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TO WHOM IT MAY CONCERN

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The evaluation process was as follows:

Phase 1: A *Call for Papers* was published and abstracts received.

Phase 2: Abstracts were evaluated by an international committee and authors of selected abstracts invited to submit the full text of their papers.

Phase 3: Full text papers were received and blind-reviewed according to a set of criteria.

Phase 4: Authors of those papers selected were notified that their papers (with or without amendments) were added to the final programme of the Conference.

Phase 5: Papers were reformatted to PDF and published digitally in the permanent Conference Website (<http://www.zaw3.co.za>).

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Finding the synergy: search engine optimization versus website usability

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Abstract:

The primary objective of this research project was to investigate and report on the importance of finding synergy between the concept of website visibility and website usability. A website needs to attract visitors and the website designer needs to ensure the website is visible to search engines. Websites that are not ranked highly by search engines are less likely to be visited. It is common practice for Internet users to not click through pages and pages of search results, so where a website ranks in a search is essential for directing more traffic toward the website. Users tend to examine only the first page of search results and once they find a good match for their search, they normally do not look further down the results list. Most search engines display only 10 to 20 of the most relevant results on the first page. Search Engine Marketing (SEM) is often used to describe acts associated with researching, submitting and positioning a website within search engines to achieve maximum exposure for a website. SEM includes search engine optimisation (SEO), paid listings and other search-engine related services and functions aimed at increasing exposure and traffic to a website. SEO is the process of improving the contents of a web page so as to offer a richer harvest to a search engine crawler. The higher a website ranks in the results of a search, the greater the chance that that website will be visited by a user. SEO helps to ensure that a website is accessible to search engines and improves the chances that the website will be found by the search engines. Website usability focuses on what happens after users arrive on a website. Usability professionals observe what users do once they arrive on a certain page. Do the users take the desired call to action? Do the users understand what page they are viewing? Is the website easy to navigate? Website usability, therefore, can be defined as a website's user-friendliness and the extent to which users can use the information on the website to meet a specific objective. The methods employed in this project include the review of literature and secondly, an inspection of South African based websites to determine the level of visibility and usability elements implemented. Results seem to indicate that very few South African based websites have both visibility and usability elements implemented on the same web page.

Keywords: Website visibility, website usability, search engine, search engine optimisation.

1. Introduction

The growth of the World Wide Web has spawned a wide collection of new information sources, which culminated in users being faced with the daunting task of determining which sources are valid, and which are not (Abels, White & Hahn, 1997). Most users rely on the web due to the low cost of information retrieval, as opposed to the expense

of having to buy a book or make use of a library. Other advantages of the web include the convenience in terms of time and access as well as the ability to easily record results. According to Green (2000: 124-137) the web is not just about promoting one's work, but is also the interactive exchange of information, which has now evolved into a powerful business tool. This highlights the importance of make sure one's website is visible to search engines and user friendly.

2. Search engine marketing

The term "search engine marketing" (SEM) was proposed by Sullivan (2001a) to cover the variety of activities involved in performing SEO, managing PPC listings, submitting websites to directories, and developing online marketing strategies for businesses, organisations, and individuals. Curran (2004:205) claims that:

"Some companies are budgeting enough for payment to search engines and they have to. Deciding not to, is a bit like launching a media campaign and deciding to ignore one whole media, like TV".

SEM revenues increased from \$4 billion to \$5.75 billion in 2005 (US and Canada), a 44% increase over 2004 (SEMPO). It is predicted that search spending will increase to \$11 billion by 2010 (Clay 2006b).

A number of SEM strategies exist, which attempt to make websites more visible. For example, Paid Inclusion (PI) is a SEM strategy, which ensures inclusion in a search engine's index normally in exchange for a once off payment (Sullivan, 2001b). PI will further more ensure that changes made to a website will be updated in the search engine index more quickly, as websites using PI will be visited more regularly. However, PI also varies from one search engine to the next. Some search engines like Yahoo! offer a PI service for payment, whereas other search engines, for example Google, do not (Neethling, 2007).

