Abstract

The purpose of this study is to evaluate the websites of Ministry of Electronics and Information Technology Organizations in India using the Alexa Internet. Alexa Internet is a subsidiary company of Amazon.com which provides commercial web traffic data. It is one of the most well known tools for evaluating websites that offers a free of charge evaluation service. The 16 Meity Organizations in India which have the web presence are included in the study. Each Organizations website was searched in the Alexa Internet and data of gathered, tabulated and visualized with Microsoft excel. The results of the analysis give interesting insights about the organizations websites. Unique Identification Development Authority of India (UIDAI) is the most popular website and in the first position among the entire organizations website. It holds global rank 572, 29th rank in India. National Informatics Centre (NIC) and Education Research Network (ERNET) websites holds the highest bounce rate of 64.5. UIDAI websites holds the highest links of 1154. Among the Meity autonomous bodies National Institute of Electronics and Information Technology (NIELIT) websites holds first rank and overall NIELIT websites holds second rank.

I. INTRODUCTION : IMPORTANCE AND NECESSITY

The websites of the Ministry of Electronics and Information Technology organizations (Meity) in India acts as a communication platform between the Meity Organizations and
the Indian Citizens. To fulfill the Digital India vision of e-development of India as the engine for transition into a developed nation and an empowered society, MEITY organizations websites contribute to promote e-Governance for empowering citizens, promoting the inclusive and sustainable growth of the Electronics, IT & ITeS industries, enhancing India’s role in Internet Governance, adopting a multipronged approach that includes development of human resources, promoting R&D and innovation, enhancing efficiency through digital services and ensuring a secure cyber space. The website’s value added services play a significant role in attaining these organizations’ purpose and existence. A webometric study is conducted to get a better understanding about the Meity organization’s websites using Alexa Internet’s web traffic statistics data.

1.1 Core Objectives of Meity Organizations
  - e-Government: Providing e-infrastructure for delivery of e-services
  - e-Industry: Promotion of electronics hardware manufacturing and IT-ITeS industry
  - e-Innovation / R&D: Implementation of R&D Framework - Enabling creation of Innovation/ R&D Infrastructure in emerging areas of ICT&E/Establishment of mechanism for R&D translation
  - e-Learning: Providing support for development of e-Skills and Knowledge network
  - e-Security: Securing India’s cyber space
  - e-Inclusion: Promoting the use of ICT for more inclusive growth
  - Internet Governance: Enhancing India’s role in Global Platforms of Internet Governance.

1.2 MEITY organizations in India
India comprises of 29 states and 7 Union Territories. In India the Meity Organizations can be categorized as follows
  - Attached Offices
  - Statutory Organization
  - Section 25 Companies
  - Autonomous Society

