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The Role of Search Engine Optimization on Keeping the User on the Site

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Abstract

In today's technology, the role of internet is rapidly increasing and will continue to do so in the future. In this rapid increase, the right data access and integration has become a challenge. Since 93% of internet traffic is managed by search engines, exploring the potential of search engines is crucial. This figure is not just a statistical outcome, instead it shows the critical role of search engines on routing users to the right websites. Due to the important effects of search engines, search results are getting more crucial for websites to compete with other rivals. The most important part of defeating other rivals is optimization of search engines. After this optimization, website owners expect that the search engine results display their website first, before other websites. The focus of this study is to scientifically justify the importance of search engines and search engine optimization (SEO). More specifically, the main focus was to measure the significance of time, speed, reduced bounce rate, page views, and page layout in keeping the user on the site. Finally, considering the inclusion of SEO factors on an experimental project and how these factors results in a positive effect on websites are explained in great detail.

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Introduction

The work that promotes the research for better outcome ranking of the search engines is known as the Search Engine Optimization. The daily increase in website development complicates the competitiveness proportionally. Therefore, the importance of end-user reachability identifies search engines to be the most effective tools. In other words, users spend most of their time in the websites they enjoy, they read detailed texts or look at pictures. If a web developer wants to keep the user in, then the context of the website and the opening time of the website become essential attributes.

Search Engine Optimization (SEO) is directly correlated with the page hit ratio and frequency of hits, since increasing number of websites suffer in competition in terms of ranking. Therefore, search engines are the most crucial tools, which play a significant role for the websites to reach the consumer, in terms of getting higher ranking. Since the purpose of the search engines is to serve “humans”, the most important feature is to understand the virtual behavior and habits. In the early days of search engines, the interlinks of websites were regarded as sign of importance. However, due to misuse and misconduct of that approach, new tool or methods were needed to be developed and/or are being developed, in order to better understand surfing behavior and habits of the people. Therefore, within the scope of this investigation we conducted a study to justify the importance of search engines, the general examination of search results, and the importance of SEO. Since Google is one of the leading figures in the area, we analyzed the Panda and Penguin updates to understand the fundamental factors that affect SEO, such as duration of the website session, site opening speed, bounce rate, and usability in experimentation. In other words, by implementing an experimental environment we were able to show how these factors should be used in a website and how these factors affect websites in a positive.

2. Literature Review and Preliminary Work

2.1. Importance of Search Engine Optimization (SEO)

In today's technology, the impact of the internet is rapidly increasing. Conducting business over the Internet and advertising different types of businesses are also rapidly growing. It is very important to be in front of everyone else and addressing the needs of a large population. Considering the search engines as the main source of obtaining information, it is the only essential tool to reach users on the websites. In case the address of the website is not known, then they use the search engines to find related websites. In fact, many users just use the search engines even though they know the address of the website. Certainly Google is the leading search engine by far (with 90.76%) according to the data taken by Stat Counter¹ between May 2012 and May 2013. According to ReachLocal's² survey, 93% of the Internet's traffic is due to search engines and the number of searches is about 100 billion and the information retrieval among the adults living in USA is 59%. A research conducted by the BlueCaribu Company³ outlined the following facts.

- “932 million websites include SEO and in Youtube there are 1,880.000 videos about SEO (as of May13).
- 3.5 people look up SEO on Google every second, meaning that 9.1 million Internet users are searching for information about SEO every month.
- 2.24 million people in USA conducted a search on SEO and 52% of those people is male.
- Most of the searches about SEO are for SEO services, SEO companies, and SEO tools.
- The month that people searched for SEO the most is March and the day is Thursday.
- The countries which interested in SEO the most are India, Pakistan, and Philippines.
- 248,000 tweets a month about SEO and 60,194 Twitter profiles where “SEO” is mentioned in the bio.
- 13 million blog contains SEO word.”

3. How to Keep User on the Site: An Applied Study

3.1. User Sessions: Staying time on a websites and the rate of leaving websites immediately.

With the updates of Google Panda and Penguin, new avenues were explored in the world of search engines and

SEO³. One of these long-lasting changes is the staying or session time, which is an indicator of user satisfaction about the website. According to the Google, staying time on a web page shows the quality and functionality of the web page. People use Google search to reach desired destination and they check search results to find the right web pages. If the rate of web-site immediate leave is high, this is a sign that the searched key word and the web page is not relevant or related. The following Google's suggestions about staying time on a web page and user oriented web pages are important factors for SEO⁴.

- *Misguiding Keyword Usage*: In this case, the user will abandon the site after finding out the heading retrieved by the search engine is not relevant to the keyword used.
- *Comprehensive Content*: The content of the page should be enriched with pictures and videos. The view and the content of the web page are equally important for users. In addition, videos does have positive effect on the user's staying time on the web page.
- *Session Length and Frequency*: The analysis on the rate of staying time on certain pages of the website should also be conducted..