PI can, however, not guarantee high rankings in search results. In fact, PI does not even guarantee placement in search engine results (Sullivan, 2001b), although websites that do invest in PI, are likely to receive more traffic than websites that do not. This is due to the fact that websites can wait for weeks or even months for a search engine spider or crawler to index their website, whereas websites using PI, may see results within days. To ensure top rankings, a website owner could invest in one or both of two SEM strategies, namely SEO and PPC (Neethling, 2007).

3. Search engine optimisation

The process of improving website visibility is referred to as SEO, which involves designing or modifying websites in order to improve Search Engine Results Page (SERP) ranking (George 2005:3). SEO can also be described as the process of improving the volume and quality of traffic to a website from search engines via "natural" ("organic" or "algorithmic") search results for targeted keywords (Anon, 2008). Usually, the earlier a website is presented in the search results or the higher it "ranks", the more searchers will visit that website. SEO can also target different kinds of search, including image search, local search, and industry-specific vertical search engines.

Within this context, according to Zhang and Dimitroff (2004: 310):

“Every Internet web publisher wants good web page visibility in search engine results so as to increase accessibility of their web pages. Unfortunately, many websites have poor visibility in search engine rankings or may not be listed at all due to various reasons.”

There are many techniques available to achieve this goal, and many of them resulted from the way search engine algorithms operate. The importance of ranking well in the SERP for queries on specific terms is undeniable according to Clay (2006a). Recent research on user behaviour shows that most users will ultimately click on a link within the first three pages. However, 62% of searchers only look at the first page of the search results. All this means that if a website is not in the top 10, few individuals will know it exists, and if the website is not in the top 30, it have almost no chance of being read by a user (Clay 2006a).

Organic SEO is still the most popular form of SEM according to Tempo's annual "state of search engine marketing" survey (Sherman, 2007). Organic search listings outperform PPC listings three to one in click-through and are also known to achieve higher conversion rates (Clay 2006b).

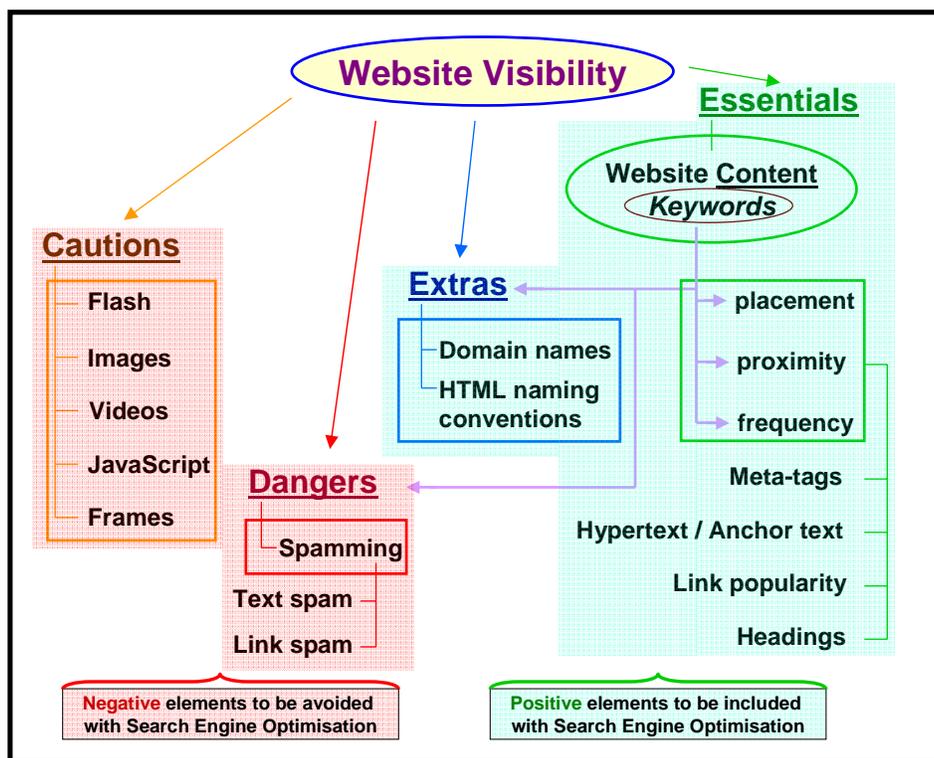
Table 1. The Chambers model for website visibility