<table>
<thead>
<tr>
<th>S.N</th>
<th>Organization Category</th>
<th>Organization Name</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Attached Offices</td>
<td>National Informatics Centre (NIC)</td>
<td><a href="http://www.nic.in">http://www.nic.in</a></td>
</tr>
<tr>
<td>2</td>
<td>Attached Offices</td>
<td>Standardization Testing Quality Certification Directorate (STQC)</td>
<td><a href="http://www.stqc.gov.in">http://www.stqc.gov.in</a></td>
</tr>
<tr>
<td>3</td>
<td>Statutory Organization</td>
<td>Controller of Certifying Authorities (CCA)</td>
<td><a href="http://www.cca.gov.in">http://www.cca.gov.in</a></td>
</tr>
<tr>
<td>4</td>
<td>Statutory Organization</td>
<td>Cyber Appellate Tribunal (CyAT)</td>
<td><a href="http://cyatindia.gov.in">http://cyatindia.gov.in</a></td>
</tr>
<tr>
<td>5</td>
<td>Statutory Organization</td>
<td>Indian Computer Emergency Response Time</td>
<td><a href="http://www.cert-in.org.in">http://www.cert-in.org.in</a></td>
</tr>
<tr>
<td>6</td>
<td>Statutory Organization</td>
<td>Unique Identification Development Authority of India (UIDAI)</td>
<td><a href="https://uidai.gov.in">https://uidai.gov.in</a></td>
</tr>
<tr>
<td>No.</td>
<td>Type of Organization</td>
<td>Name of the Organization</td>
<td>Website Link</td>
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</tr>
<tr>
<td>7</td>
<td>Section 25 Companies</td>
<td>Media Lab Asia (MLA)</td>
<td><a href="http://www.medialabasia.in">http://www.medialabasia.in</a></td>
</tr>
<tr>
<td>8</td>
<td>Section 25 Companies</td>
<td>National Informatics Centre Services Inc. (NICSI)</td>
<td><a href="http://www.nicsi.com">http://www.nicsi.com</a></td>
</tr>
<tr>
<td>9</td>
<td>Section 25 Companies</td>
<td>National Internet Exchange of India (NIXI)</td>
<td><a href="http://nixi.in">http://nixi.in</a></td>
</tr>
<tr>
<td>10</td>
<td>Section 25 Companies</td>
<td>.in Registry</td>
<td><a href="https://registry.in/">https://registry.in/</a></td>
</tr>
<tr>
<td>11</td>
<td>Autonomous Society</td>
<td>Centre for Development of Advanced Computing (C-DAC)</td>
<td><a href="https://www.cdac.in">https://www.cdac.in</a></td>
</tr>
<tr>
<td>12</td>
<td>Autonomous Society</td>
<td>Centre for Materials of Electronics Technology (C-MET)</td>
<td><a href="http://cmet.gov.in">http://cmet.gov.in</a></td>
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<tr>
<td>13</td>
<td>Autonomous Society</td>
<td>Education &amp; Research Network (ERNET)</td>
<td><a href="http://www.eis.ernet.in">http://www.eis.ernet.in</a></td>
</tr>
<tr>
<td>14</td>
<td>Autonomous Society</td>
<td>National Institute of Electronics and Information Technology (NIELIT)</td>
<td><a href="http://www.nielit.gov.in">http://www.nielit.gov.in</a></td>
</tr>
<tr>
<td>15</td>
<td>Autonomous Society</td>
<td>Society for Applied Microwave Electronics Engineering &amp; Research (SAMEER)</td>
<td><a href="http://www.sameer.gov.in">http://www.sameer.gov.in</a></td>
</tr>
<tr>
<td>16</td>
<td>Autonomous Society</td>
<td>Software Technology Parks of India (STPI)</td>
<td><a href="https://www.stpi.in">https://www.stpi.in</a></td>
</tr>
</tbody>
</table>

1.3 MEITY Organization Structure
1.4 About Webometrics

Any organization’s website can be used for several purposes, enable the users to get more information of the particular organization. The Websites has now become one of the influenced sources of information on research activities and therefore it is a suitable source to study the webometric methods. Webometrics is defined as the study of quantitative aspects of the construction and use of information resources; structures and technologies on the web, drawing on bibliometric and informetric approaches (Bjorneborn, 2004). A Webometric analysis shows structure, content, features and nature of websites. It also shows the structure of web links to know the virtual highways and their interrelations. Analysis of webpage content is a kind of subject study based on the web site contents. Web link structure study means citation analysis that provides links to other WebPages or websites. It is the study of hyperlinks of a particular website, patterns of linking like internal links, external links etc. Web usage analysis is part of a more general user and usage research. Web technology analysis refers to the information system assessment.

1.5 About Alexa Internet

A ranking system set by alexa.com, a subsidiary of amazon.com, basically audits and makes public the frequency of visits on various Web sites. The algorithm, Alexa traffic ranking is calculated, based on the amount of traffic recorded from users, over a period of three months. This traffic is based on parameters such as reach and page views. The reach refers to the number of Alexa users who visited a particular site in a day. Page view, as its name shows, is the number of times a particular page (URL) is viewed by a user. Alexa.com makes it clear though that, if a particular user visits the same URL multiple times on the same day, all those visits will be counted as one. The least the Alexa traffic rank, the more heavily visited the site (Avangate, 1999). The first step of the ranking process is calculating the reach and number of page views for all the sites on the Web on a daily basis. The Alexa ranking is obtained by performing the geometric mean of reach and page views, averaged over a predefined period of three months.

