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Arindam Sarkar

Jadavpur University, infoarindam83@gmail.com

Ashok Pal

Institute of Development Studies Kolkata (IDSK), pal.sunrise.ashok@gmail.com

Sanjoy Kar

Institute of development Studies Kolkata (IDSK)

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Webometric Mapping of Tourism Sites in India

Arindam Sarkar¹, Ashok Pal², Sanjoy Kar^{2#}

ORCID  0000-0002-8728-3378, ORCID  0000-0002-8428-6864, ORCID  0000-0001-5050-5945

Abstract

Website is the mirror of an organization or institution. This webometrics study is performed on the government tourism websites in India. The present paper highlights the global SEO ranking with various scores and popularity ranking of the tourism websites in India. Traffic score, speed score, page size and load time of the websites have been reflected in this study to reveal the quality of the websites. Collecting data using SocSciBot 4 web crawler and designing a network topology using Pajek network design software have added much to its panoramic visualization.

Keywords: *Tourism in India, Webometrics, Search Engine Optimization, Web Crawler*

Introduction:

Information and communication technologies (ICT) have had a remarkable impact on the tourism sector in the 21st century. In recent years, a considerable number of experts have shown interest in the significance of innovations in tourism sector and have analyzed the impact of ICT to tourism services and their competitiveness. The fast growing tourism industry of India is highly important from economic perspective. The World Travel & Tourism Council calculated that tourism generated a good percentage of the nation's GDP. The Ministry of Tourism functions as the nodal agency for the development of tourism in the country. It plays a vital role in coordinating and supplementing the efforts of the State/Union Territory governments. Tourism business is promoted by the State/Union Territory governments through their individual websites which offer a wide range of tour and travel related information, with their wide range of activities, as compared to other types of industrial, cultural and those types of websites. The present paper attempts to analyse and evaluate India's tourism websites on the basis of Search Engine Optimization (SEO) rank and Alexa page-ranking. Mapping of the links using SocSciBot and Pajek software is also the forte of this paper.

1) Project Assistant, Jadavpur University (JU), Jadavpur, Kolkata-700032, India

2) Assistant Librarian, Institute of Development Studies Kolkata (IDSK), Salt Lake, Kolkata-700064, India

sanjoykar007@ymail.com

Tourism in India:

India, the land of mystery and nature's sublime beauty had its magical charm on the tourists from different corners of the world since antiquity. Observing her inextricable appeal to the foreigners, tourism business in India flourished by leaps and bounds. With this in mind Indian government opened a separate sector in the name of Ministry of Tourism in 1967. In 2016 this sector earned a hefty sum of 208.9 billion US dollar and with a budget of 330million US dollar for the financial year 2018-19, India's tourism business only hinted at its blooming status. India has also jumped 12 places to 40th rank globally in the travel and tourism competitiveness list by World Economic Forum (WEF) according to Travel & Tourism Competitiveness Report 2017 (WEF, 2018). Tourism in its different colours like religious and spiritual tourism, medical tourism, adventure tourism, cultural tourism, ecotourism, heritage tourism and domestic tourism is flagrant in India where not only the foreigners but the Indian travelers also loiter from Kashmir to Kanyakumari only to drink deep into the panoramic euphoria of the land of seven rivers. Many studies (Thanh-Dam, 1983; Rao, 1999; Sreekumar, 2002; Bandyopadhyay, 2013) have pointed out that India is a centre of sex tourism. The Centre for Agriculture and Bioscience International (CABI) says that India is a haven for sex tourism. Goa is the most preferred place to the foreigners followed by Mumbai, Delhi and Kerala for liberal attitude and gorgeous beaches. Rao (1997) discussed issues on women and tourism in Kerala, including consideration of tourism as a part of modern consumerism and the sex industry. Paul, L. (2003) said that unfortunately children are also involved with this nasty profession. Govt. of India is trying to resolve the problems by adopting laws, regulations and spreading awareness.

The following figure 1 and table 2 indicate the remarkable growing trend of tourists' attraction towards India.

