Cross Media, Print, and Internet Advertising: Impact of Medium on Recall, Brand Attitude, and Purchase Intention

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Abstract

Publishers are actively selling Cross Media Advertising. An experiment was conducted in order to compare advertising effectiveness of cross media advertising with pure internet and print advertising. Findings suggest that while a combination of internet and print advertising is more effective than only internet advertising with regard to brand attitude, no differences could be confirmed between advertising effectiveness of media combination and print. Additionally, it was found that banners performed worse than print advertisements with regard to recall and brand attitude.

The authors would like to thank Corina Krüger for her research assistance.
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Introduction

There has been growing interest in internet advertising, documented for example by the Fall 2002 Special Issue on Advertising and the New Media of the Journal of Advertising. As part of this research, the effectiveness of internet advertising such as banner exposures, has been shown strikingly by in the IAB’s study conducted in cooperation with Millward Brown, (IAB, 1997) and Briggs and Hollis (1997). In comparisons with the effectiveness of print advertising, however, results have not been unequivocal. According to Sundar et al. (1998) the print medium is superior to the online medium in memory measures, ascribing the effect to the novelty of online advertisement, the delivery mechanism and users’ expectations. On the other hand Gallagher, Foster, and Parsons (2001) and Gallagher, Parsons, and Foster (2001) use advertising hyper-linked to a related text and state that both media are equally effective.

While web advertisement is often used for brand building and has also proven effective for that purpose (IAB 1997, Li, Daugherty, Biocca 2002; Gong, Maddox 2003, Dahlen, Rasch and Rosengren 2003), a comparison with print advertising in this dimension is still missing. Additionally, since online advertising is not novel any more, the question arises how banner exposures affect experienced web users, without the additional effect of hyper-links in the content. Furthermore, both studies used few (two and four) pages or screens with content and advertising, whereas a typical surfing or reading situation includes reading a number of articles. Since print products and the internet differ, the former being a linear-sequential, the latter a hierarchical medium (Bezjian-Avery, Calder, Iacobucci 1997), this might also account for differences in advertising effectiveness not looked at yet.
Moreover, there is a growing interest from the advertising industry (MSN, IAB, ARF 2002; dynamic logic 2002) in effectiveness of cross media advertising, the combination of ads in print and online. In an advertising campaign, ads are typically part of a media mix, drawing on different media. Despite this, there has not yet been scholarly research on that question. Publications from the Integrated Marketing Communication field (e.g. Sheehan and Doherty 2001) seem more engaged with strategic and organizational implications of integrating different means of communication.

An empirical investigation (N=122) compares the impact of internet advertising with print advertising and a combination of both on consumers’ attitudes and behavior. The objective of this study is to identify the effect of different media combinations on recall, recognition, attitude toward the brand and purchase intention.

The paper is organized as follows: The effects of the different media combinations will be discussed with regards to memory based measures, brand attitude and purchase intention. Second follows a description of the experimental study, and third results and discussion.
Effects of print and internet on advertising effectiveness

Characteristics of the internet as a marketing medium have been discussed in Novak and Hofmann (1996). Although news magazines are similar to their internet pendants in that they are both dominated by text and pictures, important differences with regard to advertising effectiveness obtain. These include (a) attitude towards advertisement, (b) complexity and (c) the carrier material.

Advertising effectiveness depends on users’ receptiveness towards an ad and on their attitude towards advertising. For print advertisement Metha (2000) found out, that “respondents with more favorable attitudes towards advertising recalled a higher number of advertisements the day after exposure”. In the internet, it is frequent that advertising is used with higher levels of forced exposure than only static banners (Cho, Lee, Tharp 2001), who’s level would compare to print advertising. Since higher intrusiveness leads to ad avoidance and irritation (Edwards, Li, and Lee 2002), a less favorable attitude among customers vis-à-vis internet advertising can be supposed. Assuming, that the overall attitude towards internet advertising is less favorable than towards print advertising, lower ad memory can be expected.

