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Secular Trending in Select Search Engines: The Ups & Downs in Results

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ABSTRACT: *The paper is the outcome of a research conducted on four search engines viz., Google, Bing, Yahoo, and Baidu to evaluate the trending in their results. The objectives were accompanied by collection of series of data using simple keyword* ***"Reprints"*** *in the field of Library and Information Science. 50 days of projected trend was compared from 100 days of data series, collected on daily basis. The evaluation reveal that Bing shows a positive secular trend while Google, Yahoo! and Baidu show a downward or negative secular trend.*

Keywords: *Trending, Reprints, Search engine, Fluctuation.*

I. INTRODUCTION

From navigation to information sources, from encyclopedia to digital libraries, from chunks of information to information explosion, web is used as a primary tool for all purpose in today's digital era. Various reference tools are used to search information on the web including search engines **(Madden, 2003; Fallows, 2004)** which can differ in working, algorithm and the mechanism for quality indexing **(Sullivan, 2005)**. However the results yielded for a number of queries rank in several thousand or even in millions due to the availability of infinite amount of information. However many studies show that only first few results are browsed by the users or few pages on an average only two pages with a default of 10 results per page, a total of 20 results **(Silverstein, Henzinger, Marais & Moricz, 1999; Spink, Ozmutlu, Ozmutlu & Jansen, 2002; Jansen & Spink, 2004; Jansen, Spink & Pedersen, 2005)** which determines the success of a search engine therefore result ranking holds utmost importance in this regard. Result ranking was merely based on term frequency and the inverse document frequency in case of classical Information Retrieval system **(Baeza-Yates & Ribeiro-Neto, 1999)**.Various parameters are taken into account in Web search results ranking as number of links pointing to a given web page **(Brin & Page, 1998; Google, 2016),** the anchor text of the links pointing to the web page, the placement of the search terms in the document (terms occurring in title or header may get a higher weight), the distance between the search terms, popularity of the page (in terms of the number of times it is visited), the text appearing in metatags **(Yahoo, 2016),** subject specific authority of the web page **(Kleinberg, 1999; Teoma, 2005),** recently in search index and exactness of the hits **(MSN, 2005)**. There is always an ongoing competition between search engines and Web page authors for users and high ranking respectively, which is why the algorithm ranking are kept a secret by the search engine companies as Google states **(Google, 2016),** "Due to the nature of our business and our interest in protecting the integrity of our search results, this is the only information we make available to the public about our ranking system". Apart from this search engines keep on updating and upgrading their algorithm so to improve their ranking of results. Nowadays search engine optimization industries are present which design and redesign Web pages in order to enhance their rankings within a specific search engine (e.g., search engine optimization Inc., www.seoine.com/). Therefore in the crux it can be concluded that the First ten results retrieved for a query have major chances of being visited by the users. In addition to the examination of changes overtime for the top ten results related to a query of the largest search engine, which at the times of first data collection were Google, yahoo and Tacoma (MSN search came out if beta on Feb 1st 2005 in the midst of data collection for the second round **(Payne, 2005).** However various transformations between the user's "visceral need" (a fuzzy view of the information problem in user's mind) and the "compromised need" (the way the query is phrased taking into account the limitations of the search tool at hand) **(Taylor, 2009).** Above all the fluctuation of a result related to a query can only be judged by the user while some researchers claim that it is impractical due to the presence of a large number of documents related to

a query and all of them can't be viewed by the user, hence for checking fluctuation a panel of judges is required **(Gordon & Pathak, 1999; TREC, 2014).**

Problem

In the beginning of internet searching was direct and command driven. Systems such as Archie, Gopher, and Veronica were command driven rather graphical user interface. These software's didn't cope with the information explosion. The advent of many types of search engines provided solution for literature search using Boolean operators, Proximity searching, Wild cards, Truncation etc. Many search engines developed new versions and techniques to achieve some kind of sophistication but all have not helped to forward the case of access and searching from scholar's perspective. Besides keeping in view different ways of indexing the internet, search engines operate in different ways and retrieve documents in different orders. Further, it does not sift information from scholar's point of view i.e., it retrieves information on a particular topic from different aspects like marketing, advertisement, news and entertainment mixed with some research papers. The academic community attempts to look purely for scholarly information on his topic of interest to have output/ retrieval best in terms of comprehensiveness and devoid of fluctuations etc.