Table 1: Foreign Exchange Earnings (FEEs) through tourism (in Rs. terms)

Year	Earnings (Crores)	% change	Year	Earnings (Crores)	% change	Year	Earnings (Crores)	% change
2001	15,083	-3.5	2007	44,360	13.7	2013	1,07,671	14
2002	15,064	-0.1	2008	51,294	15.6	2014	1,23,320	14.5
2003	20,729	37.6	2009	53,700	4.7	2015	1,35,193	8.8
2004	27,944	34.8	2010	64,889	20.8	2016	1,54,146	14
2005	33,123	18.5	2011	77,591	19.6	2017	1,80,379	17
2006	39,025	17.8	2012	94,487	21.8	---	---	---

Source: Sanjay Kumar "Foreign Exchange Earnings through Tourism in India in December 2017".

The above table clearly reflects that Foreign Exchange Earnings (FEEs) have been increasing profusely with every passing year which only hints at the lucrative tourism business in India.

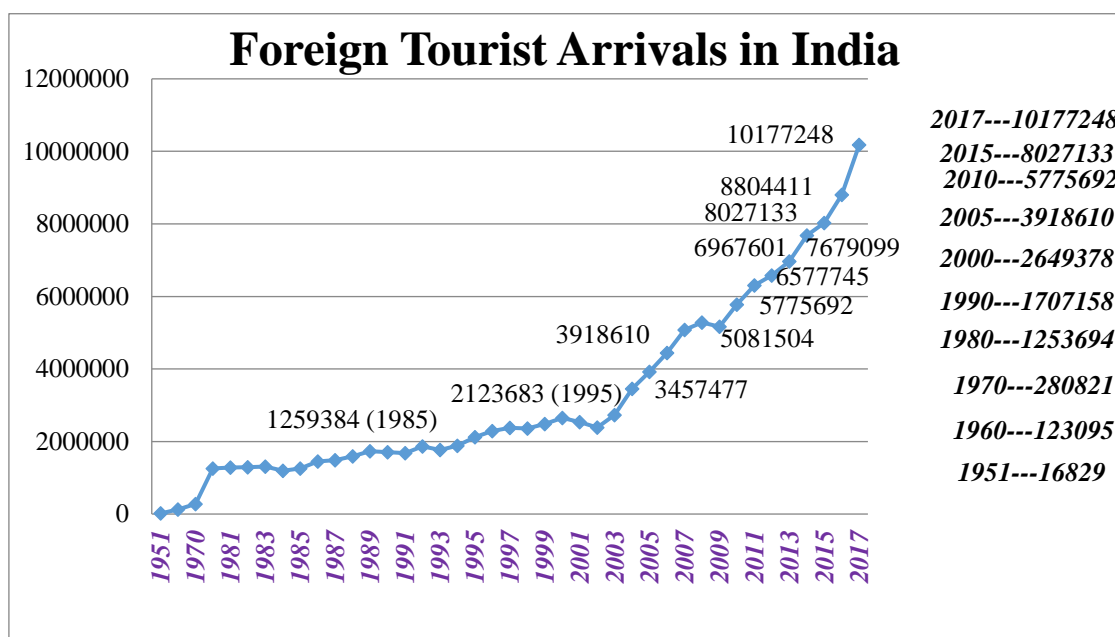


Figure: 1, Arrival of foreign tourists in India including nationals of Pakistan and Bangladesh)

Data Source: IndiaStat.Com (LokSabha Starred Question No. 130, dated on 05.03.2018 & LokSabha Question No. 235, dated on 02.03.2018, Ministry of Tourism, Govt. of India. (ON1647) Past Issues.)

