

Optimising advertising ROI on Print in a rapidly changing economic and media landscape – The contribution of Eye Tracking now and into the future.

Abstract

The aim of this paper was to investigate how eye tracking could effectively contribute towards the optimisation of return on print advertising investment. The definition of return on print advertising investment, for purposes of this investigation, was measured as the increase in brand or product awareness generated by investment into print advertising. In order to answer the research question holistically the print media landscape was assessed to establish the value that such an investigation would hold for South African advertisers. Characteristics of effective print advertising were then compared with insights that eye tracking can provide about them.

1. Introduction

With the 2011 financial crisis in Europe and the slow economic recovery throughout the world, including South Africa (United Nations, 2011), it becomes more important for businesses to find new and effective ways to operate and compete. Given the importance of marketing and marketing research in business, increased focus is needed with regards to optimising marketing budgets. This often requires new approaches in both advertising and marketing research.

The results of a survey conducted by Deloitte that were published in 2010, show that magazine advertising is the second most influential medium and newspaper the fourth most influential medium on buying behavior. This survey was conducted with 12 991 consumers in seven countries (Deloitte, 2010). Historical data from Millward Brown cross media studies in various countries have shown print advertising to have a fairly high return on investment when compared with other advertising media. It was also seen in this research that print is effective in terms of reinforcing overall brand awareness and can cause what is termed the “media multiplier effect” (Millward Brown, 2006). This means that print can act as a multiplier to the awareness generated by television advertising. Since flighting a print advert is generally less expensive than flighting a television advert in South Africa, one could speculate that by adding print to the campaign mix, and reducing the total flighting time of television advertising, this can reduce the overall cost of the campaign. The lowered cost may, for certain campaign strategies, assist in optimising the overall advertising budget, provided that the print advert used is an effective execution.

Advertising has evolved substantially over the years and in an increasingly complex and changing media landscape, print is not excluded. There is ever increasing competition among print publications, not only for readers but for advertising too. Traditional print media has in addition felt the weight of new exciting technology entering the scene around the world with increasing access to online publications. Online penetration is also slowly on the rise in South Africa (See Appendix Table 1) with easier access to the internet especially via mobile phones. With all the hype around digital media and advertising it is important to remember that internet penetration in South Africa at the moment is still only 17% (SAARF, 2012). In fact, statistics tell us that South Africa has one of the lowest internet penetration in the world and the fifth lowest internet penetration in Africa (as at December 2011, See Appendix Table 2, Chart 2 and Chart 3). Non digital platforms still account for the majority of South African advertising revenue.

The latest spend figures from Nielsen (Ad Dynamix © Nielsen Company, 2012) show that out of all the advertising spend in South Africa over the period from January 2010 to December 2011, 21% of total advertising spend was allocated to print advertising. Television constituted 64% of money spent whilst 10% went to radio, 3% to outdoor, 1% to the internet and 1% to cinema. Newspaper advertising spend seems to be increasing (See Appendix Chart 4). When we consider that print advertising currently still constitutes the second highest expenditure out of total advertising spend in South Africa and could act as a multiplier of awareness created by television campaigns; it stands to reason that finding better ways to improve the effectiveness of print advertising remains relevant.

Two important elements involved in the level of attention that a print advert will likely receive are the creative elements and the placement of the advert. The aim of the creative elements is to capture the reader's attention and to hold it. Placement in a certain publication like a magazine or newspaper, or on a specific page inside the publication, will determine how many consumers will have an opportunity to see the advert.

Eye tracking is a new technology that tracks eye movements and determines people's visual behaviour on a stimulus that they are exposed to. This technology is now used throughout the world and South Africa for usability studies, website improvement and shopper research to name a few. The use of eye tracking to improve the creative elements and layout of print advertising is relatively unexplored in South Africa. In a recent South African Research paper by Pretorius and Calitz (2011) in which they demonstrate the benefits of eye tracking in brand awareness studies, Pretorius and Calitz (2011, page 30) claimed that: "In today's rapidly changing business environment, brand management requires new approaches and data gathering techniques".

Can eye tracking provide one of these new approaches for print advertising in South Africa and effectively contribute towards the optimisation of return on print advertising investment? This paper aims to show how eye tracking supports the conclusions of conventional research as well as how it can offer additional insights to those offered by traditional research methodologies. This will ultimately show how eye tracking can assist in improving the effectiveness of print adverts, thus improving the probability that they will increase brand awareness and thereby optimise return on advertising investment.

2. Literature Review

2.1. History of Eye Tracking

The history of eye tracking goes as far back as the late 1800s. These methods were quite invasive and involved direct contact with the cornea but in 1901 the first precise non-invasive eye tracking technique was developed by Dodge and Kline (Jacob & Karn, 2003). This method involved using light reflected by the cornea to determine where test subjects were looking. The first recorded eye movement analysis of print adverts was by Nixon in 1924 (Pieters & Wedel, 2008). The first head mounted Eye Tracker was invented in 1948 by Hartridge and Thompson (Jacob & Karn, 2003).

Eye tracking research became more popular in the 1970s with a lot of research being conducted in psychology and cognitive processes related to eye movements. The accuracy of eye tracking devices improved considerably in the 1970s and with the personal computer in the 1980s came less labor intensive data analysis techniques (Jacob & Karn, 2003).

More recently in 1998 Verify International made their data of 33 independent eye tracking studies on print adverts available for use in their communication to prospective clients. These 33 studies contained 1363 full-page print adverts and a total sample of more than 3600 consumers. This data set was used to generate a model with surprising results and implications for print advertising, that seemed counter intuitive (Pieters & Wedel, 2004). This was the first eye tracking research of its kind. Pieters and Wedel (2004) findings suggested that when a print advert includes a larger and more prevalent brand symbol or logo it actually increases consumer attention. Pieters and Wedel (2004) also found that attention captured by the bigger brand symbol or logo transfers without difficulty to the picture and text.

In 2010 the Erdee Media Group in the Netherlands asked the Strategic Research Agency Validators to conduct a study to determine possible improvements on advertisement strategy for their broadsheet newspaper. The results from the eye tracking study that followed claimed to increase return on investment from newspaper media advertising by up to 25%. In June 2011, Cubeco published these results to share them with the rest of the newspaper community in the Netherlands (Leeflang & Grimm, 2011). These results were based on a sample size of 50 respondents. The key findings of this study were that adverts near to the headline of articles will get much more attention, adverts in the bottom right-hand corner of the newspaper are read first, big adverts have a larger effect than smaller ones and pages with adverts retain attention and interest longer than pages with articles only (Leeflang & Grimm, 2011).

2.2. Anatomy of the Eye – Putting things into “Perspective”

Eye tracking studies track eye movements and behaviour when exposed to a stimulus. In order to clearly understand the benefits of eye tracking it is important to have a basic understanding of how the eye functions. The eye has many constituents but for purposes of understanding eye tracking this literature review will focus only on the lens, cornea, pupil, iris, retina, fovea and optic nerve. The pupil and iris form the part of the eye that can be seen. The iris is what people are referring to when they say “he has blue eyes”. The pupil is the black circle inside the iris through which light enters the eye. The iris, cornea and the lens amongst other elements work together to limit and focus the light that enters the eye and thus allow us to see. Images are formed when light reaches the back of the eye and lands on the retina. The fovea is what allows us to see detail. The foveal vision is about the size of a thumb nail at arms length (Tobii® Technology, 2010). The foveal vision allows customers to see a company logo on a print advert when their vision is fixated on it. Eye tracking measures vision (what is seen) by measuring fixations. We only focus on a small amount of the information that we could potentially process (Tobii® Technology, 2010). One of the 3 main functions of eye movements according to Tobii® Technology (2010, page 4) is to “place the information that interests us on the fovea.”

