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## **EVALUATING THE USAGE OF DIFFERENT TYPES OF SEARCH ENGINES IN SELECTED COUNTRIES**

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### **ABSTRACT**

A search engine is known as software that is accessed on the internet which aids in searching a database of information according to the users query. The engine provides a list of results that best match what the user is trying to find. Today various types of search engines are available on the internet each with its own abilities and features. Search engines became an important day to day tool for finding the required information without knowing where exactly it is stored. Internet usage has been tremendously increased in recent days with the easy to use search engines like Google, Bing and Yahoo!. There are different types of search engines to get the information that one is looking for. The most used world -wide search engine is Google. There are a number of different international search engines and US search engines. In this study different types of search engines are analyzed. The study tries to find which search engines are mostly used and why they are preferred in particular selected countries. The study is based on collected statistics of usage of top search engines in selected countries. The study also evaluates based on which features the search engines varies and why search engines varies from country to country.

**Keywords:** search engine, software, google, binge, internet, information.

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### **1. INTRODUCTION**

The purpose of the search engine is to extract the requested information from a large online resource site. Search engines become an important daily tool for finding needed information without knowing where it is stored. Internet usage has increased dramatically in recent days as it is easier to use search engines such as Google, Bing and Yahoo! There are several types of search engines to find the information you are looking for. Search engines are a part of everyday life for two types of people. Users who search and find information. Site owners who are trying to improve their websites to get a higher ranking in search results. Users does more than billions of searches on Google to find relevant information. This opens up a huge space for businesses and online content publishers to attract people to their website for free. Search engines follow the guidelines and have their own algorithm for determining the ranking of websites in search results. Optimizing Google websites and other search engines is an important part of any website owner to reach a wider audience. Visitors can earn money from site owners through ads displayed on the site or by purchasing products.

Search engines play an important role in the lives of many of us, sometimes without us realizing it. Buying on Amazon, usually starts with a product search. New vacation bookings usually start with a hotel search. The answer to any question is simply a web search. Now we look at the history behind one type of search engine that is web search engine.

#### **History of search engines:**

WebCrawler was the first search engine to be widely used, as well as the first to fully index the content on web pages, making every word and phrase searchable. It was developed at the university of Washington and launched in 1994, the same year as Lycos from Carnegie Mellon university. Both WebCrawler and Lycos became commercial ventures. Two years after Aliweb search engines became mainstream and big business. Excite and AltaVista both launched in 1995, along with the less well-known MetaCrawler, Magellan and Daum. But the most significant success was Yahoo. "Yahoo!" started as a traditional web directory in 1994 by two Stanford University graduates, then launching in 1995. The success of Yahoo was all packaging with a fun brand and a user-friendly interface. In 1996 RankDex is created for ranking the importance of webpages in a search result. For the first time, it used link analysis to determine the importance of web pages by the number of other pages linking to them. Shortly after that Baidu is incorporated, which is now China's largest search engine. Just as PageRank is soul of Google, RankDex is the soul of Baidu and the father of modern search engine ranking algorithms. Google came relatively late to the search party, building upon several existing ideas in 1996 and launching at the end of 1997. Other search engines were starting to suffer from spam and relevancy issues, which was to become Google's golden bullet and the secret to their success.

#### **Types of search engines:**

Search engines are divided into the following three categories depending on how they work.

- Crawler based search engines
- Human powered directories
- Hybrid search engines

Let's discuss all types of search engines in detail.

#### **Crawler based search engine:**

All crawler based search engines use a crawler or bot or spider for crawling and indexing new content to the search database. There are four basic steps, every crawler based search engines follow before displaying any site in the search results.

- **Crawling:**  
Search engines crawl the whole web to fetch the web pages available. A piece of software called crawler or bot or spider performs the crawling of the entire web. The crawling frequency depends on the search engine and it may take few days between crawls. This is the reason sometimes you can see your old or deleted page content is showing in the search results. The search results will show the new updated content, once the search engines crawl your site again.
- **Indexing:**  
Indexing is next step after crawling which is a process of identifying the words and expressions that best describe the page. The identified words are referred as keywords and the page is assigned to the identified keywords. Sometimes when the crawler does not understand the meaning of your page, your site may rank lower on the search results. Here you need to optimize your pages for search engine crawlers to make sure the content is easily understandable. Once the crawlers pickup correct keywords your page will be assigned to those keywords and rank high on search results.
- **Calculating Relevancy:**  
Search engine compares the search string in the search request with the indexed pages from the database. Since it is likely that more than one page contains the search string, search engine starts calculating the relevancy of each of the pages in its index with the search string. There are various algorithms to calculate relevancy. Each of these algorithms has different relative weights for common factors like keyword density, links, or meta tags. That is why different search engines give different search results pages for the same search string. It is a known fact that all major search engines periodically change their algorithms. If you want to keep your site at the top, you also need to adapt your pages to the latest changes. This is one reason to devote permanent efforts to SEO, if you like to be at the top.
- **Retrieving Results:**  
The last step in search engines' activity is retrieving the results. Basically, it is simply displaying them in the browser in an order. Search engines sort the endless pages of search results in the order of most relevant to the least relevant sites.