Table 2: Foreign and Domestic tourist visitors in 2015

Share of top 10 states/UTs of India in number of foreign tourist visits in 2015				Share of top 10 states/UTs of India in number of domestic tourist visits in 2015			
Rank	State/Union	Number	Share (%)	Rank	State/Union	Number	Share (%)
1	Tamil Nadu	4684707	20	1	Tamil Nadu	333459047	23.3
2	Maharashtra	4408916	19	2	Uttar Pradesh	204888457	14.3
3	Uttar Pradesh	3104062	13	3	AndhrPradesh	121591054	8.5
4	Delhi	2379169	10	4	Karnataka	119863942	8.4
5	Rajasthan	1489500	6.4	5	Maharashtra	103403934	7.2
6	West Bengal	1475311	6.3	6	Telangana	94516316	6.6
7	Kerala	977479	4.2	7	Madhya Pradesh	77975738	5.4
8	Bihar	923737	4	8	West Bengal	70193450	4.9
9	Karnataka	636502	2.7	9	Gujrat	36288463	2.5
10	Goa	541480	2.3	10	Rajasthan	35187573	2.5
	Top 10 states	20620863	88		Top 10 states	1197367974	83.6
	Other	2705300	12		Other	234605820	16.4
	Total	23326163	100		Total	1431973794	100

Source: India Tourism Statistics at a Glance 2017

The above table clearly hints at the dominance of Tamilnadu in receiving foreign and domestic tourists in the year 2015. Maharashtra and Uttarpradesh are not very far behind in the list.

Literature Review

A webometrics study conducted on the websites and the web impact factor by Kumar, K. (2017), analyzed the websites of deemed universities in Andhra Pradesh and Telangana. It had examined 7 deemed university websites and identified number of web pages and link pages, and calculated Web Impact Factor (WIF) using Google search engine. The websites were ranked based on these Webometric indicators. The study revealed that websites of Andhra Pradesh's universities have more number of web-pages but the websites of Telangana's universities have high web impact factor in most of the parameters.

Biswas, Pal & Kar (2018) in their study emphasized on the websites of the 12 Government Medical College and Hospitals of West Bengal. After analysing the various types of links of the said websites, Web Impact Factor (WIF) of different types had been calculated and on the basis of WIFs three types of ranking of the websites had been delineated. The paper established the supremacy of the North Bengal Medical College and Hospital website in all the three WIF lists.

Zeinolabedini, Maktabifard and Osareh (2006) studied that various national libraries' status depend on their website's quality and performance. Results of this research showed that Library of Congress website is the most powerful one among the world's other national library websites.

Objectives of the Study: The objectives of the present study are as follows-

- i. To find out the visibility and performance of Indian tourism websites.
- ii. To examine the link-quality of selected tourism websites in India.
- iii. To analyse and evaluate the tourism websites of India on the basis of SEO.
- iv. To find out the global popularity ranking of the websites.
- v. To evaluate how the Indian tourism sites present their content in the website.

Scope and Coverage:

In India, there are 29 states and 7 union territories that create a federal constitutional republic structure under a parliamentary system. Only Government tourism sites have been considered for the present study. All the 36 websites have been considered for the present study. The study is restricted within the particular time period i.e. from 15/07/2018 to

30/07/2018. Tourism related blogs and other sites have been kept outside the purview of the study in spite of their enormous amount of information for the tourists.

Methodology:

Tourism websites have been taken from the official website of Ministry of Tourism, Govt. of India and different search engines. All the selected websites are analysed with the help of online tools like Neil Patel’s SEO analyser (<https://neilpatel.com/seo-analyzer/>) and Alexa (<https://www.alexa.com/siteinfo>). After the of data collection, the collected data were analysed and tabulated keeping in view the objectives of the study.SocSciBot (<http://socsibot.wlv.ac.uk/>) and Pajek software were also used to visualize the network mapping of the websites.

Results and Discussion:

Domain name is a very important issue for any website. A domain suffix or ‘top-level domain (TLD) is intended to define the type of website and it impacts on webpage visibility and SEO score.