3.2. Miss Ratio: Bounce Rate Should be Reduced

Bounce rate⁴ is to measure the user's satisfaction and easy information identification and retrieval. Therefore, we need to provide a clean website which people can find the content exactly. If a page consisting of single page, search engines do not calculate the bounce rate. It is also same for visitors last page visit. Apart from this, we need to produce solutions in our other pages. At first, we should examine the high "Bounce Rate" pages from analysis tool and we try to find errors and missing. For this purpose, using a "mouse tracking" applications would be useful. Thus, you can analyze the users behaviour on that page. We conducted a study on our web page "indir.com" and we observed that users could not find the "download" button on the site, regardless of its existence somewhere in the upper left. When we examine potential reasons, we can see that it is a user habit called baby duck syndrome. People's experience in finding the download button at the bottom of the site, generated a default assumption of a standard. However, a small change can easily lead to a positive outcome. For instance, to resolve the misconception we add a button to the bottom of the page and the problem was solved. In other words, adding a button to the site has improved the click ratio by 66.8%.

3.3.1. Duration of Stay on Site and Bounce Rate Measurement

Analysis and measurements of stay on the site can be made using the Google Analytics tool. High bounce rate can be reduced by making different arrangements on pages which has high bounce rates. In addition, the most useful way of optimizing the site is to determine the relevant source pages of visitors and the keywords they used to reach those pages.

- 1- Check your average visit time periodically, i.e., on a daily bases. For this a day with a sharp decrease is can be used to deeply enhanced the detailed analysis using "the average spent time on that page" feature of the Google Analytics tool, as shown in Figure 1.



Fig. 1. The Average Visit Duration and Rate.

- 2- Observe the duration of visit, visitor source, and bounce rate on the basis of pages. This allows you to reach not only the statistical information in terms of session length but also some significant level of information

on page tracking. Moreover, you can generate a keyboard based listing to determine which keywords creates high bounce rate, as shown in Figure 2.

Açılış Sayfası	Trafik Kaynakları	Kaynak	Ziyaret Sayısı ↓	Sayfa/Ziyaret	Ort. Ziyaret Süresi	Yeni Ziyaret Yüzdesi	İzlenim Çıkma Oranı
1. /	Kaynak	gigirdergisi.com	965	3,17	00:01:26	%97,72	%54,09
2. /	Araç	hizliarama.com	481	3,05	00:01:14	%95,22	%49,90
3. /karikatur/yillik	Anahtar Kelime	google	151	2,08	00:00:38	%94,04	%28,48
4. /karikatur/yillik	Kampanya	google.com.tr	72	2,17	00:00:37	%97,22	%20,83
5. /manset/yigit	Ziyaretçiler	google	36	1,75	00:00:23	%83,33	%47,22
6. /	Teknoloji	v9.com	34	2,06	00:01:09	%100,00	%61,76
7. /tag/gigir-dergisi-okul	İçerik	google	29	2,76	00:01:01	%82,76	%55,17

Fig. 2. Visit Durations and Bounce Rates.

3.3.2. Exiting From the Single Page Website and Last Page of Multiple Paged Website

While Google Analytics conducting these analysis, it fails to record the time spent on the single-paged websites and last page of the multiple paged websites. For instance, it does not record the time spent on the most recent page before departure, while surfing between pages. In this scenario, it is possible that the user might have loaded a page of an scholarly written article. With the User Status Identification Algorithm (USIA) developed, we can send the location specific information of user to the Google Analytics to measure it.

In this solution a simple logic, where the scroll position changes are considered for information collection. For example, if the scroll position indicates the middle of the page, it should be regarded as the page being read, as shown in Figure 3. If the scroll position indicates the end, then the end-of-page reached should collected and sent. In addition, any exit information related to link execution from the page can also be collected to measure if the user conducted a full content based reading. In this way not only content enrichment and improvement analysis can be conducted but also the time spent on the page can be sent to the Google⁵.

Event Action	Total Events	% Total Events
1. SayfaYuklendi	637,939	42.30%
2. SayfaSonu	449,186	29.78%
3. OkumayaBasladi	421,058	27.92%

Fig. 3. Page Open, End of the Page and Start Reading.

3.4. Site Opening Speed

Matt Cutts⁷, who is the head of search quality and webspam team, announced that site speed has been affecting the search engine ranking since April 2010. Therefore, in recent years, Google has given more importance to page speed. As an evidence the following free services⁶ are provided.

- Chrome and Firefox plugging for statistics
- Apache and NGX PageSpeed module for faster websites
- Public DNS applications for faster Internet
- Provide access to commonly used libraries by websites (Ex: jquery, Mojo, Moo Tools etc.)
- New image format called WebP which is working between 25% to 34% faster.