Most of the popular search engines are crawler based search engines and use the above technology to display search results. Example of crawler based search engines:

- Google
- Bing
- Yahoo!
- Baidu
- Yandex

Besides these popular search engines there are many other crawler based search engines available like DuckDuckGo, AOL and Ask.

#### **Human Powered Directories:**

Human powered directories also referred as open directory system depends on human based activities for listings. Below is how the indexing in human powered directories work:

- Site owner submits a short description of the site to the directory along with category it is to be listed.
- Submitted site is then manually reviewed and added in the appropriate category or rejected for listing.
- Keywords entered in a search box will be matched with the description of the sites. This means the changes made to the content of a web pages are not taken into consideration as it is only the description that matters.
- A good site with good content is more likely to be reviewed for free compared to a site with poor content.

Yahoo! Directory and DMOZ were perfect examples of human powered directories. Unfortunately, automated search engines like Google, wiped out all those human powered directory style search engines out of the web.

#### **Hybrid Search Engines:**

Hybrid Search Engines use both crawler based and manual indexing for listing the sites in search results. Most of the crawler based search engines like Google basically uses crawlers as a primary mechanism and human powered directories as secondary mechanism. For example, Google may take the description of a webpage from human powered directories and show in the search results. As human powered directories are disappearing, hybrid types are becoming more and more crawler based search engines.

But still there are manual filtering of search result happens to remove the copied and spammy sites. When a site is being identified for spammy activities, the website owner needs to take corrective action and resubmit the site to search engines. The experts do manual review of the submitted site before including it again in the search results. In this manner though the crawlers control the processes, the control is manual to monitor and show the search results naturally.

#### Most used search algorithms:

- Google:

**Unnatural links:** the search engine tries to fight against websites that use spam. It targets websites that try to manipulate rankings through artificial links.

**Mobile friendly:** Google favours mobile-friendly websites.

**SSL code signing certificate:** websites with this certificate get higher SEO rankings.

- Yahoo!:

**Keyword in URL:** this search engine favours these key words more than Google.

**Page title:** Yahoo! gives relevance to the page title. The main difference with Google is that it is not strict about the repetition of keywords in titles.

**Domain age:** unlike Google, this search engine still takes domain age into account.

- Yandex:

**Meta keywords:** this search engine takes into account meta keywords to determine if a page coincides with a search.

**Paid links:** these are considered valuable for SEO, much more than in Google.

**Spam links:** Yandex does not use these links in its algorithms

- Baidu:

**Meta descriptions:** like Google, Baidu uses descriptions as a key factor in SEO. One or two key words must be used, together with a brand term. The maximum length will be 78 simplified Chinese characters.

**Multiple domains and subdomains:** Baidu is not interested in this these. If it is a multilingual website, you should use another domain that should not be linked to the Chinese version.

**ICP Licence:** obtaining this type of licence through China's Ministry of Industry and Information Technology will greatly improve the organic search ranking.

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## 2. REVIEW OF LITERATURE

Patrick Maill'e (2022) analyses search neutrality debate stems from content or service providers complaining about being discriminated and ranked unfairly low by search engines, raising the need for methodologies and tools to verify bias in search engine rankings. For that purpose, a simple yet selective frame-work based on the comparison of the results provided by several search engines, and build the corresponding tool to carry out a campaign of tests.

#### Objectives:

- To study importance of most popular engines.
- To study importance of all search engines in different countries.
- The best Google alternatives in other countries.

