

**INFORMATION ARCHITECTURE ANALYSIS AND  
WEBOMETRIC EVALUATION OF CENTRAL GOVERNMENT  
MINISTRIES' AND DEPARTMENTAL WEBSITES OF INDIA**

*A Thesis*

*Submitted towards the requirement for the award of degree of  
Doctor of Philosophy*

**In**

**Library and Information Science  
Under the faculty of Arts**

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## **Preface**

With the coming of Internet and Information and Communication Technology (ICT), it has gotten basic for each administration body to have a site. By having a site, an administration body can have most extreme effect over countless individuals utilizing least assets and time. Consequently, it is fundamental for the administration to have their very own effective site. Aside from this, a site permits an administration body to unite all its data, regardless of whether its sub-bodies are put at topographically scattered spots. Subsequently, incorporation of ICT inside government bodies can realize advancement of government itself. (Walia & Kaur, 2010)

On the world stage it has been a tendency to grow the transparency of government, online public services development, as well as e-participation tools for citizens and business engagement in decision making. In this regard, it is urgent to develop substantial strategies to gauge the development in this area.

Governments over the world make data accessible through various channels to residents to make a dimension of straightforwardness, to speak to responsibility and to bring to the consideration of the overall population about their accomplishments. Natives utilize this data to settle on choices in regards to the dimension of certainty and achievement of governments. Also, such data enables the residents to settle on decisions notwithstanding gaining them mindful of the ground made in various zones. Government data, for example, acts, strategies and plans are critical to natives. With the improvement of World Wide Web, governments can saddle the rich capability of the web, and reach to the residents.

India has been dependably a leader in receiving innovation in administration. Since the start with a functioning help from National Informatics Center numerous services and offices have been giving data and administrations to residents. Central and state level Governments are effectively occupied with structure e-administration stages for the residents. Every now and then the legislature of India has additionally encircled numerous strategies as a piece of encouraging e-administration. A noteworthy strategy detailed as Information Technology Act 2000, a milestone improvement in IT approach in India. As of late, the advanced India activity centers not just around giving data and administrations through an e-administration stage to make it accessible to the residents the nation over (Chand & Ramesha 2017).

The Government of India directory provides a list of 52 ministries, 2 independent departments, and 52 departments. 192 Attached/Subordinated Offices, 567 Statutory/Autonomous bodies, 41 Commissions/Committees and so on. Through these websites the Government of India provides the facility of disseminating information to citizens. The examination of these websites allows audience to understand the service of information dissemination.

This study has examined 44 central government ministries and 38 departmental websites of India. It Investigates different components of information architecture (i.e. organization system, labeling system, navigation system, search system) of the existing government ministries' and departmental websites of India; it also analyzes domain systems of the websites, the number of webpages and link pages and calculate the simple web impact factor, self-link web impact factor, external link web impact factor of central government websites' of India and rank the websites according to the scores under web impact factors.

### **Organization of chapters:**

All the information in the thesis have been presented into seven chapters:-

**Chapter 1: Information Architecture: An Overview** This chapter gives detail about the concept of website information architecture, different information architectural components like organization system, navigation system, labeling system and search system. Some invisible components of information architecture have also been described in this chapter.

**Chapter 2: Webometrics: Terminologies and Tools**, discusses on webometrics, link analysis, some important link terminologies, web impact factor, different webometric tools etc.

**Chapter 3: Review of Related Literature, Statement of the Problem and Research Questions**

It looks at a review of related literature that has been conceptually categorized under a number of areas or headings. It also covers statement of the problem and important research questions of the selected research topic.

**Chapter 4: Objective, Scope and Limitation, Methodology of the Study**, it explains objectives, scope and limitation, methodology and significance of the study.

**Chapter 5: Central Government Ministries and Departments: A Brief Overview**, This chapter provides a brief overview of the selected central government ministries and ministries' departments of India under study.

**Chapter 6: Observation and Analysis**, focuses on the observation and analysis of information architectural data and various webometric data collected from the relevant websites by using different components of information architecture and webometric indicators, tools etc.

**Chapter 7: Findings and Conclusion** deals with major findings of the study divided in different sections, execution of objectives, important suggestions, future scope of the research and conclusion.

Chapter reference has been presented at the end of each chapter. A list of bibliography is provided at the end of all chapters, it comprises a total list of all the sources used in this study. The section, appendices contain published journal articles related to the research topic and it is included at the end of the thesis.

## Acknowledgement

I would like to express my deep sense of gratitude and sincere respect to my teacher and research supervisor, Dr. Sunil Kumar Chatterjee, Professor, Department of Library and Information Science, Jadavpur University for his continuous support, motivation, suggestions and care till the completion of the research work. His steady direction and insightful advice were invaluable to me while I worked on my research work and writing of thesis. I could not have prepared this research project without his tender care. I am also indebted to Dr. Shiv Shakti Ghosh, Librarian, Surendranath College for Women, Kolkata for the careful support, assistance and suggestions which I have received from him time to time.

I also want to acknowledge my departmental teachers, Prof. Udayan Bhattacharya, Prof. Gautam Maity and Prof. Subarna Kumar Das for their cooperation and advice throughout this project. I must want to convey thanks to the departmental librarian, Ananda Kumar Saha and other staff members of the department for their regular assistance. I am also thankful to the members of Research Advisory Committee and members of Ph.D. Cell, Jadavpur University for their careful help and assistance. My deep gratitude goes to my parents and sister for their continuous support and loving care which I have received throughout the entire work.

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## **Abstract**

It is very much difficult to organize resources which are available online through digital mediums. Day by day, the amount of these resources is increasing very rapidly. Organization of information resources is essential in a digital space where information are provided for the targeted audience. Information architecture is an important tool for arranging those resources so that people can understand and access the information provided in any digital information space with least effort and time. In this study, several components of website information architecture are utilized for analyzing the existing information architecture of the selected central government ministries' and departmental websites of India. In addition with that, this study has also made an endeavor to analyze and evaluate the concerned websites by utilizing different webometric indicators: analysis of domain name, calculating web impact factors (simple, external and self), retrieving domain authority, page authority and page rank of the respective websites, website link mapping etc. Web-based survey and observation techniques have been used in this study for the collection of data from different websites. Some selected online tools and techniques are used to retrieve data from the websites under study. The collected data have been structured in multiple tables and figures for analysis and evaluation. The search engine, Google has been used in this study for the collection of relevant data from the concerned websites. Results of the study highlight that maximum number of the selected ministries' and departmental websites present error in their content organization or navigation system. Chronological arrangement has been found in almost all of the concerned websites. Geographical scheme has not been adopted by most of the websites under study. Global and local navigation systems have been followed by all of the selected websites. All the ministries' websites are in a good and satisfactory situation under labeling system. Metaphor driven scheme has not been found in any of the chosen websites under study. According to domain name extension, maximum number of websites carry gov.in domain. The website of Ministry of Corporate Affairs (MoCRA) occupies 1<sup>st</sup> rank under simple and self-link WIFs. The topmost score has been attained by the website of Ministry of Railways (MoR) under domain authority, page authority and page rank. The website of Department of Food and Public Distribution (DoFPD) holds the highest rank under simple, external and self-link WIFs. Most of the websites are not linked with each other for information sharing through their websites. Therefore, the current study provides a clear-cut picture of website information architecture. The study also illustrates the visibility, performance and link quality of the concerned websites. In the

concluding lines it can be said that, this work of research will pave the way for new approaches to the analyses of website information architecture. The outcome of this study will aid in the diagnosis of the issues and point future research in the direction of webometric analyses and evaluation.

**Keywords:** Information Architecture, Webometrics, Web Impact Factor, Central Government Ministries and Departments, websites

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Appendix B: Departmental websites of central government ministries of India: a webometric study

# Chapter 1

## Information Architecture: An Overview

### 1.0 Introduction

The organization of resources becomes an important problem in a digital environment that is getting more and more sophisticated. 'Information overload' is a term used to describe the problems resulting from the incredible amount of information. Kirsh (2000) clarified that the problem of information overload is not simply caused by the increase of information amount but by other factors like the increased number of decisions of knowledge workers, the need of multi-tasking, the increased frequency of interruptions, the need of time efficiency and the insufficiency of adequate work environments. Here comes the necessity of information architecture for organization of information content in any public information space like a website.

### 1.1 Information architecture (IA)

In an increasingly complex digital environment, organization of resources becomes a critical issue. So, information architecture is necessary for organization of information content in a website. It is "the structural design of shared information environments; combination of organization, labeling, search and navigation systems within web sites and intranets, in other words it can be said that information architecture is the art and science of shaping information products and experiences to support usability and findability". The phrase "web information architecture" is used to describe both the process and the result of information design (Morville & Rosenfeld, 2006). Information architects integrate information through grouping, creating hierarchies, and establishing relationships to organize the content of entire sites (Smith & Newell, 2004).

IA development for websites is often defined as the process of organizing the website's structure and content, labelling, categorizing, and indexing material, and creating a navigation system to make it easier "to browse and search for information" (Isa, Noor & Mehad, 2006). Three important things are needed for designing a good information architecture: people, content and context (Spencer, 2010).

## **1.2 Elements of information architecture**

Three important elements of IA have been discussed in a study by Josh Knauer (2007); these are: usability, flexibility and data liquidity. According to that study, usability means how information is used to serve day-to-day information demand. Flexibility is another crucial element of IA. It denotes a system that must be extensible to different platforms and requirements. The liquidity of data identifies a system where data can enter from any existing data management system and exit in any format or interface that is required.

## **1.3 Website information architecture: components**

A component of an information system that brings users closer to the content is known as an IA component (Jain, 2016). The concept of information architecture of website can be described through different components.

### **1.3.1 Organization system**

Organization system can be defined as the system or policy which is used to organize the information so that people can easily understand and use it. A good organization system assists targeted audience to find their needed information or query. The organization of information in websites is a major factor for achieving success of those organizations, institutions or ministries under which different websites are generated (Morville & Rosenfeld, 2006).

#### **1.3.1.1 Organization scheme**

Organization systems are comprised of two components, organization schemes and organization structures. An organization scheme describes the shared characteristics of content items and influences the logical grouping of those items. An organization structure defines the kinds of relationships between content items and groups. Both organization schemes and structures have a significant impact in any information space for finding and understanding information easily. In the context of website development, organization system is closely related to navigation, labeling and indexing (Morville & Rosenfeld, 2006).



**Figure 1: Content is unavailable under the heading ‘Training & Programs’ in the website of MoWCD**

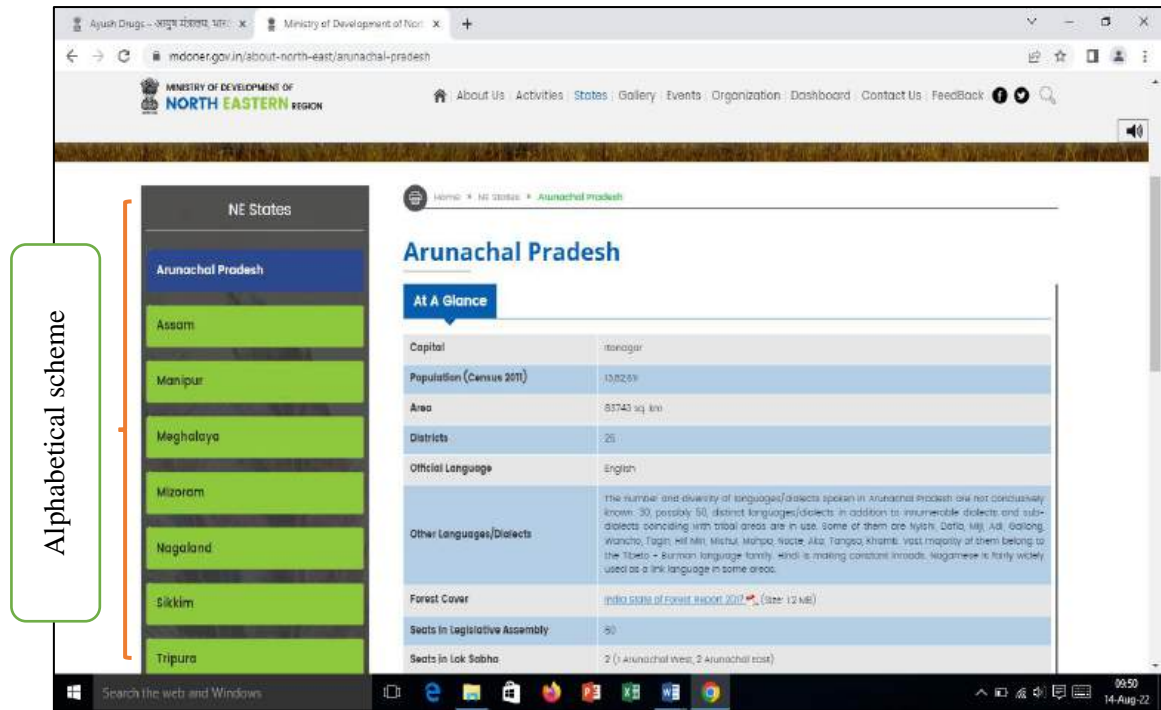
Websites’ hierarchical organization structures often play the part of primary navigation system. The levels of categories play an important role in describing the contents of those categories. Manual indexing or metadata tagging is a tool for organizing content items into groups at a very detailed level. There are two types of organization scheme: exact organization scheme and ambiguous or subjective organization scheme (Morville & Rosenfeld, 2006).

#### **1.3.1.1.1 Exact organization scheme**

Exact or objective organization schemes categorize information into distinct and mutually exclusive sections. “These schemes are relatively easy to design and maintain because there is little intellectual work involved in assigning items to categories”. They are also easy to use. Exact organization schemes include, alphabetical, chronological and geographical schemes (Morville & Rosenfeld, 2006).

##### **1.3.1.1.1.1 Alphabetical scheme**

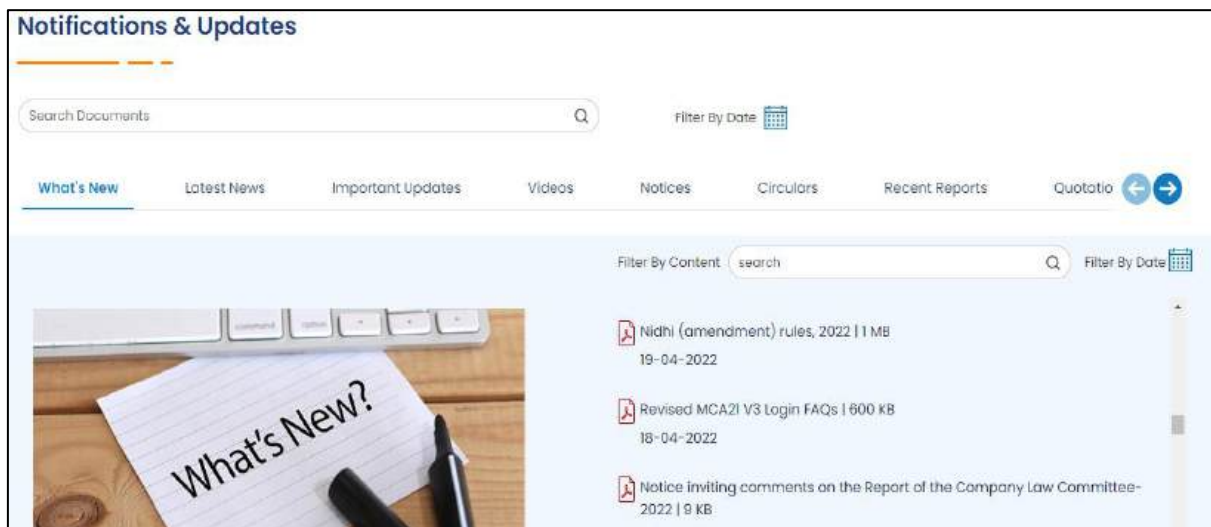
An alphabetical scheme is the scheme for constructing encyclopedias and dictionaries. “Phone books, department-store directories, bookstores and libraries all make use of 26-letter alphabet for organizing their contents. This type of organization scheme often serves as an umbrella for other organization schemes”. Information can be organized alphabetically by last name, by product or service, by department, by format etc. (Morville & Rosenfeld, 2006).



**Figure 2: Alphabetical scheme (by name of states) presented on the website of MoDNER**

### 1.3.1.1.2 Chronological scheme

The organization of information can be done according to chronology (by date or by time). For instance, an archive of press releases might be arranged chronologically based on the date of release. History books, magazine archives, diaries and television guides tend to be organized chronologically (Morville & Rosenfeld, 2006).



**Figure 3: 'What's New' section in Ministry of Corporate Affairs (topics are arranged in chronological order)**

### 1.3.1.1.3 Geographical scheme

For making geographical organization scheme place plays a vital role. We care about news and each and every news is too much influenced by place or location. Social, political and economic issues are frequently location-dependent. Companies like Google and Yahoo are working and investing heavily in local search and directory services (Morville & Rosenfeld, 2006).



**Figure 4: Geographical organization scheme in Ministry of External Affairs**

### 1.3.1.1.2 Ambiguous organization schemes

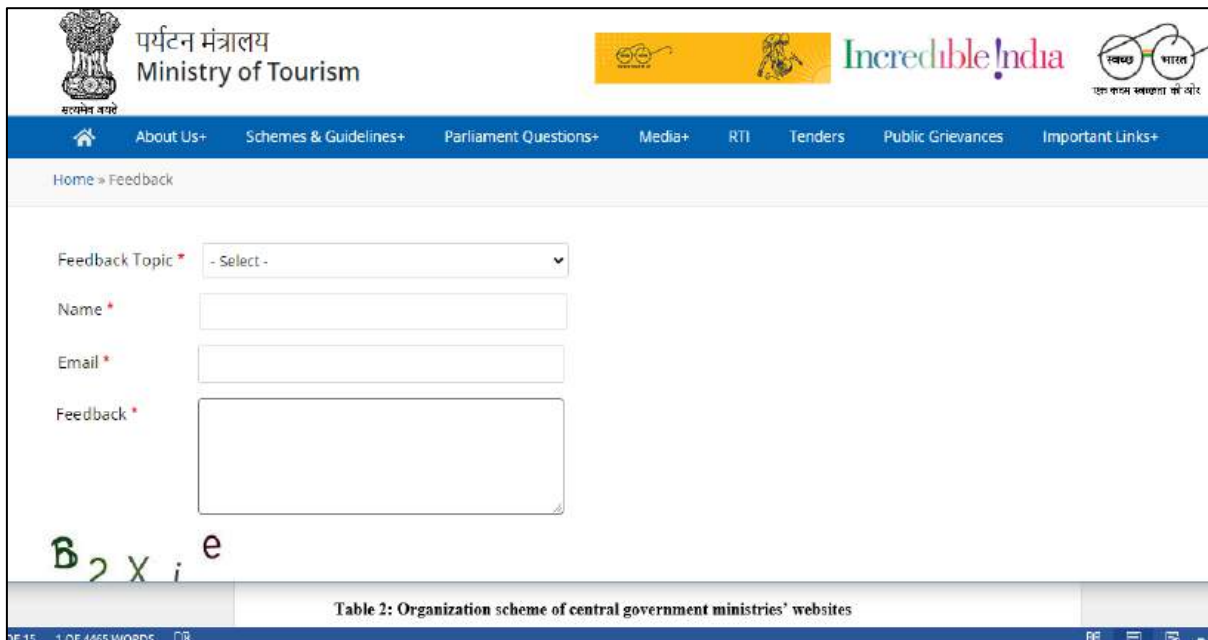
Ambiguous or subjective organization schemes are mired in the ambiguity of language and organization. These are difficult to design and maintain and also can be difficult to use. “This type of organization schemes are often more important and useful than exact organization schemes.” Ambiguous organization schemes include topic-wise, task-oriented and audience-specific schemes (Morville & Rosenfeld, 2006).