The present investigation attempts to evaluate the performance of the select search engines in terms of result fluctuation captured in two phases to check the consistency of search engines.

Objectives

- To select search engines.
- To select search term for the study.
- To collect data for 100 days.
- To compare trending by forecasting of time series analysis.

II. METHOD

There are tons of search engines currently working on the internet to find needle in a haystack, as finding information is like "needle" and web is like "haystack". The International Standard Organisation (ISO) has certified 230 search engines **(Promote3.com, 2016)**. These search engines are of various types like general search engine, robotic search engine, Meta search engine, directories and specialized search engines. Most users prefer robotic search engines as they allow the users to compose their own quires rather than simply follow pre specified search paths or hierarchy as in case of directories. Moreover, robotic search engines locate data in a similar way i.e., by the use of crawlers or worms. This distinguishing feature differentiates them form web directories like Yahoo! Where collections of links to retrieve URL's are created and maintained by subject experts or by means of some automated indexing process. However some of these services are also include a robot driven search engine facility. But this is not their primary purposes. This due to this feature Yahoo! Was included for the study.

Meta search engine e.g., Dogpile etc don't have their own database. These access the database of many robotic search engines simultaneously. Thus these were excluded for the study.

Still hundreds of robotic general search engines navigate the web, in order to limit the scope of study after preliminary study, following criteria was laid down for selection of general search engines:-

a) Availability of automated indexing
b) Global coverage to data.
c) Quick response time.
d) Availability of result counter.

Following two general search engines were selected for the study for meeting all the criteria and being comprehensive in nature.

a) Google.
b) Baidu.

Since the study relates to the field of Library and Information Science but there is no specialized search engine in the subject so another specialized search engine which relates to the subject area i.e., Bing was taken for stydy. Thus the search engines undertaken for evaluation of study are:-

a) Google (General)
b) Bing (Specific)
c) Yahoo! (Directory)
d) Baidu (Country Specific General Search engine)

III. SELECTION OF TERMS

Selection of terms is not directly possible in development and multidimensional field like Library and Information Science. Therefore, classification schemes like DDC (18th) and DDC (22nd) were consulted to understand Broad/Narrow structure of Library and Information Science. It helped to get five terms/Fields i.e.,

a) Information System.
b) Digital Library.
c) Library Automation.
d) Library Services.
e) Librarianship.

These terms were then browsed in "LC list of subject Headings" which provided many other related terms (RT) and Narrow terms (NT). Further NT and RT attached to each other preferred or standard terms were also browsed which retrieve a large number of Library and Information Science terms. At first instance 140 Library and Information Science related terms were identified.

Some terms occurred more than once and duplication removed. It reduced the number to 100. Later terms were divided into three broad groups under:

a) Application.
b) Transformation.
c) Inter-relation.

"Application" denotes utility of Library and Information science in various fields and about 50 terms came under this group. "Transformation" refers to a method of developing or manufacturing library services into practical market and 30 terms fall under this group. "Inter-relation" means transformation/dependence of one subject onto another and 20 terms came under this group.

Further each category is sub-divided into groups.

"Application" into four i.e., "Reference service", "Informatics", "Information Retrieval" & "Information Sources". "Transformation" into two i.e., "Digitization" & "Consortia". "Inter-relation" into two i.e., "Library Network" & "Information System".

The terms in each group were arranged alphabetically and each term was given a tag. Later 19% of the terms were selected from each group using "Systematic Sampling" (i.e., first item selected randomly and next item after specific intervals). It further reduced the number to 19. Finally the selected terms were classified into three groups under "Simple", "Compound" & "Complex Terms" **(Table:-1.0)**. This was done in order to investigate how search engines control and handle simple and phrased terms.

"Simple Terms" containing a single word were submitted to the search engine in the natural form i.e., without punctuating marks. "Compound Terms" consisting of two words were submitted to the search engines in the form of phrases as suggested by respective search engines and "Complex Terms" composed of more than two words or phrases, were sent to the search engine with suitable Boolean operator "AND" & "OR" between the terms to perform special searches. From the Simple terms the 7th Keyword ***"Reprints"*** was taken for the study as the other keywords are already taken for other studies.