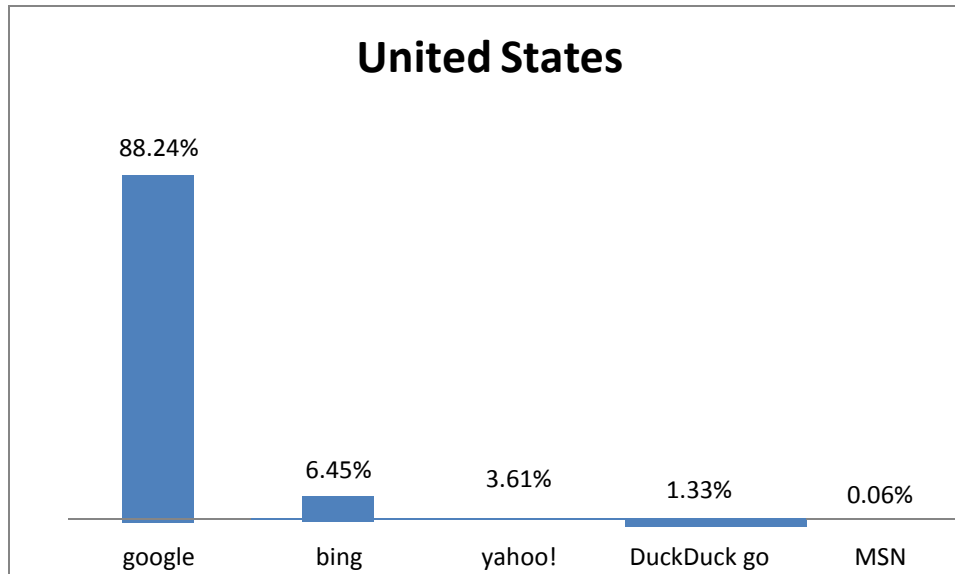
### 3. RESEARCH METHODOLOGY

Data collection method is done by collecting simple percentages of various search engines in top international countries and it is known as secondary data.

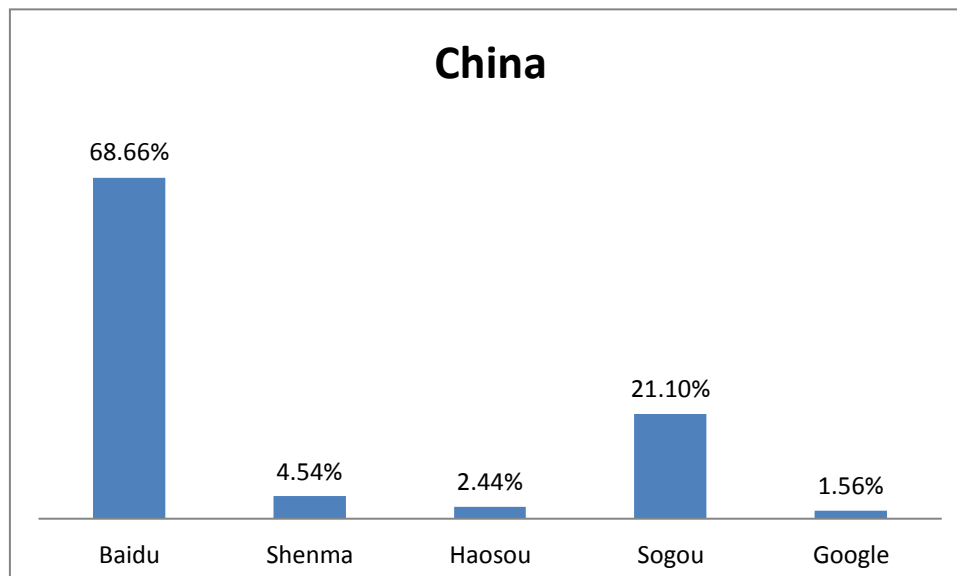
Data analysis techniques used are bar graphs to present the collected data of search engines.