#### 1.3.1.1.2.1 Topic-wise organization scheme

In topic-wise organization scheme information is organized by subject or topic which is a useful and challenging approach. Academic courses and departments, newspapers and the chapters of most nonfiction books follow topical scheme for organizing their content (Morville & Rosenfeld, 2006).

### 1.3.1.1.2.2 Task-oriented scheme

Task-oriented schemes are implemented for the purpose of organizing “content and applications into a collection of processes, functions or tasks. These schemes are appropriate when a limited number of high-priority tasks” are connected and users will want to perform those tasks. These tasks are organized under task-oriented menus like – edit, insert and format. “On the web, task-oriented schemes are found mostly in the context of e-commerce web sites where customer interaction takes center stage” (Morville & Rosenfeld, 2006).

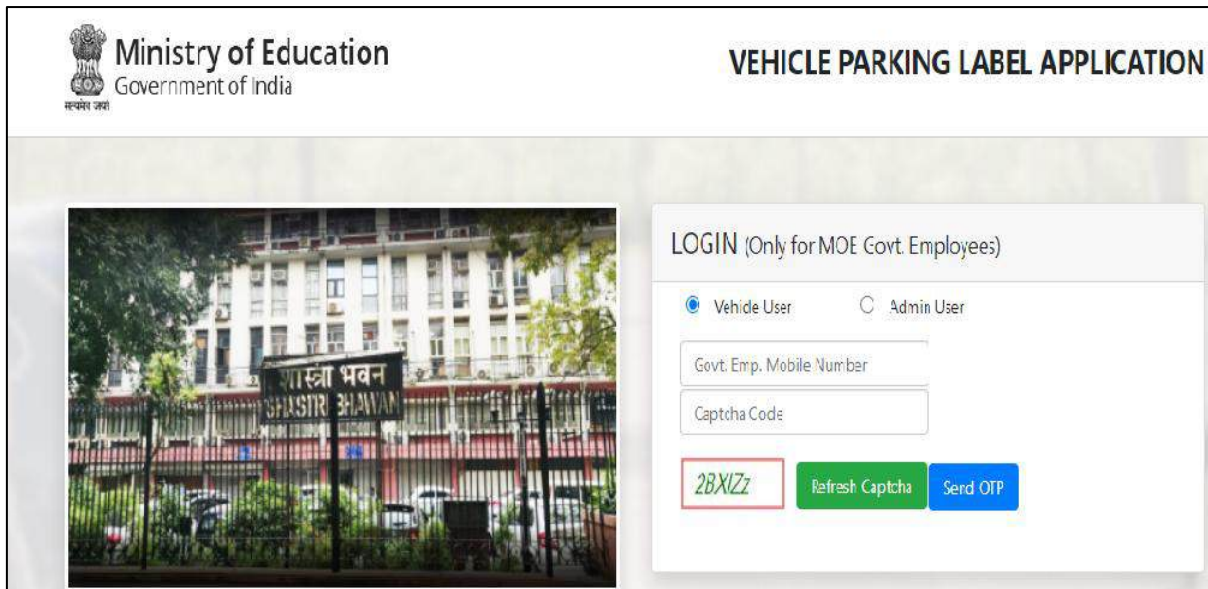


The screenshot shows the 'Feedback' page of the Ministry of Tourism website. The header includes the Ministry of Tourism logo and name in Hindi and English, along with the 'Incredible India' logo and the slogan 'एक काम स्वच्छता का जोर'. The navigation menu contains links for 'About Us+', 'Schemes & Guidelines+', 'Parliament Questions+', 'Media+', 'RTI', 'Tenders', 'Public Grievances', and 'Important Links+'. The main content area features a feedback form with the following fields: 'Feedback Topic' (a dropdown menu currently showing '- Select -'), 'Name', 'Email', and 'Feedback' (a large text area). A CAPTCHA challenge 'B 2 X i e' is visible below the form. At the bottom of the page, a caption reads 'Table 2: Organization scheme of central government ministries' websites'.

**Figure 5: Task-oriented scheme in Ministry of External Affairs**

### 1.3.1.1.2.3 Audience-specific scheme

An audience-specific organization scheme occurs in that cases where there are two or more clearly identifiable audiences for a website or Intranet. In this special type of scheme, the personal feelings, experience and opinions of a group of specific audience is considered. For instance, in the main page of dell.com, Dell realizes a great deal about its audience segments and fetches this knowledge to bear on its website (Morville & Rosenfeld, 2006).



**Figure 6: Separate log-in page for MOE Govt. Employees; ‘by audience’ organization scheme in Ministry of Education**

#### **1.3.1.1.2.4 Metaphor-driven scheme**

Metaphors are generally used to assist users understand the new or unknown thing by relating it to the known one. Metaphor driven scheme can help users for understanding the content easily by applying metaphors in an interface. Example: the games area of Teletubbies (TV Series) is organized according to the metaphor of a physical place, populated by creatures and objects (Morville & Rosenfeld, 2006).

#### **1.3.1.1.3 Hybrid scheme**

An exact organization scheme bears the ability to suggest a simple mental model that users can quickly understand. It is easy to identify an audience-specific or topical organization scheme. It can be applied to large amounts of content without losing their integrity and usability features. Confusion arises when we try to blend elements of multiple schemes. This hybrid scheme may contain elements of audience-specific, topical, metaphor-based, task-oriented and alphabetical organization schemes. It is difficult to form a mental model because all elements are mixed together. Audience need to skim through each menu item to find the option they are looking for. Example: Stanford University home page (Morville & Rosenfeld, 2006).

#### **1.3.1.2 Organization structures**

Organization structure is the combination of rules and guidelines which play an important role in the design of websites. It based on the structure of information which provides primary ways

to navigate easily throughout the website. Notable organization structures that can be applied to website and intranet architectures include the hierarchy or top-down approach, database-oriented model or bottom-up approach and hypertext model (Morville & Rosenfeld, 2006).

### 1.3.1.2.1 The hierarchy: a top-down approach

A well-designed hierarchy or taxonomy is the foundation of all good information architectures. Hierarchies provide a simple and familiar way to organize information. The top-down approach allows to quickly get a handle on the scope of the website without going through an extensive content-inventory process. Example: the hierarchy of parent-child relationships are simple and familiar. Organization charts are usually hierarchical. Dividing books into chapters into sections into paragraphs into sentences into words into letters. Thus hierarchy is ubiquitous in our lives and builds our understanding of the world in a profound and meaningful way (Morville & Rosenfeld, 2006).



**Figure 7: Hierarchical organization structure in the website of Ministry of Women & Child Development**

### 1.3.1.2.2 The database model: a bottom-up approach

A database is defined as “a collection of data arranged for ease and speed of search and retrieval.” In relational database structures, data is stored within a set of relations or tables. Rows in the tables represent records, and columns represent fields. Data in different tables may be linked through a series of keys (Morville & Rosenfeld, 2006).

The screenshot shows the official website of the Ministry of Health & Family Welfare. The header includes the ministry's name in Hindi and English, along with a logo and a banner for COVID-19 information. A navigation menu is visible below the header. The main content area is titled 'WHO'S WHO' and contains a search form with three input fields: 'Name', 'Designation (field\_designation)', and 'Email Address'. The 'Designation' field is currently set to '- Any -'. There are 'Apply' and 'Reset' buttons to the right of the form.

**Figure 8: Presence of Staff directory; Bottom-up structure of Ministry of Health & Family Welfare**

Metadata serves as the primary identifier that links architecture of information to the design of database schema. By tagging documents and other information objects with controlled vocabulary metadata, we enable powerful searching, browsing, filtering and dynamic linking. An information architect need to understand how metadata, controlled vocabularies and database structures can be used to enable —

- Automatic generation of alphabetical indexes (e.g. product index)
- Dynamic presentation of associative “see also” links.
- Fielded searching
- Advanced filtering and sorting of search results.

The database model is proved to be useful when it is applied within relatively homogeneous subsites such as product catalogs and staff directories (Morville & Rosenfeld, 2006).

### 1.3.1.2.3 Hypertext

Hypertext, a relatively modern phenomenon is a highly nonlinear approach for organizing information. In a hypertext system, two primary types of components exist: a) the items or chunks of information that will be linked, and b) the links between those items or chunks. These components can build hypermedia systems that connect text, data, image, video and audio chunks. Hypertext chunks have the capacity to be connected hierarchically, non-hierarchically

or even both. In hypertext system, items or content chunks are connected through links by following a loose web of relationships (Morville & Rosenfeld, 2006).

### **1.3.2 Labeling system**

Labeling is a form of representation. The objective of a label is to effectively communicate information that means, to convey meaning without consuming too much of a page's vertical space or the cognitive space of a user. An appropriate label educates user about new concepts and help them to quickly identify familiar ones.

Labels can be of two types: - textual and iconic. Textual labels include –

- Contextual links
- Headings
- Navigation system choices
- Index terms (Morville & Rosenfeld, 2006).

**1.3.2.1 Labels as contextual links:** in some cases labels represent the hypertext links within the body of a document or chunk of information which occur within the descriptive context of their surrounding text (Morville & Rosenfeld, 2006).

**1.3.2.2 Labels as heading:** labels are often used as headings that describe the chunk of information that follows. These headings often help to establish hierarchy within a text (Morville & Rosenfeld, 2006).

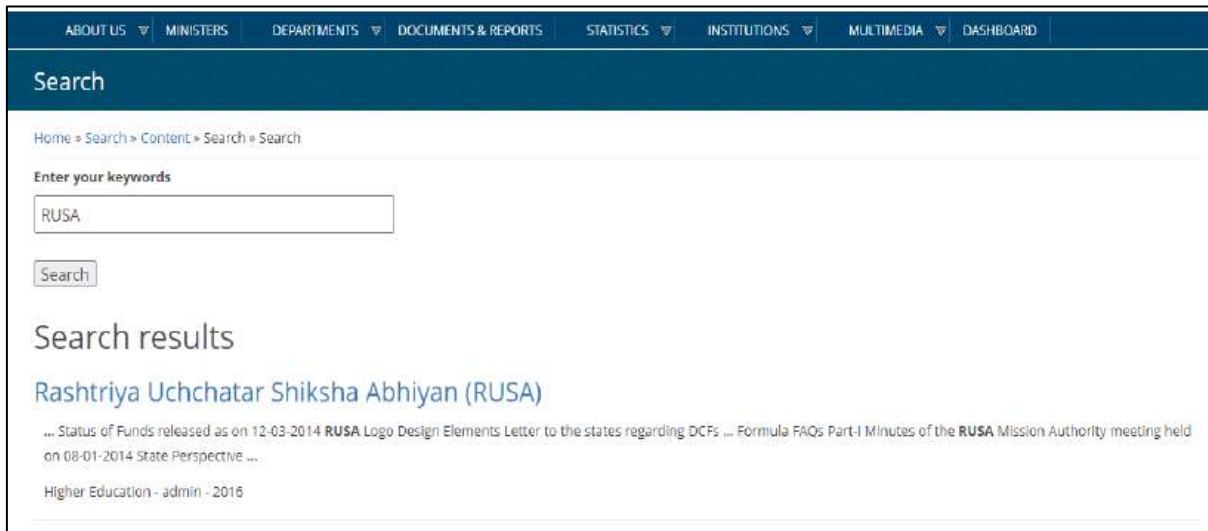
In a book, headings help to distinguish chapters from sections, in this way, a hierarchy helps to determine a site's subsites, or makes difference between categories and subcategories. The hierarchical relationship between headings are usually formed visually through consistent use of numbering, font sizes, colors, styles, indentation etc. (Morville & Rosenfeld, 2006).

**1.3.2.3 Labels within navigation systems:** labels may be occurred as options in navigation system. In that case users can navigate from one page to another by clicking the appropriate label. The majority of web users are already familiar with these labels. These labels may be appeared like –

News> News & Events> News & Announcements> Announcements.

(Morville & Rosenfeld, 2006).

**1.3.2.4 Labels as index terms:** labels may be represented as keywords, tags, descriptive metadata, taxonomies, controlled vocabularies and thesauri, sets of index term etc. These kind of labels can be used to describe any type of content: sites, subsites, pages, content chunks and so on. For representing the meaning of a piece of content, index terms support more precise searching than normally searching the full text of content. Sometimes index terms are not visible; in that cases, search result shows the topics of the preferred index term without presenting the term itself (Morville & Rosenfeld, 2006).



**Figure 9: Index term as textual label in the website of Ministry of Education**

**1.3.2.5 Iconic labels:** icons can represent information in the same way as text can. These icons can be used as navigation system labels. Icons occasionally serve as heading labels link labels etc. Iconic labels constitute a much more limited language than text – this is the main problem with iconic labels. Iconic labels are relatively difficult to create and are often ambiguous than textual labels (Morville & Rosenfeld, 2006).



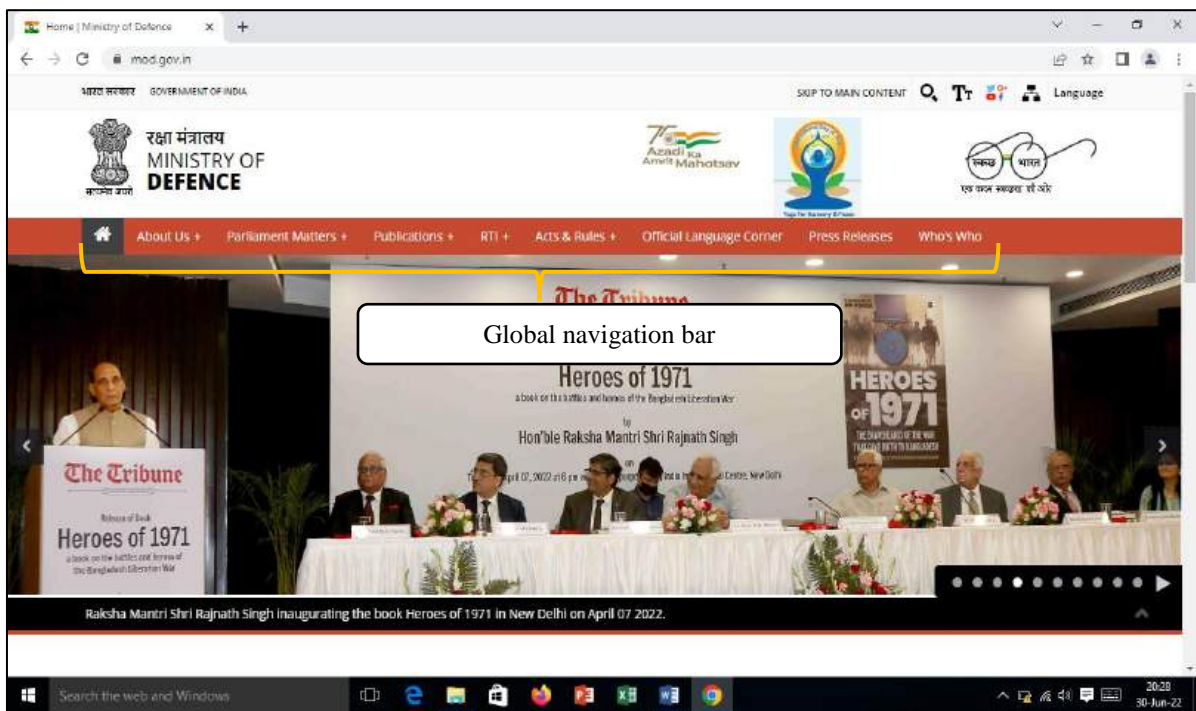
**Figure 10: Iconographic label in Ministry of Labour & Employment**

### 1.3.3 Navigation system

Navigation system allows to navigate one location to another. Developed navigation tools prevent us from getting lost and assist us to find our way for reaching home.

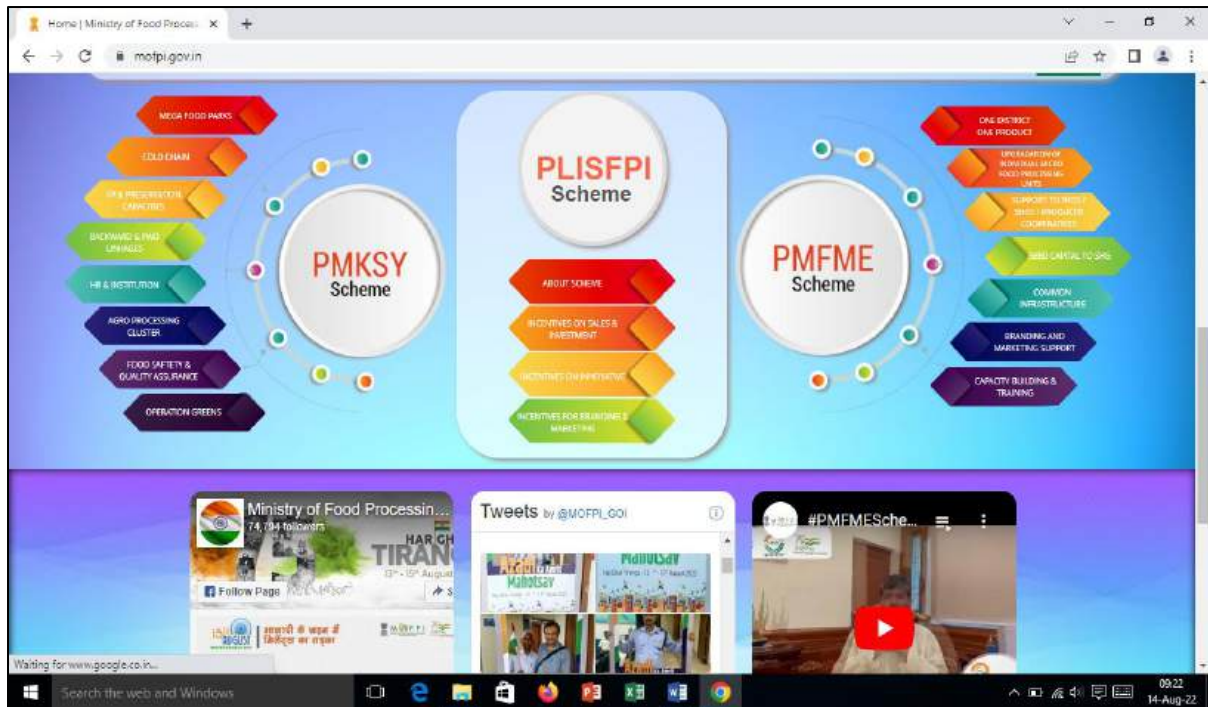
Navigation system comprises two basic subsystems – embedded navigation systems and supplemental navigation systems. Main parts of embedded navigation systems are:- global navigation, local navigation and contextual navigation. Supplemental navigation systems are composed of elements like – sitemaps, indexes and guides that exist outside the content-bearing pages (Morville & Rosenfeld, 2006).