S. No	Simple terms	Compound Terms	Complex Terms
1	Catchwork	Bibliometric Classification	Digital Library Open Source Software
2	Citation	Citation Analysis	Health Information System
3	Dublincore	Comparative Librarianship	Library Information System
4	Indexing	Digital Preservation	Library Information Network
5	Manuscript	Electronic Repositories	Multimedia Information Retrieval
6	Plagiarism	Library Automation	
7	Reprints	Semantic web	

Table 1.0: Keywords

The Ups and Downs (Fluctuation)

When a keyword is entered in a search engine, the result displayed will differ from the same keyword which is entered with a time gap, as the documents on web are consistently been altered in terms of quantitative and qualitative procedures. These quantitative and qualitative changes are expressed as fluctuations. The quantitative changes are expressed as "Result Fluctuations" and the qualitative changes are expressed as "Document" and "Indexing Fluctuations". A fluctuation may show decrease or increase in number of documents. However, growth in size of the database is a continuous and usual routine of the search engines. Thus increase and decrease is taken into account here.

A "Result Fluctuation" appears when a search engine show increase/decrease in total number of results for a query that is searched at two different intervals of time. In other words the total number of results retrieved for a query in second observation may be less as retrieved in the first observation. Thus result fluctuation appears when there is increase/decrease in the number of results for a query tested over time i.e., the number of results in succeeding observation may be more or less than the results of the preceding observation.

Secular Trending in Search Engine

The Trending is an estimate of a future event achieved by systematically combining and casting forward in predetermined way from the data about the past. It is simply a statement about the future prediction. Trending are possible only when a history of data exists. The study collected 100 days of data samples from four search engine out of seven as result-counter was available with Google, Bing, Yahoo and Baidu. The data collection was carried on 15th May, 2016 and ended on 18th of August, 2016 collecting 100 samples for keyword *"Reprints"* in four search engines **Table:-1.1.**

For forecasting process few points were taken into consideration as:

1) Fluctuation of search results and sustainability
2) 100 days of data sampling were taken into consideration **(Table:- 1.1).**
3) As the data is seasonal, Trend Projection Method was taken into consideration.
4) Total results were taken from result search counter of search engine.
5) A forecast of 50 days was generated (**Table:-1.2**).
6) The results were evaluated on a scattered graph with regression line

Table 1.1:- Time series data for forecasting of Select Search engines for the keyword "*Reprints*"

	Google			Bing			Yahoo!			Baidu		
Days (t)	Result (Y_t)	Multiplication of Days and Results (tY_t)	Square of Days $(t)^2$	Result (Y_t)	Multiplication of Days and Results (tY_t)	Square of Days $(t)^2$	Result (Y_t)	Multiplication of Days and Results (tY_t)	Square of Days $(t)^2$	Result (Y_t)	Multiplication of Days and Results (tY_t)	Square of Days $(t)^2$
1	46000000	46000000	1	12300000	12300000	1	32700000	32700000	1	9240000	9240000	1
2	46100000	92200000	4	12400000	24800000	4	32700000	65400000	4	9290000	18580000	4
3	46100000	138300000	9	12400000	37200000	9	32700000	98100000	9	9290000	27870000	9
4	46100000	184400000	16	12300000	49200000	16	32700000	130800000	16	9290000	37160000	16
5	46100000	230500000	25	12300000	61500000	25	32600000	163000000	25	9290000	46450000	25
6	46200000	277200000	36	11900000	71400000	36	32700000	196200000	36	9380000	56280000	36
7	46300000	324100000	49	11900000	83300000	49	32700000	228900000	49	8880000	62160000	49
8	46300000	370400000	64	11900000	95200000	64	32700000	261600000	64	9390000	75120000	64
9	46200000	415800000	81	12100000	108900000	81	32700000	294300000	81	9390000	84510000	81
10	46200000	462000000	100	12000000	120000000	100	32600000	326000000	100	9550000	95500000	100
11	46100000	507100000	121	12000000	132000000	121	32600000	358600000	121	9550000	105050000	121
12	46200000	554400000	144	12000000	144000000	144	32600000	391200000	144	9620000	115440000	144
13	46300000	601900000	169	12000000	156000000	169	32600000	423800000	169	9620000	125060000	169
14	46300000	648200000	196	12100000	169400000	196	32600000	456400000	196	9620000	134680000	196
15	46100000	691500000	225	12100000	181500000	225	32500000	487500000	225	9730000	145950000	225
16	46000000	736000000	256	12200000	195200000	256	32300000	516800000	256	9480000	151680000	256
17	46000000	782000000	289	12200000	207400000	289	32300000	549100000	289	9480000	161160000	289
18	45800000	824400000	324	12100000	217800000	324	32300000	581400000	324	9480000	170640000	324
19	45900000	872100000	361	12000000	228000000	361	32300000	613700000	361	9480000	180120000	361
20	46000000	920000000	400	12200000	244000000	400	32300000	646000000	400	9480000	189600000	400
21	45900000	963900000	441	12100000	254100000	441	32300000	678300000	441	9400000	197400000	441
22	45700000	1005400000	484	12100000	266200000	484	32200000	708400000	484	9400000	206800000	484
23	46300000	1064900000	529	12000000	276000000	529	32600000	749800000	529	9620000	221260000	529
24	46300000	1111200000	576	12100000	290400000	576	32600000	782400000	576	9620000	230880000	576
25	45800000	1145000000	625	12200000	305000000	625	32300000	807500000	625	9200000	230000000	625
26	45800000	1190800000	676	12400000	322400000	676	32300000	839800000	676	9110000	236860000	676
27	46000000	1242000000	729	12400000	334800000	729	32300000	872100000	729	9110000	245970000	729
28	45800000	1282400000	784	12500000	350000000	784	32200000	901600000	784	8940000	250320000	784
29	45700000	1325300000	841	12700000	368300000	841	32100000	930900000	841	8940000	259260000	841
30	45800000	1374000000	900	12700000	381000000	900	32100000	963000000	900	8740000	262200000	900
31	45800000	1419800000	961	12500000	387500000	961	32200000	998200000	961	8740000	270940000	961
32	45800000	1465600000	1024	12400000	396800000	1024	32300000	1033600000	1024	9110000	291520000	1024