Number	Leading Visibility Elements	Rank
1	Inclusion of meta-tags	1.5
2	Hypertext / Anchor text	2
3	No Flash or fewer than 50% of content	3
4	No Visible Link Spamming	4
5	Prominent Link Popularity	4.5
6	No Frames	5
7	Prominent Domain Names	7
8	Prominent Headings	7
9	No Banner Advertising	8
10	Prominent HTML Naming conventions	10

Chambers (2006) designed a model (Table 1) based on empirical experiments to improve the website visibility of a certain category of websites. This model highlighted a number of factors to consider when attempting to increase website visibility, by ranking them (lower number = higher rank).

Another author (Visser, 2006) expanded this model to distinguish between visibility elements that must be included (“Essentials”), could be included (“Extras”), should be avoided (“Cautions”) and must be avoided (“Dangers”). An adapted version of this model is given in Figure 1.

Figure 1: An improved model of website visibility elements (Source: Visser, 2006:118)



4. Pay per click

PPC or Pay for Placement (PFP) is used to describe a number of overlapping practices, however in essence refers to linking individual websites to specific keywords for payment (Moxley, Blake & Maze, 2004:61). As a result, websites can immediately drive potential clients to their website, by selecting keywords that their specific target market will use in a search (Curran, 2004:204). It is also important for a webmaster to research the possible keywords that may be used in a search for their specific product or service (Curran, 2004:205). PPC could become costly as advertisers are locked in an ongoing competition for popular keywords (Sullivan, 2003). As PPC suggests, advertisers also have to pay for every click they receive via that sponsored link (Neethling, 2007:28).

PPC was designed as a method of creating revenue for search engines. Users have become accustomed to search engines as free services for which they are not prepared to pay (Moxley *et al.*, 2004:64; Henshaw, 2001). Yet, listings do not just appear on the screen after a search, search engines go through a number of steps to review, index and generate listings. Although there are a number of ways to complete these steps, all of them are costly (Wittenberg, 2004). This leads into the requirement that search engines need some sort of income to cover such expenses, and if the user is not willing to pay, they have to look elsewhere for income. As a result, search engines take advantage of advertisers' need to be visible and visited. Having the advantage of creating the largest amount of Internet traffic (Thelwall, 2001:117), they offered services that would satisfy the advertiser. Specifically they addressed these advertisers' eagerness for more visibility, enthusiasm for being placed on the first page of returned search results and impatience for waiting to be reviewed and indexed.

Most search engines offer PPC services in order to generate revenue (Neethling, 2007:28). Google has Google AdWords, Yahoo! has Yahoo! Search Marketing, while MSN has Microsoft AdCentre. Companies can place bids for search terms at their preferred PPC search engine. When a user now enters this search term, the search engine will display the companies' website links in descending order of their bid price for that specific term. The bid represents the amount of money the company is prepared to pay the search engine every time a user clicks on the link to its website on the SERP (Neethling, 2007:28).

5. Website usability

Search engine promotion is crucial because most visitors, according to Thomason (2004), use search engines to find websites. However, once the visitors arrive, they have to be able to actually use the website and understand the content. According to Nielsen (2003), usability is a necessary condition for survival. If the homepage fails to clearly state what a company offers and what users can do on the website, users would simply leave. If users get lost on a website, they leave. If a website's information is hard to read or doesn't answer users' key questions, they leave. There are a variety of other websites available, and leaving is the first line of defence when users encounter a difficulty (Nielsen, 2003). Nielsen (2007) has compiled a list of the top 10 mistakes in web design:

5.1 Bad search

Overly literal search engines according to Nielsen (2007), reduce usability in that they're unable to handle typing errors, plurals, hyphens, and other variants of the query terms. Such search engines are particularly difficult for elderly users.

The same author further states that a related problem is when search engines prioritise results purely on the basis of how many query terms they contain, rather than on each document's importance. Nielsen (2007) suggests that search engines should have sections in their SERP near the top with one or two "best bets" links, especially for important queries, such as the names of the products.

