In 1957, Brown, Lessler, and Weilbacher, in their book Advertising Media, wrote:

> It should be pointed out that there exists for every brand or product, a theoretical number of impressions required to convert each individual prospect into a purchaser.

The authors gave an example of what their version of effective frequency was when they wrote:

> In order to maintain cigarette brand loyalty, it is necessary for the average smoker to receive sixteen television commercial messages for his usual brand, if the competitive copy claims are all roughly equivalent. And even though the notion of an average number of impressions requited for action may be abstract, it does indicate the direction in which measurement must develop.

This kind of measurement did not exist in 1957, but researchers ran many different kinds of experiments to learn if there was an optimum amount of repetition that could be called "effective" (Krugman 1965).

Two British researchers, S. Broadbent and S. Segnit (1967), contributed to the development of effective frequency when they won a prize for a paper entitled, "Response Function in Media Planning", as part of the 1967 Thomson Medals and Awards in London. They devised a technique for evaluating media plans by using response function data. They offered alternative media plans might be compared on an effective frequency basis, even if they did not use the terms effective frequency. They also hypothesized about the nature of response curves.

However, Sissors, Jack and Bumba (1990) and Goodrich & Sissors (1993) observed that, in the United States, the person who first started to publicized the need for effectiveness measures in media planning was Alvin Avhenbaum, who was then director of corporate planning and marketing services at J. Walter Thompson, New York. Achenbaum did not advocate the use of effective frequency as we know it now, but recommended the use or effective rating points (ERPs). EPRs were a combination of effective frequency and reach as a placement for gross rating points (GRPs).

Probably the greatest impetus to establishing the concept was the publication of *Effective Frequency: The Relationship between Frequency and Advertising Aawareness*, by Michael J. Naples (1979). Later the concept became a mandatory reading and references for every media planner.

Research on Effective Frequency Concept

The studies cited by Naples were performed by different persons for different reasons, but, in essence, they concluded that it takes at least two or three repeated exposures for message to be learned. Studies done by Robert C. Grass for DuPont, (Sissors, Jack, and Bumba 1990; Goodrich & Sissors 1993) found that some messages were effective from the third to the eight exposure per month. Krugman's "three hit" theory (Krugman, 1965) was also discussed in these research projects. Most of the studies found that the effect of frequency increases, but at a declining rate. In essence, their conclusions correspond to the convex response curve. One of the studies, that done by Ogilvy & Mather (1963), found that at the one frequency level, advertising effectiveness during different day parts was relatively the same, but a higher frequency level at night was more effective than it was during other dayparts. Product category and brands also made a difference in frequency effects. Two researchers (Apple and Jacobovits, cited in Sissors, Jack & Bumba 1990) found that too much frequency had negative effects, although they did not indicate how much repetition brought these effect effects about.

The McDonald Study

The most significant study reported by Naples (1979) in terms of motivating media planners to adopt the concept was done by Cohn McDonald, in l971. The study, commissioned by the London Office of J. Walter Thompson, was analyzed and reported by Cohn McDonald of the British Market Research Bureau. A report on that study appeared in Naples's 1979 book. The subsequent widespread publicity helped it become one of the leading pieces of research that underlie the effective frequency concept.

The methodology used in this study involved having a panel of consumers in great Britain keep two kinds of records: the number of television, magazine, and newspapers that they were exposed to each day for thirteen weeks, and the number of brands (in nine product categories) they had purchased in the same time period. The specific time unit that was analyzed,

the purchasing cycle for nine brand categories, range from average of 11/2 to 2 1/2 weeks. The media exposures that McDonald measured were really vehicle exposures or opportunities to see (OTS) and seemed to indicate that advertisements. In Naples's book, McDonald used terms that seemed to indicate that advertising exposure was being measured, but subsequent explanations made it clear that it was really OTS.

McDonald counted the panel's OTS for every brand in each purchase interval, and compared this with purchasing behavior, noting whether successive purchases at the beginning and end of each interval were of the same brand on a different brand.