**1.3.3.1 Global (site-wide) navigation system:** global, local and contextual navigation are extremely familiar on the web environment. This is the primary intention to present a global navigation system on every page throughout a site. It is commonly implemented in the form of a navigation bar at the top of each page. These global or site-wide navigation systems allow direct access to key areas and functions. They have a huge impact on usability. Global navigation bars appear in all shapes and sizes. Most of them provide links to the home page and search function (Morville & Rosenfeld, 2006).



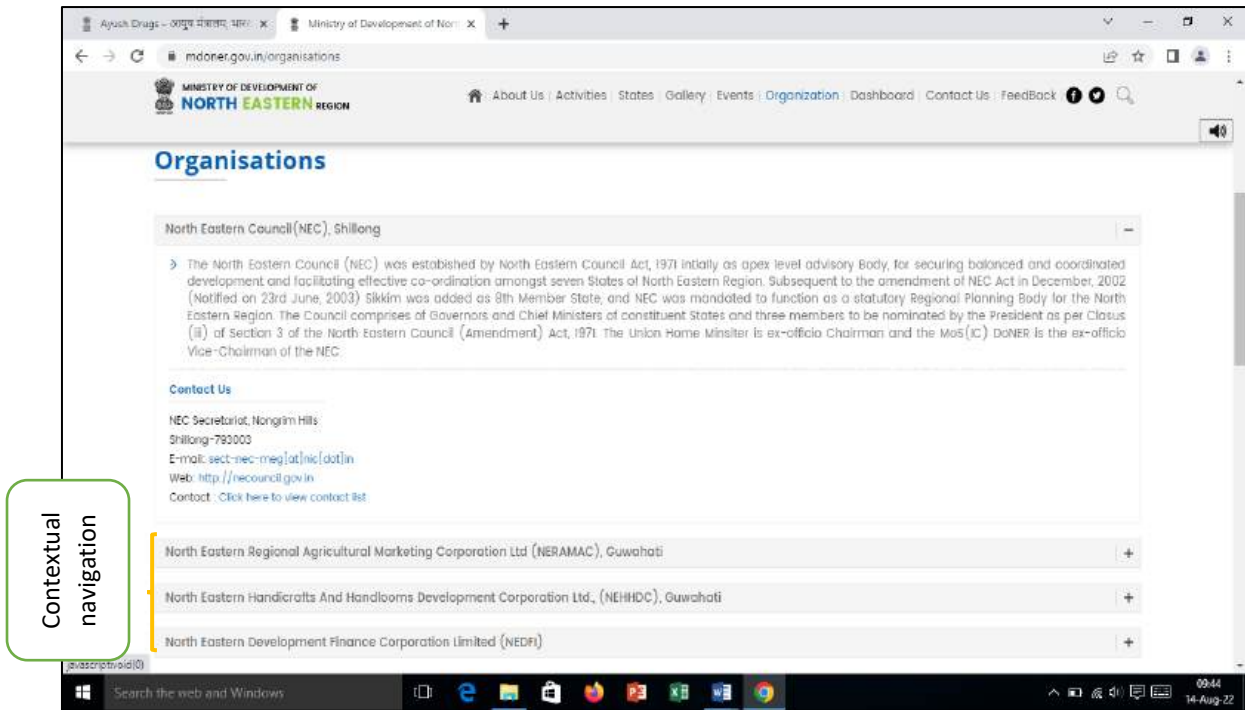
**Figure 11: Global navigation bar in the website of Ministry of Defence**

**1.3.3.2 Local navigation system:** global navigation system is complemented by one or more local navigation systems in websites that enable users to explore the immediate area. In most websites global and local navigation systems are integrated for providing better access to the target audience. Local navigation system usually deals with local content (Morville & Rosenfeld, 2006).



**Figure 12: Local navigation system in the website of Ministry of Food Processing Industries**

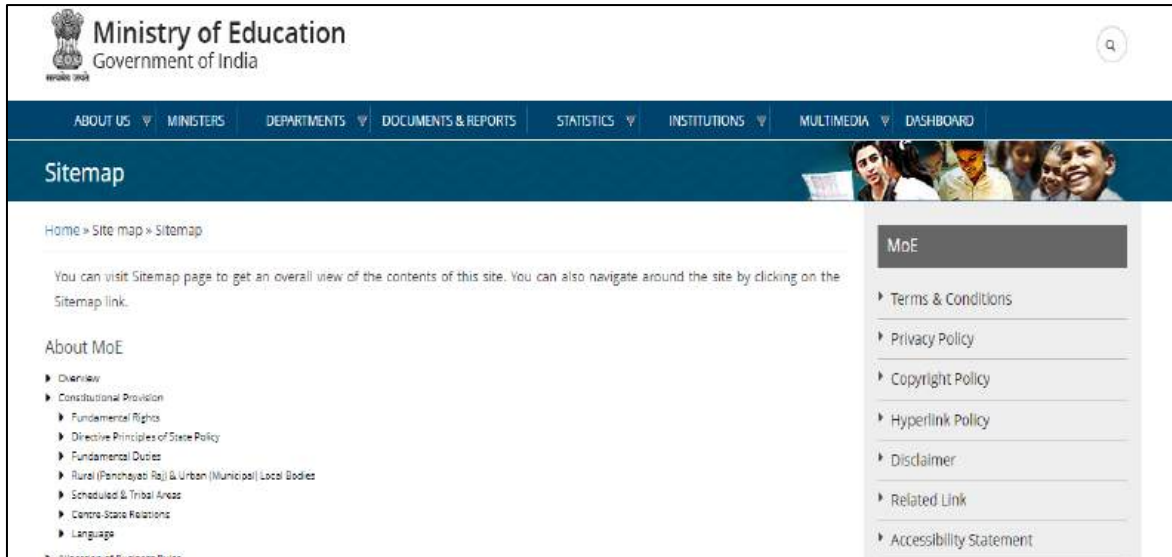
**1.3.3.3 Contextual navigation:** links for contextual navigation specific to a particular page, document or item. This type of link points to page or pages which provide details of the specific term or topic. The content in Wikipedia is the best example for providing contextual navigation links. This system supports associative learning. We can also mention “see also” links on an e-commerce site which point users to related products and services. On an educational site, they might point to similar articles or related topics (Morville & Rosenfeld, 2006).



**Figure 13: Contextual navigation can be found from the website of MoDNER**

**1.3.3.4 Supplemental navigation system:** supplemental navigation systems are mainly composed of three elements: sitemap, index and guide. These provide complementary ways of finding content and completing tasks (Morville & Rosenfeld, 2006).

**1.3.3.4.1 Sitemaps:** a typical sitemap shows the top few levels of information hierarchy. It provides a broad view of the content in the website and facilitates random access to segmented portions of that content. Sitemap provides a birds-eye-view of a sites content. A sitemap might not be required for a tiny website with only two or three levels of hierarchy (Morville & Rosenfeld, 2006).



**Figure 14: Presence of ‘Sitemap’ as supplemental navigation system in the website of Ministry of Education**

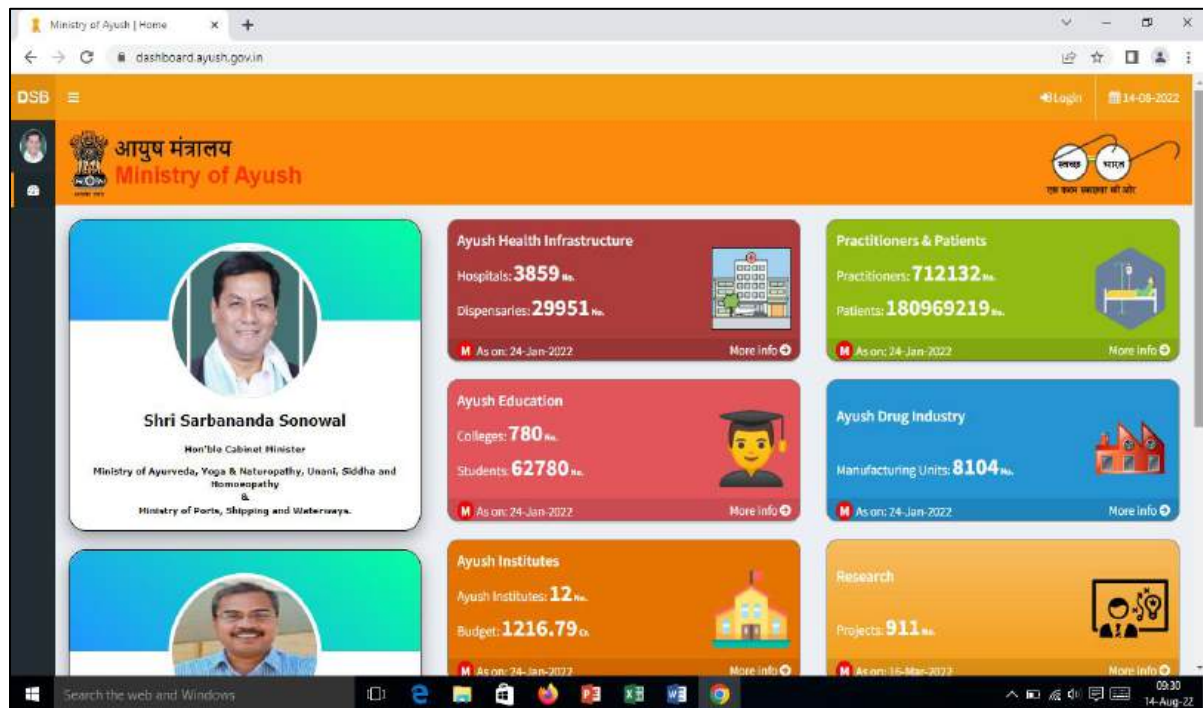
**1.3.3.4.2 Site indexes:** a web-based index provides words or sentences in alphabetical order without displaying the hierarchy. Unlike a table of contents, indexes are relatively flat, presenting only one or two levels of depth. Therefore, indexes are useful for users who already know the name of the item they are looking for (Morville & Rosenfeld, 2006).



**Figure 15: ‘Site Index’ in the website of Ministry of External Affairs**

**1.3.3.4.3 Guides:** guides can be seen in several forms – guided tours, tutorials and micro-portals. These are centered around a specific audience, topic or task. Guides serve as effective

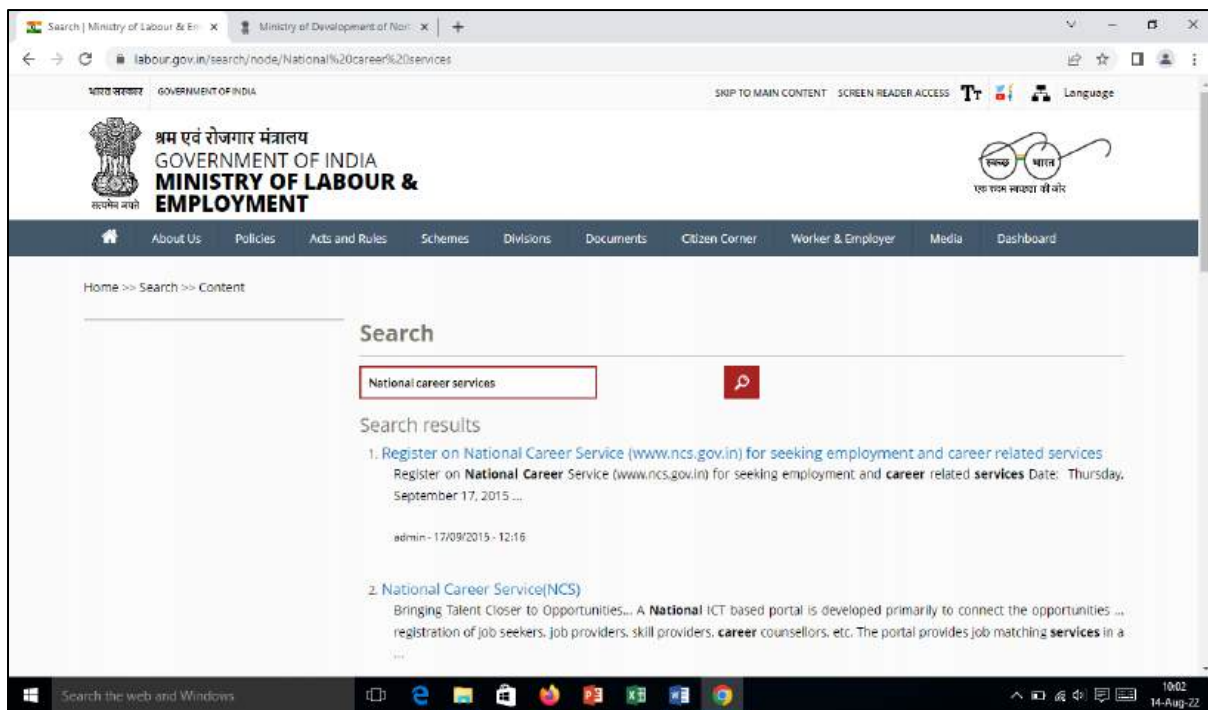
tools for introducing new users to the content and functionality of a website (Morville & Rosenfeld, 2006).



**Figure 16: Presence of Dashboard as micro-portal in the website of MoA**

### 1.3.4 Search systems

Search system is an automated system activated by the user or the intermediary, in making a systematic investigation to obtain data or information. Information professionals will be expected to devise a coherent search strategy for this purpose. In database software, searching is called the process of seeking out an entry, keyword or phrase which may strung together and qualified by Boolean logic operators such as ‘AND’, ‘OR’ and ‘NOT’. In searching system a number of several subsystems are involved; these include – search engine, search algorithm, search interface (search zone, search box etc.) (Morville & Rosenfeld, 2006).



**Figure 17: Search system of the website of MoLE**

Search engines are software applications and these are obviously the foundation of search system. Several technical issues are involved in search engines selection and configuration – load balancing for server’s platform limitations and so on. We need to assign IT staff for performing these tasks. But the responsibility for writing a sites content, designing its visual aspects or developing its information architecture is obviously goes to an information architect (Morville & Rosenfeld, 2006).

#### **1.4 Invisible IA components**

There are some architectural components in the information environment which are not visible to the users, they rarely interact with them. These components provide assistance to other IA components for retrieving information. As an instance thesaurus is used to develop a search query. Some examples of invisible IA components are mentioned below:

##### **1.4.1 Controlled vocabularies**

A controlled vocabulary is a list of preferred terms on a specific domain (e.g. psychology, medical science, etc.). There are two forms to constitute a controlled vocabulary: a) in the form of a synonym ring, which is a list of equivalent terms, b) in the form of an authority file, which is a list of preferred terms. A synonym ring is used to connect a set of equivalent words/terms for the purpose of retrieving information on a specific domain (Morville & Rosenfeld, 2006).

An authority file is a list of preferred terms but it does not include variants or synonyms. Libraries and government agencies use this authority file in traditional way “to define the proper names for a set of entities within a limited domain.” (Morville & Rosenfeld, 2006).

#### **1.4.2 Classification scheme**

It is used to mean a hierarchical arrangement of preferred terms. The Dewey Decimal Classification (DDC), first published in 1876 is considered to be the most widely used classification scheme in the entire world. There is a hierarchical ranking in DDC that starts with 10 top-level classes/categories and digs deeply into each one.

##### **1.4.2.1 DDC First Summary**

- 000 Generalities
- 100 Philosophy & related disciplines
- 200 Religion
- 300 Social sciences
- 400 Language
- 500 Pure sciences
- 600 Technology (Applied sciences)
- 700 The arts
- 800 Literature (Belles-lettres)
- 900 General geography & history (Dewey, 1979)

These classification schemes can further be used in the context of searching. The search engine Yahoo! maintains it effectively.

#### **1.4.3 Thesauri**

A thesaurus is “a compilation of groups of words, consisting of the links between words used in documents and words used as Descriptors, prepared for consultation in information retrieval.” In order to attain a unity of indexing terminology in their respective domains, a number of thesauri of the most frequently used terms in diverse topic areas have been released (Prytherch, c 2005).

Thesauri connect words to their synonyms, homonyms, antonyms, broader and narrower terms, and related phrases through a semantic network of concepts. Thesaurus is built up of three types of semantic relationships: equivalence relationship, hierarchical relationship and associative relationship (Morville & Rosenfeld, 2006).

The management of synonyms is the main emphasis of the equivalence relationship. The hierarchical relationship makes it possible to group chosen terms into categories and subcategories. Meaningful connections that aren't handled by hierarchical or equivalence relationships are made possible by the associative relationship (Morville & Rosenfeld, 2006).

### **1.5 Conclusion**

IA is important for the creation of information systems. It offers a proactive foundation for information system development, giving planners a framework for greater functioning. Because the development of IA lowers the cost of long-term data collection, searching, retrieval, and maintenance, it benefits management at all levels. Information must be organized so that users may easily obtain the information of their interest due to the evolving nature of companies and the rising expectations of users. The user of an information system needs an effective information architecture to accomplish his information-seeking objectives. It starts a productive conversation between the user and the system that results in access (Jain, 2016).

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## Chapter 2

### Webometrics: Terminologies and Tools

#### 2.0 The Web

The common public and the users of internet generally refer to the World Wide Web as simply “web.” It is a network of linked hypertext contents that can be accessed through online. Web pages are the hypertext documents that can be viewed on web browsers through the Internet and consist of text, images, audio, video and other multimedia elements connected via hyperlinks. The World Wide Web was founded by Tim Berners-Lee and Robert Cailliau in 1989 at the European Organization for Nuclear Research (CERN) in Geneva, Switzerland. Tim Berners-Lee and Robert Cailliau created World Wide Web in 1990 as a “Hypertext project” in order to store material that would be read in hypertext pages (Shukla & Tripathi 2015).

Measurements of the web are conducted to analyse how well different services delivered via it are working. Number of studies have been undertaken to analyze and quantify the web in different dimensions. Researchers have investigated the web and their study results have shown the way to quantify the web. The well-known methods of measuring a website’s performance are search engines, search engine query analysis, indexing of search engine databases, search engine behavior, website usage analysis, URL analysis, website content analysis, depth of website, qualitative analysis of web documents and similar methods (Shukla & Tripathi 2015).

The web (WWW) is a combination of several web pages linked with one another by utilizing hyperlinks. In present time, websites are a vital component of communication. These are used by people, organizations, businesses and other entities as a tool to not only advertise their services but also to provide them to users or customers. A website is a collection of pictures, related web pages, videos, or other digital resources that are linked by a single Uniform Resource Locator (URL). In a network using the Internet Protocol, it is made up of an IP address or domain name and the root path (/) (Brahma & Verma 2017).

#### 2.1 Webometrics

The term webometrics is derived from two words “web” and “metrics”. The science dictionary defines web as a system of connected hypertext pages accessed over the internet. Users can

share and access information on this platform. Web 2.0 has evolved from it, allowing for increased user involvement and content creation (Web, c2016). Metrics means Systems of measurement, particularly assessment of the usability and efficiency of electronic resources.

