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Keyword(s):

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A before-after study group-control group experiment was conducted on 451 internet users in order to compare advertising effectiveness of cross media advertising of these innovative approaches. The purpose of the study was to test hypothesis regarding the effect of viewing advertisements on internet sites versus prints originating from them. We conducted a behavioral experiment to measure recall of advertisements and advertisement messages, brand attitude and purchase intention as a result of exposure to internet and printout advertisements.

Reinforcement of internet advertisements with printouts appeared to increase brand recall significantly. While brand attitudes were unaffected by viewing internet advertisements, consumers perceived brands appearing on their print-outs more favorably. Finally, while internet advertisements were lost in clutter, the advertisements appearing on print-outs were not only noticed, but remembered as well. The findings indicate towards an opportunity of extending e-commerce by reaching the consumers through an innovative route – their print-outs.

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Advertisement avoidance on internet: Can internet printing help?

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Keywords: Internet advertising, banner ads, print, brand recall, brand attitude, advertising effectiveness

Introduction

IEC defines electronic commerce as an emerging model of new selling and merchandising tools in which buyers are able to participate in all phases of a purchase decision, while stepping through those processes electronically rather than in a physical store or by phone (with a physical catalog) [13].

On a typical day, 19 million people go online to research a product. Eighty-three million people report that they have bought products online. Online marketing is growing rapidly taking a bigger bite from the overall marketing budget [16]. With the dramatic shift of communication and commerce to the online world, it is easy to assume that print advertising has been supplemented by all things Web [17].

As several studies have recognized, the proliferation of ads has caused consumers to avoid ads in traditional media [31], the cluster-bomb approach of ads on the Internet has also been cited as a reason for the trend toward declining consumer responsiveness to Internet ads [26]. This negative trend becomes more apparent when we look at the continuously declining click-through rates (CTRs). The first Web advertisement appeared in 1994 (a single panel display ad for AT&T which appeared on HotWired.com). The initial CTR for display advertisements was as high as 30 percent in the very early days of online advertising. The CTR industry average CTR as of June 2003 was .2 to .6% [21] and it hovers around 0.3% today [23].

In last two years, the percentage of consumers using pop-up blockers and spam filters has more than doubled. Now, more than half of North American households report using these technologies to avoid unwanted messages. Households with broadband are even harder to reach: 81% currently use these technologies [8].

The online advertisements have continued to remain attractive to advertisers because of their Mere Exposure Effect (IR) and ability to influence brand attitude [6,11,25]. But even that is getting ineffective as the phenomenon of "Banner blindness", internet users' tendency to avoid fixing their eyes on anything that looks like a banner ad, is negatively influencing consumers' responsiveness to Internet ads exposure [2,3]. Those studies have shown that while banners fail to grasp user attention and do not impact recall, they distract the user and significantly increase time taken to accomplish task at hand. Animated banners have not been found to have significantly different impact on recall than static banners. Research has further shown that internet advertising becomes less effective as internet users get more experiences [5]. As advertisers shift marketing budgets to Internet tactics like email and online advertising, their messages will not be skipped in a two-second blur — they won't show up at all [8].

The studies reveal that perceived goal impediment is the most important antecedent in advertising avoidance on the Internet [7]. Other studies have shown intrusiveness as a predictor of ad avoidance [12]. Various tactics are being tried to reduce perceived goal impediment by utilizing less intrusive advertising formats like keyword search results, sponsorships, opt-in ads, etc. While a lot has been studied on effects of various types of advertisements on websites as well as traditional media, the ad vehicle associated with internet advertising that has not been given required attention is print-outs taken from websites that also carry advertisements.

While internet advertising is picking up momentum everywhere, people have started realizing the additional benefit of internet, exposure to advertisements when printouts are taken (printout advertisements). This has led to various attempts of putting different advertisements on printer-friendly versions (example, Yahoo! Movies) or stealth settings for print function (epicurious.com). Apart from that, since most webpages do not have print link, advertisements appear on printouts by default. Since no work has been done regarding printouts specifically, we used existing work on print (newspapers, magazine, and catalog) media to arrive at our hypothesis.

Advertising stimuli leads cognitive, behavioral, and mechanical ad avoidance across both electronic and print media [27]. The intrusiveness scale shows magazines to be less intrusive media [12]. Other studies [18,IR] also show paper based media (newspapers, magazine, direct mail) to be less intrusive, less irritating and more believable. Another cross-media study [26] with traditional print media and internet had shown that banners performed worse than print advertisements with regard to recall and brand attitude.

The internet with its hierarchical structure is a more complex medium than print, being linear sequential. Hyperlink based structure of internet provide more control and require more concentration the users than a passive reading of a news magazine [4]. The passive print reading process is more likely expose the reader to an ad, allowing higher receptiveness. On the contrary, an internet user directly clicks to an article of interest and will easily skip undesired information, resulting in less advertising exposure and thus less effective advertising [26].