33	46000000	1518000000	1089	12400000	409200000	1089	32300000	1065900000	1089	9110000	300630000	1089
34	45800000	1557200000	1156	12500000	425000000	1156	32200000	1094800000	1156	8940000	303960000	1156
35	46200000	1617000000	1225	12500000	437500000	1225	32000000	1120000000	1225	8800000	308000000	1225
36	46000000	1656000000	1296	12500000	450000000	1296	32200000	1159200000	1296	8800000	316800000	1296
37	46000000	1702000000	1369	12500000	462500000	1369	32100000	1187700000	1369	8800000	325600000	1369
38	46100000	1751800000	1444	12500000	475000000	1444	32200000	1223600000	1444	8690000	330220000	1444
39	46000000	1794000000	1521	12500000	487500000	1521	32200000	1255800000	1521	8690000	338910000	1521
40	46100000	1844000000	1600	12600000	504000000	1600	32200000	1288000000	1600	8690000	347600000	1600
41	46200000	1894200000	1681	12500000	512500000	1681	32000000	1312000000	1681	8800000	360800000	1681
42	46000000	1932000000	1764	12500000	525000000	1764	32200000	1352400000	1764	8800000	369600000	1764
43	46000000	1978000000	1849	12500000	537500000	1849	32100000	1380300000	1849	8800000	378400000	1849
44	46400000	2041600000	1936	12600000	554400000	1936	32400000	1425600000	1936	9030000	397320000	1936
45	46400000	2088000000	2025	12700000	571500000	2025	32300000	1453500000	2025	8650000	389250000	2025
46	46600000	2143600000	2116	12600000	579600000	2116	32500000	1495000000	2116	9090000	418140000	2116
47	46400000	2180800000	2209	12700000	596900000	2209	32300000	1518100000	2209	8650000	406550000	2209
48	46600000	2236800000	2304	12700000	609600000	2304	32500000	1560000000	2304	9090000	436320000	2304
49	46900000	2298100000	2401	12800000	627200000	2401	32500000	1592500000	2401	8720000	427280000	2401
50	47000000	2350000000	2500	12800000	640000000	2500	32500000	1625000000	2500	8720000	436000000	2500
51	47100000	2402100000	2601	12800000	652800000	2601	32500000	1657500000	2601	9170000	467670000	2601
52	47400000	2464800000	2704	12800000	665600000	2704	32700000	1700400000	2704	9170000	476840000	2704
53	47100000	2496300000	2809	12800000	678400000	2809	32500000	1722500000	2809	9170000	486010000	2809
54	47500000	2565000000	2916	12800000	691200000	2916	32700000	1765800000	2916	9170000	495180000	2916
55	47500000	2612500000	3025	12800000	704000000	3025	32700000	1798500000	3025	9170000	504350000	3025
56	47600000	2665600000	3136	12800000	716800000	3136	32700000	1831200000	3136	9750000	546000000	3136
57	47700000	2718900000	3249	12900000	735300000	3249	32700000	1863900000	3249	9750000	555750000	3249
58	47800000	2772400000	3364	12900000	748200000	3364	32900000	1908200000	3364	9750000	565500000	3364
59	47900000	2826100000	3481	12800000	755200000	3481	32900000	1941100000	3481	9750000	575250000	3481
60	48000000	2880000000	3600	12800000	768000000	3600	12900000	774000000	3600	9780000	586800000	3600
61	48000000	2928000000	3721	12800000	780800000	3721	33000000	2013000000	3721	9780000	596580000	3721
62	48000000	2976000000	3844	12800000	793600000	3844	33000000	2046000000	3844	9780000	606360000	3844
63	48100000	3030300000	3969	12800000	806400000	3969	33000000	2079000000	3969	9560000	602280000	3969
64	48100000	3078400000	4096	12800000	819200000	4096	33100000	2118400000	4096	9560000	611840000	4096
65	48000000	3120000000	4225	12800000	832000000	4225	13200000	858000000	4225	9490000	616850000	4225
66	48000000	3168000000	4356	12600000	831600000	4356	12900000	851400000	4356	9490000	626340000	4356
67	48000000	3216000000	4489	12600000	844200000	4489	12900000	864300000	4489	9890000	662630000	4489
68	47700000	3243600000	4624	12600000	856800000	4624	13200000	897600000	4624	9890000	672520000	4624