Webometrics is a quantitative investigation of web-related phenomena. The webometric study could be applied to web with commercial search engines providing the raw data. It is concerned with measuring aspects of the web: websites, web pages, parts of web pages, words in web pages, etc. (Beerappa & Sheshadri, 2016)

Almind and Ingwersen are credited with creating the term "webometrics." Webometrics is a term that was created by combining the words "web" and "metric" in contemporary English. The Web is a shortened version of WWW. Metrics, on the other hand, have to do with measurement or counting (Verma & Brahma, 2017).

Webometrics, in the words of Björneborn and Ingwersen, is “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.” (Björneborn & Ingwersen, 2004).

This concept encompasses the four primary areas of webometrics study, including the usage side and construction side of the web; these are: a) content analysis of web pages, b) web link structure analysis (including internal, external and hypertext links), c) web usage analysis (including tracking user search and browsing activity in log files) and d) web technology analysis (including search engine performance) (Björneborn & Ingwersen, 2004).

According to M. Thelwall, webometrics is the study of web based information utilizing mostly quantitative approaches for social science research employing methodologies that are not particular to one field of study, emphasizing the development of applied methods for application in the broader social sciences. Research on any network-based communication using informetric or other quantitative measurement is covered under webometrics (Thelwall, 2022).

## **2.2 Link analysis**

The internet is made up of linked hypertext documents that are interconnected. Hyperlinks are created for online navigation. The “outlink” of hypertext document refers to the hyperlinks. The built-in text command (site:website address) in search engines can be used to calculate the total number of hypertext documents on any given website or domain. There are several built-in text commands that can be used to count the total number of web pages, self-links, outlinks,

inlinks etc. A number of research studies have been conducted to examine various links and web pages with the help of paid search engines (Shukla & Tripathi 2015).

### 2.3 Important link terminologies

In the field of webometric research there is lack of accurate terminology, ideas and concepts. In the year of 2004 Bjerneborn conceptualized different terms related to webometrics. Some important terms connected with web impact factor have been used by Ingwersen also in 1998. The important terminologies of link analysis derived from the book *Webometric Studies and Libraries* by A. Shukla and A. Tripathi (2015) have been described below:

**2.3.1 Web node:** This term identifies an analytical unit similar to a web page, directory or website. It can also be an entire top level domain of a country.

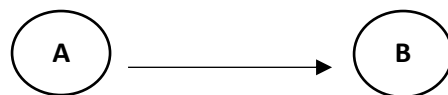
**2.3.2 Incoming link:** It is a link that coming to a website from a separate web site. Some times this link is also denoted as inlink, backlink, inbound link, inward link and citation. In the following figure, the website A has an inlink from website B.



**Figure 18: Incoming link**

(Source: Shukla & Tripathi, 2015)

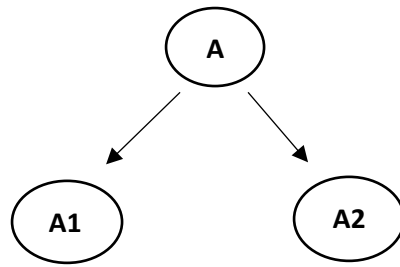
**2.3.3 External link:** External link points to a link which directs to an another webpage/website. This link is also called outlook or outgoing link. In the picture below the website A is connected to website B with an external link from A to B.



**Figure 19: External link**

(Source: Shukla & Tripathi, 2015)

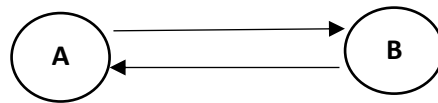
**2.3.4 Self-link:** The link coming from various webpages of a website to a particular webpage of the same website is referred as self-link. Self-links are created for the purpose of navigation. The following figure denotes that website A has two webpages A1 and A2. Website A is linked to these two webpages with self-links.



**Figure 20: Self-link**

(Source: Shukla & Tripathi, 2015)

**2.3.5 Reciprocal link:** reciprocal links are those links between two websites that are both incoming and outgoing. It is seen from the following figure that website A and website B are connected with each other through the help of reciprocal links.



**Figure 21: Reciprocal link**

(Source: Shukla & Tripathi, 2015)

**2.3.6 Transversal link** connects different nodes across directed link path. These links work as a shortcut between two web nodes (Shukla & Tripathi 2015).

## 2.4 Web Impact Factor (WIF)

Web sites, top-level domains, and sub-domains can be ranked, evaluated, classified, and compared using the quantitative tools offered by the WIF. The Webometrics technique includes WIFs. The WIF is a metric used to assess the relative importance of websites in specific industries or a nation. The perceived repute of the website increases with increasing impact factor. A WIF is a metric used to determine how frequently the "average web page" within a website has been linked at any particular moment. A website with a greater impact factor may generally be thought of as more prestigious or of higher quality than those with lower impact factors. The WIF will increase as the number of link pages to a website increases. There are three types of links, these are: 1) Simple WIF which indicates the proportion of all links to the number of webpages; 2) External WIF signifies the ratio of outgoing links made from site to the external site to a number of pages at the site; 3) Internal WIF, the proportion of internal links within the site to a number of pages (Verma & Brahma, 2017).

Web impact factor, which is based on hyperlinks and their citations, is nothing more than a measurement of average link frequencies. The Journal Impact Factor (JIF), which Eugene Garfield first proposed in 1972, was the source of this exact idea. It offers numerical tools for classifying, rating, assessing, and contrasting websites, top-level domains, and subdomains (Shukla & Tripathi 2015).

#### 2.4.1 Calculation of Web Impact Factor

The web impact factor is a tool for evaluating the value of websites based on the links that point to them. The number of websites and links to a website are necessary for the calculation of WIF. The concerned study uses three different kinds of WIFs, which are described below:

$$\text{Simple WIF} = \frac{\text{No. of Linked pages}}{\text{No. of webpages – indexed by the search engine Google}}$$

$$\text{Self/Internal Link WIF} = \frac{\text{No. of Self-Linked Pages}}{\text{No. of webpages – indexed by the search engine Google}}$$

$$\text{External Link WIF} = \frac{\text{No. of External Linked Pages}}{\text{No. of webpages – indexed by the search engine Google}}$$

(Verma & Brahma, 2017)

#### 2.5 Web citation analysis

Analysis of web citations is another important field of Webometrics research. Alike journal articles, web citation analysis is worked on counting online citations to published materials. Bibliographic citations from classic citation indexing databases such as SCI, SSCI, and Hand ACI were thought to be the key resources for determining the significance of research articles. The Web made it easier to locate Web citations for articles that were published online, mostly for open access journals, which helped to overcome the shortcomings of the bibliographic citation databases. Studies on web citations have revealed a relationship between citations on

the web for specific research papers and citations found in bibliographic citations. Research on Web citations have found that there was correlation between the citations found in bibliographic citations and citations found on the Web for particular research papers (Vaughan and Shaw, 2003).

Since Google Scholar was released, webometricians have had easier access to this citation database for determining the significance of research papers. The amount of study in this field has increased significantly in recent years because of the development of resources like Google Scholar and Altmetrics (Harinarayan and Raju, 2013).

Since Google Scholar was released, webometricians have had easier access to this citation database for determining the significance of research papers. The amount of study in this field has increased significantly in recent years thanks to the development of resources like Google Scholar and Altemetrics. Webometrics can be used to undertake studies of this nature, as further explained by two study publications noted below. Kousha and Thelwall (2007) conducted a study on Google Scholar and Google Web/URL Citations, whereas Kousha and Thelwall (2008) conducted a study on Google Scholar.

## **2.6 Search engine evaluation**

Search engine evaluation is a major subject of webometrics study. The focus of the major webometric research has been on the accuracy of the results given and the coverage of the web. It was well known that not all search engines had indexed all of the content on the Internet. Still, none of the search engines have indexed 70% of the material that is available on the Internet.

Many studies have questioned the validity and trustworthiness of data obtained from search engines, and the accuracy of data obtained through commercial engines was also a highly contested subject in webometrics. Many search engines, including Yahoo, Bing and Alta Vista (which was used by many webometricians for link analysis in early times), no longer offer the advanced link search commands option (Bar-Ilan, 2004; Kousha, 2005).

## **2.7 Webometric tools**

The online tools utilized for accomplishing webometric research are known as webometric tools. In this present webometric research some tools have been used which are explained below:

### **2.7.1 The search engine Google**

A search engine is a tool that allows the users of World Wide Web (WWW) to conduct searches according to their query or search term. When a keyword or key phrase is entered into a search engine by a user, a list of webpages, images, videos etc. that are semantically related to the search query appears in number of result pages of the search engine. So, a search engine results page consists of collection of content that a search engine offers to a user (Search engine, 2023).

Search engines try to rank results for a particular search according to their relevancy to the topic, the quality and reliability of the sites are also been assessed. Google is the most popular search engine in the world which uses an algorithm named Page Rank that is changing constantly to evaluate websites (Search engine optimization, 2018).

Any publisher or data provider build software to allow detailed access to their information, which is typically stored in a database, using criteria like author, title or keyword. On the World Wide Web, third-party search engines rely on Web crawlers, which move across the site following links between pages and copying pertinent data to generate a database that is then indexed to create searchable terms (Prytherch, c 2005).

An internet user can use a search engine, which is a computer programme, to look up specific words or phrases on the internet. Search engines have become a crucial tool for Internet usage, and specifically for searching the internet, it is possible for the software that enables this search to be performed at a very high speed (Feather & Sturges, 2003).

The formation of contemporary Internet search engines can be traced back to the early 1990s, a period concurrent with the adoption of the suite of Internet protocols that facilitated communication between computers worldwide using public domain freeware. The advent of the World Wide Web has resulted in the generation of a plethora of documents, predominantly encoded with Hyper Text mark-up language (HTML), that are stored on computers spanning the globe. These search engines constitute an integral component of this distributed and fluid information milieu, serving to facilitate the retrieval of data for users (Feather & Sturges, 2003).

### **2.7.2 Search Engine Optimization (SEO) tools (link analyzer)**

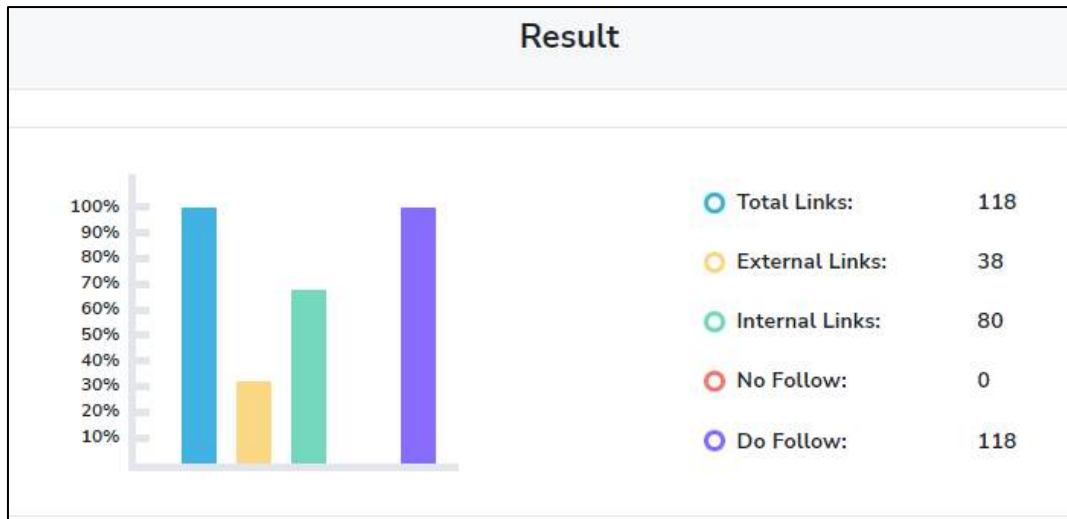
Search engine optimization (SEO) refers to techniques used to boost a website's page rank in search results, hence bringing in more visitors. SEO frequently entails enhancing the content's quality, making sure it is abundant with pertinent keywords, and structuring it utilising subheads, bullet points, bold, and italic characters (Search engine optimization, 2018).

The analysis of links is one of the most important components of SEO (search engine optimisation). The link analyzer on website may examine both internal and external links as well as dofollow and nofollow links. This link checker was created to give website owners, webmasters, and SEO experts a tool that displays accurate results and can be used to analyse all the links on a specific website. A table of website's internal and external links will be displayed. The link analyzer tool can be used to find out any hidden or spam links in a website by entering website's URL. Additionally, it will display the websites that are bringing you visitors or backlinks. With the help of this website link checker tool, one can concentrate on most crucial web pages and then work to strengthen the links leading to them to boost page rating with search engines like Google. This link analyzer is a very practical tool that enables to maintain follow links that are placed on website or blog. The results will be produced promptly by this Link Analyzer tool. It will show a report with every inbound and outgoing link, along with the anchor text that goes with each one. If there are any images on the page that are hyperlinked, the alt property of that image will be displayed as the anchor text (Small seo tools, 2023).

The image shows a web form for a link analyzer tool. At the top, it says "Enter URL". Below this is a text input field containing the URL "https://www.mod.gov.in/". Underneath the input field, it asks "Type of links to return:" and provides three radio button options: "External (links going to outside web-sites)", "Internal (links inside the current web-site)", and "Both Types". The "External" option is selected.

**Figure 22: URL entering bar in link analyzer tool**

(Source: <https://smallseotools.com/website-link-analyzer-tool/>)



**Figure 23: Number of link pages of the entered URL**

(Source: <https://smallseotools.com/website-link-analyzer-tool/>)

### 2.7.3 Domain authority and Google’s Page Rank

The software development company, MoZ created a search engine ranking metric called Domain Authority (DA). In comparison to competitors, it forecasts a website’s possibility of appearing on search engine results pages (SERPs). Higher scores indicate a greater ability to rank, and the score spans from 1 to 100. Page authority is the score of a webpage that predicts a pages position and rank on search engine result pages (Domain authority: what is it and how is it calculated, 2025).

The Google search engine employs a link analysis technique called PageRank (PR). The importance of a web page is indicated by a numeric value, 0–10. The PageRank algorithm was created by Google in the beginning to rank websites according to their significance within a network. It has been modified for a variety of uses, including evaluating brain connectomes, tracking objects in films, and ranking biomedical publications. Each node in a network is given a numerical value by PageRank, which takes into account both the quantity and quality of connections pointing at it. It can be used to find significant nodes or spot anomalies in a variety of systems (Page rank, n.d.).

**Get Website Insights and Domain Analysis:**

enter domain name:  
https://www.

## coal.gov.in


[Submit](#)

Buy Relevant DA 40+, PA40+ Backlinks from \$3 Now

[Check Google Pagerank](#) | [LINK TO US](#) | [SEO Services](#) | [SEO Site Audit](#) | [Advertise](#) | [Contact Us](#) | [PageRank Blog](#) | [Privacy Policy](#)  
 CheckPageRank.net - Page Rank Analysis and Professional Web Marketing (SEO and Backlinks Building) company since 2004!

**Figure 24: Option for entering domain name in page rank checker**

(Source: <http://checkpagerank.net/index.php>)



**Domain Analysis For:**  
**coal.gov.in**  
 Date: February 14 2022

**Google PageRank: 4/10**  
**cPR Score: 4.1/10**

Domain Authority: 45  
 Page Authority: 30  
 Trust Flow: 39  
 Trust Metric: 39  
 Domain Validity: Found  
 Global Rank: 1,521,838  
 Alexa USA Rank: N/A  
 Alexa Reach Rank: 1,431,435  
 Spam Score: 1 / 18  
 External Backlinks: 73,200  
 Referring Domains: 469  
 EDU Backlinks: 18  
 EDU Domains: 7  
 GOV Backlinks: 11,711  
 GOV Domains: 36  
 PR Quality: **Moderate**  
 Domain Age: NA  
 HTTP Response Codes: 200  
 Canonical URL: coal.gov.in/  
 Root IP: 164.100.166.94  
 Title: Ministry of Coal, GOI  
 Topic: Society/Government  
 Topic Value: 39  
 Indexed URLs: 5,451  
 Crawled Flag: False  
 Google Directory listed: YES  
 DMOZ org listed: NO

**Figure 25: Result page returned from the tool checkpagerank.net**

### 2.7.4 Graph Visualisation Software: Graphviz

Open source graph visualisation software is called Graphviz. The representation of structural data as diagrams of abstract networks and graphs is known as graph visualisation. It has significant uses in machine learning, database and web design, networking, bioinformatics, software engineering, bioinformatics, and visual interfaces for other technical disciplines.

For making concrete diagrams, Graphviz offers a variety of useful capabilities, including options for colours, typefaces, tabular node layouts, line styles, hyperlinks, and custom shapes (Graphviz, 2021).

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## Chapter 3

### Review of Related Literature, Statement of the Problem and Research Questions

#### 3.0 Introduction

The World Wide Web (WWW) is proved to be the most widely used medium for implementation of e-governance initiatives. Realizing the importance of this medium a large number of websites belonging to different government entities have been published on the web to ensure maximum reach of government information and services to the common citizens of India. In today's information decade 'information overload' is a term used to describe the problems resulting from the incredible amount of information. Kirsh (2000) shows us that the problem of information overload is not simply caused by the increase of information amount but by other factors like the increased number of decisions of knowledge workers, the need of multi-tasking, the increased frequency of interruptions, the need of time efficiency and the lack of adequate work environments.

The main intention of information architecture is to reduce the time-wasting chaos that can arise from navigating through vast quantities of information globally. The central features of information architecture are likely to be overall design of a shared/common information environment, organizing and structuring information resources (web sites etc.) through formalization and manipulation of metadata, creating efficient methods of linking resources, designing structures for future generations so that anticipated needs can be met (Prytherch, c 2005).

In general way, webometrics is the quantitative study of web related phenomena; the webometric analysis concentrates on the analysis of websites according to their performance on the whole web (WWW).

The whole study aims to analyze information architecture and evaluate webometric phenomena of central government ministries and departmental websites in India. This chapter elaborates the existing literature in the area of research, statement of the problem and important research questions.

### **3.1 Literature review**

This chapter provides a comprehensive literature review on information architecture analysis and webometric evaluation of central government ministries and departmental websites of India.

#### **3.1.1 Methodology**

At the initial stage, a comprehensive literature search has been carried out to identify and locate available information, relevant to the problem of this research work, scattered in different information sources like e-books, journal articles, theses and dissertations, electronic information resources from internet, etc. The collected data have been analyzed, classified and represented under suitable headings to maintain consistency with the objective of the research work. Author's surname and publication year of the work have been mentioned in every paragraph. The APA (The American Psychological Association) style of referencing, 6<sup>th</sup> edition has been adopted for citing different reference sources. An overview uncovered through assessment of existing literature is outfitted underneath.

#### **3.1.2 Observations**

The observations of key ideas from the review of literature are as per the following:

##### **3.1.2.1 Architecture**

The word "architecture" originates from the field of building construction, where it describes the art or practice of planning and erecting structures. While this phrase typically relates to the art form, it also essentially describes how functionality is produced utilizing general principles. It refers to the following methodical organization of various technological, informational, or conceptual elements for guaranteeing appropriate execution to meet certain goals in the field of information technology.

Architecture is described as the rules and norms that enable the elegant and aesthetically pleasing realization of functioning. In the past, these principles were connected to the design and construction of structures, but in modern usage, the word is metaphorically used to denote the adoption of standards and principles that are similar to those employed in the design and construction of information systems (Dubey, 2019).