There are certain affordances of the carrier medium itself that is expected to influence the visual and haptic component of consuming content. Screen flicker, lack of touching experience, eye fatigue may have further negative impact on concentration and hence, ad avoidance. A computer screen “with its thick boxed boundaries, [might] limit readers’ attention to the center of the screen.” This could also lead to a reduced perception of ads placed at the border of pages [29].

Sundar et al. studied the effect of reading same text and exposing same advertisements on screen versus on paper. The findings suggest that while consumer remembered same amount of information from both mediums, incidental memory for ad content was significantly lower in online medium compared to print medium [29].

These previous researches indicate that the advertisements are less likely to be noticed when content is read from screen than if same content (and advertisement) gets printed and consumed. Being paper-based medium, it is likely to be less intrusive and more engaging. Since the content would be consumed in a left-to-right, top-to-down fashion, the likelihood of noticing advertisements is also higher.

Hypothesis formulation

The discussed arguments lead to the following research hypothesis:

Hypothesis 1: Advertising effectiveness – Brand recall

- A. The exposure to static advertisement leads to better brand recall when an advertisement is displayed in internet medium than no exposure
- B. The exposure to static advertisement leads to better brand recall when an advertisement is displayed in printout medium than no exposure
- C. The exposure to static advertisement leads to better brand recall when an advertisement is displayed in both printout medium and internet than no exposure

Hypothesis 2: Advertising effectiveness – Brand attitude

- A. The exposure to static advertisement leads to more favorable brand attitude when an advertisement is displayed in internet medium than no exposure
- B. The exposure to static advertisement leads to more favorable brand attitude when an advertisement is displayed in printout medium than no exposure
- C. The exposure to static advertisement leads to more favorable brand attitude when an advertisement is displayed in both printout medium and internet than no exposure

Hypothesis 3: Advertising effectiveness – Purchase intent

- A. The exposure to static advertisement leads to higher purchase intention when an advertisement is displayed in internet medium than no exposure
- B. The exposure to static advertisement leads to higher purchase intention when an advertisement is displayed in printout medium than no exposure
- C. The exposure to static advertisement leads to higher purchase intention when an advertisement is displayed in both printout medium and internet than no exposure

While other cross media studies focus on measuring brand recall, attitude and intention to use/purchase, very few (IR) focus on recall of advertisement message. Our assumption is, higher receptiveness of print media should lead to higher advertisement recall as well.

Hypothesis 4: Advertising effectiveness – Message recall

- A. The exposure to static advertisement leads to higher advertisement message recall when an advertisement is displayed in printout medium than in internet medium
- B. The exposure to static advertisement leads to higher advertisement message recall when an advertisement is displayed in both printout medium and internet than in internet medium

Method

Participants

451 respondents ranging from 15 to 30 years of age, who were moderate to heavy users of internet and printing from internet, took part in the experiment for compensation. Participants have been recruited by a research agency (IMRB). The purpose of the research was not disclosed.

The subjects were randomly selected and assigned to groups. No significant differences have been found between groups with regards to previous brand recall, attitude towards brand, internet experience, and print usage frequency.

Materials and stimuli

The screenshot shows a web page for 'Rawal-Kot Jaisalmer'. At the top, there is a navigation menu with links like 'Home', 'About Us', 'Rooms and Suites', 'Activities', 'Event Planning', and 'Local Information'. Below the navigation, there is a large banner advertisement for the hotel. The banner includes the hotel's name, a description of its location and amenities, and a 'Print This Page' button. Below the banner, there is a table titled 'Hotel - Tariff in (Rs.)' with columns for 'TARIFF PLAN', '2 Day / Couple', and '3 Day / Couple'. The table lists four room types: Premium Room, Executive Room, Presidential Suite, and Extra Bed, with their respective rates for both stay durations.

Hotel - Tariff in (Rs.)		
TARIFF PLAN	2 Day / Couple	3 Day / Couple
Premium Room	10000	12000
Executive Room	15000	20000
Presidential Suite	20000	27000
Extra Bed	2000	3000

A web portal was designed for the purpose of this experiment. It was designed keeping the interest of the users in mind. Since the respondents belonged to younger group (15-30 years) the portal was selected to be a travel portal. It contained links to hotels and tourist package deals to three select destinations and 21 pages to browse. There were no outgoing links and the portal was hosted on the local network. A log was kept on the machine to track pages visited by the subject and their visit frequency. This helped us in keeping track of banner advertisements that were seen by a particular subject.