Eye movements consist of fixations and saccades. Depending on lighting and the light intensity of an image, research has shown that the eye needs to fixate on the image for 80ms before registering it, but this still does not mean that it was consciously noticed (Tobii® Technology, 2010). Research studies have concluded that average fixation durations vary between 0.2 and 0.3 seconds (Loftus and Mackworth 1978; Just & Carpenter, 1980; Franzen, 1994; Rosbergen, Wedel & Peters 1997)

Saccades are the short quick movements of the eye from one fixation to the next. Vision is suppressed during a saccade so there is virtually no visual input during the eye's movement from one fixation to the next (Tobii® Technology, 2010). The relationship between the eyes and the brain is what allows an image to be seen as a "whole" when in fact what is fixated on are only small sections of the "whole". It is this relationship that has made eye tracking so useful in research over the years.

2.3. The Link between eye movements and cognitive processing

Early theories in eye movement behavior argued that there is a lag between the perceptual input and processing of information in the brain (Kolers, 1976). Rayner (1977) however argued on the basis of his research that eye movements are affected by cognitive processes. Results from an experiment conducted by Pieters and Wedel (2007) supported well known research published by Alfred Yarbus in 1967 (Pieters & Wedel, 2007). The experiment showed that the amount of information conveyed by an element in an advert is contingent on goals and that thoughts about the elements to some extent can be followed by tracking eye movements. Rosbergen, Pieters and Wedel (1999) found that cognitive processes underlie visual attention to a print advert and their research seemed to support a hypothesis for stimulus driven visual responses.

Eye tracking measures include but are not limited to:

- Time taken before a respondent fixates on an element for the first time (also known as time to first fixation)
- Duration of the first fixation on an element (also known as first fixation duration)
- Total number of fixations per element.
- Average fixation duration
- Total fixation duration
- The number of respondents who fixated on an image or area of interest on a visual stimulus (also known as percentage fixated)
- Repeat viewing (fixations keep reverting back to the same element)

The speed, length and number of saccades can also be used to analyse viewing behavior. In previous research the pupil diameter has also been used as a processing measure of attention (Pieters & Wedel, 2007).

The overall number of fixations has been shown in previous research by Kotval and Goldberg (as cited in Jacob & Karn, 2003) to be correlated negatively with search efficiency and so are able to provide an

indication of poor layout of creative elements. Longer individual fixations on an area of interest are believed to be an indication of difficulty in extracting information, thus requiring more visual processing per fixation (Jacob & Karn, 2003). The total time spent fixating and number of fixations, on a specific area of interest, is also generally believed to indicate the importance of that element (Jacob & Karn, 2003). “Stand out” of an area of interest can be inferred by the percentage of respondents who fixated on it (Jacob & Karn, 2003). Graf and Kruger (1989) (as cited in Jacob & Karn, 2003) suggested that short and long fixations could be classified into two types of fixations, these being involuntary and voluntary fixations respectively.

3. Research Objectives

The aim of this research is to determine “if” and “to what extent” eye tracking can contribute to the improvement of print advertising effectiveness and thereby improving the return on print advertising investment in South Africa. The main research objectives were:

- 3.1. To investigate the opinions held by South African stakeholders with regard to the value of print as a medium for advertising in South Africa.
- 3.2. Establish the awareness of eye tracking and to what extent South African advertisers, that have made use of eye tracking, feel that eye tracking has assisted in improving their print advertising relative to traditional research approaches.
- 3.3. Investigate the characteristics of effective print advertising by data mining results from quantitative print advertising studies.
- 3.4. Investigate how eye tracking can assist in improving print advertising by comparing local and global eye tracking case studies and linking them to the analysis of the database and opinions of South African stakeholders.

4. Methodology

The research objectives form distinct parts that are necessary to answer the overall research question holistically. Different data collection techniques and research methodologies were employed. This included both qualitative and quantitative data collection and analysis techniques.

4.1. Structured face-to-face in-depth interviews

4.1.1. Design:

The reason for choosing this methodology was due to the more detailed individual opinions required in order to set the scene for later research findings. This methodology is prone to bias but this bias in itself helps to create a more accurate picture of print media in South Africa and the personal views held by stakeholders in the industry (Boyce & Palena, 2006). The aim was to determine the value of print advertising from a South African view point and to determine the level of awareness and opinions around eye tracking in South Africa. Other limitations of this method are the time-intensive nature of conducting the interviews and not being able to generalise due to the small sample size (Boyce & Palena, 2006).

4.1.2. Participants:

Interviews were conducted with stakeholders in the South African marketing, advertising and media industry. The sample criteria were that they needed to have a good understanding of this industry in South Africa. This was determined by their level of formal education in marketing and media or the number of years that they have worked in the industry (See Appendix Table 5 for list of respondents interviewed) Interviews were conducted in January, February, March and April 2012.

4.1.3. Research Instruments:

A discussion guide was used to keep a general structure to the interviews and to assist in keeping them similar for all respondents, so as not to digress from the objectives of the research interviews. Discussions included, but were not limited to; the usage of and attitudes towards print advertising in South Africa, optimisation of print adverts and advertising budgets, issues facing print advertising in South Africa and awareness of eye tracking for assessment of print advertising. All interviews were recorded and transcribed for analysis purposes.

4.1.4. Data Collection:

Interviews were conducted over a two-month period. These interviews were all conducted face-to-face at a quiet venue that was comfortable for the respondents. Interviews consisted of structured in-depth discussions. Interviews were conducted in Johannesburg and Pretoria. Permission was obtained from each respondent in writing to conduct and record the interviews for transcription and analysis.

4.1.5. Data Processing:

Following the interviews, the transcripts, notes and recordings were analysed in-depth, in an analysis grid in Microsoft Excel. Thematic and content analysis was conducted on the content of the interviews and the findings were compiled into a written report. The aim was not simply to report the facts but to link these to the current South African media landscape and eye tracking. Stakeholder opinions and direct quotes in the report were kept anonymous.

4.2. Data mining of a global database of copy tested print adverts

4.2.1. Design:

The database used for this analysis was provided by Millward Brown and consisted of 2195 copy tested print adverts from around the world. The research methodology applied was quantitative using face to face questionnaire based interviews. The average duration of each interview was 15 minutes. The three main research questions that these studies aimed to answer were:

- Will the advert connect with the consumer in a branded fashion?
- Does the advert succeed in linking the right associations with the brand?
- Do the brand associations make the brand, product or service that is advertised more desirable at key decision moments?

(See Appendix Table 3 for a list of countries that these studies were conducted in)

4.2.2. Participants:

Each advert was tested among a minimum sample of 100 respondents. The demographic split was different for each advert and was based on the target market specified for the test adverts at the time of the studies.

4.2.3. Research Instrument:

The studies used PrintLink™ which is a product utilising a quantitative questionnaire based methodology for evaluating the effectiveness of print advertising. The reliability of the PrintLink™ measures have been tested and were shown to have a direct correlation with historical sales data and in-market advertising performance.