### 3.1.2.2 Information Architecture

Richard Saul Wurman, an architect, first introduced the term "information architecture" in 1975. Lou Rosenfeld and Peter Morville later used it to describe how large-scale websites and intranets are structured in 1996. Information systems ensure present capabilities, interoperability, security, and future scalability by adopting appropriate architectural principles (Dubey, 2019).

An information modeler attempts to address the issue of psychological over-burden by including sufficient structures, labels and browsing aids to websites and programming applications so as to improve ease of use. In fact an adequate information architecture may optimize the digital work environment which is the information space. Users ought to handily discover the information they mentioned, without being over-burden with an excessive amount of information. They should work in the data space in an instinctive way and ought to have the option to recuperate their work after an interference (Zimmermann, 2005).

Rosenfeld and Morville (1998) advocated the idea of information architecture by utilizing it to characterize a blueprint for information organization and access for sites. Their blueprint determines the classificatory structure, labeling of ideas inside that structure, navigation and searching systems.

“Information architecture is a structural design of shared information environments” (Morville & Rosenfeld, 2006); amalgamation of organization, labeling, search and navigation systems within websites, intranets, etc. in simple way information architecture is the art and science of shaping information products and experiences to support usability and findability (Morville & Rosenfeld, 2006).

IA is typically believed to be the art and science of organizing and structuring information environments to maximize their usability and accessibility in order to assist people in successfully satisfying their information demands. IA development for websites is often defined as the process of organizing the structure and content of the website, labelling, categorizing, and indexing information, as well as building a navigation system to assist information searching and browsing (Isa, Noor & Mehad, 2006).

In website design, it specifically refers to how the many pages of the site interact to one another and includes concerns like content analysis and planning, page organization, giving users' clues to help them orient themselves, labelling, and navigation design (Brinck et al 2002).

### **3.1.2.3 Analysis of Information Architecture**

Stover and Zink (1996) evaluated forty randomly selected university and college library web sites in Canada and the United States on the suspicion that librarians would provide excellent models of well-organized sites. They utilized ten criteria that included the number of links on a home page, the number of typographical errors present on a page and the purpose of the site.

In a study, Gullikson, et al. (1999) assessed the impact of the information architecture of an academic web site; how information is categorized, labelled and presented, and how navigation and access are facilitated. They addressed how the information architecture influenced clients' ability to negotiate the site.

Al-Omari, H. (2006) in his study, 'E-Government Architecture in Jordan: A Comparative Analysis' proposed architecture for Jordan e-government portal which consisted of different services like communication services, economic services, education and training services, health services, labor services etc.

### **3.1.2.4 World Wide Web (WWW)**

WWW is an organized data recovery and specialized tool described especially by its utilization of Hypertext Links to different records and its capacity to deal with non-literary data like illustrations and video. WWW (also known as 'the Web') has become essentially interchangeable with the Internet (Prytherch, c2005).

The World Wide Web is a sizable database of hypertext documents that is constantly growing. The Internet has grown out of this collection and now spans the entire planet. A document can have one or more pages. A URL on one page directs the user to another page. A document's home page is the initial page with links to the pages after it. There could be several documents on a single website. The most crucial service at the moment is website service. The Internet is currently used by roughly 45% of the population. The Web has caused an Internet revolution. The way people engage with one another is changing socially as a result of it. It is transforming how we obtain information. It offers an information superhighway (Kamal, c2002).

The World Wide Web is a large collection of hypertext documents, these documents are known as web pages (Kamal, c2002). A web page is a text document with the "html" or "htm" file name extension, such as "mypage.html" (Jackson, 2009).

Hypertext Markup Language (HTML) is a language used to format web pages. This language enables users to navigate between Web pages by clicking on links. The HTTP protocol is used by the Web to transfer data and communicate knowledge. Web documents, or Web pages, are accessed using browsers like Internet Explorer, Google Chrome, or Mozilla Firefox that are connected by links (Web, c2023).

A website is a collection of online pages with a specific focus, such as an organization, a person, or a topic (Prytherch, c2005). It is made up of several digital components, including web pages, photographs, videos, and other sorts of media (Rahman & Batcha, 2020).

A website is a group of interconnected, publicly accessible Web pages with a common domain name. A website can be developed and maintained to serve a variety of objectives by an individual, group, company, or organization. The World Wide Web is made up of all websites that are open to the public (Website, c2023). A working website can be advantageously seen as a complicated, quasi-stable system having nonlinear relationships among its components (Newell, 2001).

### **3.1.2.5 Webometrics**

Webometrics cover research of all network-based communications using metric and other quantitative measures (Jeyshankar R, Sujitha, Maria and Valarmathi, 2012). The World Wide Web (WWW) has now become one of the main sources of information on academic and research activities, and therefore is an excellent platform to test new methods of evaluating webometric activities (Beerappa & Sheshadri, 2016).

The scope of webometrics is closely associated with the dynamic changing nature of the Web. Printed documents are relatively more permanent compared to Web documents which are constantly changing in several ways. The contents of webpages change, documents are often removed, URLs change, websites disappear, and some documents are temporarily inaccessible. Search engines are the main sources of webometrics data collection (Madhusudhan & Prakash, 2013).

Björneborn and Ingwersen (2004) stated Webometrics as “the study of the quantitative aspects of the construction and use of information resources, structures and technologies on the World

Wide Web drawing on Bibliometrics and Informetrics approaches.” This definition includes both the web's creation and use, which encompass the four key topics of webometrics research. Which are as follows:

- a. Web page content analysis;
- b. Web link structure analysis (e.g. Hyperlink, Self-link and External link);
- c. Web usage analysis (For instance, tracking user search and browsing activity through log files); and
- d. Web technology analysis (incorporating search engine effectiveness).

### **3.1.2.6 Webometric Evaluation**

The webometric analysis is based on the data collected from the Web using Google search engine. In each search engine, there are some specific search keywords that are designed to retrieve information from the Web (Beerappa & Sheshadri, 2016).

In North East India, 10 Central universities were the subject of a study on webometric analysis by Verma and Brahma (2017). The study calculates the number of webpages, links, and Web Impact Factor of Central Universities in North East India and discovered that Tezpur University was in the highest position with Domain Authority of 77 (21.75%), Page Authority of 61 (14.35%), External Equity-Passing Links basis with 866 (32.18%) and Total External Links with 1491 (29.96%); the Mizoram University has the highest Internal Equity-Passing Links with 2331 (68.27%), and Total Internal Links with 2426 (69.03%).

In a study, Ramanayaka, Chen and Shi (2018) evaluated university library websites in Sri Lanka using web metrics, specifically WIF (inlinks) and WISER, with the goal of developing a framework for an automated ranking and recommendation system for library websites. The Open University of Sri Lanka's library website came in first place on the WISER index, while the University of Moratuwa's library website came in first place on the WIF (inlinks) index.

The study conducted by Verma and Brahma (2017) used a novel method to evaluate the effectiveness of NGO websites in Assam using webometric indicators. It examined the websites of 25 chosen NGOs in Assam based on different links, impact factor, international & external web impact factor, etc. and ranked the websites according to their web impact factor. The Centre for North East Studies and Policy Research and AARANYAK have achieved the

highest visibility among the study's chosen NGOs websites, according to an analysis of the selected websites.

The researchers, Beerappa and Sheshadri (2016) made an effort to evaluate the websites of 12 Indian documentation centres. The analysis comprises determining the overall number of webpages, as well as the web impact factor (WIF), self-link pages, and external link pages. These variables have been measured and compared one with the other.

In their study, Kothainayaki and Gopalakrishnan (2011) applied webometrics to evaluate agricultural universities in India. 54 Agricultural Universities in total, including 4 Central Universities, 5 Deemed Universities, and 44 State Agricultural Universities (SAUs), were taken into consideration. The evaluation process takes into account a number of ideas, including Google PageRank, Alexa Traffic Rank, and rich files. Additionally, it provides network diagrams displaying the webometric analysis' link architectures between web nodes.

#### **3.1.2.7 Web Impact Factor (WIF)**

WIF is the web versions of impact factor. There are three types of WIFs – Simple WIF, Self-link WIF and External link WIF. The WIF was introduced by Ingwersen in 1998. It is the ratio of the number of links to a site, divided by the number of webpages at the site. Therefore, WIF is a useful measure of the overall influence of a website, using links (simple, self and external) to the website (Madhusudhan & Prakash, 2013). “The WIF measure may be defined as the number of web pages in a web site receiving links from other web sites, divided by the number of web pages published in the site that are accessible to the crawler” (Webometrics, 2023).

The web impact factor measures how widely a website is linked to and regarded by other websites. WIF is a component of the methods of research used in webometrics. In general, it's a measurement of how many other websites link to and identify it. The WIF is a metric used to assess the relative importance of websites in specific industries or a nation, such as academic websites there. The perceived reputation of the website increases with increased WIF. The WIF offers numerical tools for classifying, comparing, and ranking websites, top-level domains, and sub-domains (Verma & Brahma, 2017).

#### **3.1.2.8 Evaluation of Government Websites**

Six broad key parameters for the study of Indian Government Websites have been suggested by Chand and Ramesha; these are - identifier, information, usability, security, participation and services. Identifier is the concept which confirms the authenticity of websites and certifies the

credibility which is very important from the user point of view to determine the accuracy and dependability. Information or content is the second major parameter which actually defines the key information that is being disseminated (Chand & Ramesha, 2017).

Abdulbasit Abdullah Mohammed Darem performed experiments to measure the effectiveness, efficiency and user satisfaction of e-government websites. His research process included usability testing through major usability evaluation criteria, constructing a web-based usability evaluation questionnaire and using a new framework to evaluate the e-government based on four constructs: sections, elements accessibility and speed. Finally he tried to find out how the website design influenced the effectiveness, efficiency and satisfaction of e-government websites.

Wang, Bretschneider & Gant stated that, despite the importance of the evaluation of Web-based e-government services, especially the performance of government Web sites in facilitating public-government interaction, little research has been generated, with most web-based service evaluation focusing on the private sector. Web diagnostic tools have become a method of evaluation for general websites and e-Government websites (Brooks & Persaud, 2015).

Bhattacharya, Debjani worked on Service Quality of Government Websites in India and has remarked that user perceived service quality in the context of e-government, can be defined as the effectiveness of the web portals of government organizations. Usefulness and usability features of government portals can help citizens to participate in various public activities making the public administration effective, efficient, and transparent.

By searching the related literature of the concerned study, it has been observed that investigators examined usability of academic and government websites through usability testing by participation of user groups; none of the criteria (used by Stover and Zink,1996) specifically addressed information architecture; many authors have analyzed government webpages through the evaluation of web-based e-government services, especially the performance of government web sites in facilitating public-government interaction. At this juncture, information architecture analysis and webometric evaluation of central government ministries and departmental websites of India is an unexplored area of webometric research which has been chosen to conduct research study. Findings of this study may open the door to further studies of other new areas of the concerned field.

### **3.2 Statement of the problem**

The Indian Government facilitates information dissemination to citizens with the assistance of many of its websites. Studying these websites will allow the users to understand how the information dissemination is being facilitated. Information architecture is the process of structuring information in meaningful pattern. It assists users to find information in an information space with employing less effort. Webometrics is the study of web related matters with the use of various webometric indicators, tools and techniques. It helps to identify the web presence, performance, link quality of a webpage or website in meaningful manner.

In this context, there is a high requirement to know the web presence of central government in general and Indian Central government in particular. It is also required to quantify the web impact through various WIFs using appropriate webometric indicators in order to enhance its efficiency through optimizing web content, analysis and re-designing.

The problems of the research may be stated as:

1. Analysis of information architecture of central government ministries and departmental websites through considering different information architectural components and
2. Evaluation of central government ministries and departmental websites with the help of webometric indicators.

### **3.3 Research questions**

The problems stated above along with some necessary and relevant research questions emerging therefrom will be resolved in course of the investigation :-

- i) In what way the information are categorized, organized and labeled in the respective websites? What are the kinds of IA components followed by the websites for information organization and labeling?
- ii) What are the specific organization structure followed by the selected websites?
- iii) How information are linked with each other? What are the particular navigation structure? Is there any discrepancy found in information navigation system?
- iv) Are the concerned websites characterized by an active searching system?
- v) What are the total number of webpages and links (simple, external and self) carried by each of the selected websites?

- vi) How the websites perform in the search engine result page?
- vii) How the respective websites are linked together for information sharing?

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## Chapter 4

### Objective, Scope and Limitation, Methodology of the Study

#### 4.0 Objectives of the study

The purpose of this research is to find out information organization strategy, presentation style, links, etc. (which are displayed through websites of different ministries and departments of central government of India) and analyze those strategies in a systematic way using information architectural components, webometric tools and techniques. In order to achieve the goal the study will precisely attempt:

- 1) to analyze the organization and content of various information presented on the websites;
- 2) to find out and analyze the exact labeling system followed by the websites;
- 3) to identify and analyze the navigation structure of the concerned websites;
- 4) to examine an active searching system;
- 5) to rank the respective websites according to their scores obtained under different IA components;
- 6) to find the number of web pages, number of link pages, number of self-link pages, external link pages and calculate WIFs (Simple, External and Self) with rank of the concerned websites under study.
- 7) to find out visibility and performance of Indian government ministries and departmental websites;
- 8) to observe how the different pages of the sites relate to one another;
- 9) to identify and classify the domain of central government websites (ministries and departments) of India.

#### **4.1 Scope and limitation of the study**

The study got restricted within the information architecture analysis and webometric evaluation of central government ministries (44) and their departmental websites (38) of India; out of 52 ministries only 44 have their own websites. Remaining 8 ministries are portrayed by means of sites of their departments. The departmental websites (38) with individual domain name have been taken for observation and analysis in this study. As a whole, this study covers the analysis and evaluation of websites of selected ministries and ministries' departments under central government of India. The websites of 192 Attached/Subordinated Offices, 2 Independent Departments, 567 Statutory/Autonomous bodies, 41 Commissions/Committees under the union government of India are kept beyond its scope (Integrated government online directory, n.d.).

The relevant IA components used in this study have been taken from the renowned book 'Information Architecture for the World Wide Web' authored by Peter Morville and Louis Rosenfeld, other than this no other IA component has been employed in this study for making website analysis.

According to the definition given by Björneborn and Ingwersen 2004, there are four key areas of webometric research: web page content analysis, web link structure analysis, web usage analysis and web technology analysis including search engine evaluation. The present study is only limited to the web link structure analysis.

#### **4.2 Methodology of the Study**

Alike the journal/article citation mechanism, Importance of web pages or websites can be judged with the help of links (especially text links), information organization and presentation style and their analyses. In this study, the required data have been collected applying web-based survey and observation methods from all 44 union government ministries' websites and 38 departmental websites of India. Collected data had subsequently been analyzed and tabulated by using different information architectural components, webometric tools and techniques.

In order to carry out the analysis of website information architecture, Google search engine has been utilized for collecting data from the concerned websites. The book 'Information Architecture for the World Wide Web' by Peter Morville and Louis Rosenfeld is become very much useful to take the information architectural components for making analysis in this study. Data collection process has been conducted for ministries websites during 20<sup>th</sup> March – 29<sup>th</sup>

June, 2022 and for departmental websites during 10<sup>th</sup> September, 2022 – 26<sup>th</sup> May, 2023. For performing webometric evaluation, the following tools are utilized in this study:-

Google: the search engine Google is used to collect total number of webpages from each of the websites; the identified search keyword was, site:url of the website for example, site: <https://www.indiaculture.nic.in/>

Website Link Analyzer: (<https://smallseotools.com/website-link-analyzer-tool/>) this online tool has been employed to retrieve simple links, self or internal links and external links of each government ministry and department website under investigation. The required data from ministries' websites have been collected during 18<sup>th</sup>-21<sup>st</sup> August, 2022; data of the departmental websites have been taken from 7<sup>th</sup> December, 2022 to 27<sup>th</sup> May, 2023. Each ministry and departmental website has been searched during 14<sup>th</sup> February, 2022 – 1<sup>st</sup> April, 2022 and 18<sup>th</sup> April, 2023 – 2<sup>nd</sup> June, 2023 respectively on the website <http://checkpagerank.net/index.php> for collecting page rank, page authority and domain authority of the concerned websites under study.

Data which are collected from different websites and online tools have subsequently been tabulated for making analysis. Data analysis has been done by considering different information architectural components. The scores of the selected websites under different components of information architecture have been presented in tables. It is also visible from the table that how many websites have followed or not followed a particular information architectural component. In order to represent data in a better way figures are also prepared under each table, depending upon the data presented on the table. General formula of calculation and formula of calculating web impact factor have been used in the analysis section of the study. The APA referencing style 6<sup>th</sup> edition has been utilized to make citation for the sources used in the study.

#### **4.3 Significance of the study**

The findings of such study may help to diagnose the problem and lead us to find right direction for research in the field of information architecture analysis and webometric evaluation of central government ministries' and departmental websites of India. The study will show the visibility, performance and link quality of central government websites of India. It will help to analyze the organization and content of various information, navigation, search strategy, etc. presented on the concerned websites. The study will also help to rank the selected government websites (ministries and their departments) according to their web impact factors.

## Chapter 5

### Central Government Ministries and Departments: A Brief Overview

#### 5.0 Introduction

Every government organization now needs to host a website because of the very presence of Internet and information and communication technology (ICT). A government organization may reach the huge number of people with the least amount of effort and resources by generating a website. Due to this reason, the government must have an effective and organized website of its own. Therefore, integrating ICT into government organizations can advance the government itself.

There are three main divisions that make up the Indian government; these are: 1. The legislative branches- Parliament, including the Lok Sabha and Rajya Sabha 2. The executive branches- central ministries and departments and 3. The judicial branches- Supreme Court, High Court and District Courts. Ministries are the essential executive part of the government to represent useful information and activities of the government to the common citizens of India (Walia & Kaur, 2010).

Most of the ministries have their own websites that offer insight into how the government operates. There are 52 ministries listed in the online directory of the government of India. The government ministries with individual website addresses are considered for observation and analysis in this study. This chapter provides a brief outline of these ministries.

The government of India has launched a project called, “Digital India” to integrate its citizens and various government departments and agencies. With the purpose of minimising paperwork, it seeks to ensure that government services are made electronically accessible to citizens (Kedar, 2015).

The Integrated government online directory of India (<https://igod.gov.in/>) reports that there are 52 central government ministries, 19 of which have their own department or departments. There are 52 departments under these ministries as a whole, and they are each in charge of carrying out various tasks for their parent ministries. This study includes the departmental websites with separate domain names, in this way the number of 38 departmental websites have

been selected for the study. This chapter aims to provide a brief outline of all the selected departmental websites under different ministries of India.