The brands chosen were real-world brands related to product category of interest to the age group, i.e. television channels. The advertisement was created in-house using existing program guide. We chose not to use real banner advertisements of the brand to avoid false recognition due to exposure outside study environment. The same banner advertisement was used on webpage and on printouts to facilitate comparison of media. The advertisement was a standard skyscraper banner displaying the same text and layout as the printed version. It was produced professionally in order to look similarly real. The test

advertisement was placed on randomly selected pages at the same occurrence frequency as other advertisements.

Each webpage contained two banner advertisement or equivalent (equivalent means two half-sized advertisements fitted in area equal to area of one advertisement), one at the header and one at the footer. This was to simulate real-world clutter on popular webpages [32]. Each printed page carried one banner advertisement only. This was to simulate to scenario of popular printout targeted webpages that carry just one banner advertisement.

Design

Stimulus material, tasks and questionnaire were pre-tested by a small random sample resulting in minor adjustments. The hypotheses were tested in before-after study group-control group based experimental design, which allowed comparing the effectiveness of one advertisement presented in printout, web, or both.

The participants (N=451) were asked to fill up a questionnaire about their brand recall (spontaneous and aided), attitude (entertaining channel) and likelihood of watching channels (preferred channels, interested in watching). We allowed 7-10 days to elapse before calling them for the next stage. While this period was short enough to limit exposure to external stimuli, but it was enough to make guessing objective difficult. We took some additional steps to ensure that the objective is not easily guessed and no bias creeps in.

Participants were randomly assigned to two groups, printout (whose printouts carried test advertisement) and non-printout (whose printouts did not carry test advertisement). The non-printout subjects who did not visit websites

containing test brand advertisements formed our control group (N=203) that did not see any advertising stimulus for test brand as a part of study. This control group was used to measure the impact of exposures against external exposures. The non-printout subjects who visited websites containing test brand advertisements formed our internet only study group (N=97). Likewise, printout subjects exposed to test brands online were printout + internet study group (N=50) and the remaining were printout only study group (N=101).

	Test ad on printout (controlled)	No test ad on printout (controlled)
Test ad on webpage (uncontrolled)	Combination group (N=50)	Internet group (N=97)
No test ad on webpage (uncontrolled)	Printout group (N=101)	Control group (N=203)

They were instructed to plan a travel for themselves within a given budget. Assuming they have won a contest and the prize can be availed only from given options, they had to choose location of interest, hotel to stay and site-seeing package (optional). They were also asked to take the printout of final choices, underline to cost components and make calculations of total estimated cost. To keep them focused on the task, the respondents were told that we are looking for a winner who can plan the most economic travel plan to the most popular destination. They were given 20 minutes to complete the task.

After task completion, both stimulus materials (webpages and printout) were removed. Their brand recall, brand attitude and viewing preference were again measured by administering the questionnaire. Additionally, the subjects were also asked to describe the advertisements message. It was then interpreted by human researchers and classified as correct recall, partially correct recall, incorrect recall and no recall.

The metrics used for measuring advertisement effectiveness were brand recall (spontaneous/ aided), brand attitude, purchase intention and message recall. Spontaneous recall was operationalized through open ended question (When I use the word English language TV Channels, what are the brands that come to mind?) and aided recall through closed ended ("As I read out the names, please tell me if you have heard of this channel or not heard of it"). Brand attitude measured on entertainment dimension. Purchase intention was measured through the question: "Of these English TV channels, which are the channels you would choose for viewing?" Message recall was measured by asking "Was there any message in the advertisement? If so, what was the message?"

Results

To test the hypothesis, ANOVA with repeated measures was conducted for four groups and three dependent variables. We did not get any enough sample size of respondents who could recall message from internet only group, hence that variable was analyzed separately.

The descriptive statistics are summarized in table 1. The descriptive statistics show a drop in recall and purchase intention for the test brand. This was also corroborated by the drastic decline in viewership of the channel as per data. The descriptive statistics also revealed that there was no significant difference between various groups.

Table 1 : Descriptive statistics: Advertising effectiveness by medium

Group	Mean value of dependent variable (Std. dev)							
	Spontaneous recall		Aided recall		Brand attitude		Purchase intention	
	Before	After	Before	After	Before	After	Before	After
Control	0.38 (0.49)	0.26 (0.44)	0.57 (0.50)	0.67 (0.47)	0.14 (0.48)	0.39 (0.80)	0.06 (0.36)	0.03 (0.23)
Internet only	0.34 (0.48)	0.25 (0.43)	0.61 (0.49)	0.64 (0.48)	0.27 (0.77)	0.53 (0.96)	0.03 (0.29)	0.12 (0.50)
Printout only	0.32 (0.47)	0.36 (0.48)	0.61 (0.49)	0.61 (0.49)	0.34 (0.86)	0.50 (0.97)	0.09 (0.48)	0.11 (0.46)
Printout + internet	0.20 (0.41)	0.18 (0.38)	0.77 (0.42)	0.75 (0.44)	0.20 (0.61)	0.42 (0.84)	0.18 (0.59)	0.05 (0.22)

Brand recall

Hypothesis 1A and 1B were not supported but 1C was supported.