4.2.4. Data Collection:

The data collection methodology varied by country. The data collection methodologies included face to face interviewer assisted paper based interviews, face to face interviewer assisted or self administered computer aided interviews and self administered online interviews.

4.2.5. Data Processing:

For purposes of the data mining, the database results were split according to four important measures from the studies, namely impact, persuasion, branding and key message recall. Impact refers to the ability of the advert to gain attention in a cluttered environment, in which many adverts compete for consumer's attention. Persuasion refers to the ability of the advert to influence consumer's purchasing decisions. Branding refers to the adverts ability to create lasting memories of the brand in a consumer's mind. Key message recall refers to how well the advert communicates its intended message.

Historical sales data has shown a higher correlation with two of these measures namely impact and persuasion. The data was grouped into the top and bottom 25% of adverts in terms of their performance against impact, key message delivery and the highest and lowest 20% in terms of their performance against persuasion and branding. The aim was to determine general characteristics of the most effective and least effective print adverts. Significance tests were conducted at a 95% confidence level between

the top and bottom performing adverts for each of the four measures to determine which characteristics appeared significantly more amongst the top performers than amongst the bottom performers and vice versa. The results would later be used to determine if and how these characteristics could be evaluated and improved on through the use of eye tracking.

4.3. National and International Eye Tracking Case Studies

4.3.1. Design:

Eye tracking studies are usually designed around the research question. They can also be designed to compliment traditional quantitative or qualitative research such as face to face interviewer aided questionnaires or focus groups. The way an eye tracking study is designed and analysed is largely based on the aim and objectives of the research, this is mainly due to the vast amount of eye movement data generated. Data for a small sample of respondents can be analysed for days if there is no definitive research question to be answered. Each case study's design will therefore be discussed separately as each study is different.

Six case studies were analysed to measure the possible contribution of eye tracking to the evaluation of effectiveness in print advertising. This would later be linked to characteristics of effective print advertising as determined by the data mining in section 3.1:

Case one was sourced directly from THiNK eye tracking. Case two was sourced directly from Millward Brown Singapore and cases 3, 4, 5 and 6 were sourced from directly from Millward Brown South Africa.

Case 1: Study conducted on a print advert for Sunsilk using eye tracking.

Case 2: Study conducted on a print advert for the financial brand, NTUC Income, using eye tracking and online questionnaires.

Case 3: South African example of a print advert for a new brand that was tested for Unilever using eye tracking and online questionnaires.

Case 4: South African example of a print advert tested for a South African telecommunications brand using eye tracking and paper aided interviews.

Case 5: Analyses of the combined eye movement data of six print adverts tested for a South African telecommunications brand using eye tracking.

Case 6: Aggregate analysis of viewing behaviour data, collected from 22 South African print advertisements that were tested, from case studies over the past two years using eye tracking.

4.3.2. Participants:

A sample of 30 respondents is sufficient for a qualitative eye tracking study (Bojko & Adamczyk, 2010). This is however not a magic number and as Bojko, A. and Adamczyk, K.A. (2010, page 5) put it: “There is no one sample size appropriate for all eye tracking studies. As in any other type of study, the sample size depends on multiple factors including research objectives and study design.”

Each case study presented below has a different sample size which was determined by the research objectives and methodology for each one in isolation. Eye tracking studies can follow a quantitative or qualitative approach which also influences the sample size required. Each sample is discussed individually below.

Case 1: 200 female respondents from the UK regardless of race, age or other demographic requirements.

Case 2: 50 male and 50 female respondents between the ages of 25 and 45 years. The total sample was 100 respondents.

Case 3: 30 black female respondents between the ages of 25 and 50 years.

Case 4: 15 male and 15 female small business owners for eye tracking and a separate sample of 170 small, medium and large business owners for the face-to-face paper aided interviews.

Case 5: Data from two eye tracking studies for the same brand was combined for analysis of the viewing behaviour on six print adverts. A sample of 30 small-business owners were exposed to five adverts and a separate sample of 30 small business owners were exposed to a sixth advert for the same brand.

Case 6: Data from 22 adverts that were tested using eye tracking was combined for analysis of viewing behaviour. The data consisted of a total sample of 385 respondents who were not all exposed to every advert, however the minimum sample for each advert was 30 respondents.

4.3.3. Research Instruments:

The case studies made use of Tobii Eye Trackers which are an improved version of the traditional CCR remote eye tracking technology (US Patent US7, 572,008). Near infrared illumination is used to create the reflection patterns on the cornea and pupil of the eye of a user and two image sensors are used to capture images of the eyes along with the reflection patterns. Advanced image processing algorithms and a physiological 3D model of the eye are then used to estimate the position of the eye in space and the point of gaze with high accuracy, Tobii Technology © 2012. Face to face paper aided interviews were conducted in case 4 and online questionnaires were used in case 2.

4.3.4. Data Collection:

Data was collected using eye tracking software that was specifically designed for collecting and analysing data of eye movement behaviour. Each respondent was calibrated using a 9 point calibration process where the respondent was required to look at 9 different points on the screen. Calibrations are needed for accuracy as respondents might have differences in the structure of their eyes. Further data collection for case 2 and 4 were done via questionnaires. Respondents filled in a self completion survey online in conjunction with the eye tracking test for case 2 and an additional 170 respondents were

interviewed in the field using face to face paper questionnaires for case 4. All interviews were facilitated by experienced interviewers and distractions were kept to a minimum.

4.3.5. Data Processing:

Data files were extracted from the Tobii analysis software at a respondent level and analysed in excel using basic data analysis techniques to determine averages, correlations and scanning patterns. Eye tracking metrics generated by the vast amount of data collected included impact measures such as time to first fixation, fixation length and percentage fixated. Interest and engagement were analysed by looking at the number of fixations on an area or the fixation lengths. Total gaze time and fixation order or were also used to investigate levels of interest. Fixation lengths were scrutinized to investigate the level of mental processing required on certain visual elements. Assumptions were made carefully and in conjunction with other eye tracking metrics and the research results from the questionnaires in cases 2 and 4. Heat maps were generated from the eye tracking software for a qualitative visual representation of viewing behaviour indicated by darker and lighter red shading to show key areas of focused attention.

5. Results

5.1. Structured face-to-face in-depth interviews

5.1.1. Attitudes toward print advertising in South Africa:

A general feeling that came up in these interviews was that print media in South Africa is a constant challenge and for many reasons. Stated reasons included: the high cost of paper and logistics, ignorance in the market to the value of print as a medium for advertising, competition from television, electronic media, social networking, a general perception in the market that print is dying and a lack of research into the medium. One respondent referred to print as a “huge challenge”. Respondents all agreed that print is highly valuable and plays a large role when planning advertising strategies.

The word “strategy” came up often in terms of when to use print media for advertising. Beneficial uses that were mentioned included:

- Enforcing brand messages from television advertising
- The benefit for retail advertising
- The benefit of targeting a very specific or niche market
- The lower cost of flighting, when compared with television and out of home media.

It should be noted, nonetheless, that two respondents claimed it was expensive in terms of cost per thousand (cost to reach 1000 consumers). Another benefit that was often mentioned was the “shelf life” of print advertising. When a magazine or newspaper is placed in a waiting room or simply visible in a home, usually more than one person has access to the publication which means that, more often than not, multiple consumers have the opportunity to see the advertising in that publication long after it was published. One respondent mentioned that confusion often occurs between circulation and readership. Most respondents were aware that readership of newspapers has trended upwards over the last three years as seen in the chart below (Figure 1).