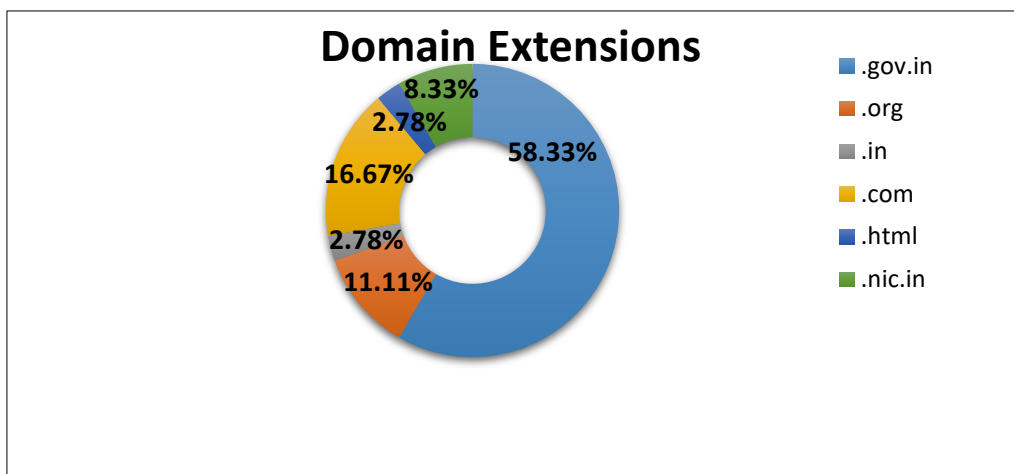


Figure 2: Domain extension percentages

In this figure 2, 36 Indian tourism websites were grouped under six domain extensions as reflected in their URLs. Most of the websites have .gov.in (58.33%) extension, followed by.com (16.67%), .org (11.11), .nic.in (8.33%), .in (2.78%) and.html (2.78%).

Visibility and Web-traffic:

Web traffic is known as the collective number of visitors to a website. Search Engine Optimization increases the web traffic by making the website more visible to search engines. In this study online SEO report generation tool, Neil Patel’s SEO analyser (<https://neilpatel.com/seo-analyzer/>) has been used to analyse and compare India’s state

and union territory tourism websites on various parameters like backlinks, page size, load time, request, traffic score, SEO score and speed score.

Table 3: Results from SEO Analyzer

	Name of NL Website	URL	Back links	Page size (KB/MB)	Load time (Sec.)	Request
1	Andaman & Nicobar	http://www.andamans.gov.in	147	1.5MB	4.11	50
2	Andhra Pradesh	http://www.aptourism.gov.in	50	1.0MB	4.96	40
3	Arunachal Pradesh	http://www.arunachaltourism.com/#0	212	1.0MB	1.71	46
4	Assam	http://www.assamtourisonline.com/	38	643.8KB	0.78	43
5	Bihar	http://bstdc.bih.nic.in/	5184	3.4MB	9.32	86
6	Chandigarh	http://chandigarhtourism.gov.in	150	98.6KB	3.35	15
7	Chhattisgarh	http://cgtourism.choice.gov.in/	8	10.0MB	7.62	176
8	Dadra-Nagar Haveli	http://dnh.nic.in/Tourism/destinations.html	453	161.8KB	2.79	45
9	Daman and Diu	http://www.daman.nic.in/	805	2.5 MB	12.01	84
10	Goa	http://www.goatourism.gov.in	289	551.2KB	12.64	43
11	Gujarat	http://www.gujarattourism.com/	711	1.2MB	56.57	54
12	Haryana	http://haryanaturism.gov.in	224	2.5MB	6.04	128
13	Himachal Pradesh	http://hptdc.nic.in	75	6.7MB	8.61	188
14	Jammu & Kashmir	http://www.jktourism.org/	333	8.6MB	23.27	245
15	Jharkhand	http://jharkhandtourism.gov.in/	25	5.0MB	32.39	232
16	Karnataka	http://www.karnatakaturism.org/	295	1.3MB	16.12	104
17	Kerala	http://www.keralaturism.org	905	2.2MB	8.77	110
18	Lakshadweep	http://lakshadweeptourism.com/	104	139.6KB	0.82	24
19	Madhya Pradesh	http://www.mptourism.com	570	3.7MB	5.52	114
20	Maharashtra	http://www.maharashtratourism.gov.in/	530	2.6MB	4.80	57
21	Manipur	http://www.manipur tourism.gov.in/	34	3.3MB	8.56	155
22	Meghalaya	http://megtourism.gov.in	204	1.2MB	5.53	47
23	Mizoram	https://tourism.mizoram.gov.in	207	1.4	5.45	53
24	Nagaland	http://tourismnagaland.com/	112	1.3MB	6.00	67
25	New Delhi	http://www.delhitourism.gov.in/delhitourism/index.jsp	585	894.6KB	7.74	69
26	Odisha	http://www.odishaturism.gov.in	145	1.7MB	16.53	111
27	Puducherry	http://tourism.puducherry.gov.in/	1670	588.8KB	4.57	45
28	Punjab	http://www.punjabtourism.gov.in	116	4.3MB	7.57	128
29	Rajasthan	http://www.tourism.rajasthan.gov.in/	6108	2.7MB	6.19	126
30	Sikkim	http://www.sikkimtourism.gov.in/	167	838.0KB	5.36	47
31	Tamil Nadu	http://www.tamilnadutourism.org	681	3.7MB	5.13	63
32	Telangana	http://www.telanganaturism.gov.in/	281	6.6MB	16.96	152
33	Tripura	http://tripuratourism.gov.in	91	1.7MB	44.09	120
34	Uttar Pradesh	http://www.uptourism.gov.in	188	5.6MB	11.48	221
35	Uttarakhand	http://uttarakhandtourism.gov.in/	194	7.4MB	16.74	265
36	West Bengal	http://www.wbtourism.gov.in	34	2.9MB	7.60	109