II. LITERATURE REVIEW

Govindarajan and Dhanavanthan (2017) analyzed about the Ophthalmologist associations in India websites. They found All India Ophthalmic Society (AIOS) is the most popular website and is in the first place among all the associations' website. It holds the global rank of 965269. Chandigarh Ophthalmologist website holds the highest bounce rate of 82.0. Odisha State ophthalmological society website holds the highest time on site 2.16. Chandigarh ophthalmological society website holds the highest links of 177. Stephen and Pramanathan (2016) evaluated Indian IITs websites. Result found most of the IITs websites do not act successfully on the web and need much attention similarly, some high traffic ranking IITs showed weak performance in some of the attributes.
whereas some low traffic ranking IITs performed comparatively better in some of the attributes. The downloading speed and bounce rate of most of the IITs are not satisfactory, which needs to be given due attention as it could increase the number of visitors for the respective IITs and their consequent global reach. Besides administrators of IITs, the results of them study will be useful for web site managers in any field including those in charge of library web sites. Naheem K.T. (2016) examined the 13 Malayalam Newspaper websites. Results of the study shows that, most of the Malayalam newspaper websites do not act successfully on the web and need much attention. Similarly, some high traffic ranking newspaper showed weak performance in some of the attributes whereas some low traffic ranking newspapers performed comparatively better in some of the attributes. The downloading speed and bounce rate of most of the newspapers are not satisfactory, which needs to be given due attention as it could increase the number of visitors for the respective newspapers and their consequent global reach.

III. OBJECTIVES OF THE STUDY

The objective of this study is the evaluation of Ministry of Electronics and Information Technology (Meity) websites in India based on eight Alexa indexes including: traffic rank, pages viewed, speed, links, bounce percentage, time on site, search percentage, Indian and foreign users.

IV. RESEARCH METHODOLOGY

The present study has been done by using webometric methods with the help of Alexa databank, which is known as the most famous tool for evaluating websites. In this research researcher selected eight indexes – i.e. traffic rank, pages viewed, speed, links, bounce percentage, time on site, search percentage, Indian and foreign users. – in order to analyze Meity Organizations websites. The 16 organizations listed in the website of the Meity Organizations (http://meity.gov.in/content/meity-organisations) as taken as a sample for evaluation in the present study. The internet addresses (URLs) of these Meity Organizations were collected from the internet. Using these URLs, each organization's website was searched on 3rd April, 2017 in Alexa website (www.alexa.com) and all the data were obtained by real-time examination according to prearranged evaluation indexes. The data collection process was completed on the same day to decrease possible errors associated with frequent website updates. The downloaded data were further entered into the specially designed Microsoft Excel worksheet. Then data were analyzed and tabulated to relevant findings in accordance with the desired objectives. The list of the Meity Organizations with their URLs, which are coming under the purview of this study, is provided in (Table 2).

<table>
<thead>
<tr>
<th>Traffic Rank</th>
<th>User Percentage</th>
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</table>
5.1 Traffic Rank

The algorithm according to which Alexa traffic ranking is calculated, is simple. It is based on the amount of traffic recorded from users that have the Alexa toolbar installed over a period of three months. This traffic is based on such parameters as reach and page views. The reach refers to the number of Alexa users who visit a particular site in one day. Page view, as its name shows, is the number of times a particular page (URL) is viewed by Alexa users. Alexa.com makes it clear though that, if a particular user visits the same URL multiple times on the same day, all those visits will be counted as one. The first step of the ranking process is calculating the reach and number of page views for all the sites on the Web on a daily basis. The Alexa ranking is obtained by performing the geometric mean of reach and page views, averaged over a predefined period of time (three months). With regard to the attribute traffic rank in India, the best-ranked Meity Organizations are UIDAI and NIELIT with traffic ranks of 29 and 1,792 respectively. The Meity Organizations like, ICERT, CMET, NIXI, CyAT shows high traffic ranks, which reflects their weak performance on this account. Out of the 16 Meity
Organizations, only four have traffic rank of less than 10,000, which projects their good performance in this attribute while compared to others. In the case of Global traffic rank, UIDAI with traffic rank with 572. Except UIDAI no one Meity Organizations have traffic rank less than 1000 from that all are shown very weak performance in this attribute. After UIDAI, NIELIT Traffic rank globally with 25,121.

5.2 Pages View
It is an estimated percentage of global page views. Page views measure the number of pages viewed by site visitors. Multiple page views of the same page made by the same user on the same day are counted only once. The page views per user numbers are the average numbers of unique pages viewed per user per day by the visitors to the site. The three-month change is determined by comparing a site’s current page view numbers with those from pages viewed three months ago, which reflects the average number of pages viewed by users in a certain web site. Page views/user is the estimate of daily unique page views per user (Alexa Internet, 2016).

Concerning to this attribute, CMET has the highest number of average pages viewed by users per day (4.6%), followed by STPI (4.3) and MLA (3.8). The lowest number of average pages viewed is 1.7% for CyAT (Table 2). Except the first three Meity Organizations (CMET, STPI & MLA) all others have shown bad function in this attribute. NIELIT got sixth position in this attitude with 3.12%.