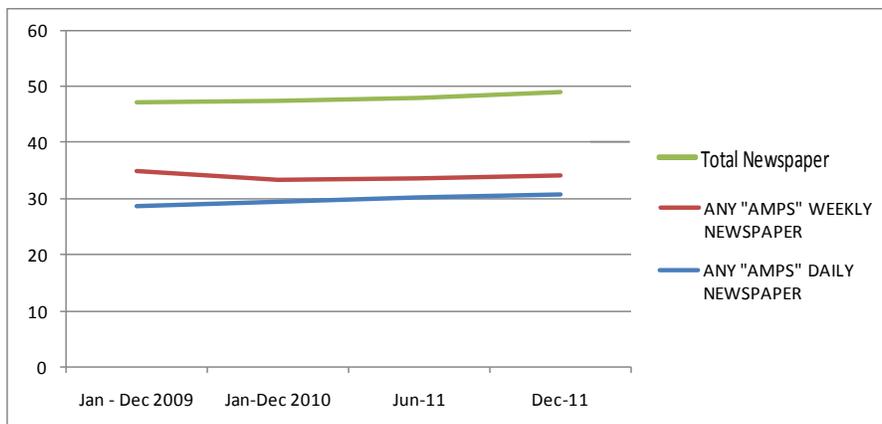


Figure 1 – Source: South African Audience Research Foundation www.saarf.co.za

Another general opinion amongst the interviewed stakeholders was that print is a more engaging medium than television or radio and it was argued that it's much easier to switch off during a commercial on television than it is whilst reading a newspaper or a magazine. Hence justifying that print advertising is less likely to be missed or overlooked compared to television or radio.

The following quotes were taken from the interviews to illustrate some of the beliefs about print media and advertising in general in South Africa:

“There's still a place for print”

“I think physical papers are still going to be with us for a number of years”

“I think it still has a future. I think it is very important.”

“...at the moment we are actually going through a fantastic time because there were quite a number of newspapers that came onto the market ... and suddenly upped the readership in this country, because a lot of people that haven't read newspapers before, started reading ...”

“The perception is that print is dying, but newspaper readership is definitely up”

“Everybody's saying print is dead. It won't die. It's a strong thriving industry.”

5.1.2. The “Digital Threat”

At the time of the interviews respondents did not perceive digital media as a current threat. Most of them however, did recognise the possibility of a threat posed from digital media in the future. The threat from television, cost of paper and the ignorance around print media and advertising were mentioned as the most prominent threats for the moment. The main reasoning's for the lack of concern around a digital threat to print was the low internet penetration level in South Africa, which in turn stem from the high prices of connection, slow connection speeds, lack of decent broadband services and a poor telecommunications infrastructure. Another general mention was that a number of South African print publications were already publishing their newspapers and magazines online. This is in conjunction with the paper versions and often these have remained identical to the print layout.

The following quotes were taken from the interviews to illustrate some of the opinions about digital media in South Africa:

“Whilst the electronic media, internet media, social media is making a lot of noise; I don't think they've really decreased the value of print as such...I think the value is as big as it always has been.”

“We don't see the increase in the internet replacing the decline in circulation.”

The general opinions were largely positive towards print and it is still seen as a relevant and worthwhile medium for advertising in South Africa, while online media was not considered an imminent threat.

5.1.3. Improving Print Advertising

Various methods of improving print advertising were mentioned by respondents, yet research was usually the last mentioned and some respondents were probed before mentioning this. Once the subject of research arose, it was however, seen as a very important element. Ways that were mentioned for measuring the effectiveness of print advertising were:

- Measuring responses to adverts, e.g. retail sales.
- Experience built up over years of working with print advertising and developing a “gut feel” for what works.
- Desk research
- Focus groups

Most respondents felt that there is not currently enough research done in South Africa on how to optimise print advertising.

Some newspapers and magazines have conducted their own research with the aim of establishing best practices and proving the benefits of print advertising. It was regularly mentioned that not enough industry research has been conducted and there is limited knowledge on effective print advertising in South Africa, especially when compared to the rest of the world. Other mentions were also made of the lack of testing individual executions. One respondent in particular felt that in some instances, this could make it more difficult to pin point the reasons as to why an advert did not meet its objectives. Was it the placement or the creative elements? Due to the cost involved in conducting research the general assumption was that testing print executions might not be seen as worth the investment, due to the low cost of flighting them.

The following quotes illustrate opinions about the lack of print research in South Africa:

“I think the print media lacks presenting themselves. They should do much more presentation, general research about themselves and they should market themselves.”

“We don’t have nearly enough research. I think we need to know a lot more on that particular media.”

“...but generally, if there is some spare budget to do research, it goes on television. It seldom goes onto print.”

5.1.4. Eye Tracking

Most respondents knew very little about eye tracking and a few did not know what it was. None of the respondents remembered having seen any published material relating to eye tracking on print advertising in South Africa. They had limited knowledge of what value eye tracking could provide, and one respondent mentioned how they could not imagine that it would provide any form of value other than indicating where a consumer was looking on a page. Studies that were mentioned were mainly scientific in nature or around website improvement. One respondent knew of an international eye tracking study conducted for out of home media. Another respondent remembered when eye tracking was popular in the 1970s. Respondents did have very clear opinions on what generally works well for print advertisements, the main opinions given were that the picture captures attention and the use of bright colours enhances print adverts. The elements mentioned most often were the headline and the picture. Other mentions were: single clear messages, eye-catching, relevance, news, information, link to television campaign, not too much detail.

The following quotes were taken from the interviews to illustrate some of the opinions about eye tracking and effective print advertising in South Africa:

“It depends what your message is and what you’re aiming to do.”

“...it’s all about the headline and the visual”

“So I don’t think eye-tracking will do anything for creative.”

“What it really just told me was how people look at it. Do you want it to be in the top part of the page or in the bottom part of the page? What do they look at first?”

“Well, for outdoor it will definitely play a role. For newspapers, I don’t know.”

“I’m aware of it. What it actually is, I can’t tell you in detail”

Awareness of eye tracking was very low amongst respondents. It was also not really considered to hold much value for improving print executions however most respondents felt that not enough is currently done to improve the effectiveness of print advertising.

Mentions that were made by stakeholders of the characteristics of effective print advertising, tied up closely with the important characteristics that were found in the data mining as discussed in the next section (section 5.2).

5.2. Data mining of a global database of copy tested print adverts

As with all advertising, there are no hard-and-fast rules to suggest that specific types of print adverts will always produce certain results, or that they are the right type of adverts for a specific category or brand. However, by looking at the characteristics of adverts that performed particularly well on impact, persuasion and / or both, a general pattern arose which seemed to be associated with more effective print advertising.

Impact takes into account the respondent's interest in the advert) whether they would look further or turn the page) engagement and branding. The following characteristics were found significantly more in the adverts with the highest impact scores: new claims, single key messages, rational messages or combined rational and emotional messages, funny or light-hearted humour, new-product advertising, brand variant extensions, cartoons, continuations of existing campaigns, new news, similarities to current television advertising and text containing 20-40 words. Advertising with the lowest impact scores had substantially more of the following characteristics: a small brand position, two or more key messages, emotional messages, no intended humour, promotional news, images of children, slogans used by the brand before, new campaign evolving from an old campaign, containing no new news, no supporting television advertising and text containing more than 40 words.

