Post Impressions: Internet Advertising without Click-Through.

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Abstract

This research compared the factors affecting the click-through and post impression rates of internet banner advertising. The data analysed included over 7 million impressions, with 739 placements, and covered 12 different campaigns.

Post-impressions were correlated with click-throughs; the average click-through was 0.44% which compared to 0.13% for post-impressions. We found that targeting had a strong positive effect on both click-through and post impression rates, increased size had a small effect, but promotions and pricing had a negative effect.

Keywords

Introduction

Total internet advertising declined by 16% in 2002, and 12% in 2001, (IAB, 2003b) but in 2003 the market grew, with growth fuelled by increased internet penetration, increased usage due to broadband, and the increased availability of rich and streamed media. This growth is also supported by evidence that the branding effect of internet advertising is much stronger than the click-through (Dynamic Logic, 2002)

A post-impression is a visit to a website, after exposure to an internet advertisement, **without** clicking through the advertisement. It is measured by the deposit of a cookie, which records that an impression of the relevant advertisement has been downloaded. When the same computer downloads a page from the destination website the cookie is recognised and, if the visit is within the specified time (usually 90 days), it is recorded in the web logs as a post-impression. The term 'view-through' is also used. There is evidence (2003a) that post-impressions are increasing relative to click-throughs as consumers become more adept at searching. This research identifies and compares some of the key factors that determine click-through and post-impression rates.

This research was undertaken in conjunction with the advertising agency mOne, a leading interactive advertising company.

Literature Review

Internet Advertising Effectiveness

Measurement of Internet advertising was traditionally based on CPM (Novak & Hoffman, 2000) but relatively quickly click-through rate became the standard measure. Click-through rate has declined steadily from 5% in 1998, but seems to have stabilized at 0.5% (Doubleclick, 2003a).

Drèze and Hussherr (2003) conducted an experiment to explain falling click-through rates, using an eye-tracking device. They found that surfers avoided looking at banners, but hypothesized that they might perceive them in their peripheral vision. Drèze and Hussherr found that more experienced surfers spent less time processing pages, and looked at fewer parts of the site. However, Dahlen (2001) found that users with less experience were more likely to look at banners, and had a higher click-through rate. This helps to explain declining click-through rates; as the internet population becomes more experienced, the average propensity to click-through decreases.

A number of studies confirm that repeat exposure to banner advertisements reduces click-through, (Briggs & Hollis, 1997; Chatterjee, Hoffman, & Novak, 2003; Flores, 2000). Dahlen found a U-shaped pattern, with repeated exposure click-through rates increased, declined and then increased again.

Several authors suggest that effectiveness depends on web motives (Raman & Leckenby, 1998; Rodgers & Thornton, 2000; Rodgers, 2002). In addition, Rodgers and

Thornton suggest that an individual using the internet with a strong goal-directed motive will be *less* receptive to web advertisements.

There is considerable evidence that targeting can improve click-through rate (Briggs et al., 1997; Chandon & Chtourou, 2001; Chandon, Chtourou, & Fortin, 2003; Chatterjee et al., 2003). Briggs and Hollis distinguish three aspects of targeting: the immediate relevance of the *product* to the target audience, the immediate relevance of the *message* to the target audience and the relevance of the *brand*. The internet enables advertisers to target users by choosing appropriate sites, in addition, advertising delivery can be related to the search terms that surfers use.

Chandon and Chtourou (2001) found that click-through was positively affected by an increase in banner size, but they did not include any banners larger than the conventional 468 x60 pixels. Baltas (2003) found that bigger advertisements had a better click-through, but Drèze and Hussherr (2003) found no relationship between the size of banner and brand recall. Baltas found an inverse relationship between click-through and the number of words in the advertisement. Although one might expect the presence of an image to have a positive effect on click-through rates, Chandon and Chtourou found no significant effect.

Chtourou, Chandon and Zollinger (2002) found that mention of price or promotion had no *significant* impact on click-through rate, although click-through declined non-significantly when price was mentioned. They also found an interaction between price and placement type: on keyword-targeted sites mention of price significantly decreased click-through. They suggest this is because searchers are more expert and therefore less sensitive to price-based advertisements.

There is limited evidence that branded banners have lower click-through rates. Chandon et al, (2001;2003) found that branding had a non-significant negative effect. This finding is supported by Baltas (2003) who found a significant negative effect ($p<0.05$); he suggests that the absence of branding might stimulate curiosity. There is conflicting evidence on the effectiveness of tricks and promotions, whereas some research has found a significant effect (Chandon et al., 2001; Chandon et al., 2003), Baltas found that tricks were ineffective; he hypothesises that users have become more sceptical.