**Table 1: List of selected central government ministries of India with their website addresses**

| Sl. no. | Central government ministries and their abbreviations       | Website addresses   |
|---------|---|---|
| 1       | Ministry of Ayush (MoA)                                     | <a href="https://main.ayush.gov.in/">https://main.ayush.gov.in/</a>   |
| 2       | Ministry of Civil Aviation (MoCA)                           | <a href="https://www.civilaviation.gov.in/">https://www.civilaviation.gov.in/</a>   |
| 3       | Ministry of Coal (MoC)                                      | <a href="https://coal.gov.in/">https://coal.gov.in/</a>   |
| 4       | Ministry of Cooperation (MoCO)                              | <a href="http://cooperation.gov.in/Cooperation.aspx">http://cooperation.gov.in/Cooperation.aspx</a>                         |
| 5       | Ministry of Corporate Affairs (MoCRA)                       | <a href="https://www.mca.gov.in/content/mca/global/en/home.html">https://www.mca.gov.in/content/mca/global/en/home.html</a> |
| 6       | Ministry of Culture (MoCL)                                  | <a href="https://www.indiaculture.nic.in/">https://www.indiaculture.nic.in/</a>   |
| 7       | Ministry of Defence (MoD)                                   | <a href="https://www.mod.gov.in/">https://www.mod.gov.in/</a>   |
| 8       | Ministry of Development of North Eastern Region (MoDNER)    | <a href="https://mdoner.gov.in/#">https://mdoner.gov.in/#</a>   |
| 9       | Ministry of Earth Sciences (MoES)                           | <a href="https://moes.gov.in/">https://moes.gov.in/</a>   |
| 10      | Ministry of Education (MoE)                                 | <a href="https://www.education.gov.in/en">https://www.education.gov.in/en</a>   |
| 11      | Ministry of Electronics & Information Technology (MoEIT)    | <a href="http://meity.gov.in/">http://meity.gov.in/</a>   |
| 12      | Ministry of Environment, Forest and Climate Change (MoEFCC) | <a href="https://moef.gov.in/en/">https://moef.gov.in/en/</a>   |
| 13      | Ministry of External Affairs (MoEA)                         | <a href="https://mea.gov.in/">https://mea.gov.in/</a>   |
| 14      | Ministry of Finance (MoF)                                   | <a href="https://www.finmin.nic.in/">https://www.finmin.nic.in/</a>   |

| <b>Sl. no.</b> | <b>Central government ministries and their abbreviations</b> | <b>Website addresses</b>  |
|----------------|--|---|
| 15             | Ministry of Food Processing Industries (MoFPI)               | <a href="https://www.mofpi.gov.in/">https://www.mofpi.gov.in/</a>             |
| 16             | Ministry of Health and Family Welfare (MoHFW)                | <a href="https://main.mohfw.gov.in/">https://main.mohfw.gov.in/</a>           |
| 17             | Ministry of Heavy Industries (MoHI)                          | <a href="https://heavyindustries.gov.in/">https://heavyindustries.gov.in/</a> |
| 18             | Ministry of Home Affairs (MoHA)                              | <a href="https://www.mha.gov.in/">https://www.mha.gov.in/</a>                 |
| 19             | Ministry of Housing and Urban Affairs (MoHUA)                | <a href="https://mohua.gov.in/">https://mohua.gov.in/</a>                     |
| 20             | Ministry of Information and Broadcasting (MoIB)              | <a href="https://mib.gov.in/">https://mib.gov.in/</a>                         |
| 21             | Ministry of Jal Shakti (MoJS)                                | <a href="https://jalshakti.gov.in/">https://jalshakti.gov.in/</a>             |
| 22             | Ministry of Labour and Employment (MoLE)                     | <a href="https://labour.gov.in/">https://labour.gov.in/</a>                   |
| 23             | Ministry of Law and Justice (MoLJ)                           | <a href="https://lawmin.gov.in/">https://lawmin.gov.in/</a>                   |
| 24             | Ministry of Micro Small and Medium Enterprises (MoMSME)      | <a href="https://www.msme.gov.in/">https://www.msme.gov.in/</a>               |
| 25             | Ministry of Mines (MoM)                                      | <a href="https://mines.gov.in/">https://mines.gov.in/</a>                     |
| 26             | Ministry of Minority Affairs (MoMA)                          | <a href="https://minorityaffairs.gov.in/">https://minorityaffairs.gov.in/</a> |
| 27             | Ministry of New and Renewable Energy (MoNRE)                 | <a href="https://mnre.gov.in/">https://mnre.gov.in/</a>                       |
| 28             | Ministry of Panchayati Raj (MoPR)                            | <a href="https://panchayat.gov.in/">https://panchayat.gov.in/</a>             |

| <b>Sl. no.</b> | <b>Central government ministries and their abbreviations</b> | <b>Website addresses</b>  |
|----------------|--|---|
| 29             | Ministry of Parliamentary Affairs (MoPA)                     | <a href="https://mpa.gov.in/">https://mpa.gov.in/</a>                             |
| 30             | Ministry of Personnel, Public Grievances & Pensions (MoPPGP) | <a href="https://persmin.gov.in/">https://persmin.gov.in/</a>                     |
| 31             | Ministry of Petroleum and Natural Gas (MoPNG)                | <a href="https://mopng.gov.in/en">https://mopng.gov.in/en</a>                     |
| 32             | Ministry of Ports Shipping and Waterways (MoPSW)             | <a href="https://shipmin.gov.in/">https://shipmin.gov.in/</a>                     |
| 33             | Ministry of Power (MoP)                                      | <a href="https://powermin.gov.in/">https://powermin.gov.in/</a>                   |
| 34             | Ministry of Road Transport and Highways (MoRTH)              | <a href="https://morth.gov.in/">https://morth.gov.in/</a>                         |
| 35             | Ministry of Railways (MoR)                                   | <a href="https://indianrailways.gov.in/">https://indianrailways.gov.in/</a>       |
| 36             | Ministry of Rural Development (MoRD)                         | <a href="https://rural.nic.in/">https://rural.nic.in/</a>                         |
| 37             | Ministry of Skill Development and Entrepreneurship (MoSDE)   | <a href="https://www.msde.gov.in/">https://www.msde.gov.in/</a>                   |
| 38             | Ministry of Statistics and Programme Implementation (MoSPI)  | <a href="https://mospi.gov.in/">https://mospi.gov.in/</a>                         |
| 39             | Ministry of Steel (MoS)                                      | <a href="https://steel.gov.in/">https://steel.gov.in/</a>                         |
| 40             | Ministry of Textiles (MoTT)                                  | <a href="http://ministryoftextiles.gov.in/">http://ministryoftextiles.gov.in/</a> |
| 41             | Ministry of Tourism (MoT)                                    | <a href="https://tourism.gov.in/">https://tourism.gov.in/</a>                     |
| 42             | Ministry of Tribal Affairs (MoTA)                            | <a href="https://tribal.gov.in/">https://tribal.gov.in/</a>                       |

| <b>Sl. no.</b> | <b>Central government ministries and their abbreviations</b> | <b>Website addresses</b>                              |
|----------------|--|---|
| 43             | Ministry of Women & Child Development (MoWCD)                | <a href="https://wcd.nic.in/">https://wcd.nic.in/</a> |
| 44             | Ministry of Youth Affairs and Sports (MoYAS)                 | <a href="https://yas.gov.in/">https://yas.gov.in/</a> |

### **5.1 Ministry of Ayush (MoA)**

**Official Address:** Ayush Bhawan, B Block

GPO Complex, INA, New Delhi- 110023

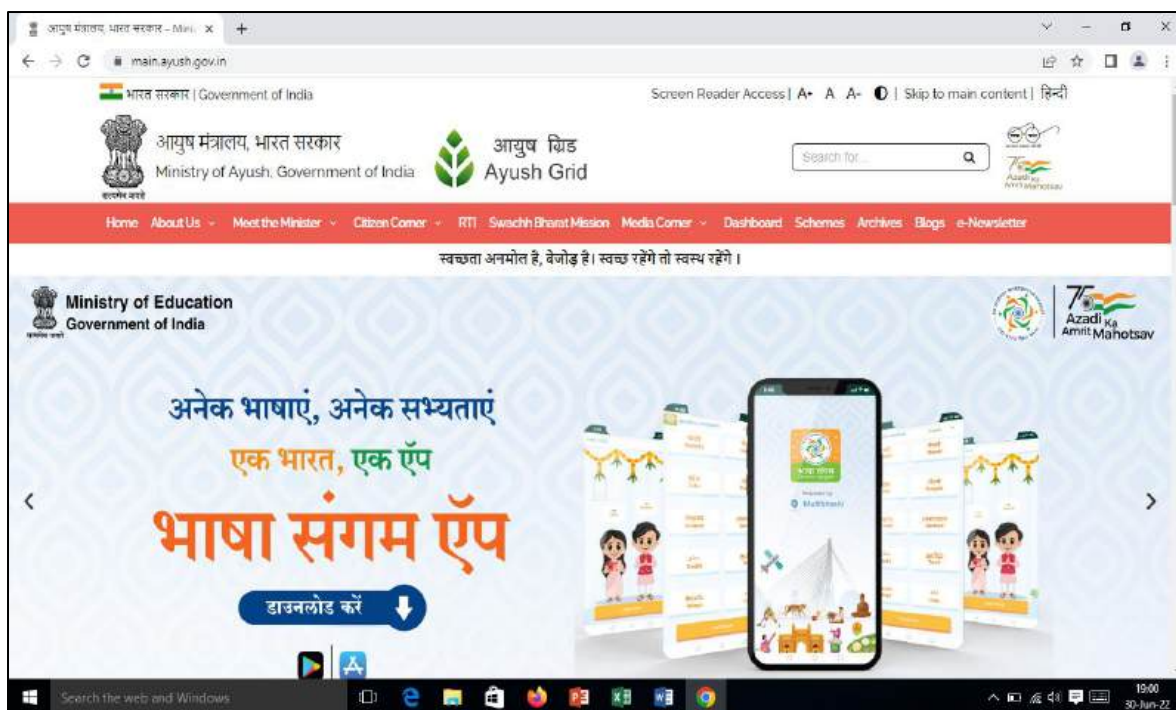
**URL:** <https://main.ayush.gov.in/>

**Cabinet Minister:** Shri Sarbananda Sonowal

**Minister of State:** Dr. Munjpara Mahendrabhai Kalubhai

**About MoA:** The Ministry of Ayush was established on November 9, 2014, with the goal of revitalizing India's ancient medical systems and ensuring the optimal development and propagation of Ayush healthcare systems. Previously, the Department of Indian System of Medicine and Homoeopathy (ISM & H), established in 1995, was in charge of the development of these systems. In November 2003, it was renamed as the Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (Ayush), with a focus on education and research in Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (Ministry of Ayush, Government of India, n.d.).

The Ministry of Ayush was established on November 9, 2014, with the goal of revitalising our ancient medical systems and ensuring the optimal development and propagation of Ayush healthcare systems. Previously, the Department of Indian System of Medicine and Homoeopathy (ISM&H), established in 1995, was in charge of the development of these systems. In November 2003, it was renamed the Department of Ayurveda, Yoga, and Naturopathy, Unani, Siddha, and Homoeopathy (Ayush), with a focus on education and research in Ayurveda, Yoga, and Naturopathy, Unani, Siddha, and Homoeopathy (Ministry of Ayush, Government of India, n.d.).



**Figure 26: Screenshot of the Homepage of Ministry of Ayush**

## **5.2 Ministry of Civil Aviation**

**Official Address:** Rajiv Gandhi Bhawan 110003,

Block B, Safdarjung Airport Area, New Delhi, Ph. - 011-24610364

**URL:** <https://www.civilaviation.gov.in/>

**Cabinet Minister:** Shri Jyotiraditya M. Scindia

**Minister of State:** Gen. (Dr.) V. K. Singh (Retd.)

**About the Ministry:** The Ministry of Civil Aviation, which is established at the Safdarjung Airport in Rajiv Gandhi Bhavan, New Delhi, is in the charge of developing national policies and programs for the country's growth and regulation in Civil Aviation Sector. It is in charge of administering the Aircraft Act of 1934, the Aircraft Rules of 1937, and a number of other laws that affect the country's aviation industry. Attached and autonomous organizations like the Directorate General of Civil Aviation, the Bureau of Civil Aviation Security, and the Indira Gandhi Rashtriya Uran Akademi are under this Ministry's administrative control, as are affiliated Public Sector Undertakings like the Airports Authority of India and Pawan Hans Helicopters Limited. This Ministry also has administrative control over the Commission of

Railway Safety, which is mandated by the Railways Act of 1989 to ensure the safety of rail travel and operations (Ministry of Civil Aviation, n.d.).



Figure 27: Screenshot of the Homepage of Ministry of Civil Aviation

### 5.3 Ministry of Coal

**Official Address:** Ministry of Coal, Shastri Bhawan, New Delhi- 110001 ph-23387277/23383109

**URL:** <https://coal.gov.in/>

**Cabinet Minister:** Shri Pralhad Joshi

**Minister of State:** Shri Raosaheb Patil Danve

**About the Ministry:** The Ministry of Coal is in charge of all matters related to the exploration and development of coal and lignite reserves, including the approval of significant, high-value projects and all related decisions. These essential responsibilities are carried out by the Public Sector Undertakings, specifically Neyveli Lignite corporation India Limited (NLCIL) and Coal India Ltd. and its subsidiaries, which are under the Ministry's administrative control. Singareni Collieries Company Limited is a joint venture between the Ministry of Coal and the Government of Telangana in addition to Coal India Ltd. and Neyveli Lignite Corporation India

Ltd. Telangana's government owns 51% of the company, while India's government owns 49% (Ministry of Coal, n.d.).



**Figure 28: Screenshot of the Homepage of Ministry of Coal**

## 5.4 Ministry of Cooperation

**Official Address:** Atal Akshay Urja Bhawan, CGO Complex, Lodhi Road, Behind NIA Building

New Delhi- 110003, Phone No. 20849026

**URL:** <http://cooperation.gov.in/Cooperation.aspx>

**Cabinet Minister:** Shri Amit Shah

**Minister of State:** Shri B. L. Verma

**About the Ministry:** Through a Cabinet Secretariat Gazette Notification dated July 6, 2021, the existing entries related to cooperation and cooperative in the business of the former Ministry of Agriculture, Cooperation, and Farmers Welfare were transferred to the Ministry of Cooperation. The Hon'ble Minister for Cooperation, Shri Amit Shah, is in charge of the ministry, with the assistance of the Hon'ble Minister of State for Cooperation, Shri B. L. Verma. The Ministry's administrative head is the Secretary, Cooperation. One Additional Secretary, two Joint Secretaries, and a Central Registrar of Cooperative Societies support the Secretary, Cooperation (Ministry of Cooperation, n.d.).

A distinct administrative, legal, and policy framework for bolstering the nation's cooperative movement is the responsibility of the Ministry. It aims to develop a cooperative-based economic model in which each member works with a spirit of responsibility and to deepen cooperatives as a true people-based movement that reaches down to the grassroots (Ministry of Cooperation, n.d.).

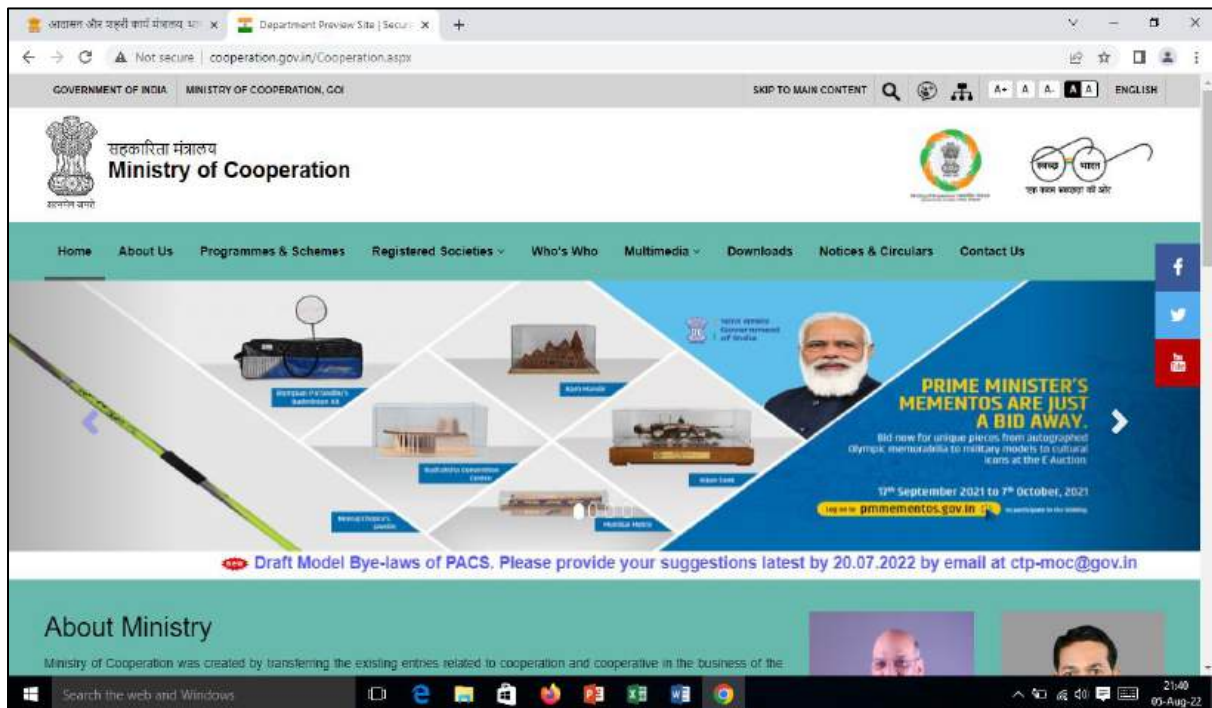


Figure 29: Screenshot of the Homepage of Ministry of Cooperation

## 5.5 Ministry of Corporate Affairs

**Official Address:** A Wing, Shastri Bhawan, Rajendra Prasad Road, New Delhi- 110001

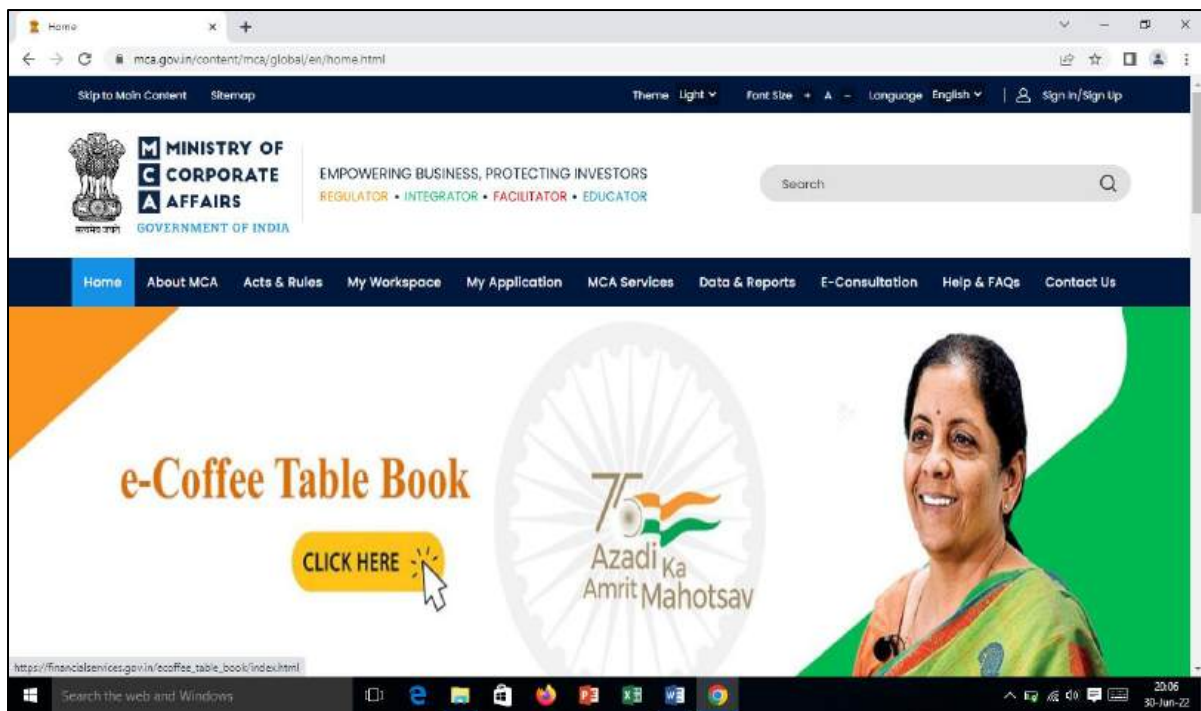
**URL:** <https://www.mca.gov.in/content/mca/global/en/home.html>

**Cabinet Minister:** Smt. Nirmala Sitharaman

**Minister of State:** Sh. Rao Inderjit Singh

**About the Ministry:** in order to enable corporations to effectively contribute to national development, the Ministry of Corporate Affairs (MCA) provides them with a regulatory and administrative framework. Through the administration of the Companies Act of 2013, the Insolvency and Bankruptcy Code of 2016, the Competition Act of 2002, and a few other related statutes, the Ministry hopes to be a facilitator of corporate governance of world-class quality (Ministry of Corporate Affairs, n.d.).