3. 4. 1 Implementation Consideration

In this work we used PageSpeed Insights⁸ a Google service, and Pingdom Website Speed tool⁹ to conduct website analysis for the site speed improvement. With some constructive changes such as use of CDN (Content Delivery Network), image dimensions specification; HTML, JavaScript, and CSS files size minimization; redirects and request size minimization; use of Inline Coding for small JavaScript and CSS codes; avoid use of CSS import and delete unused CSS; use of CSS Sprites to Combine Images; define a character set and accept-encoding header; promote caching system and asynchronous resource usage; consider using scaled images; and avoid DOM element and iframe usage. Within the scope of these considerations, the site speed improvements were raised from 43% to 79%.

3. 4. 2. Necessity of increasing page views per user

Many website owners think that visitors number is the only and most important attribute, while ignoring the type activities done on the site, similar to shopping mall where too many visitors without any sale is encountered. Therefore, any visitor on the website must be entertained according to goals set forth. For instance, user can only spend time on the page that is interesting. While there are many approaches to attract the user, providing rich content enhanced with relevant hyperlinks stands out the most important one. Also providing an related or random alternative site(s) for user to stay longer and explore more is useful as well. For instance, "oynacom" is an game site and users play car games. In order to increase session length, we can suggest other car games to keep the attention on the site by trying different games when the user feels bored and want to try something different. Therefore, it is necessary to verify and validate the active nature of the links. Otherwise any broken link will be turn off the interest of users. If users make mistakes, then they should be sent to an error pages that is constructive, informative, and intuitive.

The attractiveness of a website is proportional to the number of visit. Therefore, the fundamental task of the search engine is to find and retrieve the most relevant and complete website. In our experiment we encountered that the outcome offsite visitation and related time affects the outcome of search engines.

4. Experimental Analysis

Websites must be user friendly. A recent study¹⁰ revealed that %68 of users exit due to lack of user friendliness of websites. We know that if we do an usability test with 5 users, we can solve %85 of problems.

In terms of usability, the "300 million dollar button story" is a well known and popular story. In this story, a company changed the action word "register" to "continue" and won 300 million dollar¹¹. Indeed, little details can be very important for the users. Therefore, we have to conduct some sort of usability and effectiveness tests with users before publishing website. The feedback can be obtained in a numerous way such as use of eye-tracking device, mouse tracking software, screen capturing, or directly watching users. Why this is important? Because the user behavior can be better analyzed in using complete click maps, heat maps, and user videos.

The usability of the website will affect the frequency and duration ratio and the related statistics of the user visitation. In other words, not only more web pages will be visited but also in each visit the duration time will be longer. In our website, instead of a traditional type of search button we just substituted it with a magnifying glass image. When the user behavior was monitored we observed that the user do write a word in the search box but fails to conduct the typical search operation, although the image representation of magnifying glass hints out a descriptive meaning for search. . However, when the term "search" was added next to the magnifying glass, the internal search rates in ("oyna.com)" were increased by 27%.

Since the aim of the experimental project was to create a website to upload programs, the turn-around time in obtaining the objectives (i.e., the right content within right time) of user were within our expectations. Therefore, additional informative features were targeted to extend the frequency and the duration time. We also added "similar programs", to improve the pages and/or visit numbers.

As can be seen from the Figure 4, the average number of visitors per month is around 9.8 million and the average duration of a visit is 2.5 minutes.

In order to better track the user behavior and optimize the content to be user specific additional information such as name, gender, site address etc., were collected with a segment of code, See Figure 6, and send to the Google Analytics for information enhancement.



Fig. 4. Duration and number of visits – (As of May)

Also we try to give user focus content with track their movements. We add some software codes to elaborate analysis. And we can track user names, sex, there is visits in Google Analytics. And send them to Google periodically.

Our first study for increasing the duration of stay on the site was to reduce the bounce rate. As shown in Figure 5, the initial bounce rate, which was %70, was reduced to 29% after certain countermeasure are taken.



Fig. 5. Bounce Rate

By further reducing the bounce rate, the on-site time of visitors should have been increased. With the afore mentioned approaches the average visiting time of pages on the site is increased from 1.5 to 5, as shown in Figure 6.



Fig. 6. Avg. Page Visit

After these studies, the average duration of stay of users on the site was increased to 2 minutes and 48 seconds from 46 seconds, as shown in Figure 7.



Fig. 7. Average Visit Duration

As a result of the positive impacts of these studies, the Google search result ranking of "indir.com" raised to the first page, after the 2,5 months of the opening of the site. Furthermore, based on the feedback collected during the first year additional improvement have been made with the users' data. As a result of these factors, increasing of the search engine ranking on Google continued to evolve positively, as shown in Figure 8.