Drèze and Hussherr measured advertising recall, brand recall, and brand awareness effects, finding that these were all higher than click-through rates. This supports an earlier finding by Briggs and Hollis (1997) which showed that banner advertisements had an impact on consumers' attitudes to a brand, independent of click-through. In response to low, declining click-through rates, new internet advertising effectiveness research tools have been developed, (Hughes, 2002). These divide internet users randomly into a control and an exposed group, using cookies to record whether the respondent has been exposed to an advertisement; subsequent research can then determine the effect of the advertising on brand awareness and brand perceptions. Dravillas, Broussard and Graham (2003) report an average increase of 4% in brand recall, 17% in message association, 4% in brand favorability and 13% in purchase intention for 17 targeted internet campaigns. Dynamic Logic found that targeted campaigns perform significantly better than untargeted campaigns on brand and brand perception metrics, (2002).

Brand recognition, unaided recall and awareness *increase* with exposure, (Drèze & Hussherr, 2003). Dynamic Logic (2000) suggest that increasing frequency from 1 to 4 doubles the *branding* effect. Danaher and Mullarkey (2003) found that the longer a person is exposed to a banner advertisement, the more likely they are to remember it. They also found that *recognition* scores were higher than both unaided and aided recall, and that web users in goal-directed surfing mode are more likely to recall and recognize banners.

Advertisement tracking companies have measured post-impressions for several years, (Briggs, 2002), but we did not find any research on the factors which effect *post-impression* rates. It is possible that these factors are different for post-impressions, because with post-impressions the surfer is more passive when viewing the advertisement, but then has to make an active attempt to find the URL and the site. This may occur through the branding effect or because the viewer has made a note of the web site address. This sort of initiative by the viewer may be affected differently by the parameters of the advertisement.

Research Agenda

Placement

The data included four different types of media: run of network (RON); run of site (ROS); run of channel (ROC); and keyword. RON is a bulk space procurement method where the advertisement is placed on a number of networks of associated web sites. ROS means that the advertisement is placed on a specific site, but is not targeted within the site. ROC means the advertisement is placed on a specific part of the site, e.g. the travel section. Keyword here refers to graphic banner advertisements (i.e. not a Google-style textual advertisement) which are only shown when a specific term is searched. The level of targeting of the media is highest for keyword, moving through ROC and ROS and lowest for RON. One would expect that both click-through and post-impression rates would vary with the level of targeting. Consequently,

H_1 Click-through and post-impression rates are related to placement type, with more targeted advertisements achieving higher click-through and post-impression rates.

Size

Some research has found that size increased click-through-rate (Chandon et al., 2001; Baltas, 2003) but Drèze and Hussherr (2003) found no relationship between the size of banner and brand recall. Consequently,

H_2 Click-through and post-impression rates are related to the size of the banner.

Price and Promotion

There is very little academic research on the use of price and promotion in internet advertising. Chtourou, Chandon and Zollinger (2001) found that although neither price nor promotion had a direct effect on CTR, interactions between price or promotion and media placement were significant. Consequently,

H₃** **Click-through and post-impression rates are related to presence of price and/or promotion.

Methodology

MOne gave us access to web logs recording both click-throughs and post impressions, and to images for each banner. The data was cleaned and imported into SPSS, and the click-through and post-impression rates were calculated as a percentage of the total number of page impressions. There were four types of media targeting, and eight different banner sizes, the latter were consolidated into small, medium and large categories; the medium category was the conventional 486x60 pixel banner. Creatives were coded into four categories, those with promotions, those with prices, those with both and those with neither.

Results

The average click-through rate for campaigns was 0.44%; the rate for post-impressions was 0.13%. Click-through and post-impressions were highly correlated (Pearson correlation, $p<0.000$); the correlation coefficient was 0.274. This suggests that post-impressions are additional and do not substitute for click-throughs.

Examination of the means of the click-through and post-impression rates reflects the relationship between click-through and post-impression rates for the different factors. Table 1 shows the two response rates for different placement types. For each type of placement post-impression rate is about 30% of click-through rate, indicating that placement affects the two responses in a similar way. The table also illustrates how response rate improves with targeting; keywords are about 6 times more effective than RON, and twice as effective as ROC.