Table-3 shows the number of backlinks, page size, load time and request of 36 tourism websites. With the good amount of quality backlinks, one can not only attract a remarkable number of visitors to their website but also can improve their website’s ranking. Rajasthan (6108) has highest number of backlinks and then followed by websites of Bihar (5184), Puducherry (1670), Kerala (905), Daman-Diu (805) and Gujarat (711). Page size of a website, the indicator of the amount of data to be spent to load the site, is a very important parameter of SEO. In this regard, Chhattisgarh (10.0 MB) has topped the list. After the website of Chhattisgarh websites of Jammu & Kashmir (8.6 MB), Uttarakhand (7.4 MB), Himachal Pradesh (6.7 MB) and Telangana (6.6 MB) maintain their order. Website load time is another important indicator of SEO. Users’ satisfactions or dissatisfactions are very much dependent on website loading time. Above table shows that website of Assam is the fastest loading website with 0.78 seconds and then followed by websites of Lakshadweep (0.82 sec.), Arunachal Pradesh (1.71 sec.), Dadra-Nagar Haveli (2.79 sec.) and Chandigarh (3.35 sec.). In case of request website of Uttarakhand (265) has topped the list, followed by Jammu & Kashmir (245), Jharkhand (232), Uttar Pradesh (221) and Himachal Pradesh (188). Based on these above four parameters, following scores are given by Neil Patel’s SEO analyser that is distributed through figure-2 and table-4 (See Appendix-1 in page no. 14).



Figure 2, Traffic Score, SEO Score, Speed Score

It is evident from the table 4 and figure 2 that no single website tops all three categories of ranking. Whereas website of Rajasthan (74) receives highest traffic and is followed by websites of Bihar (66), Puducherry (57), Kerala (52), Gujarat (50) and New Delhi (50). In the list of SEO score Mizoram holds the numero uno status with a score of 85 while websites of Andhra Pradesh, Dadra-Nagar Haveli, Goa and Gujarat (each having SEO score of 84) have done well and those are followed by Jharkhand (83) and Meghalaya(83), Andaman Nicobar (82) and Himachal Pradesh (82), Bihar (81) and Maharashtra (80). Tourism website of Goa (77) has topped the speed score and is followed by Andhra Pradesh (75) and Lakshadweep (72).

Popularity Rank of Websites:

Website popularity ranking is another important indicator which helps to better promotion of a website. Ranking of a website is based on a combined measure of page views and unique site users. Popularity ranking of selected state and union territory tourism websites is described below through the following table.