On one hand, Jeremy Elliot, senior associate director of J. Walter Thompson, London, (Sissors, Jack & Bumba 1990) commenting on McDonald's study, write that "the first OTS increased retention of advertising and that a second OTS increased it as much again." But the third and any additional OTS in the purchase interval had little effect. (See Table 2)

Table 2
Relationship of Frequency Levels and Purchasing
the Same Brand Again

	Media Exposure (various Number of repetitions)			
	0	1	2	3
Percent of brand's purchases Repeated the next purchase	54.4	58.4	62.6	63.1
Percent of gain		+4.0	+4.3	+.04

On the other hand, Elliot, noted that OTS also had a different effect, the second OTS was twice as effective as the first in bringing about brand switching. Elliot noted that brands that had two or more OTS in a purchasing interval were making gains at the expense of brands that had two or more OTS. In a purchasing interval were making gins t the expense of brands that had only one OTS. He concluded that "it takes greater stimulation to overcome inertia and change behavior than it does to maintain it." Nevertheless, the third OTS still had no incremental value. (See Table 3)

Table 3
Relationship of Frequency Levels and Purchasing of Different Brands

	Media Exposure (various number of repetitions)			
	0	1	2	3
Percent of competitive purchases in which consumers switched to different brand at the next purchase	17.2	20.91	27.4	27.9
Percent of gain		+3.7	+6.5	+0.5

McDonald's study was important because it showed that it took at least two OTS to bring about brand switching, and that media plans ought to have at least as many to make frequency effective. Of course, the study was also well done, and that contributed further to its acceptance.

Does Advertising/PR Campaign Wear Out When There Is Too Much Frequency?

Some of the research cited by Naples (1979) showed that there were negative responses that occurred after using too much repetition. Some consumers may even forget all advertising message because of high levels of frequency.

Robert C. Grass of DuPont (1968), through his research, found that there were satisfaction effects on attention and learning levels is a results of increased advertising frequency. After two or three exposures, attention and learning declined. Nonetheless, Grass also found, through a different piece of research, that a favorable attitude toward a company developed because of increased advertising frequency, and there were no diminishing returns.

The main problem, then, is when, and under what circumstances, does frequency affect wear-out? It should be remembered that those who use the three-plus concept assume that there is no wear-out, at least no wear-out caused by too much repetition. But some persons in the industry feel that there may be range of wear-out, and after the range has been passed, wear-out begins. Achenbaum (Naples 1979) said that tile range may be from three to ten, or perhaps from two to seven, but could not say with assurance (based on existing research) where the optimal range was.

CASE STUDY B
SUKOM ADVERSTISING/ PAID CAMPAIGN

A case study by Choy, S.L (1998) observed eleven promotional activities planned by the Department of Communication, SUKOM Berhad prior to the event of 21 September 1998 and only two were paid activities. This study concentrated on paid activities adverstising/paid campaign between the period of 1993 to 1998:

Paid Activities Advertising/PR Campaign Period

1. "Pengenalan Sukan Komanwel '98"   April - September 1995
2. 100 Days Countdown To Kuala Lumpur 98 XVI   3 June 1998
Commonwealth Games

Non-Paid Paid Activities Advertising/PR Campaign/Promo

1. Venue Visits
2. Le Tour De Langkawi
3. Sukom Games Family Carnival
4. Kuala Lumpur '98 XVI Commonwealth Games Nationwide Promotion
5. 100 Days Countdown To Kuala Lumpur '98 XVI Commonwealth Games 6. The Sukom - Ministry of Education - Milo Children's Art Competition
7. Main Information Center
8. Website
9. INFO '98

Reach and Frequency Effectiveness of SUKOM's Campaign

Activity 1   **Pengenalan Sukan Komanwel 1998**
Period: April-Sept '95
Media Strategy/Vehicle: Out of Home - Billboard
Frequency: 24 jam (6 months)
Reach: 3.9 million (Lembah Klang)
Target Audience: Road users
Cost: RM40,000

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Activity 2   **100 Days Countdown to KL 98 XVI Commonwealth Games**
Period   One Day (June 1999)
Media Strategy/Vehicle   Newspapers
Frequency   Single exposure only
Reach   7,794,000
Target Audience   All newspapers readers
Cost   RM38,730.04

Cost per thousand (CPM) for both media strategies were:

Newspaper   CPM = $\dfrac{\text{Cost}}{\text{Target Audience}}$ = $\dfrac{\text{RM38,730}}{7,794}$ = **RM4.96**

Billboard   CPM = $\dfrac{\text{Cost}}{\text{Target Audience}}$ = $\dfrac{\text{RM40,000}}{3879.4}$ = **RM 10.31**

CPM for billboard were not as effective as newspaper. It should be noted down that CPM of RM 10.31 were after 50% discounts. However if we look into the GRPs (Gross Rating Points) where it translate message weight to target audiences. A measure of the total gross weight delivered by a vehicle. It is the sum of the ratings for the individual announcements or programs. A rating point means an audience of l percent of the coverage base. Hence 150 gross rating points means 1.5 messages per average home. Gross rating points are duplicated ratings as shown below for both media vehicles/strategies:

Billboard   Reach   =   75% of target audience = 2,909,550
                   Exposure Frequency   =   20 (working days per month)
                   Total Target Audience   =   3,879,400
                   Average Exposure   = $\dfrac{20 \times 3.879.400}{75\% \times 3.879.400}$
                                               = $\dfrac{77,588,00}{2,909,550}$
                                               =   2066
                                               = $\dfrac{26.66 \times 1}{100}$ =0.27 messages **per car**

Newspaper   Reach   =   95% of target audience = 7,404,300
                   Exposure Frequency   =   One day

Total Target Audience $=$ 7,794,000

Average Exposure $=$ $\dfrac{1 \times 7{,}794{,}000}{95\% \times 7{,}794.000}$

$=$ $\dfrac{7{,}794{,}000}{7{,}404{,}300}$

$=$ $1.05 = \dfrac{1.05}{100} \times 1 = 0.01$ **message per home**

Result

As a result, Sukom's media paid activities were rather ineffective due to low message weight, low reach and low frequency. In terms of cost, Sukom paid very little for paid activities. A total of RM78,730.04 were spent for both activities which amounted to 2.2% out of Sukom's total budget of RM260 million. In terms of reaching, the two paid media activities left more than 10 million of Malaysians without messages. Total audience reached by both activities were only 30.77% which left 70% other Malaysians unreached.

CONCLUSIONS

Effective Frequency could be summarized as one exposure of an advertisement to a target consumer group (within a purchase cycle) has little or no effect. Because one exposure is usually ineffective, the main thrust of media planning should be on emphasizing frequency rather than reach. Most of the research studies suggested that two exposures within a purchase cycle is an effective threshold level. Three exposures within a purchase cycle, however is felt to be optimal. After three exposures within a purchasing cycle, advertising becomes more effective as frequency is increased, but at a decreasing rate. If this were drawn on a graph, it would appear as a convex curve rising front a zero point. Wear-out of an advertising campaign is not caused by too much frequency *per se*. It is caused by copy and content problems. Generally, small and less well-known brands may or may not be helped by increasing frequency "depending on how close they are to advertising saturation levels." Different day-parts on television are effected by different frequency levels. A similar idea applies to thin versus thick magazines, with the thinner ones having better response are affect than the thicker ones. Frequency responses are affected by the amount of money an advertiser spends as a percentage of the product category total. Those brands with the greatest proportion of exposures within their categories should also gain great effect when frequency is increased. The responses due to increased frequency are not affected by different media. What is true for one medium is true for others. Each brand may require a different level of frequency of exposure. One cannot generalize from a given brand's experiences to some other brand. Specialized research is required to find the unique frequency level for a brand. Two brands spending the same amount of money for advertising may have different responses to their frequencies.

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NOTES

[1]   While it is important to reach as many target audience members as possible, it is also just as important to reach them at an efficient cost. The most efficient cost is the lowest cost per thousand. Though, there will be times when cost per thousand may be ignored in planning because some other selection criterion has a higher priority – but not often.

[2]   Reach and frequency are components of gross ratings points (GRPs), i.e. GRPs = Reach x Frequency. Therefore, if we know the GRP level and the reach developed by our schedule then we can restructure the formula to find the average frequency as follows; Frequency = GRPs ¸ Reach.