Search is the user's lifeline when navigation fails. Even though advanced search can sometimes help, simple search usually works best, and search should be presented as a simple box, since that's what users are looking for (Nielsen, 2007).

5.2 PDF files for online reading

Users normally do not like, according to Nielsen (2007), coming across a PDF file while browsing, because it breaks the users flow. Even simple things like printing or saving documents are difficult because standard browser commands do not work. Layouts are often optimised for a sheet of paper, which rarely matches the size of the user's browser window.

PDF works best for printing and for distributing manuals and other big documents that need to be printed. Any information that needs to be browsed or read on the screen should always be in the form of a webpage (Nielsen, 2007).

5.3 Not changing the colour of visited links

A good grasp of past navigation helps users understand the current location. Knowing the past and present locations in turn makes it easier for the user to decide where to go next. Links are a key factor in this navigation process. Users can exclude links that proved fruitless in their earlier visits. Conversely, they might revisit links they found helpful in the past (Nielsen, 2007).

Most important, knowing which pages they've already visited frees users from unintentionally revisiting the same pages over and over again. These benefits only come into play under one important assumption: that users can tell the difference between visited and unvisited links because the site shows them in different colours. When visited links don't change colour, users exhibit more navigational disorientation in usability testing and unintentionally revisit the same pages repeatedly (Nielsen, 2007).

5.4 Non-scannable text

A wall of text is counter productive for an interactive experience. It could even be described as intimidating, boring and painful to read (Nielsen, 2007).

Web designers should write for the online environment, not for print. To draw users into the text and support scannability, use well-documented tricks:

- subheads
- bulleted lists
- highlighted keywords
- short paragraphs
- the inverted pyramid (starting with the conclusion)
- a simple writing style, and
- stay away from promotional writing style with boastful subjective claims (Nielsen, 2007).

5.5 Fixed font size

Nielsen (2007) states that CSS style sheets unfortunately give websites the power to disable a Web browser's "change font size" button and specify a fixed font size. About 95% of the time, this fixed size is *tiny*, reducing readability significantly for most people over the age of 40.

Respect the user's preferences and let the user resize text as needed. Also specify font sizes in relative terms, not as an absolute number of pixels (Nielsen, 2007).

5.6 Page title with low search engine visibility

Search engines are one of the most important tools that help users discover websites. The search function that can be incorporated in websites helps users to find their way around individual websites. The page title is one of the main tools to attract new visitors from search listings and to help existing users to locate the specific pages that they need (Nielsen, 2007).

The page title is contained within the HTML <title> tag and is almost always used as the clickable headline for listings on SERP. Search engines typically show the first 66 characters or so of the title (Nielsen, 2007).

Page titles are also used as the default entry in the *Favourites* when users bookmark a site. For the homepage, begin with the company name, followed by a brief description of the website. It is not recommended to start with words like "The" or "Welcome to". This will cause the website to be alphabetised under "T" or "W" (Nielsen, 2007).

For other pages than the homepage, start the title with a few of the most salient information-carrying words that describe the specifics of what users will find on that page. Since the page title is used as the window title in the browser, it's also used as the label for that window in the taskbar under *Windows*, meaning that advanced users will move between multiple windows under the guidance of the first one or two words of each page title. If all the page titles start with the same words, usability for user that use multiple windows has been reduced (Nielsen, 2007).

Taglines on homepages are a related subject. They need to be short and quick to communicate the purpose of the website.

5.7 Anything that looks like an advertisement

Selective attention is very powerful, and Web users have learned to stop paying attention to any ads that get in the way of their goal-driven navigation (Nielsen, 2007). Therefore, it is best to avoid any designs that look like but are not advertisements.

5.8 Violating design conventions

Consistency is one of the most powerful usability principles: when things always behave the same, users do not have to worry about what will happen. Instead, they will know what will happen base on their earlier experiences (Nielsen, 2007). This means that users form their expectations for a website based on what is commonly done on most other websites. If the website deviates, it will be harder to use and users will leave.