Adverts that performed in the top 20% for branding were significantly more for established brands and those that had a leader or medium brand position. This group of adverts with the highest brand scores also included significantly more of the following characteristics: just an image, colour, one key message, cartoons, established branding devices, unknown campaigns evolving from old campaigns or continuations of existing campaigns and text containing 11-40 words. The lowest brand scores were achieved more by adverts for new or young brands and containing 'new-product' advertising.

New and young brands appeared significantly more in the group of adverts that performed well in terms of persuasion (top 20%). They also contain significantly more of the following characteristics: rational messages or messages with rational and emotional combinations, new news, new products, brand variant extensions and text containing more than 40 words. The group of adverts in the lowest 20% of persuasion scores contained significantly more, big and established brands. These adverts also have more emotional messages, new or no claims, new approaches, children and text containing 10 words or less.

Adverts that performed particularly well in terms of key message recall (top 25%) were mostly new and young brands, and they tend to have two key messages. They contain significantly more new-product advertising and are significantly more frequently for FMCG brands. The adverts that performed in the lowest 25% persuasion scores were significantly more established brands and tend to be focused more towards the use of a new approach. Significantly more of these adverts contain slogans, and the brand names tend to form part of their slogans. There are significantly more non-FMCG brands in this group.

5.3. National and International Eye Tracking Case Studies

5.3.1. Case 1:

Eye tracking can be used to test different layouts in order to determine the best layout and position of brand cues in a print advert. In the following example from THiNK Eye Tracking © (2009) a sample of 200 respondents were shown the advert below (Figure 2). From the heat map, it can be seen that few respondents noticed the product which acts as the brand cue for this advert. When shown the modified advert (Figure 3) the brand cue was clearly noticed. This change improved the advert's potential to create memories of the brand and product and not just the advert itself.



Figure 2



Figure 3

5.3.2. Case 2:

Results from the eye tracking showed that respondents read the body of the main text (Figure 4). A questionnaire was also used to ask respondents questions on their opinions of the advert that they had just seen. Results from the questionnaire showed that the key message recall was significantly lower than the norm. Norms were generated from more than 30 previous case studies on print advertising using the same methodology. This combined with the eye tracking data, pointed to poor clarity of the intended message. Even after reading the text respondents still did not understand the message that the advert was trying to communicate. Without the eye tracking data it would have been clear that the message was not remembered or understood from the responses in the questionnaire but why this was the case would not have been as clear. The eye tracking helped to provide actionable recommendations for improving the advert so that the message would be conveyed more clearly. In this case study it was not the layout of the advert but the content that was causing the key message to be missed.



Figure 4

5.3.3. Case 3:

In a South African eye tracking study conducted on for Unilever, three print adverts for a relatively new brand “Motions” were tested to determine which of the three adverts would be most effective for a new campaign. The eye tracking results clearly indicated that the recommended advert (Figure 5) was the most engaging of the three and had the largest spread of attention throughout all elements of the advert. The eye tracking was complimented by questions relating to the adverts. The results from these were positive except for the branding elements, which could be improved further. The recommended advert (Figure 6) received the highest attention to the brand elements and recommendations were made to increase emphasis on the slogan and brand name. Figure 5 and Figure 6 below demonstrate the difference in the spread of attention between two of the test adverts, where the chosen advert (Figure 6) performed better. In this case study eye tracking proved to be very useful in deciding which of the three print adverts to use; by pointing out the most effective advert in terms of drawing and maintaining the audience’s attention and thus improving the overall effectiveness of the campaign.

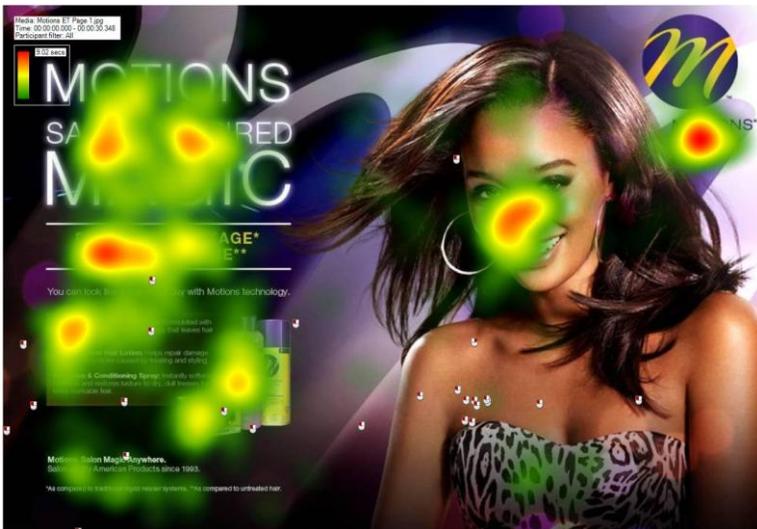


Figure 5

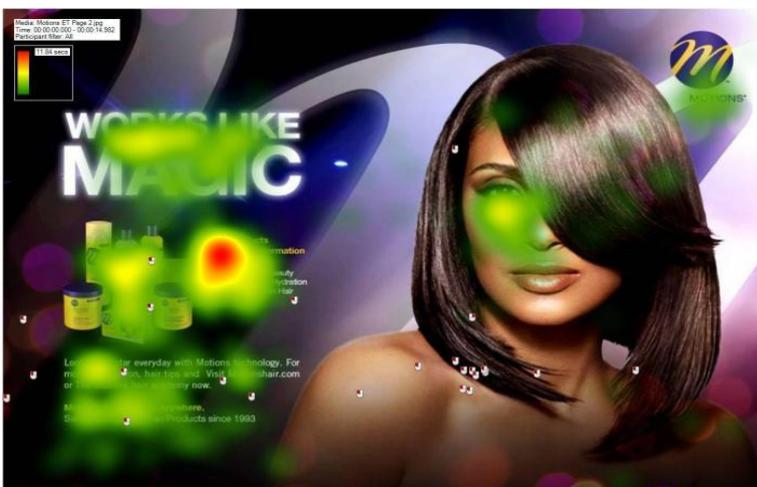


Figure 6

5.3.4. Case 4:

The following advert (Figure 7) was evaluated using face to face paper aided personal interviews and similar questions as in the Print Link methodology discussed earlier. The advert was seen as being somewhat more striking than other print adverts for the same brand. This was determined by the advert's performance against the norms derived from a number of previous print adverts for this brand. The rest of the measures for the advert were normative except for the key message recall, which was significantly lower than the norm. The key messages that were played back when asked what respondents thought the advert was trying to communicate were focused mainly around more data, technological advancement and the offering of business solutions. The intended message was “collaboration at discounted rates” and the aim was also to communicate that collaboration happens across borders with the use of the background images of New York, Cape Town and Sydney.

The eye tracking results showed little attention paid to the fine print, and that the background images were barely noticed. This gave valuable insights as to why the intended message recall was so low. Recommendations could now be made on how to improve key message delivery by minimising the detail in the fine print and increasing the font size as well as placing more emphasis on the background images or following a completely new approach to convey the idea of collaborating across borders.