69	47700000	3291300000	4761	11800000	814200000	4761	13200000	910800000	4761	10000000	690000000	4761
70	47700000	3339000000	4900	13100000	917000000	4900	33100000	2317000000	4900	10000000	700000000	4900
71	47600000	3379600000	5041	13100000	930100000	5041	32900000	2335900000	5041	9610000	682310000	5041
72	47500000	3420000000	5184	13200000	950400000	5184	32700000	2354400000	5184	9610000	691920000	5184
73	47500000	3467500000	5329	13200000	963600000	5329	32700000	2387100000	5329	9990000	729270000	5329
74	47300000	3500200000	5476	13200000	976800000	5476	32600000	2412400000	5476	9990000	739260000	5476
75	47400000	3555000000	5625	13200000	990000000	5625	32800000	2460000000	5625	9550000	716250000	5625
76	47400000	3602400000	5776	13300000	1010800000	5776	32600000	2477600000	5776	9550000	725800000	5776
77	47500000	3657500000	5929	13300000	1024100000	5929	32500000	2502500000	5929	9550000	735350000	5929
78	47300000	3689400000	6084	13300000	1037400000	6084	13300000	1037400000	6084	9020000	703560000	6084
79	47400000	3744600000	6241	13400000	1058600000	6241	32600000	2575400000	6241	9020000	712580000	6241
80	47300000	3784000000	6400	13300000	1064000000	6400	13300000	1064000000	6400	9020000	721600000	6400
81	47400000	3839400000	6561	13400000	1085400000	6561	32500000	2632500000	6561	9040000	732240000	6561
82	47300000	3878600000	6724	13400000	1098800000	6724	32500000	2665000000	6724	8810000	722420000	6724
83	47300000	3925900000	6889	13300000	1103900000	6889	13300000	1103900000	6889	9020000	748660000	6889
84	47400000	3981600000	7056	13400000	1125600000	7056	32500000	2730000000	7056	9040000	759360000	7056
85	47600000	4046000000	7225	13100000	1113500000	7225	32800000	2788000000	7225	8840000	751400000	7225
86	47300000	4067800000	7396	13000000	1118000000	7396	32500000	2795000000	7396	9000000	774000000	7396
87	47100000	4097700000	7569	12900000	1122300000	7569	13000000	1131000000	7569	9000000	783000000	7569
88	47000000	4136000000	7744	12900000	1135200000	7744	32200000	2833600000	7744	9000000	792000000	7744
89	47000000	4183000000	7921	13000000	1157000000	7921	12900000	1148100000	7921	9000000	801000000	7921
90	46900000	4221000000	8100	13000000	1170000000	8100	32300000	2907000000	8100	8760000	788400000	8100
91	47000000	4277000000	8281	13000000	1183000000	8281	32200000	2930200000	8281	8730000	794430000	8281
92	46900000	4314800000	8464	12900000	1186800000	8464	32200000	2962400000	8464	8730000	803160000	8464
93	47000000	4371000000	8649	12900000	1199700000	8649	32200000	2994600000	8649	8210000	763530000	8649
94	46900000	4408600000	8836	12900000	1212600000	8836	32200000	3026800000	8836	8730000	820620000	8836
95	46900000	4455500000	9025	12800000	1216000000	9025	32200000	3059000000	9025	8350000	793250000	9025
96	46900000	4502400000	9216	12800000	1228800000	9216	32000000	3072000000	9216	9210000	884160000	9216
97	46700000	4529900000	9409	12600000	1222200000	9409	31800000	3084600000	9409	9210000	893370000	9409
98	46700000	4576600000	9604	12600000	1234800000	9604	31900000	3126200000	9604	9300000	911400000	9604
99	46700000	4623300000	9801	12600000	1247400000	9801	12500000	1237500000	9801	9300000	920700000	9801
100	46800000	4680000000	10000	12400000	1240000000	10000	32000000	3200000000	10000	9540000	954000000	10000
$\sum t$	$\sum(Y_t)$	$\sum tY_t$	$\sum(t)^2$	$\sum(Y_t)$	$\sum tY_t$	$\sum(t)^2$	$\sum(Y_t)$	$\sum tY_t$	$\sum(t)^2$	$\sum(Y_t)$	$\sum tY_t$	$\sum(t)^2$
5050	4675600000	237562500000	338350	1263200000	64694600000	338350	3012900000	146149200000	338350	923130000	46480790000	338350