The Ministry's primary responsibility is the administration of the Companies Act of 2013, the Insolvency and Bankruptcy Code of 2016, the Competition Act of 2002, and a few other related statutes, the Ministry hopes to be a facilitator of corporate governance of world-class quality. The administration of the Companies Act of 2013, the Companies Act of 1956, the Limited Liability Partnership Act of 2008, and other related Acts, as well as the rules and regulations drafted thereunder, is the primary responsibility of the Ministry. These Acts are primarily responsible for ensuring that the corporate sector operates as per the law (Ministry of Corporate Affairs, n.d.).



**Figure 30: Screenshot of the Homepage of Ministry of Corporate Affairs**

## 5.6 Ministry of Culture

**Official Address:** C-Wing; Shastri Bhawan; New Delhi

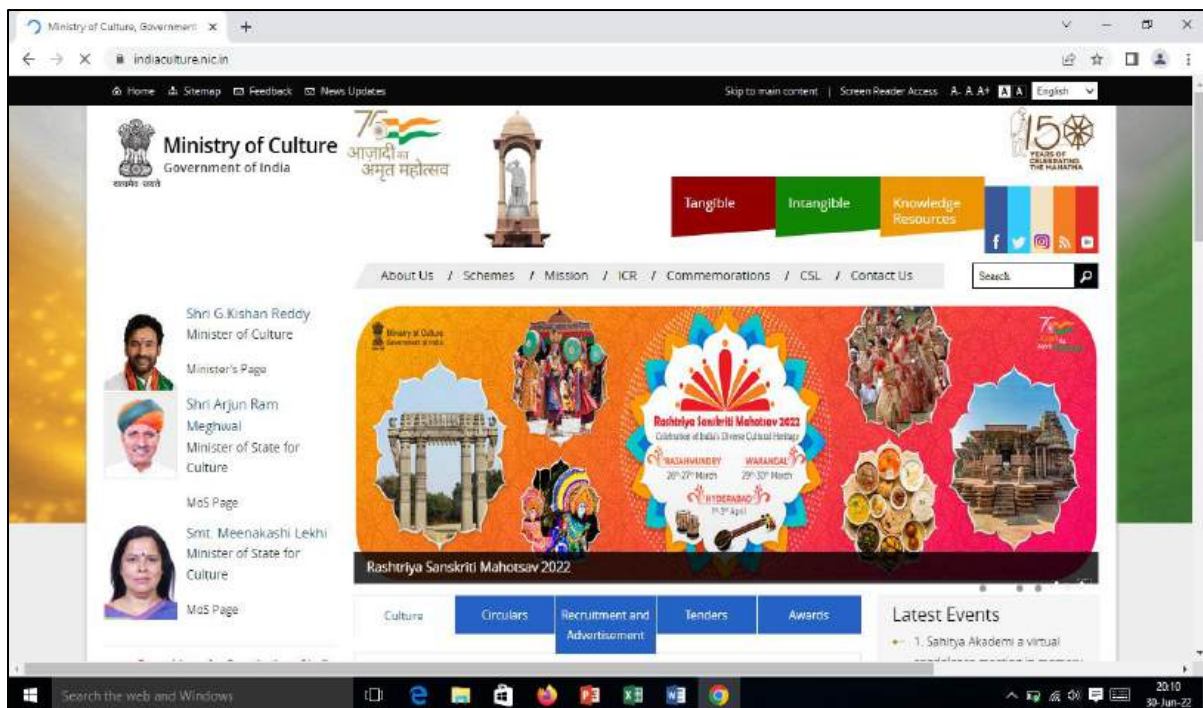
**URL:** <https://www.indiaculture.nic.in/>

**Cabinet Minister:** Shri G. Kishan Reddy

**Minister of State:** Shri Arjun Ram Meghwal, Smt. Meenakshi Lekhi

**About the Ministry:** Any nation's development plan is heavily influenced by its culture. It is a collection of shared values, goals, attitudes, and practices. Most economic, social, and other activities are influenced by culture and creativity. The diversity of India's culture is a symbol

of the country's diversity. The functions of the Ministry of Culture include the preservation and conservation of our cultural heritage as well as the promotion of all forms of art and culture—tangible and intangible—as part of its mandate. The Ministry's responsibility is to devise and maintain strategies for maintaining the people's active and dynamic creative and aesthetic sensibilities. This Ministry has a wide range of functions, from raising cultural awareness at the local level to encouraging international cultural exchange. The Ministry engages in a variety of activities arising from subjects assigned by the Government in order to accomplish these goals of India's Business Rules Allocation (Ministry of Culture, c2022).



**Figure 31: Screenshot of the Homepage of Ministry of Culture**

## 5.7 Ministry of Defence

**Official Address:** Room No. 501, 'C' Wing, Shastri Bhawan, New Delhi- 110001

**URL:** <https://www.mod.gov.in/>

**Cabinet Minister:** Shri Rajnath Singh

**Minister of State:** Shri Ajay Bhatt

**About the Ministry:** The defense of India and all of its parts is the responsibility of the Indian government. The President holds the Armed Forces' Supreme Command. The Cabinet is in charge of ensuring the nation's defense. This is carried out by the Ministry of Defence, which

gives the Armed Forces the policy framework and tools they need to carry out their duties as part of the country's defense. The Ministry of Defence is headed by the Raksha Mantri, or Defense Minister. The Defense Ministry's primary responsibility is to obtain policy directives from the government on all matters pertaining to defense and security and to communicate them to the Services Headquarters, Inter-Services Organizations, Production Establishments, and Research and Development Organizations for implementation. It is also necessary to guarantee that approved programs are carried out within the allotted resources and that the government's policy directions are effectively implemented. The Ministry of Defense has five Departments, namely Department of Defense (DOD), Department of Defense Production (DDP), Department of Defense Research and Development (DDR&D), Department of Ex-Servicemen's Welfare, and Finance Division are all parts of the Department of Defense (Ministry of Defence, n.d.).



**Figure 32: Screenshot of the Homepage of Ministry of Defence**

## 5.8 Ministry of Development of North Eastern Region

**Official Address:** Vigyan Bhawan Annexe,

Maulana Azad Road, New Delhi- 110011

**URL:** <https://mdoner.gov.in/#>

**Cabinet Minister:** Shri G. Kishan Reddy

**Minister of State:** Shri B. L. Verma

**About the Ministry:** the responsibilities of the Ministry of Development of North Eastern Region are: planning, implementation and monitoring of development projects and plans. Its goal is to get the region's socio-economic development moving faster so that it can grow at the same rate as the rest of the country (Ministry of Development of North Eastern Region, c2022).



**Figure 33: Screenshot of the Homepage of Ministry of Development of North Eastern Region**

## 5.9 Ministry of Earth Sciences

**Official Address:** Prithvi Bhawan, Lodhi Road

New Delhi 110003 Phone No. +91-11-24669578

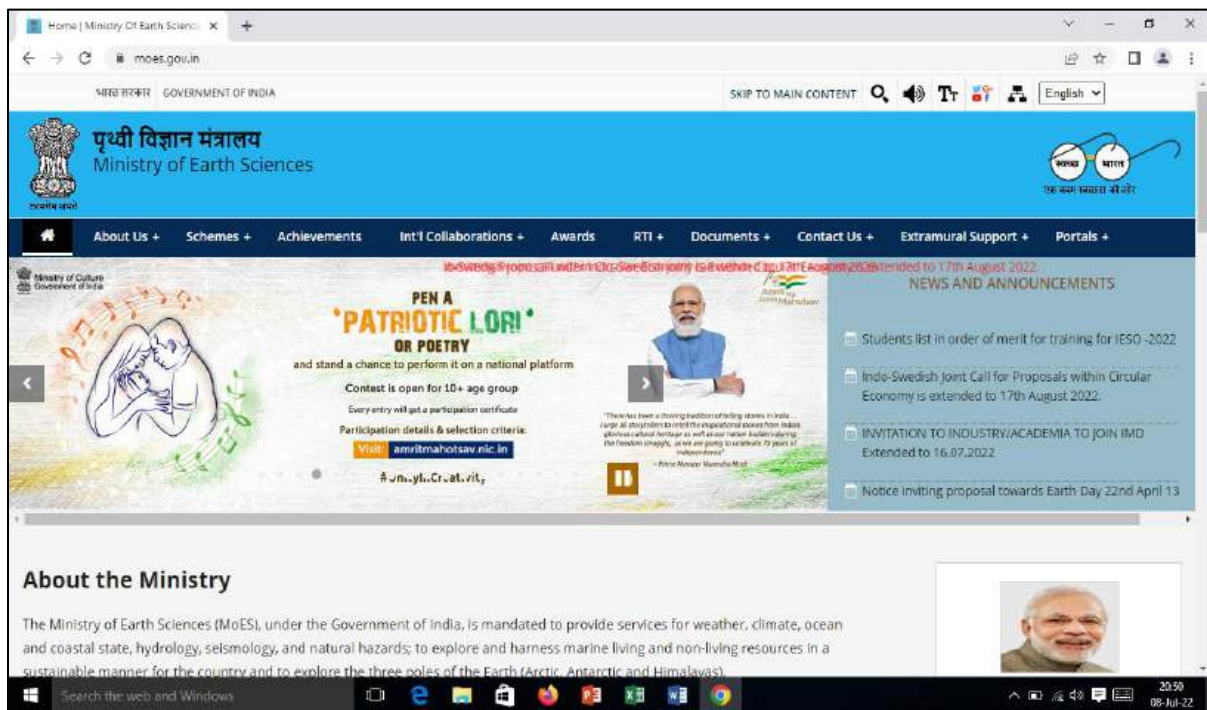
**URL:** <https://moes.gov.in/>

**Cabinet Minister:** Nil

**Minister of State:** Dr Jitendra Singh (Independent Charge)

**About the Ministry:** The Indian government's Ministry of Earth Sciences (MoES) is responsible for providing services related to weather, climate, ocean and coastal state, hydrology, seismology, and natural hazards; to investigate the three polar regions of the Earth—the Arctic, Antarctic, and Himalayas—and to explore and exploit marine resources in a sustainable manner for the nation (Ministry of Earth Sciences, n.d.).

The Department of Ocean Development (DOD), which was established in July 1981 as a component of the Cabinet Secretariat directly accountable to the Prime Minister of India, was formerly known as MoES. In March 1982, it was established as a separate department. The former Department of Defense served as the nation's focal point for organizing, promoting, and coordinating ocean development initiatives. In February 2006, the Indian government designated DOD as the Ministry of Ocean Development (Ministry of Earth Sciences, n.d.).



**Figure 34: Screenshot of the Homepage of Ministry of Earth Sciences**

## 5.10 Ministry of Education

**Official Address:** Shastri Bhawan

New Delhi- 110001

**URL:** <https://www.education.gov.in/en>

**Cabinet Minister:** Shri Dharmendra Pradhan

**Minister of State:** Smt. Annpurna Devi, Dr. Subhas Sarkar and Dr. Rajkumar Ranjan Singh

**About the Ministry:** The country's socioeconomic fabric is balanced by education, which plays a significant and remedial role. India's citizens are its most valuable resource, and in order to improve its quality of life, our billion-strong nation requires basic education. This necessitates that our citizens develop holistically, which can be accomplished by laying solid

educational foundations. The Ministry of Education (MoE) was established on September 26, 1985, as part of the 174th amendment to the Government of India (Allocation of Business) Rules, 1961, in order to accomplish this goal. Currently, the MoE works through two departments: 1. Department of School Education & Literacy and 2. Department of Higher Education. While the Division of School Training and Proficiency is answerable for advancement of school instruction and proficiency in the country, the Branch of Advanced education deals with what is one of the biggest Advanced education frameworks of the world, soon after the US and China (Ministry of Education, n.d.).



**Figure 35: Screenshot of the Homepage of Ministry of Education**

## **5.11 Ministry of Electronics & Information Technology**

**Official Address:** Electronics Niketan, 6, CGO Complex, Lodhi Road, New Delhi- 110003

**URL:** <http://meity.gov.in/>

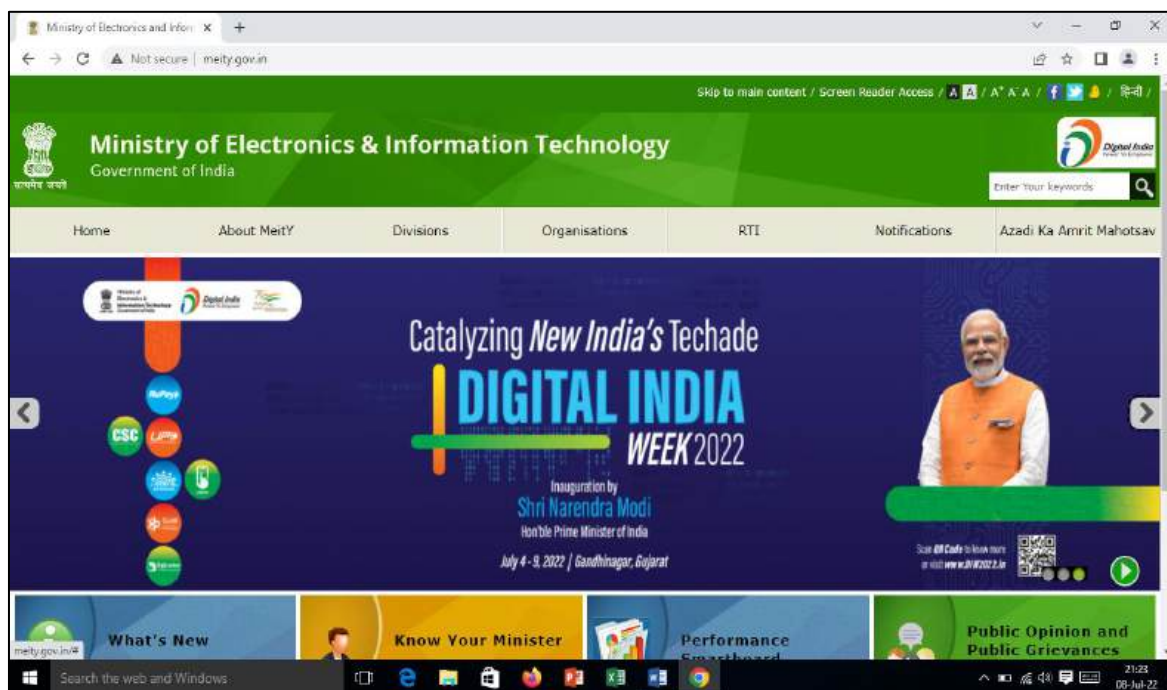
**Cabinet Minister:** Shri Ashwini Vaishnaw

**Minister of State:** Shri Rajeev Chandrasekhar

**About the Ministry:** An executive ministry of the Union Government of the Republic of India is the Ministry of Electronics and Information Technology. On July 19, 2016, it was separated from the Ministry of Communications and Information Technology to become a separate ministerial organization in charge of IT policy, strategy and the growth of the electronics sector.

In 2012, it changed its name from “The Department of Information Technology” to “The Department of Electronics and Information Technology” (Ministry of Electronics and Information Technology, 2023).

The missions of the Ministry are to advance e-governance for the purpose of empowering citizens, to advance inclusive and sustainable growth of the electronics, information technology and related services industries, to strengthen India’s position in Internet governance, a multi-pronged strategy that includes the development of human resources, the promotion of research and development (R & D) and innovation, the improvement of efficiency through digital services and the maintenance of a secure cyberspace must be used (Ministry of Electronics and Information Technology, 2023).



**Figure 36: Screenshot of the Homepage of Ministry of Electronics & Information Technology**

## 5.12 Ministry of Environment, Forest, and Climate Change

**Official Address:** Indira Paryavaran Bhawan, Jorbagh Road, New Delhi- 110003

**URL:** <https://moef.gov.in/en/>

**Cabinet Minister:** Mr. Bhupender Yadav

**Minister of State:** Shri. Ashwini Kumar Choubey

**About the Ministry:** The Ministry of Environment, Forest, and Climate Change is the central government agency responsible for planning, promoting, coordinating and supervising the implementation of India's environmental and forestry policies and programs. In addition with this, the Ministry serves as the country's nodal agency for the United Nations Environment Programme (UNEP), the South Asia Co-operative Environment Programme (SACEP), the International Centre for Integrated Mountain Development (ICIMOD), and UNCED's follow-up. The ministry is also responsible for environmental related issues involving multilateral organizations like the Commission on Sustainable Development (CSD), the Global Environment Facility (GEF), and regional organizations like the Economic and Social Council for Asia and the Pacific (ESCAP). The broad objectives of the Ministry are:

- Conservation and survey of flora, fauna, forests and wildlife;
- Prevention and control of pollution;
- Afforestation and regeneration of degraded areas;
- Protection of the environment and
- Ensuring the welfare of animals (Ministry of Environment, Forest, and Climate Change (c2021).