Figure 7

5.3.5. Case 5:

Eye tracking data from two South African eye tracking studies, conducted in 2010 and 2011 respectively, were analysed to look for any indication that too much text may lower the impact of the text or how much attention it receives. Six South African print adverts were tested for a large telecommunications brand. Five adverts were tested in the first study (2010) of 30 respondents, and a sixth advert was tested in a separate study (2011) for the same brand with a different group of 30 respondents. The total sample for the analysis below is 60 respondents. Data was extracted for areas of interest that were specified around the text elements of these adverts. Two areas of uniform text were specified for each advert. All text of the same font size was grouped together to minimise the effects of font size on the results. Adverts for the same brand were selected to minimise the effects of bias toward a brand on impact and viewing behavior.

Data was extracted for average total fixation duration on the areas of interest as well as average total fixation count and average percentage fixated. Fixations on a specified area of interest of an advert were compared with all other fixations on the advert. A ratio of fixations on the area of interest to fixations on the rest of the advert was calculated for each of the three measures, for all six adverts. See Appendix Table 4 for a data summary. There is a strong negative correlation between the number of words and fixation duration, fixation count and percentage fixated. This supports the idea that texts containing too many words draw less attention. If they draw less attention and are seen by fewer respondents it might make them less impactful. More research would be needed to confirm this, as the sample size in terms of the number of adverts included is small. Another limitation to this analysis of the eye tracking data was that the position of the text was not taken into account, possibly allowing for skewed results.

5.3.6. Case 6: Summary of South African print advertising cases to determine average “Scan Path”

A total of 22 print adverts for FMCG and Non-FMCG South African brands that were tested on a total of 385 respondents using eye tracking were summarised as follows: adverts were divided into nine equal areas of interest and labeled A1, A2, A3, B1, B2, B3, C1, C2 and C3 (Figure 8). Data was generated for average time to first fixation and percentage fixated (Chart 1) for each area of interest. A scan path was determined using the average time to first fixation for the combined sample data (Figure 9). The numbers and arrows represent the average scanpath from the first fixations to the last fixations (1 to 9 respectively).

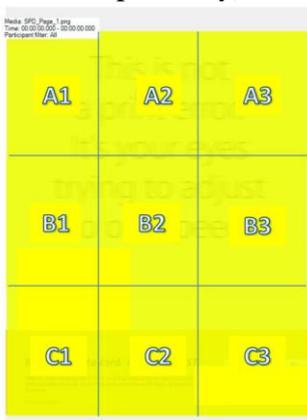


Figure 8

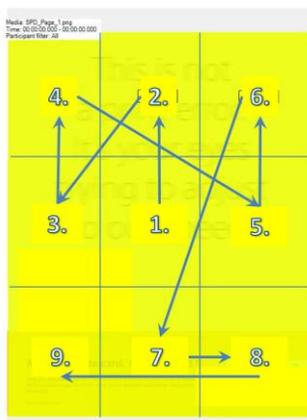


Figure 9

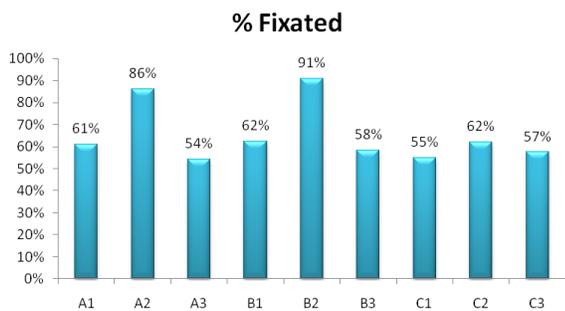


Chart 1

The results of the summary of cases above shows the same preferential scan path sequence and characteristics that Wilfried Leven (1991) found in a study that he conducted using 10 print adverts tested on 149 respondents for detergent and cosmetics products (as cited in Pieters & Wedel, 2008). Leven (1991) found, as in the South African results above, that the centers of the adverts were fixated on more than the sides. Levin (1991) also found a preferential scan path sequence that started in the middle, moving to the top and after some other movements ended up in the bottom right-hand corner. The results above show a slightly dissimilar picture in terms of the end point yet the difference to the results from the study by Levin (1991) is minor with the lower right being seen, on average, second-to-last with a lead of only 200 milliseconds to the lower left.

6. Discussion

Results from interviews in section 5.1 support the idea that print as a medium for advertising will still be around for some time in South Africa. Print is also a popular advertising medium in India and forms a large part of their advertising budget (Deloitte, 2010). There is a difference in the media landscape between developed and developing countries. An example of this can be seen when comparing the latest declining trend in print advertising spend in the United States (The Atlantic, February 2012) to the South African and Indian markets where this is not the case.

Print advertising is still quite relevant in the South African advertising industry and considering that it may hold a higher return on investment according to global cross media research and moreover in the opinions of stakeholders, it remains important to focus on improving return on investment into print advertising. Only a small portion the marketing research budget in South Africa is invested in the improvement of print advertising and this may be largely due to the cost of research vs. the cost of advertising in print.

“...but generally, if there is some spare budget to do research, it goes on television. It seldom goes onto print.” (Quote from in-depth interviews)

When evaluating print advertising it is important to know whether the advertising will capture a consumer’s attention and hold it. It is also important to know if a consumer remembers the advert in a branded way. Research has proven that supporting television campaigns with a print element can increase the awareness of the campaign as a whole and enforce memories of the brand. The mere exposure effect shows that repetition can enforce positive attitudes towards a brand (Sawyer, 1981). This is also known as the familiarity principle (Reis, Maniaci, Caprariello, Eastwick & Finkel, 2011). It is, however, important that consumers see the connection to the overall campaign to enforce the communication of the campaign. With the high cost of advertising, especially on television, the use of print to support television could be a welcomed relief on the marketing and advertising budget.

Eye tracking has proven to be useful in many areas of market research the world over. The biggest impact it has had in recent years has been on user experience. Eye tracking is known more in South Africa for its application to in-store and packaging research. Research on traditional advertising (such as print and television) using eye tracking is not used much in South Africa and there seems to be a general lack of understanding of its value in this field. Over 30 years of research exists on viewing behaviour and how this links to cognitive processing and 100 years of research exists on eye tracking. With new technology and advancements in computer hardware and software capabilities eye tracking has become more cost effective and less labour intensive to use.

Traditional research using focus groups and questionnaires have given us valuable insights into effective print advertising in the past but new technologies allow us to expand and improve on this. Where traditional methods rely on respondent memories about what they saw or think they saw, eye tracking has proven to be useful around the world in adding to traditional research insights by allowing

us to see what people see and measure attention as it happens. Consumers cannot recall a brand that they have not seen. Our primary mode of gathering information is through our eyes and this is also the most studied and best understood sense mechanism of human perception (Zilmer & Spiers, 2001).

It stands to reason then, that viewing behavior can add valuable insights to the evaluation of the effectiveness of print advertising. Historical eye tracking research has shown that eye movement behavior can give insights into cognitive behavior and thereby allow us to look more closely into consumer's attitudes and behaviors. In some instances this can be more valuable than relying on their own feedback.