IV. TYPES OF TREND PROJECTIONS

Trending describes the ups and downs of a fluctuation in a time-series forecasting where a trend line meets to a series of historical data points and then projects the line into the future for medium- to long range forecasts. The research has described the trend component with a line visually to a set of points on a graph. The graph, however, is subject to slightly different interpretations. There are three types of trend projection viz.,

1) Positive Secular Trend or Upward Secular Trend:- it describes the data into a upward or raising trend line.
2) Negative Secular Trend or Downward Secular Trend:- it describes the data into lowering trend line
3) Neutral Secular Trend or Straight Secular Trend:- no changes the data is consistent.

For the study 400 samples were taken into account to generate 200 results of projected data which are described in graphs.

The formula derived for the study is:-

$t_t = b_0 + b_1 t$

b_0 and b_1 can be derived as:

$$b_0 = \bar{y} - b_1\bar{t}$$

$$b_1 = \frac{n\Sigma t y_t - \Sigma t \Sigma y_t}{n\Sigma t^2 - (\Sigma t)^2}$$

Where

t = days

y_t = Result of the search query

The projected result **Table 1.2**, shows a vast fluctuation both in terms of positive Secular trend and negative secular trend. The estimate is given by a trending line.

Table 1.2:- Projected data using trend projection method for 50 days for the keyword "*Reprints*"

Days	Google	Bing	Yahoo!	Baidu
1	47631576	13179273	26491273	9148103
2	47668421	13205283	26326105	9143263
3	47708061	13234241	26156840	9139284
4	47748600	13264270	25983343	9135201
5	47790065	13293117	25805472	9131012
6	47832482	13322850	25620718	9126712
7	47878303	13343807	25433425	9124480
8	47927916	13364534	25241290	9109972
9	47979187	13384991	25044149	9107096
10	48029582	13410350	24841831	9104354
11	48081467	13433312	24631493	9106027
12	48132175	13456218	24415296	9108373
13	48186955	13479038	24193027	9113393
14	48246240	13501741	23964463	9119419
15	48307585	13527199	23729371	9126524
16	48365141	13552808	23484535	9138051
17	48421218	13581581	23226261	9143623
18	48478547	13610821	22959611	9150045
19	48530857	13637379	22684229	9157378
20	48586963	13660830	22399740	9165685
21	48647282	13690536	22105752	9175038
22	48705592	13717322	21801848	9182842
23	48758086	13744134	21484197	9191536
24	48831502	13767485	21169157	9208784
25	48907450	13793911	20843987	9227927
26	48968166	13823813	20497528	9234082
27	49029593	13861254	20138819	9237411
28	49099106	13899782	19767289	9240840
29	49162620	13943196	19378580	9237985
30	49223006	13995850	18971560	9234505
31	49287494	14051062	18548902	9222592
32	49352589	14101102	18113763	9209059