5.9 Opening new browser windows

Designers open new browser windows on the theory that it keeps users on their site. But even disregarding the user-hostile message implied in taking over the user's machine, the strategy is self-defeating since it disables the *Back* button which is the normal way users return to previous sites. Users often do not notice that a new window has opened, especially if they are using a small monitor where the windows are maximised to fill up the screen. So a user who tries to return to the origin will be confused by a non functional *_Back* button (Nielsen, 2007).

5.10 Not answering users' questions

Users are highly goal-driven on the Web. Users visit websites because there's something they want to accomplish, maybe even buy a product. The ultimate failure of a website is to fail to provide the information users are looking for (Nielsen, 2007).

6. Methodology

The authors chose 10 websites. This was done by doing searches on Google South Africa using various keywords to identify number one ranking websites based in South Africa. The fact that the 10 websites are all ranked number one on Google South Africa is about all that they have in common. These 10 websites was then tested with a software package called WebPosition Gold 4 (WPG4) to determine each website's visibility score and visibility percentage.

When using WPG4 the visibility score is achieved by assigning a point value to the highest position achieved on each keyword-engine pair. A point value is only awarded to ranking positions one through 30, with a position of one being awarded 30 points, position two is worth 29 points, three is 28 points and so on through 30 which is given one point. The points are then summed for all the engines in the WPG4 mission. This total is the visibility score (Anon, n.d.).

The visibility percentage is calculated using the visibility score and dividing it by the maximum points available. If the WPG4 mission consisted of two engines and two keywords for each search engine, then the maximum points possible would be 120, or four first place positions being awarded 30 points each (Anon, n.d.).

Table 2 shows an example when using two keywords on two engines of a WPG4 mission:

Table 2: Visibility score & visibility percentage example

Search Engine	Keyword	Position	Points
1	1	2	29
1	2	7	24
2	1	28	3
2	2	Not in first 30	0
Total		56	

$$56 / 120 = 0.4666 \text{ or } 46.66\%$$

The visibility score for the above example would be 56. The visibility percentage is 46.66% (Anon, n.d.).

As a result, the higher the percentage, the higher the visibility. If all four searches had returned a number one ranking the visibility score would have be 120 and the visibility percentage would have be 100%. Web designers should not be discourage if they do not achieve a 100% score when targeting a large number of keywords. Few websites reach or approach a "perfect" score. The purpose of this score is to simply give the web designer a base line for monitoring improvement over time. Obviously the fewer keywords the designer target, the easier it will be to approach 100%. However, the greater the number of popular keywords a designer can achieve top rankings on within the major engines, the more traffic you can expect to receive. Traffic and the resulting sales should be the ultimate goal (Anon, n.d.).

For the purpose of this research paper the search engines chosen to perform the WPG4 tests on was Ananzi, Google (com), Google (co.za), MSN and Yahoo!.

Furthermore, the authors inspected the 10 chosen websites to see how many (if any) of Nielsen's (2007) worst usability mistakes are present in each. The result of the visibility tests and the usability tests was then compare with each other and is discussed.

7. Results

Table 3 represents the results of the WPG4 tests. According to the WPG4 test results website 8 has scored the best visibility percentage of 94.67%. This website is a winelands tourism website. It has a ranking of first place with Google.co.za and Yahoo!. It also has a number two, three and six ranking with Google.com, MSN and Ananzi respectively.

The website that came in second place is website 9 with a visibility percentage of 79.33%. It has a ranking of 1, 5, 6, 11 and 13 with Google.co.za, Google.com, Ananzi, MSN and Yahoo! respectively. This website is a vehicle manufacturing website (Table 3).

Table 3: Visibility results

Website	Ananzi Ranking	Google.com Ranking	Google.co.za Ranking	MSN Ranking	Yahoo! Ranking	Visibility Score	Visibility %
WS1	Not in first 30	1	1	Not in first 30	Not in first 30	60	40%
WS2	Not in first 30	1	1	Not in first 30	Not in first 30	60	40%
WS3	Not in first 30	1	1	1	Not in first 30	90	60%
WS4	9	1	1	4	Not in first 30	109	72.67%
WS5	Not in first 30	1	1	Not in first 30	Not in first 30	60	40%
WS6	Not in first 30	1	1	4	Not in first 30	67	58%
WS7	Not in first 30	1	1	1	Not in first 30	90	60%
WS8	6	2	1	3	1	142	94.67%
WS9	6	5	1	11	13	119	79.33%
WS10	5	5	1	Not in first 30	Not in first 30	82	54.67%

In third place with a visibility percentage of 72.67% is website 4 which is a car and household insurance website. It has a ranking of one with Google.com and Google.co.za. It also has a number 4 and 9 ranking with MSN and Ananzi (Table 3).