The internet with its hierarchical structure is a more complex medium than print, being linear-sequential. By clicking through websites and choosing hyperlinks, the internet user has more control about what he actually sees, as compared to a more passive reader of a news magazine (Bezjian-Avery, Calder, Iacobucci 1997). A print reader will more likely be exposed to an ad, even if it is only by skimming through a magazine. On the contrary, an internet user directly clicks to an article of interest and will easier skip undesired information, resulting in less advertising exposure and thus less effective advertising. Moreover, the more active role in the internet requires deciding and thus concentration, whereas a printed magazine can be skimmed through without concentrating on navigation, allowing higher receptiveness.

While news magazines are printed on paper, content in the internet can only be read at screens. This is resulting in one of the fundamental differences between print and internet: a screen will not be grasped and physically manipulated as is the case with a magazine consisting of paper. Therefore, the haptic component of consuming content is different. Printed text can be touched and magazine pages turned, whereas the screen impression is controlled at distance and indirectly, through clicking on mouse, keyboard, touchpad, trackerballs, etc. The spatial plane of mouse movements is turned from back / forth to down / up. Although laptop computers or personal digital assistants with touch screens would enable a more flexible use of the internet, the predominant access medium to the
internet is still a desktop computer (European Commission and EOS Gallup Europe 2002). But even touching a screen, consisting of glass or plastic, would result in a different sensual experience than touching paper. In addition, reading a printed magazine is linked with different odors and sounds than reading at a computer screen. While this difference might not necessarily result in a less intense experience of content consumption, and thus a worse advertising effectiveness in the internet, the combination of print and online advertising can be assumed to be more effective than only exposure to either of the two media.

Moreover, as Sundar et al. (1998) have speculated, a computer screen “with its thick boxed boundaries, [might] limit readers’ attention to the center of the screen.” This could lead to a reduced perception of ads placed at the border of pages.

The carrier material can additionally influence advertising effectiveness, as flickering displays and unfavorable color characteristics with screens (e.g. radiated light spectrum differs from natural white light, contrast, or brightness) might be tiring and thus negatively impacting concentration. Sundar et al (1998) report a number of studies, in which subjects recalled “about the same amount of news information from newspaper and computer”. However, this might not prevail for advertisement information.

The discussed arguments lead to the following research hypotheses:

**H1:** Two exposures to a static advertisement lead

- **a)** to a better recall
- **b)** to a more favorable brand attitude and
- **c)** to a higher purchase intention,

if the advertisement is displayed in print than if displayed in the internet
H2 Exposure to a static advertisement leads
   a) to a better memory
   b) to a more favorable brand attitude and
   c) to a higher purchase intention,

   if the advertisement is displayed in both the print medium and in the internet than if displayed only in the internet

H3 Two exposures to a static advertisement lead
   a) to a better recall
   b) to a more favorable brand attitude and
   c) to a higher purchase intention,

   if the advertisement is displayed in both the print medium and in the internet than if displayed only in print
Research design

The above hypotheses were tested in an experimental design, which allowed comparing the effectiveness of one advertisement presented in print, web, or both. The participants (N=134) were exposed twice to a current German news magazine containing twenty double pages with articles and advertisements, either in the print format or the online equivalent, with the respective advertisement either in print, online, combined, or not at all. After subjects read through the magazine, their ad memory, brand attitude and purchase intention was measured by an online questionnaire.

Participants

134 undergraduate business students took part in the experiment. The subjects were randomly assigned to four groups, print, internet, combined, and control. No significant differences have been found with regards to previous knowledge of the brand, attitude towards advertising, internet experience, usage frequency of the magazine, sex, and personality. Twelve participants were excluded as not experienced internet users (participants' own estimated internet experience: rather un-experienced or not experienced; average time of internet usage per week: never; regular internet usage for: less than three months). According to Dahlen more experienced internet users "[...] are less inclined to react to unexpected stimuli [...]" (Dahlen 2001, p. 24). Experience with print was assumed. Although earlier studies in this field mentioned the importance of a comparable media experience (e.g. Gallagher, Forster, and Parsons 2001), it has not yet actually been controlled for. Participants have been recruited in the university computer lab, with the incentive of a one in twelve chance to win prizes worth a total of 120 Euros. The purpose of the research was not disclosed.