	Mean Click per Impression	Mean Post-imp per Impression	Click/post–imp Ratio
RON	0.20%	0.06%	30%
ROS	0.36%	0.10%	28%
ROC	0.67%	0.18%	27%
Keyword	1.17%	0.37%	32%

Table 1: Click-Through and Post-Impression Rate Means by Placement Type

Table 2 shows that size impacts differently on the two measures. Click-through is twice as high for large banners compared to medium or standard banners, but post-impression rates are highest for medium banners, with large banners performing less well. However, unfortunately the majority of our sample were medium advertisements so that these findings may be unreliable.

	Mean Click per Impression	Mean Post-imp per Impression	Click/post– imp ratio
Small	0.35%	0.01%	3%
Medium	0.42%	0.14%	33%
Large	0.87%	0.05%	6%

Table 2: Click-Through and Post-Impression Rate Means by Size

Table 3 compares banners with price, promotion, both price and promotion and neither price nor promotion. For both click-through and post-impression rates banners without any price or promotion are most effective. However, there is a much greater affect for post impressions: advertisements without price and promotion were ten times more effective for post-impressions, for click-throughs they are approximately four times more effective.

	Mean Click per Impression	Mean Post-imp per Impression	Click/post– imp ratio
Price	0.16%	0.01%	6%
Promotion	0.17%	0.02%	12%
Both	0.19%	0.02%	11%
Neither	0.66%	0.23%	35%

Table 3: Click-Through and Post-Impression Rate Means by Price/Promotion

Significance Tests

We used ANOVA to test the significance of the variance of the placement, size and price/promotion variables. ANOVA determines whether samples are from populations of

equal means (Hair, Anderson, Tatham, & Black, 1998) and allows for the comparison of more than two levels of independent variable at the same time. ANOVA was chosen in preference to multiple t-tests, which would increase *type 1 errors*, or *family-wise errors* (Field, 2000).

ANOVA is a parametric test, and there is an assumption that the data is from a normally distributed population (Field, 2000). The distributions of click-through and post-impression rates were not normal, with considerable skewing towards the lower end of the scale, which was confirmed by the Kolmogorov-Smirnov and Shapiro-Wilk tests. We therefore used a natural log transformation for both click-through and post-impression rates, which produced more normal distributions. However, as both dependent variables have been converted into logarithms of their original data, the data is no longer truly representative of the original variables; we therefore refer to log click through (LCT) and log post impression (LPI) in the results reported below. This methodology replicates that used by previous research on the factors effecting click-through, (Baltas, 2003; Chandon et al., 2001; Chandon, Chtourou, & Zollinger, 2002; Chandon et al., 2003).

Media Type

For both LCT and LPI the ANOVA for media type (RON, ROS, ROC and keyword) was significant. The model is strong for LCT with R-Square at 0.185 but only just acceptable (> 0.1) for LPI, see Table 4.

Dependent Variable	Type III Sum of Squares	Df.	Mean Square	F Test	Sig.	Partial Eta^2	Adj. R^2
LCT	213.004	3	71.001	53.956	0.000	0.188	0.185
LPI	176.167	3	58.722	22.907	0.000	0.105	0.101

Table 4: Results of Media-Type ANOVA

As the ANOVA tests were significant, post hoc Scheffe multiple comparisons were conducted to evaluate pair-wise differences. For both LCT and LPI keyword placement was significantly more effective with significantly higher means. For LCT ROC was significantly more effective than RON, but there was no significant difference between for RON and ROS, or between ROC and ROS. For LPI, however, RON was significantly less effective than both ROC and ROS, although again there was no significant difference between ROS and ROC. Figure 1 shows a graph of the means of LCT and LPI for different levels of targeting.

<Figure 1: Mean LCT and LPI for Different Media Types.

Size

The ANOVA for size was significant for both LCT and LPI, but the R-Square was very low, see Table 5.

Dependent Variable	Type III Sum of Squares	Df.	Mean Square	F Test	Sig.	Partial Eta^2	Adj. R^2
LCT	10.567	2	5.284	3.296	0.038	0.009	0.006
LPI	32.05	2	16.026	5.712	0.003	0.019	0.016

Table 5: Results of Size ANOVA

Post hoc Scheffe showed that for LCT that there was no significant difference between the three banners. However, for LPI medium and large banners were both more effective than small banners. Figure 2 shows the means of LCT and LPI for different size banners.

<Figure 2: Mean LCT and LPI for Different Banner Sizes.

Price/Promotion

The ANOVA for price/promotion was significant for both LCT and LPI, and the R-Square was acceptable for LCT and good for LPI, see Table 6.