33	49418253	14149098	17665824	9208585
34	49492568	14198692	17200696	9207938
35	49560058	14254076	16713391	9200099
36	49644763	14311679	16198268	9185396
37	49723346	14371617	15670196	9168933
38	49803400	14434015	15116210	9150576
39	49889307	14499003	14543325	9125379
40	49972799	14566723	13946409	9097434
41	50062328	14641810	13324147	9066531
42	50158492	14715911	12666046	9037445
43	50248117	14793257	11987853	9005514
44	50339444	14874032	11275079	8970522
45	50451403	14963159	10544314	8943111
46	50567310	15061462	9776366	8895233
47	50697057	15160133	8983284	8864121
48	50822468	15268695	8144636	8808989
49	50962462	15383127	7276919	8770592
50	51123597	15508839	6369014	8710628

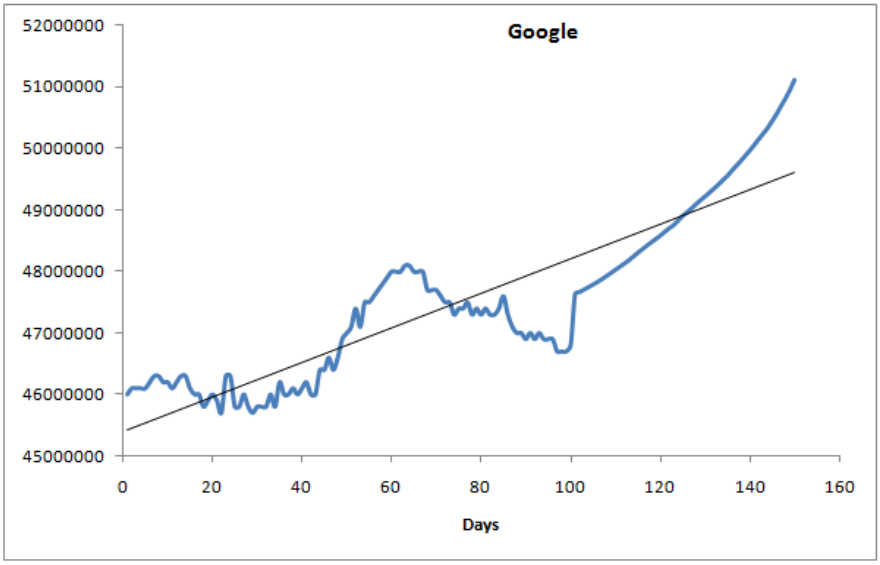

Fig 1.3:- Negative Secular Trend of Google for the keyword "*Reprints*"

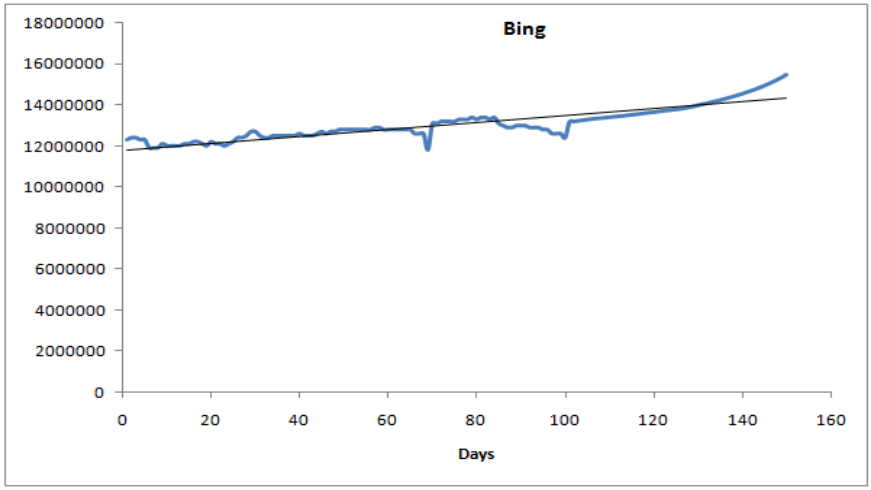

Fig 1.4:- Negative Secular Trend of Bing for the keyword "*Reprints*"