Advertising Stimulus

A current issue of the weekly German news magazine "Der Spiegel" was used. It seemed especially suitable, as an equivalent internet version is existing, publishing a similar range of topics and a number of identical articles. Additionally, it is a well-known magazine that students will know, but do not generally read. That was important in order to decrease the likelihood that participants had already been exposed to the ad. Usage frequency during the last six months among the participants was on average between "less than five times" and "never". The advertisement was for the history magazine "GEO Epoche". GEO Epoche is a relatively new monothematic magazine from the GEO family of brands with two issues per year. The GEO brand is well known, but not GEO Epoche. The brand was chosen as it was thought to be around the center of the FCB grid,
with the two axes "involvement" and "feeling". A nice side effect was that the advertisement highlighted the topic of the magazine rather than the brand, which clearly distinguished it from other advertisements of the GEO brand family. An actual advertisement and magazines were chosen in order to insure realistic quality of the stimulus material and increase generalizability.

The print magazine was prepared such that twenty double pages could be read, including the table of contents. The advertisement was placed in the second half of the available pages, between different other articles and advertisements. It appeared next to an article about Jeff Koons, in the culture section. The advertisement had the size of a full page, which is the standard advertisement format in that magazine.

For the preparation of the internet stimulus, the spiegel.de webpage was downloaded to a local network drive. Most of the articles in the print version were available online, which allowed creating a similar advertising context, with the ad placed also next to the equivalent article about Jeff Koons in the same section. Links to magazine sections that have been taken out, e.g. Travel, were made invisible, in order to keep users from spending their time clicking at different disabled hyperlinks. Hyperlinks leading away from the site were disabled. Users could access the article and the ad either with one click from the homepage, but had to scroll down, or with two clicks via the culture section. The advertisement was a standard skyscraper banner displaying the same text and layout as the printed version. It was not actually used as an advertisement, but has been produced professionally in order to look similarly real.

Standard advertisement formats were used in order to increase applicability to practical decisions, even if that means that the size of the advertisements differed. However, the skyscraper format was used as the one that is the most comparable internet pendant to a single magazine page. Skyscrapers are the largest banners and they are situated vertically next to the text, whereas e.g. standard banners are horizontally on top of the text. Interstitials or pop-ups were not used since these would interrupt users, which is not the case with standard print ads. Animation and hyperlinks, although readily available for internet advertising, were omitted in order to isolate the effect of medium.
**Dependent variables**

Internet Advertising effectiveness has been measured using both web metrics and traditional measures. A good overview about web metrics is provided by Bhat, Bevans, Sengupta (2002). Traditional measures are based on recall (see, Alba, Hutchinson, and Lynch 1991), brand attitude, and purchase intention.

Recall was operationalized through seven different questions, three recall and four recognition questions. Recall questions were open ended (e.g., "Various products or groups of products have been advertised. Which of these do you remember?") or closed (e.g., "Do you remember having seen one of the following brands?"). Recognition items asked for details of the advertisement, e.g. "Which slogan was used to advertise for the issue?" Similar to Sundar et al. (1998) correct recall and recognition answers were added up to for the memory variable.

Brand attitude was operationalized through a thirteen question Likert-type scale (nice/ugly; comfortable/awkward; gentle/rough; attractive/repellent; tasteful/tasteless; exciting/boring; colorful/colorless; fascinating/bland; convincing/not convincing; honest/dishonest; novel/ordinary; fresh/frumpy; lively/liveless) asking participants to evaluate the GEO brand. Four items have been excluded after the experiment as they proved not suitable to the GEO brand (nice/ugly; attractive/repellent; honest/dishonest; and fresh/frumpy). Answers ranging from one (positive) to five (negative) were summed up to create the variable "brand attitude", with 9 the best and 45 the worst value.