Table 5: Popularity rank of the websites

	Name of NL Website	URL	Rank by Neilpatel.com	Alexa page rank
1	Andaman & Nicobar	http://www.andamans.gov.in	540 659	542 084
2	Andhra Pradesh	http://www.aptourism.gov.in	297 883	295 770
3	Arunachal Pradesh	http://www.arunachaltourism.com/#0	634 733	632 548
4	Assam	http://www.assamtourisonline.com/	1 016 708	999 550
5	Bihar	http://bstdc.bih.nic.in/	510 2	507 1
6	Chandigarh	http://chandigarhtourism.gov.in	2 055 693	2 010 428
7	Chhattisgarh	http://cgtourism.choice.gov.in/	1 538 149	1 639 904
8	Dadra - Nagar Haveli	http://dnh.nic.in/Tourism/destinations.html	349 868	348 388
9	Daman and Diu	http://www.daman.nic.in/	94,075	93,034
10	Goa	http://www.goatourism.gov.in	693 987	688 678
11	Gujarat	http://www.gujarattourism.com/	180 308	179 652
12	Haryana	http://haryanatourism.gov.in	590 591	588 353
13	Himachal Pradesh	http://hptdc.nic.in	215 888	350 301
14	Jammu and Kashmir	http://www.jktourism.org/	736 325	740 561
15	Jharkhand	http://jharkhandtourism.gov.in/	815 177	815 155
16	Karnataka	http://www.karnatakaturism.org/	1019811	1019811
17	Kerala	http://www.keralaturism.org	95 519	95 658
18	Lakshadweep	http://lakshadweeptourism.com/	870 573	889 273
19	Madhya Pradesh	http://www.mptourism.com	220 226	221 548
20	Maharashtra	http://www.maharashtratourism.gov.in/	208 462	209 608
21	Manipur	http://www.manipur tourism.gov.in/	3 172 761	3 301 065
22	Meghalaya	http://megtourism.gov.in	463 313	454 426
23	Mizoram	https://tourism.mizoram.gov.in	81 595	81 522
24	Nagaland	http://tourismnagaland.com/	1 518 009	1 518 184

25	New Delhi	http://www.delhitourism.gov.in/delhitourism/index.jsp	157 317	157 255
26	Odisha	http://www.odishatourism.gov.in	632 391	632 359
27	Puducherry	http://tourism.puducherry.gov.in/	48 835	48 886
28	Punjab	http://www.punjabtourism.gov.in	811 890	801 902
29	Rajasthan	http://www.tourism.rajasthan.gov.in/	705	712
30	Sikkim	http://www.sikkimtourism.gov.in/	387 186	382 963
31	Tamil Nadu	http://www.tamilnadutourism.org	212 374	212 001
32	Tripura	http://tripuratourism.gov.in	1 100 253	1 102 212
33	Telangana	http://www.telanganatourism.gov.in/	248 071	248 071
34	Uttar Pradesh	http://www.uptourism.gov.in	405 924	405 124
35	Uttarakhand	http://uttarakhandtourism.gov.in/	261 522	263 808
36	West Bengal	http://www.wbtourism.gov.in	573 570	568 637

Above table reflects that, according to popularity test, tourism website of Rajasthan (705 and 712) is the most popular website by Neil Patel's SEO analyser and Alexa. After the website of Rajasthan most popular websites are Bihar (5102 and 5071), Puducherry (48835 and 48886), Mizoram (81595 and 81522) and Kerala (95519 and 95658). This table also shows that there is very little difference between two ranks provided by Neil Patel's SEO analyser and Alexa.

Link Mapping of Sites:

World popular web crawler SocSciBot (<http://socscibot.wlv.ac.uk/>) was used to collect the required data (Christopoulos, 2014) from the India's tourism web sites. The crawler provides some analytical tools and returns the data in a form which can be easily imported in common network analysis programs. The web harvesting was conducted on 25.07.2018-27.07.2018. For Social Network Analysis (SAN) and visualization, the Pajek (De Nooy, 2018) software was used. Pajek allows better diagrams than illustrated in the instructions - including coloured nodes and variable width nodes and arcs. The network diagram showing links between 36 tourism sites covered in this study is given bellow. The figure-3 shows that, Delhi tourism site (delhitourism.gov.in) is linked with maximum tourism sites of India. Delhi tourism site is linked with Maharashtra, Goa, Taminnadu, Rajasthan, Andaman, Gujrat, Chandigarh, Haryana, Bihar and other tourism sites. Haryana tourism site is also linked with Punjab and Jharkhand tourism sites. The states of North East India, Arunachal Pradesh, Meghalay, Nagaland, Tripura, Sikim, Monipur, Assam, Mizoram are connected with each other. So there is a collaborative venture among the states of North East India that leads tourists to discover the natural beauty of eastern India.