Scanpath theory (Groner 1998; Norton and Stark 1975; Stark and Ellis 1981) (as cited in Rosbergen et al, 1999) predicts that respondents store the sequence of fixations on a stimulus in memory during the first exposure, establishing a scanpath. The same scanpath is repeated when the respondent is exposed to the stimulus again, assisting in stimulus recognition (Rosebergen et al, 1999). Scanpath theory suggests that scanpaths are stationary across exposures (Rosbergen et al, 1999). According to the scanpath theory, the first exposure will determine the viewing behavior for subsequent exposures and repetition will merely increase the speed and lower the duration of fixations on the stimulus (Rosbergen, et al.,1999). Research has also shown that there is little difference in scanpaths across subjects on the same stimulus (Rosbergen, et al.,1999).

Print advertising could improve brand memories and attitudes toward the brand with repeated exposure according to the mere exposure effect (Sawyer, 1981). The scanpath theory would however suggest that this will only happen if the brand or product is noticed during the first exposure, as viewing behavior to subsequent exposures will not necessarily change much. This increases the importance of improving the initial layout of the advert for optimal attention to the brand, key messages and key visual elements.

The average scanpath of 22 South African adverts is discussed in Case 6 and even though the viewing pattern shown matches closely to the results of an international study there are still variations between individual print adverts and generalisations should be avoided in terms of viewing behavior, as not enough research has been conducted in this area. Print advertising layout should preferably be evaluated on a case by case basis because too many variables could influence the scanning pattern between executions.

The case studies discussed earlier show the benefit of using eye tracking to improve the layout of print adverts for optimal attention to the key elements. When the eye tracking was combined with a questionnaire approach, problem areas could be more clearly defined such as in Cases 2 and 4. It was determined that the key messages were missed by asking respondents to answer some questions, but why this was happening was not clear. In both cases the reason for the low message take out could not have been determined without the use of eye tracking and the reasons were clearly different in the two cases. Case 1 showed a lack of clarity and understanding to the messages conveyed in the text and Case 3 showed that the images conveying the messages were simply not noticed.

The data mining results showed that new product adverts are much more likely to appear in the group of adverts with the highest impact scores. New product advertising however appear significantly more with lowest branding scores so even though the impact score takes branding into consideration as mentioned earlier, these adverts may not necessarily be associated with the brand at a later stage. This is not surprising when considering that a new brand or product which is unfamiliar may be harder to remember due to a lack of previous exposure (Sawyer, 1981).

In this case an aspect to focus on for a new product advert might be to optimise branding. The Sunilk Case (Case 1) is an example of how this has been achieved in the past using eye tracking. Case study 1 illustrates how eye tracking can be useful in providing actionable ideas for the improvement of print adverts in terms of layout so that the brand cues are noticed.

Case 1 also illustrates, as in case 2, how one can compare different executions using eye tracking to determine the best creative and layout with the most visual attention on key elements. Only 30 respondents are needed for qualitative analysis of this kind using eye tracking (Bojko & Adamczyk , 2010). Such a low base size greatly reduces the cost of research and still yields valuable results. Conducting qualitative focus groups using the same sample size will require a greater investment due to this labor intensive methodology.

Further links between traditional research and eye tracking were seen in the data mining results, which showed that adverts' containing text of more than 40 words fall significantly more in the group of adverts with the lowest impact and branding scores. The assumption of too much text detracting from the impact of an advert is also supported by Case 5 where eye tracking shows a negative correlation between the number of words and attention paid to them.

7. Conclusion

Print media is still abundant in most developing countries including South Africa yet print advertising is not evaluated much in terms of its effectiveness in South Africa. In terms of the advertising budget print has much to offer and optimising it should be considered a priority especially in times of austerity. Eye tracking can prove to be more cost effective in terms of lower sample sizes and the length of interviews. This paper has also shown the value that eye tracking can add in terms of actionable insights on how to improve print adverts. Eye tracking can be used in conjunction with traditional research to answer questions that these methods did not cover or could not answer. It can also be used as a standalone for qualitative analysis that would be more costly using traditional approaches such as focus groups or in-depth interviews.

Both international and local case studies show similar benefits of eye tracking to improve print advertising layout and effectiveness. They have shown how eye tracking can provide insights on improving communication of key messages, branding, impact and key creative elements that were found in the highest performing print adverts. Measuring attention tells us what consumers will see and therefore have the opportunity to remember. If consumers remember an ad campaign in a branded way it assists to increase the overall brand or product awareness, improving the return on print advertising investment.

Eye tracking will remain a valuable research tool even as we move further into the digital age and print publications start facing bigger competition from digital publications. Our media consumption patterns may change but how the human eyes and brain function together is unlikely to change in the near future. Viewing behaviour can give us valuable insights to the ever more complex media consumption patterns and behaviours arising as technology advances and the media landscape changes even further. Even if print moves online consumers will still have to see the advertising to have an opportunity to remember it.

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Appendix

Table 1 - Online Penetration in South Africa

% of the adult population of South Africa that accessed the World Wide Web in the:	2007	2008	2009	2010	2011
Past 12 Months	9.4	10.7	13.4	18	22.4
Past 4 Weeks	8.1	9.5	11.7	15.6	19.8
Past 7 Days	6.9	8.1	9.8	13.2	17
Yesterday	4.6	5.6	6.8	9	11.7

Table 1 Source: South African Audience Research Foundation 2012 www.saarf.co.za

Table 2 - Internet Users and Populations Statistics for Africa - December 2011

INTERNET USERS AND POPULATION STATISTICS FOR AFRICA						
<u>AFRICA REGION</u>	Population (2011 Est.)	Pop. % of World	Internet Users, 31-Dec-11	Penetration (% Population)	Users % World	Facebook 31-Dec-11
<u>Total for Africa</u>	1,037,524,058	15.0%	139,875,242	13.5%	6.2%	37,739,380
<u>Rest of World</u>	5,892,531,096	85.0%	2,127,358,500	36.1%	93.8%	761,352,780
WORLD TOTAL	6,930,055,154	100.0%	2,267,233,742	32.7%	100.0%	799,092,160

NOTES: (1) Internet Usage and Population Statistics for Africa are for December 31, 2011. (2) CLICK on each region for detailed data for individual regions. For help and definitions see the [site surfing guide](#). (3) Population numbers are based on figures from the [U.S. Census Bureau](#). (4) The Internet usage numbers come mainly from data published by [WWW](#), [ITU](#), [the Nielsen Company](#), [Facebook](#), and other trustworthy sources. (5) Data from this table may be cited, giving the due credit and establishing an active linkback to Internetworldstats.com. Copyright © 2012, Miniwatts Marketing Group. All rights reserved worldwide.