### 4. DATA ANALYSIS AND INTERPRETATION

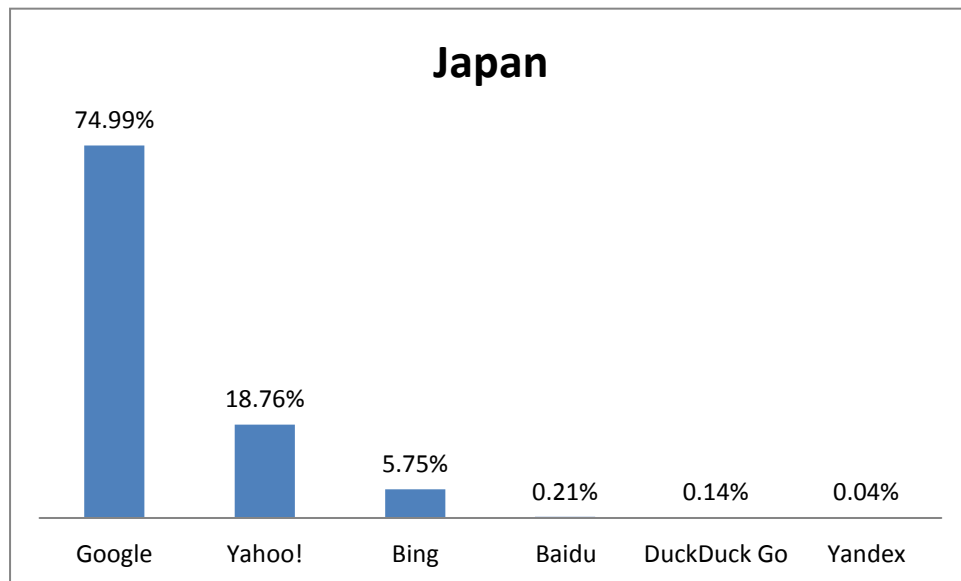
The selected countries for collecting data are United States, China, Japan, Russia, South Korea and India. The various types of search engines found in different countries are Bing, Yandex, Yahoo!, DuckDuckGo, Baidu and most popular search engine Google



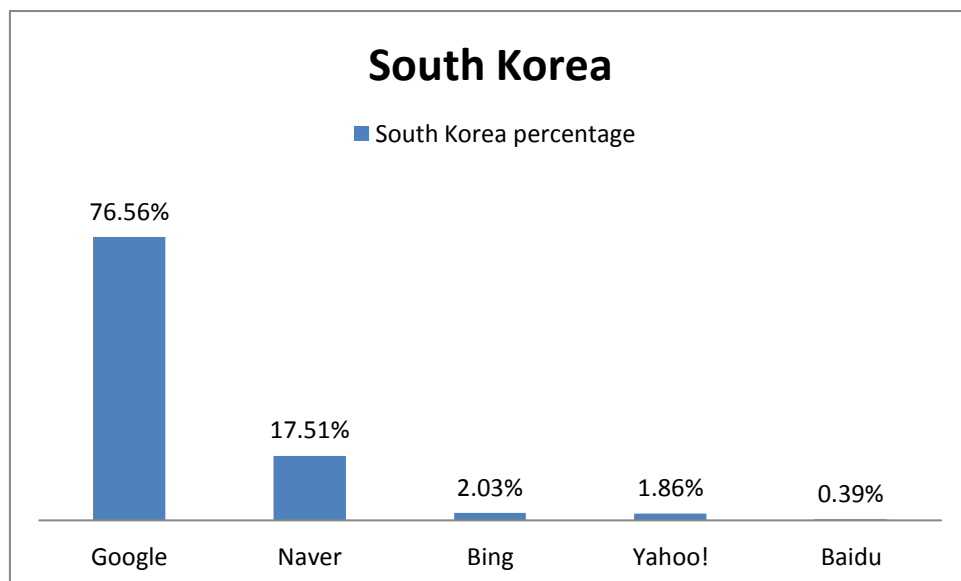
**Interpretation:** Google is observed as the most used search engine in United States and then the other alternative search engines are Bing, Yahoo!, DuckDuck Go and MSN



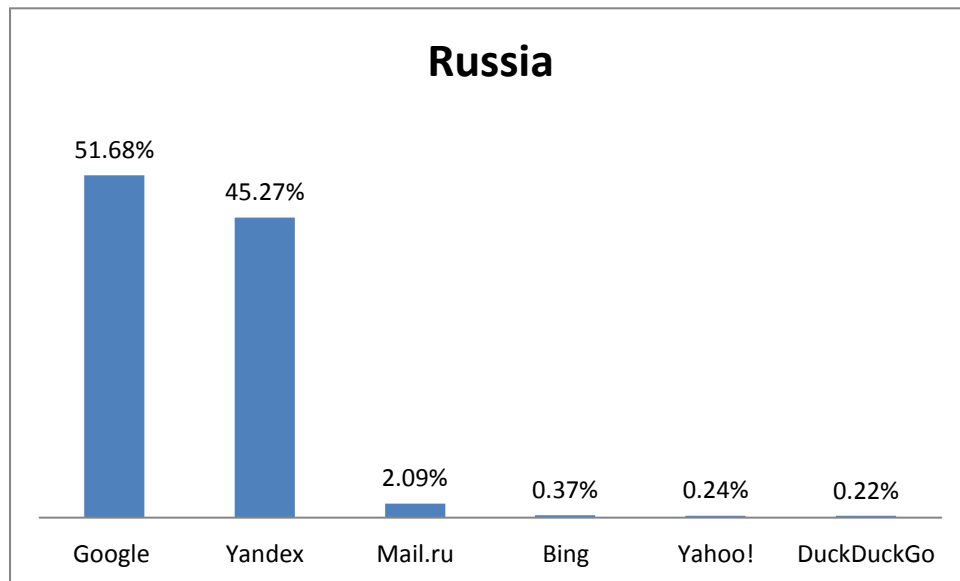
**Interpretation:** In China the most used search engine is Baidu with 68.66% and other used search engines are Shenma, Haosou, Sogou and least used search engine is Google.