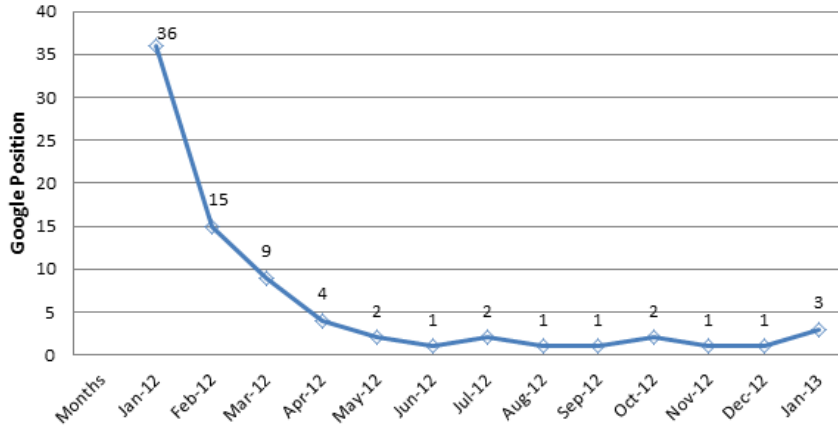


Fig. 8.Observation of search engine results ranking on Google - Monthly

When we examine the period of January 2012 to May 2013, we can see that, "indir.com" has recently began to acquire new places on search engines results and has 35 thousands monthly visitors. In December 2012, it has 570 thousand visitor and reached the number 3 in the Google search results ranking. Since 70% of the visitors come from Google, it is obvious that the increase in ranking is correlated to the number of visitor.

As can be seen in Figure 9, the monthly number of visitor has increased and improved in proportion to Google Results page within the period of January'12 to May'13.

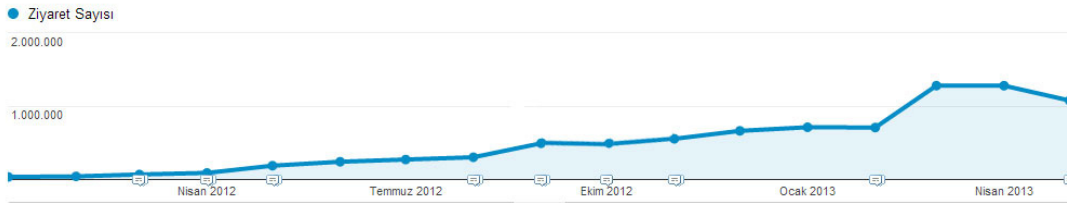


Fig. 9.The number of visitors on monthly basis

If we examine the statistics collected during the last four month for the word "indir" on "indir.com", we can clearly present the change rates in ranking position and click-through. As shown on Figure 10, when indir.com takes the first position, the click-through rate becomes 56%. However, when it takes the second place, the click-through rate drops down to half of the amount, i.e., it becomes 29%.

Arama sonuçlarındaki konumu	Gösterimler ▲	Tıklamalar	TO
1	450.000	250.000	%56
2	35.000	10.000	%29
3	18.000	2.500	%14
4	15.000	1.000	%7
5	600	30	%5
3. sayfa +	520	10	%2
6 - 10	430	22	%5

Fig. 10.Sort by clickthrough rate

Except our targeted word "oyunindir", when we can examine the source provider for the site, we can see that word "oyun" has more search volume, as shown in Figure 11. However, since the average Google ranking for the

phrase "oyunindir" is averaged to 5.9, the click-through rate is only remained at 9%.

Sorgu	Gösterimler ↕	Tıklamalar	TO	Ort. konum
☆ oyun indir	800.000	75.000	%9	5,9
☆ indir	550.000	250.000	%45	1,2
☆ gta türk indir	450.000	75.000	%17	1,0
☆ wolfteam indir	450.000	8.000	%2	6,6
☆ ammyy	300.000	600	%0	6,0
☆ gta indir	200.000	12.000	%6	5,5
☆ lfs indir	170.000	18.000	%11	4,1

Fig. 11. Keywords and click-through rates

On site staying time and links used in sites must be regularly checked using the Google SEO tools to avoid the undesired links when necessary. As emphasized in Google, the main visitors for websites are the users not the search engines. Therefore, websites should be designed for users request, not for search engines.

5. Conclusion

Search engines are the biggest source of access to information on the internet and their importance is increasing day-by-day. Therefore, search engines, in providing right content within a right time, gained so much importance nowadays. To be on top with the search results is very important, if the aim is to target a large audience. However, with this competition between sites are increased, while putting a significant emphasis on search engine optimization for the better search result ranking.

In recent years Google have provided important updates for fighting spam sites, called Panda and Penguen. When we examine these updates, we can see that there are lots of innovations and new factors for SEO. The most important factor of these is the duration of stay on site.

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