Table 2 Source: Internet World Stats 2012 <http://www.internetworldstats.com>

Appendix

Table 3 - Millward Brown Print Advertising Database composition

Country
Argentina
Australia
Belgium
Brazil - Sao Paulo
Canada - English Speaking
Canada - French Speaking
China - Beijing
China - Shanghai
China - Tertiary Cities
Czech Republic
Denmark - mixed methodology
France
Germany
Hong Kong
India - North
India - South
India - Unspecified
India - West
Ireland
Italy
Japan
Korea
Malaysia
Mexico
Netherlands
Norway - mixed methodology
Panama
Peru
Philippines
Poland
Russia
South Africa - LSMA (7-10) - F2F
Spain
Sweden - mixed methodology
Switzerland
Taiwan
Turkey
United Kingdom
USA - English
USA - Spanish

Appendix

Table 4 - Telecommunications eye tracking study example from South Africa

	Number of words	Average Text Size	Total Fixation Duration Ratio	Fixation Count Ratio	Percentage Fixated Ratio
Advert 1 Text 1	100	8	0.16	0.16	0.28
Advert 1 Text 2	10	26	1.20	1.11	1.00
Advert 2 Text 1	100	8	0.15	0.15	0.16
Advert 2 Text 2	22	24	1.72	1.83	1.00
Advert 3 Text 1	100	8	0.36	0.33	0.48
Advert 3 Text 2	22	24	1.71	1.93	1.00
Advert 4 Text 1	100	8	0.52	0.35	0.44
Advert 4 Text 2	22	24	1.07	1.07	0.91
Advert 5 Text 1	100	8	0.46	0.33	0.66
Advert 5 Text 2	22	24	0.55	0.64	0.81
Advert 6 Text 1	55	10	0.79	0.56	0.80
Advert 6 Text 2	34	16	1.81	1.39	0.85

Table 5 - List of respondents that were interviewed

In-Depth Interviews were conducted with the following stakeholders in the South African media industry in alphabetical order:

1.	Dr. Arien Strasheim PHD – Senior Lecturer: Dept. Marketing and Communication Management University of Pretoria
2.	Mr. Busani Dube – Lecturer Marketing Research: University of Johannesburg (Dept. Marketing Management)
3.	Clayton Cunningham – Managing Director: Sprint Design
4.	Erik Du Plessis – Chairman: Millward Brown South Africa
5.	Esmé Deken – Head: Market Intelligence: Avusa Ltd.
6.	Hendrik Van Blerk - Senior Market Research Strategist: Avusa Ltd.
7.	Karen Dyke – Marketing Services and Trade: Ads 24
8.	Linda Gibson - CEO: Ads 24
9.	Dr. Paul Haupt
10.	Shirly Franz – Director: Mind Share South Africa

Appendix

Chart 2

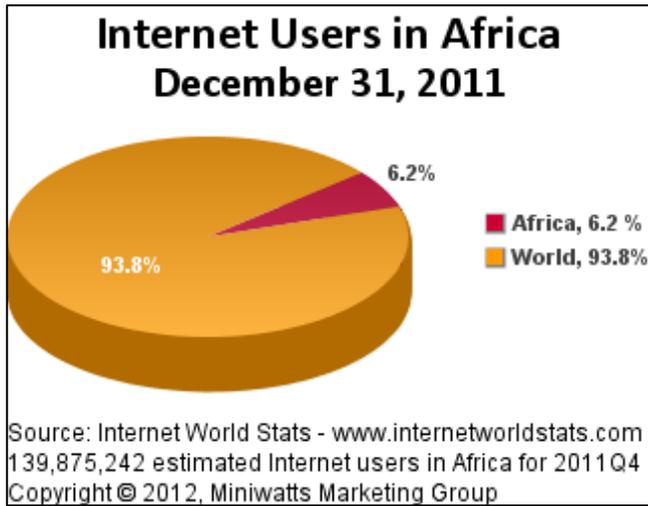
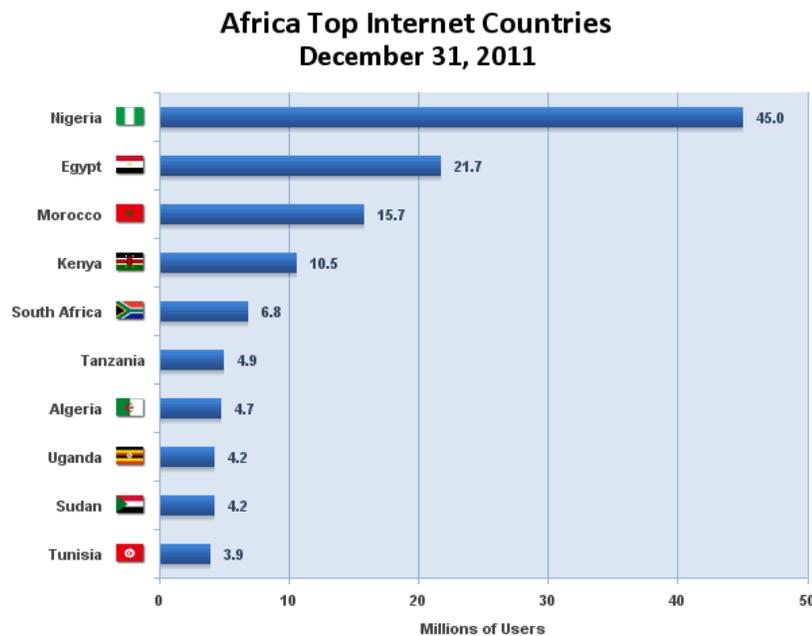


Chart 2 Source: Internet World Stats 2012 <http://www.internetworldstats.com>

Chart 3



Source: www.internetworldstats.com/stats1.htm
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Chart 3 Source: Internet World Stats 2012 <http://www.internetworldstats.com>

Appendix

Chart 4 – Newspaper Advertising Revenue in South Africa

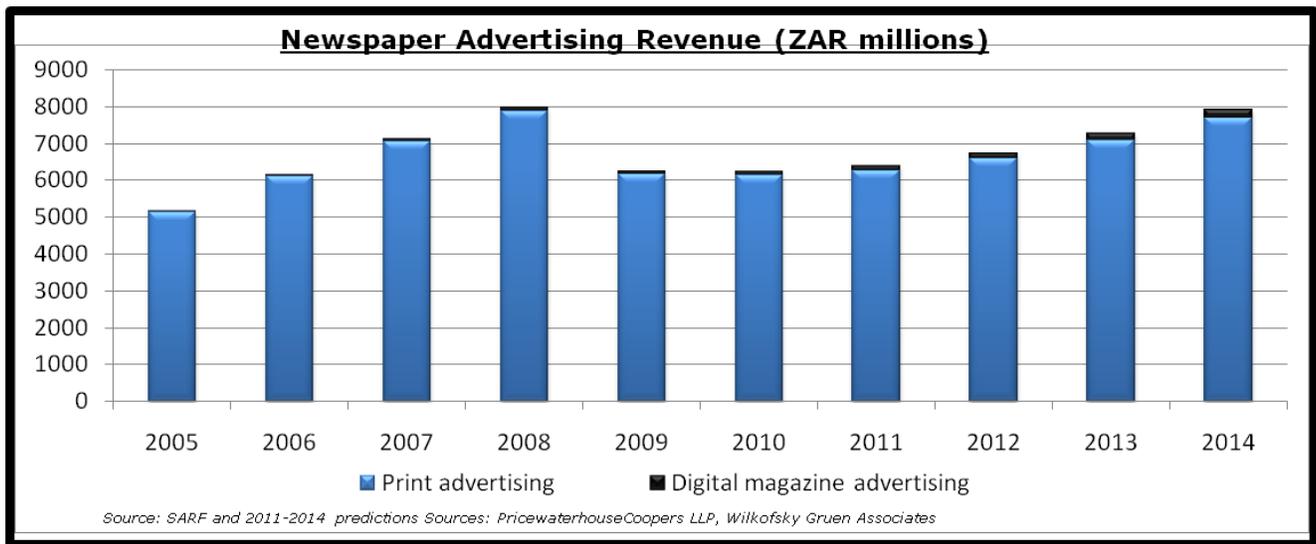


Chart 4 Source: South African Audience Research Foundation www.sarf.co.za