![Figure 3: Pages Viewed](image)

### 5.3 Downloading Speed

Speed is the measure of average load time. Web pages downloading speed that reflects the average time for opening pages of a certain web site (Alexa Internet, 2016).
Figure 4 – Downloading Speed

Regarding the downloading speed, Software Technology Parks in India (STPI) have the highest speed (0.58 Seconds only). NIELIT has the slowest downloading speed of 2.885 seconds followed by C-DAC 2.2884 seconds, CCC 2.852 Seconds, STQC 2.745 seconds. The overall downloading speeds are in the range of 0.58 to 2.2885 seconds (Table-2), which clearly indicate the weak performance of the Meity Organizations websites in this attribute.

5.4 Links

A measure of reputation, which includes a number of web sites connected to a certain web site which shows its popularity. Regarding the number of links that each Meity Organizations website has received, UIDAI has received the highest number of links (1154), which is considerably different from other Meity Organizations. This organizations has covered a various range of web links like aadhar enrolment, aadhar service, aadhar act, UIDAI authority, Testing certification, academics, research, Tender, Carrier, Internal links which has probably made it much more popular than others. This site linking leading websites of world like Stock overflow, bbc.co.UK, BBC, New York times, stock exchange etc. C-DAC with 988 links occupied second place followed by NIELIT 671 links. ERNET has no links is the last in the queue. Majority of the Meity websites have less than five hundred links shows their poor performance in this attribute.

Figure 5 - Links

5.5 Bounce Percentage

Estimated percentage of visits that consist of a single page view called bounce rate. UIDAI has the lowest bounce percentage (31) followed by NICSI with (34.7) and C-DAC (36.8). Education Research Network (ERNET) and National Informatics Centre
Dr. G. Stephen :: Webometric Analysis of Ministry of Electronics and Information Technology Organizations Websites in India

(NIC) shows the high rate of bounce percentage (64.5) shows its weak performance. The higher bounce rate in most of the Meity Organizations websites indicates their weak performance in this attribute.

![Bounce Rate Chart]

**5.6 Time on site**

According to Alexa internet Estimated daily time on site (mm:ss) method. The estimated daily time spent on site by the visitors is highest for STPI (11:20), UIDAI occupies second place with (9:41) followed by C-DAC (5:30) and the lowest in this category is for CyAT (1:09). The time spent on the rest of the sites is in the range of 1:09-11:20.
5.7 Search Percentage

Estimated percentage of visits that came from a search engine. The highest percentage of visits that came from search engines is for National Informatics Centre Services Inc (NICSI) with (35.3) and the lowest is (7.9) for Software Technology Parks in India (STPI).

5.8 Audience Geography
The table 2 shows the data on Indian and foreign users. Most of the foreign users to Meity Organizations websites are come from USA and other countries. Only Two Meity Organizations websites are used by majority foreign users. First one is CMET (22.4%) and secondly .in Registry (21.8%). It is inferred from this results that migrated Indians, foreign scientists and academicians who are especially involving the material of electronic technology still interested to know the CMET activity news through the websites of Meity Organizations. For the purpose of getting domain name 6.7% of the USA users visited .in Registry website.

VI. CONCLUSION
The results reveal that global traffic ranks, number of page views, number of links and time on site of Meity organizations is low. However, the page ranks are to some extent satisfactory. The traffic ranks of Meity organizations differ significantly, whereas no major difference in the page ranks is found. Further, the results show that Meity organizations’ websites have not been able to attract foreign visitors given the caliber and reputation of these Organizations because Meity completely serve to Indian citizens. Originality/value. The results of this study will be useful for website administrators of Meity Organizations in India and other organizations. The study helps the webmaster and the respective Meity organizations to improvise the usability of websites. The present study has been exploratory and there is possibility to future research in this area. This study gives an overall preview of the traffic and page ranks of Meity organizations of India websites. Based on this present study, there is an opportunity for forthcoming studies in this area. This study could be continuing further by compare other ministry organizations or autonomous bodies within the particular geographical coverage. Like the global rank, the Alexa Traffic Rank within country also could be calculating in future .It is pertinent therefore, for those Meity organizations that are not highly visible and accessible to take the necessary steps to improve the development of their websites. Hopefully by taking these measures it would help the Meity organizations in their drive to be the best among their contemporaries.

VII. REFERENCES


PAPER CITATION

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