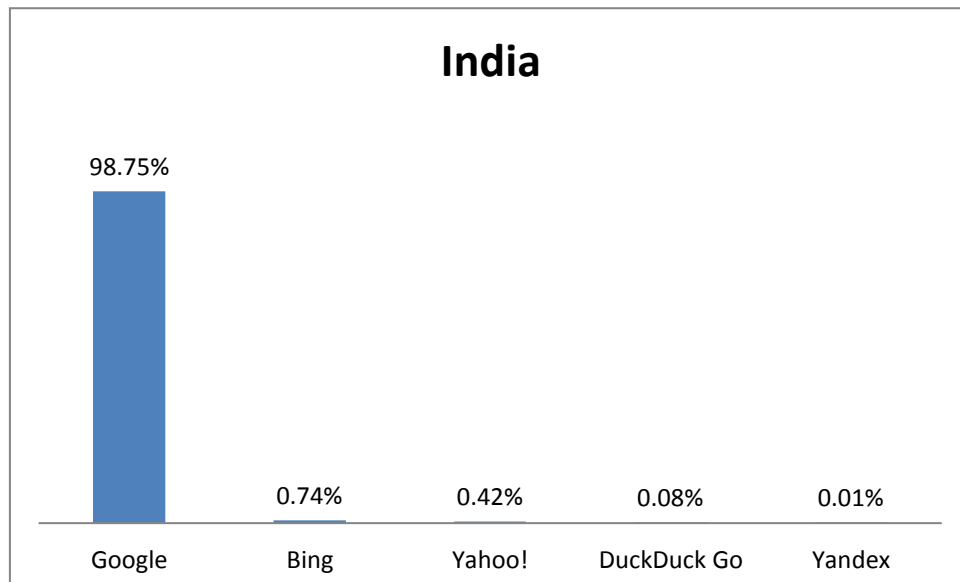
**Interpretation:** The most used search engine followed by Google is Yahoo! with 18.76%. The other search engines used are Bing, Baidu. The least used is Yandex.



**Interpretation:** The new search engine followed by Google is Naver that is 17.51%. The other search engines that are least used are Yahoo! and Baidu.



**Interpretation:** It can be observed that both Google and Yandex are most used search engines which are competing in Russia. The other search engines Mail.ru, Bing, Yahoo! and DuckDuck Go are least used.



**Interpretation:** In India Google is observed as the market leader in search engines and the alternate search engines Bing, Yahoo!, DuckDuck Go and Yandex are much least used.

## 5. FINDINGS

Google has a higher penetration in almost all countries. But in China Google makes up a measly 1.5% of market share with search engine Baidu taking the lion's share at 70%. In fact, Google places 4<sup>th</sup> after Shenma, Haosou and Sogou. Yahoo! tried to achieve a strong presence in Japan. In South Korea, Naver search engine is occupying a good presence and trying to achieve a strong presence. In Russia Yandex is the strong competition to Google. Nonetheless with nearly 92% market share globally Google dominates the search engine landscape in most of the countries including India. It is found that many new search engines are developed in all countries. But the presence of Google is observed in all countries.

## 6. CONCLUSION

When dealing with topics such as search engine the Google search engine is probably the first that comes to mind to most of the people at present. But it is interesting to know that Google is not only the search engine in every country. So when working on international search engine optimization it's important to know the most popular search engines and the main search engine algorithms on which each is based. In fact there are number of

alternative search engines that want to take Google's throne but none of them is ready to even pose a threat. Nevertheless, there are other search engines like Baidu, Naver and Yahoo! as the best alternative search engine in few countries. When we consider globally Google is most popular search engine.

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