Purchase intention was measured through the question: "Assuming you are confronted with the decision of buying GEO Epoche. How likely would that be?" with a five point scale (certain/uncertain).

**Procedure**

Participants were randomly assigned to four groups, print, internet, combined, and control. Groups contained between 30 and 37 subjects. Each participant was exposed to a medium twice, i.e. two times to the printed magazine, two times to the internet magazine or a combination of both. Half of the combined and control groups received the print version first, half of it second. The medium included the GEO Epoche advertisement for the print, internet and combined groups, the control group received media without the ad.
The participants were asked to perform two tasks, one for each exposure. In the first task participants were asked to concentrate on the layout and on the proportion between articles and advertising. The second task was comprised of skimming through the magazine with a special focus on the culture section. The time limit for each task was five minutes. The tasks were designed to increase the probability of being exposed to the relevant ad as well as to simulate a usage situation somewhere in the middle between serious and playful (Rodgers and Thorson, 2001).

After the two tasks, the stimulus material was removed and the participants were directed to an online-questionnaire. The first questions were not related to the stimulus material (questions about interests, usage of the magazine "Der Spiegel" and internet experience), in order to simulate retroactive interference and long-term effects of the ad. The online-mode of the questionnaire prevented participants from changing recall answers after they learned about the focal brand. Stimulus material, tasks and questionnaire were pre-tested by a small random sample resulting in minor adjustments of the tasks and the questionnaire.

**Control variables**

Variables potentially influencing the results were previous knowledge of the brand, attitude towards advertising (operationalized through the factor value of the agreement to four statements, e.g., "Advertising is informing"), internet experience (operationalized through asking for participants' own estimated internet experience, their average time internet usage per week, and the time they have been usage the internet regularly), usage frequency of the magazine, sex, and personality (operationalized through the factor values of "attitude towards security" and "willingness to perform" derived from ten related items and through items checking the interest for six related dimensions (e.g. interest in history).
Results

Hypothesis testing

In order to test the hypotheses, oneway ANOVAs were conducted for the three different samples and three dependent variables (see table 1 to 3). Hypothesis one predicted higher advertising effectiveness for print advertising than for internet advertising. In accordance with Sundar et al. (1998), the sample showed significant (F=2.813, p <.1) differences with regards to short-time recall. Effects on brand attitude and purchase intention were not supported, even if a tendency (F=2.438) is visible with brand attitude. For the second hypothesis, claiming that combined print and internet advertisement is more effective than only internet advertisement, support was found with regards to brand attitude (F=3.661; p<.1). However, neither better recall nor higher purchase consideration were supported. Between combined print and online advertising and only print advertising (hypothesis three), no significant differences were found.

Table 1: Analysis of Variance Results: Print vs. Internet

<table>
<thead>
<tr>
<th></th>
<th>Print</th>
<th>Internet</th>
<th>F-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall</td>
<td>2.42</td>
<td>1.72</td>
<td>2.813</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>Brand Attitude</td>
<td>26.97</td>
<td>25.04</td>
<td>2.438</td>
<td>0.124</td>
</tr>
<tr>
<td>Purchase Intention</td>
<td>3.43</td>
<td>3.43</td>
<td>0.001</td>
<td>0.982</td>
</tr>
</tbody>
</table>

Table 2: Analysis of Variance Results: Combined Print and Internet vs. Internet only

<table>
<thead>
<tr>
<th></th>
<th>Internet</th>
<th>Combined Print and Internet</th>
<th>F-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall</td>
<td>1.72</td>
<td>2.27</td>
<td>1.532</td>
<td>.221</td>
</tr>
<tr>
<td>Brand Attitude</td>
<td>25.04</td>
<td>27.91</td>
<td>3.661</td>
<td>&lt;.1</td>
</tr>
<tr>
<td>Purchase Intention</td>
<td>3.43</td>
<td>3.48</td>
<td>.046</td>
<td>.832</td>
</tr>
</tbody>
</table>