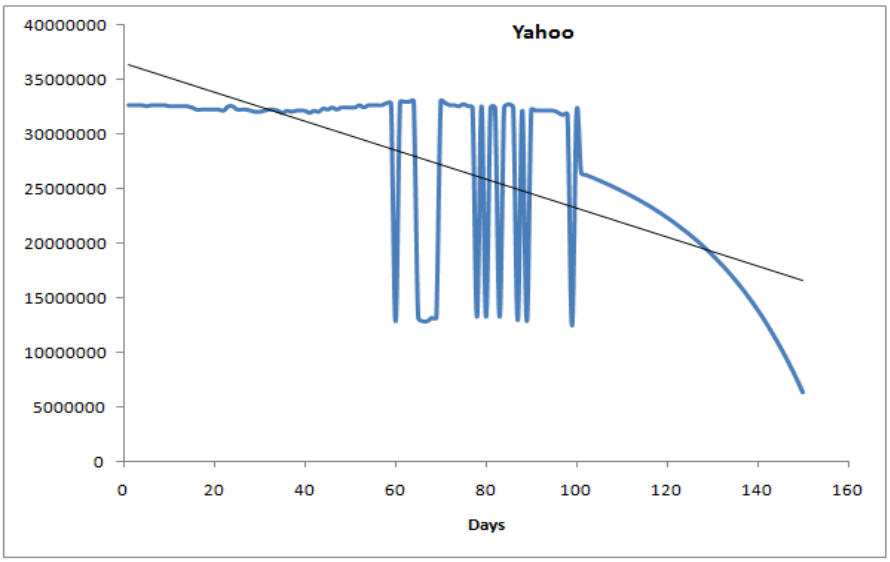

Fig 1.5:- Straight Secular Trend of Yahoo! for the keyword "*Reprints*"

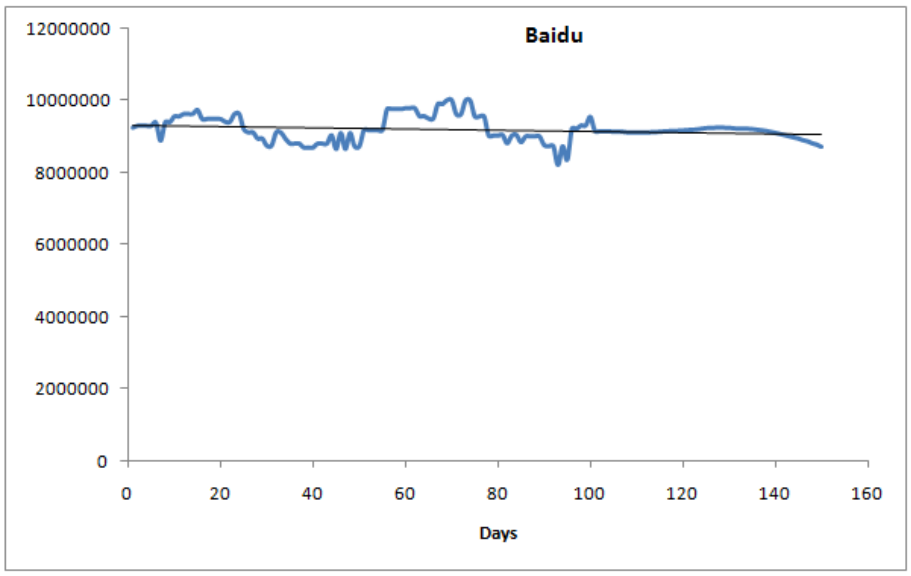

Fig 1.6:- Positive Secular Trend of Baidu for the keyword "*Reprints*"

V. CONCLUSION

The trending of the search engines reveal that Google shows negative secular trend while Yahoo! also shows negative secular trend. Bing Shows an upward or positive secular trend, Baidu on the other hand also shows a negative secular trend. The data forecasted show a consistent growth in the database of Bing in terms of result fluctuation. Google, Yahoo! and Baidu drops down showing down secular trending resulting in loss in database.

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