In accordance with numerous cross media studies, internet exposure did not cause any significant impact on brand recall. The exposure to advertisement on printout also was not effective in changing it. But a combination of both was found to have significant influence on both spontaneous recall ($F = 4.787, p < 0.05$) and aided recall ($F = 5.323, p < 0.05$).

	Spontaneous recall		Aided recall	
	F-value	p-value	F-value	p-value
Internet only	0.316	0.575	0.036	0.851
Print only	0.276	0.599	0.054	0.817
Print + internet	4.787	0.03 *	5.323	0.02 *

(* - Significant at $p < .05$)

Brand attitude

Hypothesis 2A and 2B were supported but 2C was not supported.

Both internet and printout were found to improve brand attitude among the sample. Printout only group had shown significant impact ($F = 4.172, p < 0.05$) on brand attitude, and internet only group, as proven by earlier studies, showed improvement in brand attitude ($F = 3.544, p < 0.1$). Interestingly, no significant difference was found for the combination of both medium. Overall, there was a trend of more positive attitude towards brands advertised in printout medium only.

	Brand attitude	
	F-value	p-value
Internet only	3.544	0.061 **
Print only	4.172	0.042 *
Print + internet	0.262	0.609

(* - Significant at $p < .05$, ** - Significant at $p < .1$)

Purchase intention

Hypothesis 3A, 3B and 3B were not supported.

Effect on intention to view the advertised channel was not supported. However a strong tendency was visible with both printout only ($F = 2.725$) and the combination ($F = 2.431$). Influence of internet on the purchase intent was not supported.

	Purchase intention	
	F-value	p-value
Internet only	0.649	0.421
Print only	2.725	0.1 ***
Print + internet	2.431	0.12 ***

(*** - strong tendency)

Message recall

Since there were not enough subjects who remembered the content of the internet banner advertisements, only descriptive statistics of the message recall for printouts were analyzed and set of hypothesis 4 could not be tested. Out of 151 subjects who were exposed to test advertisement in printout, one-third remembered the brand correctly. Out of those who remembered the brand, two-third subjects could correctly recall the advertised message.

Findings and implications

The most significant finding of the study was the effectiveness of combination of printout and internet advertising as compared to any one of them. This clearly led to higher brand awareness among the sample. This effect was not just because of multiple opportunities to see. Since subjects browsed freely, more than a quarter of subjects who saw test

advertisement, were exposed to it multiple times during the experiment, but still it did not lead to better recall. The characteristics of the screen and paper as a medium are very different and the findings suggest a combination of both has more significant influence on both spontaneous and aided recall.

In influencing brand attitude, printout was more effective than internet alone. Surprisingly a combination of both did not prove out to be more effective than no exposure. There are a couple of possible reasons: (A) The advertisement was not well suited to change the attitude towards brand, (B) perceived clutter (over-exposure) led to negative influence on brand attitude or (C) less sample size for combination of both exposures. Since N for combination was 50 as compared to 203 for control group, the improvement that was observed may not have been significant due to smaller sample size.

Internet has been moving from pay-per-impression to pay-per-performance but the results do not support influence of advertisement exposure of internet banners on intention to purchase. This explains low and declining click-through rates. However, printout only and combination show a tendency of influencing decision to purchase/ consume. Since both printout only and combination results showed similar results and internet only did not show any tendency, it may be concluded that tendency in combination scenario may have been due to printout alone.

Besides, the recall of message finding is very significant for advertisers looking at internet as vehicle for marketing communication. Printouts appear to be very effective way of getting your message across to internetizens.

Overall, the internet printing shows potential of enhancing the effectiveness of advertisements that are delivered through internet. Advertisers looking at internet as a medium to reach their customers should explore embedding their advertisements in printable content.

Limitations and further research

This study compares effects of exposure to static advertisements. It may be useful to further investigate the effectiveness of printouts with respect to video advertisements, full-screen advertisements, and other newer forms.

This study used only one product category and hence generalizability across products might pose a problem. Also, further investigation into functional versus emotional products, high involvement versus low involvement products might be useful.

Although most internet users fall in the age group 15 to 30, younger or elder internet users may behave differently.

Conclusion

The potential of internet are still being explored and this study opens up new possibilities for advertisers looking at building their brands through internet and new business opportunity (pay-per-print) for website providers. Most important implication for managers is to look for content that not just has certain keywords, but has good enough content that people will print and see.

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