Interestingly, brand attitude was worse for the print condition than for the internet condition, with a difference of nearly two points or 7.7% (26.97 versus 25.04). It was also worse for the combined condition than for the internet only condition, with a difference of 2.87 or 11.5% (27.91 versus 25.04). This finding has two implications: (a) Together with the fact that the control group
had a significantly more positive brand attitude (18.45 vs. 26.52; \( F=55.77, p<.01 \)) than the other groups, it gives rise to the suspicion that the advertisement was actually not well suited to increase the brand attitude towards the GEO brand. (b) The difference between the combined condition and the internet condition is a little larger than the difference between the print condition only and the internet condition. The combined condition, although not significantly, also has a higher average than the print condition. That indicates that a stronger effect for the media combination than for either of the single conditions might well be the case.

<table>
<thead>
<tr>
<th></th>
<th>Combined Print and Internet</th>
<th>F-value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall</td>
<td>2.42</td>
<td>2.27</td>
<td>.122</td>
</tr>
<tr>
<td>Brand Attitude</td>
<td>26.97</td>
<td>27.91</td>
<td>.354</td>
</tr>
<tr>
<td>Purchase Intention</td>
<td>3.43</td>
<td>3.48</td>
<td>.047</td>
</tr>
</tbody>
</table>

The reason for a lacking effect on purchase intention under all conditions seems to be a too little sample size, as participants recalling the ad (aided recall) among all groups showed a little higher purchase intention than did participants not recalling the ad (\( t=-1.964; p<.05 \)).
Discussion

The most interesting result is that a combination of internet and print advertisement did not show significant differences from only print advertisement regarding recall and brand attitude. Since internet and print address different senses, we had expected to lead to better results. However, judging from the difference between internet and print alone, the combination can also be seen as the combination of a highly effective and a less effective medium. From that line of argument, the combination should perform worse than the highly effective medium alone. This argument though seems not to be the case, either: Since there are no significant differences between print and combined, the finding suggest that one print exposure can be replaced by one internet exposure without reducing effectiveness, although internet advertisement alone is far less effective than print advertisement. This is especially important since thousand contact prices in the internet are much lower than in print. This finding is additionally interesting, since the design of the study has not drawn upon all possibilities of internet advertising. Since animated and clicked-at banners can be expected to be more effective than static banners, cross-media campaigns are definitely a considerable alternative to pure print campaigns, potentially rendering advantages to integrated media groups, and worth looking at in greater detail.

Lower advertising effectiveness for the online condition than for print is not surprising, as online advertising was among all participants considered more disturbing than print advertising (1.98 versus 2.94 on a five point scale). The internet magazine is hierarchical, as well, requiring concentration on navigation and reducing the likelihood of being exposed to the ad. Additionally, although modern computers and screens were used, negative impacts of the carrier material can not be excluded. However, it is possible, that smaller size of the skyscraper ad is responsible for that effect. The fact that only the memory measure proved significant might be due to the fact that the stimulus material and the tasks forced the participants towards the ad in every condition, with the effect that no significant differences have been found.
Limitations and further research

Although usual, student samples do pose problems to external validity. Additionally, modern computer facilities were used with the website hosted at a network drive. Since the majority of internet users are still accessing the internet by telephone lines, this might pose a problem regarding generalizability. Only one product category was tested, the results might be different for other products. Significance levels of 10% do not suffice strict scientific standards.

In this study, print advertisements were compared to static internet banners. While this allows isolating effects to the medium itself, it does not compare the two media in use of their full potential. Further research would be required to compare animated and hyperlinked advertisements to print, as well as the combined use of print and online with different motives, e.g. referring to one another.

Conclusion

With this study it was intended to expand the knowledge about internet and cross-media advertising effectiveness. These topics are of interest both for scholars and practitioners, as the internet’s possibilities are not unequivocally considered and are still developing. This renders business opportunities. Immediate managerial implications come from the fact that cross media advertisement is at least similar effective than traditional print advertisement.
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