Dependent Variable	Type III Sum of Squares	Df.	Mean Square	F Test	Sig.	Eta^2	Adj. R^2
LCT	145.566	3	48.522	34.203	0.000	0.129	0.125
LPI	402.221	3	16.026	61.424	0.000	0.024	0.237

Table 6: Results of Price/Promotion ANOVA

Post hoc Scheffe showed that for LCT, there was a significant difference between banners with neither price nor promotion, and those with either price or promotion. For LPI, those without price or promotion were significantly more effective than those with price, those with promotion and those with both. Figure 3 shows the means of LCT and LPI for the different options.

<Figure 3: Mean LCT and LPI for Different Price/Promotion Alternatives.

Combined Factors ANOVA

We were unable to run a combined factors ANOVA because examination of the data revealed that the number of small or large advertisements was relatively small, and there was a high degree of collinearity between placement and price/promotion. None of the keyword placements had either price or promotion; this may have been because the creative was linked to the keyword rather than a tactical promotion.

Discussion

The research supported all three hypotheses:

H_1 Click-through and post-impression rates are related to placement type, with more targeted advertisements achieving higher click-through and post-impression rates.

H_2 Click-through and post-impression rates are related to the size of the banner.

H₃ Click-through and post-impression rates are related to presence of price or promotion.

However, although the total number of impressions was over 7 million, and we had over 700 different placements, the sample size was small relative to the number of variants examined. In advertising, the industry, the brands and the products advertised, and the creative will also affect response, so that it is important that this research is replicated on a larger scale. The findings are also constrained by the limited number of small and large banners, and by the collinearity identified between placement and price/promotion.

For click-through the strongest effect found was for targeted media placements, followed by price or promotional content, while size had a limited impact. However, for post-impressions, price or promotional content had the strongest effect, (as indicated by the ANOVA adjusted R-Square), followed by placement, with only a negligible effect for size. The highest response rates for both click-through and post-impressions occurred with keyword placements and without price or promotion.

The effect of placement was similar for click-through and post-impression rates, both are up to 6 times more effective with keyword as opposed to RON placements. However, for size, there was a difference between the two measures. Whereas click-through rates were highest for large advertisements, for post-impressions medium advertisements were most effective. These results suggest that size may be less relevant for post-impressions. This may be because the increased intrusiveness of larger advertisements may precipitate audience reaction in the form of click-through, while small advertisements may create insufficient impact for the post-impression effect. However, it should be remembered that we had a limited number of large banners in the sample, and the data did not include any 'skyscraper' advertisements.

Banners with prices or promotions had significantly lower responses. At first sight this is counter intuitive, in marketing discount pricing and promotions usually stimulate responses. However, prices and promotions are tactical and therefore product specific; the response will be more dependent on the *content* of the banner. For example, if a banner offers a flight to New York for £199, whether one clicks on the advertisement will depend on whether one wants to visit New York and whether the price is attractive, an advertisement with the same creative and placement, but a different promotion or price, could have a different response. The results found may therefore show that in *these* cases the promotions/prices offered were not attractive, this does not mean that all price or promotional banners will have low responses.

The price and promotion effect is much more marked for post-impressions. Whereas for click-through the rates for advertisements with price and/or promotion are about 25% of the click-through of advertisements with neither, for post-impressions the rates for advertisements with price and/or promotion are less than 10% of those with neither. This makes sense, if the price or promotion is attractive there is little point in the viewer postponing a visit to the site, as the offer may be difficult to find on the site, or no longer available.

A management implication is that internet advertising should be designed so as to increase post-impression rate. This may consist of distinctive logos or web site addresses. Research using DART Advertising Serving Data (2003a) suggests that post-

impressions or 'view-throughs' have increased steadily from 0.36% in Q1 2002 to 0.77% in Q3 2003. This may be because as surfers get better at searching for sites they are able to postpone their visits to web sites to more convenient times.

There is a need for research to explore how post-impressions occur. Do people note details of banners, do they remember the brand name, or is there a subtle branding effect, so that during subsequent surfing they visit the relevant site but without recollecting the advertisement? It is also likely that some post-impressions are coincidental, i.e. the viewing of the advertisement is unrelated to the subsequent visit.

This research has focused on the measurement of internet advertising in terms of click-through and post-impressions. However, these simply relate to the *number* of people who arrive at the home page of a web site, for the marketer the key factor is the conversion of these people into customers. This will partly depend on the type of person who visits, so that gimmicks may increase visits but not conversion. It is possible that post-impressions have a higher conversion rate, as they consist of people who have *chosen* to visit the site at that particular time, further analysis of web logs should reveal if this is the case.

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