Websites 3 and 7 has a 60% visibility percentage and has a number one ranking with Google.com, Google.co.za and MSN. Website 3 is a law firm website while website 7 is a Cape Town tourism website (Table 3).

Website 6, a Western Cape property website, has scored a visibility percentage of 58%. It has a first place ranking with Google.com & Google.co.za and a fourth place ranking with MSN (Table 3).

Website 10, a South African restaurant guide website, has a number one ranking with Google.co.za and a number five ranking with Ananzi and Google.com (Table 3).

Websites 1, 2 and 5 has a visibility percentage of 40%. The three websites has a number one ranking with Google.com and Google.co.za. Website 1 is a Western Cape accommodation website. Website 2 is a Western Cape Car Hire website. Lastly, website 5 is a University website which is based in South Africa (Table 3).

Table 4 represents the usability results of the ten selected websites. Website 5, the University website, has none of the ten worst usability mistakes present. The law firm website, website 3, has only one usability mistake. It has no search function. Website 2 has no search function and the colour of the links already visited does not change.

Websites 1, 4, 6, 8 and 9 each has three usability mistakes present. These mistakes include that they do not have search functions or that the search function does not support spelling errors like "Bellvile". They also have links that does not change colour when those links has already been visited. The webpages have advertisements on or have text boxes that closely resemble advertisements. Page title does not make sense or has a low visibility to search engines. Lastly, some of the links open into new windows (Table 4).

Table 4: Usability results

Website	Bad search function	PDF files for online reading	Not changing the colour of visited links	Non-scannable text	Fixed font size	Page title with low search engine visibility	Advertisement	Violating design conventions	Opening new browser windows	Not answering users' questions
WS1	X		X				X			
WS2	X		X							
WS3	X									
WS4	X		X				X			
WS5										
WS6	X		X			X				
WS7	X		X	X			X			
WS8	X		X				X			
WS9	X		X						X	
WS10			X	X		X	X			

Websites 7 and 10 has issues relating to links that does not change colour. Too much

text on the website which makes it impossible to scan through. Page title does not make sense or has a low visibility to search engines. The webpages have advertisement on or have text boxes that closely resemble advertisements. They do not have a search function or they do not have a search engine that can accept spelling mistakes (Table 4).

8. Conclusions & recommendations

From the results the following was observed:

- Website 8, which is the highest ranking website chosen, has three usability mistakes present relating to “bad search function”, “not changing the colour of visited links” and “advertisement”. By addressing these three usability issues will result in users having a more pleasant experience while visiting the website. Having a search function on the website should not affect the visibility of the website to search engines, but will definitely help users navigate more efficiently on the website. The same holds true for not changing the colour of visited links. Also, it is always a good idea to make a website uncluttered, remove advertisements and unnecessary text to make the website more users friendly. Websites 1 and 4 also shares the same usability issues.
- Website 9, the second highest ranking website, has three usability related issues present. Two of these issues were already addressed in the previous bullet. The third has to do with opening a new browser window when clicking on a link. It often confuses users. Fixing these issues again will have no impact on the visibility of a website.
- Websites 6 and 10 both have a page title with a low search engine visibility. Correcting this issue will not only increase the usability of the websites to users, but will also improve the visibility of the website to search engines.
- None of the websites tested had the “PDF files for online reading”, “fixed font size”, “violating design conventions” and “not answering users’ questions” mistakes present.
- The two most common mistakes was “bad search function” and “not changing the colour of visited links”.

The websites tested already had a very good visibility to search engines. It is however recommended that website owners invest a little time and money into usability testing. Websites exist for the users and not for search engines. Search engines are merely a tool for users to help them find websites, but the website itself must be able to convert visits into sales.

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