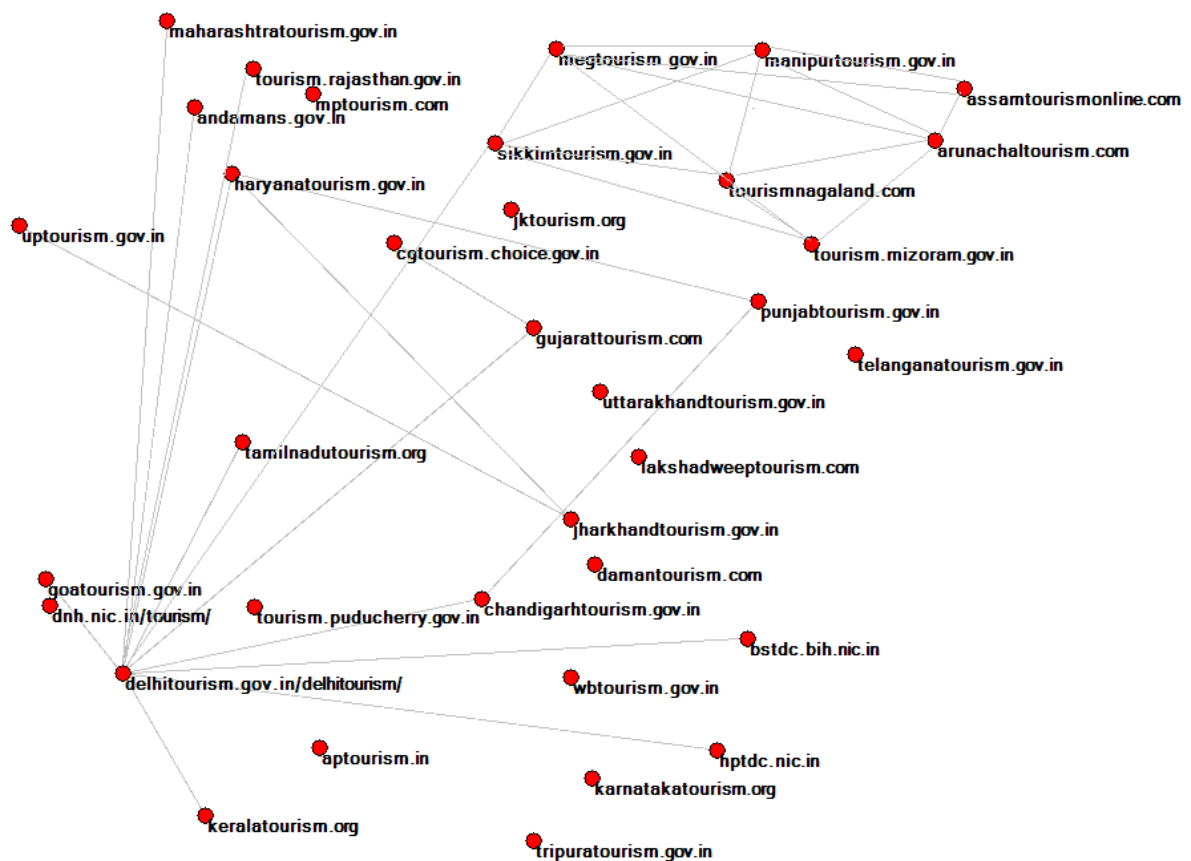


Figure 3, Mapping of Indian Tourism Sites (Pajek)

Conclusion:

All the government tourism sites of India are well designed and structured and maximum websites are hosted by NIC. All the sites have visualized their local festivals, food habits, historical, cultural, geographical information and heritage of the particular State/Union Territory. A few websites are linked with each other. SEO Analyser shows, Rajasthan (6108) has highest number of backlinks and Chhattisgarh has lowest (8) number of backlinks. It is expected that all the tourism sites have large number of images related to site views and other information. So, the page size gets increased likewise. But speed factor is also an issue for a good website. Chhattisgarh has the largest page size with 10 MB with a loading time of 7.62 sec. Dadra-Nagar Haveli (161.8KB) has lowest page size with a loading time of 2.79 sec. Users' satisfactions or dissatisfactions are very much dependent on website's loading time. Assam with a loading time of 0.78 sec and Gujrat with a loading time of 56.57 sec. stand in stark contrast to each other. This maximum

loading time is a cause for dissatisfaction to an eager viewer. Chhattisgarh, Jharkhand, Manipur, West Bengal, Assam, Andhra Pradesh, Tripura and Lakshadweep need to improve backlinks number. North East India is growing in popularity as a tourist destination for its natural beauty in spite of its communication and other infrastructural problems. With the presence of links to App and social sites (like WhatsApp, Facebook, Twitter etc.), virtual reference service (like FAQ), logistics management and security related information only add much to the value of a tourism website.

Webometrics study of tourism sites in India is an unexplored area of webometric research. These findings open the door to further studies of other new areas of the web and for longitudinal studies to chart the changing nature of the way in which communities use the Internet.

Declaration of Conflicting Interests:

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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(Appendix-1)
Table 4: Scores via SEO Analyzer

	Websites	URL	Traffic Score	SEO Score	Speed Score
1	Andaman & Nicobar	http://www.andamans.gov.in	46	82	64
2	Andhra Pradesh	http://www.aptourism.gov.in	49	84	75
3	Arunachal Pradesh	http://www.arunachaltourism.com/#0	45	73	61
4	Assam	http://www.assamtourisonline.com/	40	73	62
5	Bihar	http://bstdc.bih.nic.in/	66	81	56
6	Chandigarh	http://chandigarhtourism.gov.in	39	73	67
7	Chhattisgarh	http://cgtourism.choice.gov.in/	40	64	53
8	Dadra Nagar Haveli	http://dnh.nic.in/Tourism/destinations.html	48	84	64
9	Daman and Diu	http://www.daman.nic.in/	52	80	58
10	Goa	http://www.goatourism.gov.in	45	84	77
11	Gujarat	http://www.gujarattourism.com/	50	84	61
12	Haryana	http://haryanaturism.gov.in	46	67	58
13	Himachal Pradesh	http://hptdc.nic.in	49	82	67
14	Jammu and Kashmir	http://www.jktourism.org/	44	73	53
15	Jharkhand	http://jharkhandtourism.gov.in/	43	83	51
16	Karnataka	http://www.karnatakaturism.org/	40	67	58
17	Kerala	http://www.keralaturism.org	52	73	67
18	Lakshadweep	http://lakshadweeptourism.com/	43	72	72
19	Madhya Pradesh	http://www.mptourism.com	49	75	66
20	Maharashtra	http://www.maharashtratourism.gov.in/	49	80	63
21	Manipur	http://www.manipur tourism.gov.in/	38	69	63
22	Meghalaya	http://megtourism.gov.in	47	83	58
23	Mizoram	https://tourism.mizoram.gov.in	48	85	63
24	Nagaland	http://tourismnagaland.com/	40	74	67
25	New Delhi	http://www.delhitourism.gov.in/delhitourism/index.jsp	50	70	67
26	Odisha	http://www.odishaturism.gov.in	45	69	68
27	Puducherry	http://tourism.puducherry.gov.in/	57	74	60
28	Punjab	http://www.punjabtourism.gov.in	43	78	50
29	Rajasthan	http://www.tourism.rajasthan.gov.in/	74	74	53
30	Sikkim	http://www.sikkimtourism.gov.in/	48	68	65
31	Tamil Nadu	http://www.tamilnadutourism.org	49	71	60
32	Telangana	http://www.telanganaturism.gov.in/	49	65	52
33	Tripura	http://tripuratourism.gov.in	40	72	59
34	Uttar Pradesh	http://www.uptourism.gov.in	47	72	48
35	Uttarakhand	http://uttarakhandtourism.gov.in/	49	63	58
36	West Bengal	http://www.wbtourism.gov.in	46	62	53