**Figure 37: Screenshot of the Homepage of Ministry of Environment, Forest and Climate Change**

### 5.13 Ministry of External Affairs

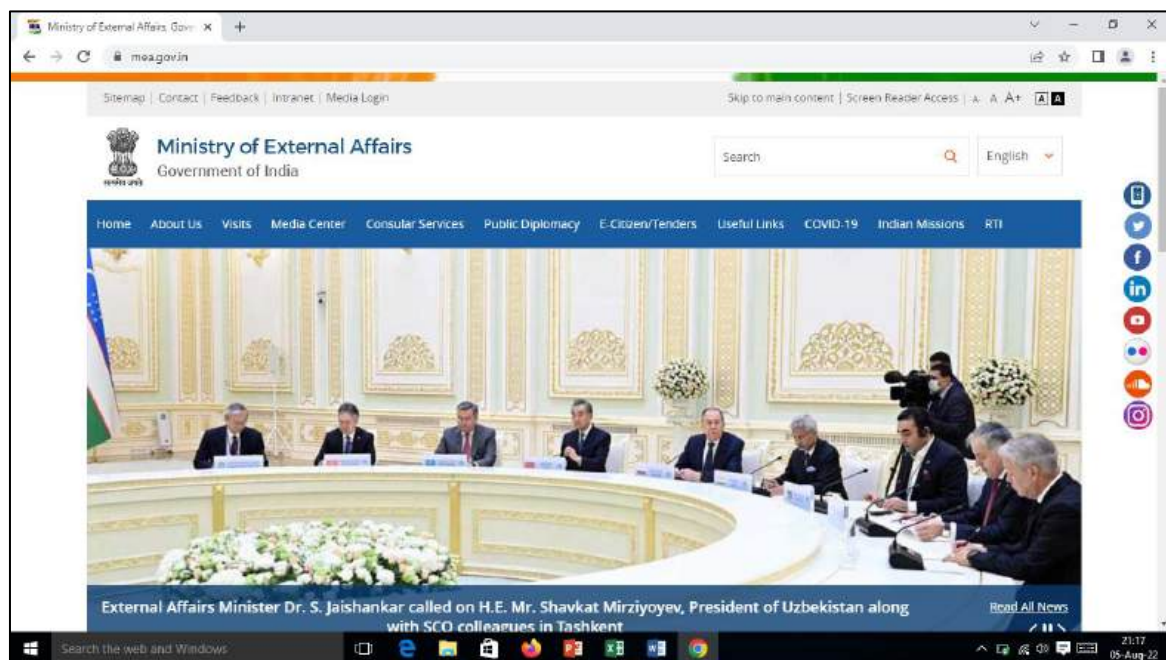
**Official Address:** South Block, Secretariat Building, Raisina Hill, New Delhi, Delhi, India.

**URL:** <https://mea.gov.in/>

**Cabinet Minister:** Dr. S. Jaishankar

**Minister of State:** V. Muraleedharan, Smt. Meenakashi Lekhi and Dr. Rajkumar Ranjan Singh

**About the Ministry:** India's Ministry of External Affairs is the government agency in charge of putting Indian foreign policy into action. The Minister of External Affairs, a Cabinet Minister, is in charge of the Ministry of External Affairs. The most senior civil servant in charge of the Department of Foreign Affairs is the Foreign Secretary, an Indian Foreign Service officer. Through embassies, the Ministry represents the Government of India. It is also in charge of India's representation at the United Nations and other international organizations, as well as expanding and protecting India's influence and Indian interests worldwide by providing billion-dollar development aid to other nations. Additionally, it provides foreign government and institution advice to other Ministries and State Governments (Ministry of External Affairs, c2022).



**Figure 38: Screenshot of the Homepage of Ministry of External Affairs**

## 5.14 Ministry of Finance

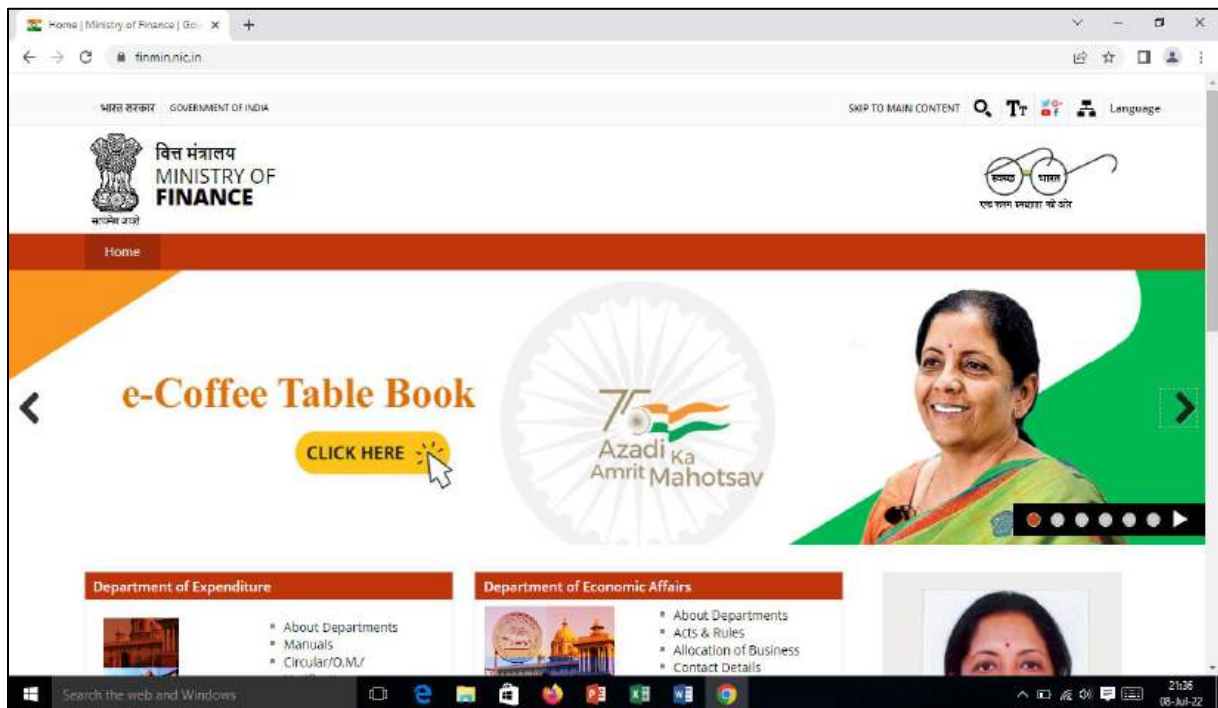
**Official Address:** Cabinet Secretariat, Raisina Hill, New Delhi

**URL:** <https://www.finmin.nic.in/>

**Cabinet Minister:** Smt. Nirmala Sitharaman

**Minister of State:** Dr. Bhagwat Kishanrao Karad, Shri Pankaj Chaudhary

**About the Ministry:** The Indian government's Ministry of Finance is responsible for the country's economy and serves as the country's Treasury. Taxation, financial regulations, financial institutions, capital markets, central and state finances, and the Union Budget are just a few of the topics it addresses. The Indian Revenue Service, the Indian Audit and Accounts Service, the Indian Economic Service, and the Indian Civil Accounts Service are the four central civil services that are overseen by the Ministry of Finance. Indian Cost and Management Accounts Service, one of the central commerce services, is also under its control (Ministry of Finance, n.d.).



**Figure 39: Screenshot of the Homepage of Ministry of Finance**

## **5.15 Ministry of Food Processing Industries**

**Official Address:** Panchsheel Bhawan, August Kranti Marg, Khelgaon, New Delhi- 110049

Fax No. 011-26493228

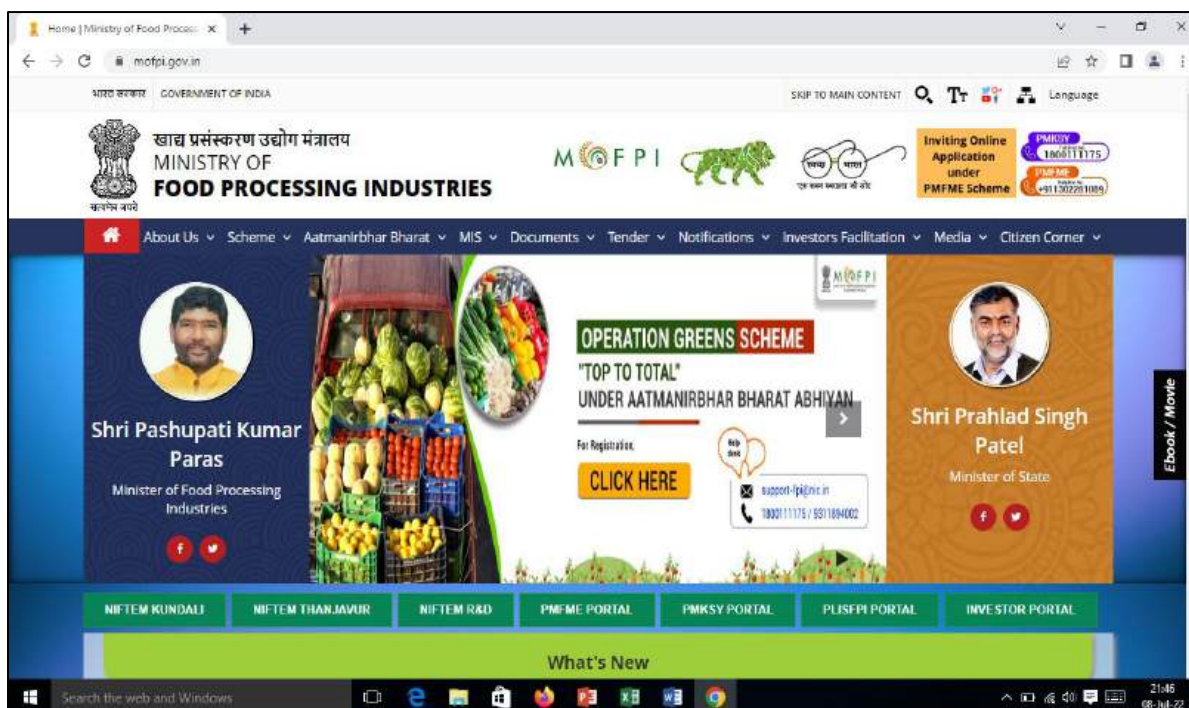
**URL:** <https://www.mofpi.gov.in/>

**Cabinet Minister:** Shri Pashupati Kumar Paras

**Minister of State:** Shri Prahlad Singh Patel

**About the Ministry:** Reducing the waste of perishable agricultural produce, increasing food product shelf life, ensuring value addition to agricultural produce, diversifying and commercializing agriculture, creating employment, increasing farmers' incomes, and creating surplus for the export of agro-processed foodstuffs all require a thriving food processing industry. During the era of economic liberalization, every sector, including; The Ministry encourages the active participation of the private, public, and cooperative sectors, each of which has clearly defined responsibilities. The Ministry of Food Processing Industries has a clear goal of making food processing a national initiative by facilitating and acting as a catalyst for quality investments in this sector from within and outside of India. With this overall objective, the Ministry aims to:

- Enhance farmer's income by better utilization and value addition of agricultural produce
- Minimize wastage at all stages in the food processing chain by developing infrastructure for storage, transportation and processing of agro-food produce;
- Introduce of modern technology into the food processing industries from both domestic and external sources;
- Encourage R&D in food processing for product and process development and improved packaging;
- Provide policy support, and support for creation of Infrastructure, capacity expansion/ Upgradation and other supportive measures form the growth of this sectors;
- Promote export of processed food products (Ministry of Food Processing Industries, n.d.).



**Figure 40: Screenshot of the Homepage of Ministry of Food Processing Industries**

## 5.16 Ministry of Health and Family Welfare

**Official Address:** Cabinet Secretariat, Raisina Hill, New Delhi

**URL:** <https://main.mohfw.gov.in/>

**Cabinet Minister:** Dr. Mansukh Mandaviya

**Minister of State:** Dr. Bharati Pravin Pawar

**About the Ministry:** the Ministry of Health and Family Welfare under Indian government is in charge of health policy in India. It is also in charge of all of India's government programs for family planning. As a member of the Council of Ministers, the Minister of Health and Family Welfare possesses cabinet rank. Through the Indian Pharmacopoeia Commission (IPC), an independent body responsible for setting standards for drugs, pharmaceuticals and healthcare devices and technologies in India, the Ministry has published the Indian Pharmacopoeia on a regular basis since 1955 (Ministry of Health and Family Welfare, n.d.).



**Figure 41: Screenshot of the Homepage of Ministry of Health & Family Welfare**

### 5.17 Ministry of Heavy Industries

**Official Address:** Room No. 176, Udyog Bhawan, New Delhi, Phone No. 23063598 (O), 23061339 (O)

**URL:** <https://heavyindustries.gov.in/>

**Cabinet Minister:** Dr. Mahendra Nath Pandey

**Minister of State:** Shri Krishan Pal

**About the Ministry:** the Ministry of Heavy Industries is responsible for managing 29 operational Central Public Sector Enterprises (CPSEs), 4 autonomous organizations, functioning machine tools, heavy electrical, industrial machinery and auto industries. The CPSEs under the Ministry are involved in contracting, consulting and manufacturing. The CPSEs run by the Ministry produce a variety of goods. Boilers, gas/steam/hydro turbines, industrial equipment, turbo generators, tractors and consumer goods including paper, salt, tyres and watches are just a few examples. The Ministry also oversees the machine-building sector and meets the equipment needs of fundamental sectors like paper, cement, sugar, steel, non-ferrous metals, power, fertilizers, refineries and petrochemicals. A variety of intermediate technical goods, including castings, forgings, diesel engines, industrial gears and gearboxes are supported by the Ministry (Ministry of Heavy Industries, n.d.).

The Ministry supports initiatives for the expansion of the industry and keeps close communication with industry associations. The Ministry also helps the industry to achieve its growth ambitions through supporting for legislative initiatives, appropriate interventions for restructuring trade and tariffs, promotion of technological collaboration and advancement, research and development efforts etc. (Ministry of Heavy Industries, n.d.)



**Figure 42: Screenshot of the Homepage of Ministry of Heavy Industries**

## 5.18 Ministry of Home Affairs

**Official Address:** Room No.- 104, North Block, New Delhi- 110001 India

**URL:** <https://www.mha.gov.in/>

**Cabinet Minister:** Amit Shah

**Minister of State:** Shri Nityanand Rai, Shri Ajay Kumar Mishra & Shri Nisith Pramanik

**About the Ministry:** Internal security, border management, center-state relations, administration of Union Territories, management of Central Armed Police Forces, disaster management and other important functions fall under the purview of the Ministry of Home Affairs (MHA). Even though “public order” and “police” are listed in entries 1 and 2 of List II, which is called the “State List,” in the Seventh Schedule to the Indian Constitution, the states are responsible for maintaining “public order” and “police” (Ministry of Home Affairs, c2022).

However, Article 355 of the Constitution requires the Union to “protect every State against external aggression and internal disturbance” and to make sure that each state’s government operates in accordance with the Constitution. In order to fulfill these responsibilities, the Ministry of Home Affairs continuously monitors the internal security situation, issues appropriate advisories, shares intelligence and provides the State Governments with guidance, expertise, manpower and financial support for the maintenance of security, peace and harmony without violating the constitutional rights of states (Ministry of Home Affairs, c2022).



**Figure 43: Screenshot of the Homepage of Ministry of Home Affairs**

## **5.19 Ministry of Housing and Urban Affairs**

**Official Address:** Nirman Bhawan, New Delhi

**URL:** <https://mohua.gov.in/>

**Cabinet Minister:** Hardeep S. Puri

**Minister of State:** Kaushal Kishore

**About the Ministry:** The highest authority in India to formulate policies, sponsor and support programs, coordinate the activities of various Central Ministries, State Governments, and other nodal authorities, and monitor programs pertaining to all housing and urban affairs issues in the country is the Ministry of Housing and Urban Affairs. The Indian Constitution has given the State Governments authority over issues related to urban development. Numerous of these

responsibilities have been further delegated to urban local bodies by the Constitution (74th Amendment) Act. The government's legal and constitutional authority of India is restricted to Delhi and other Union Territories, as well as to subjects over which the Union Parliament is authorized by State Legislatures (Ministry of Housing and Urban Affairs, c2017).

However, the government of India plays a much larger and more significant role in determining the overall policies and programs of the nation. The government makes decisions about national policy issues. of India, which also provides funding through national financial institutions, provides resources to State Governments through a variety of Centrally Sponsored Schemes, and supports a variety of external assistance programs for the country's overall urban development. The indirect impact of the government's fiscal, economic, and industrial location choices of India have a much greater impact on the pattern of India's urbanization and real estate investment (Ministry of Housing and Urban Affairs, c2017).



**Figure 44: Screenshot of the Homepage of Ministry of Housing and Urban Affairs**

## **5.20 Ministry of Information and Broadcasting**

**Official Address:** 22, Akbar Road, New Delhi

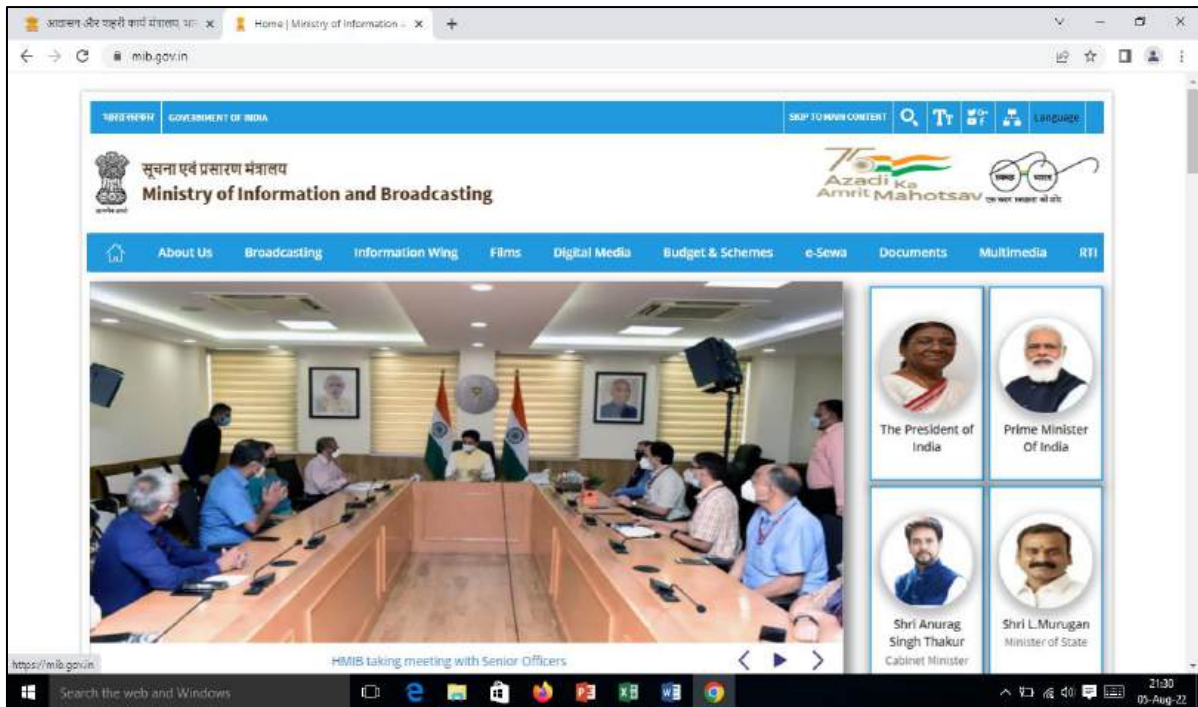
**URL:** <https://mib.gov.in/>

**Cabinet Minister:** Shri Anurag Singh Thakur

**Minister of State:** Dr. L. Murugan

**About the Ministry:** one of the first ministries established following India's independence was the Ministry of Information and Broadcasting. Sardar Vallabhbhai Patel served as India's first Minister for Information and Broadcasting. One of the most important ministries that serves as the public face of the government is the Ministry of Information and Broadcasting. The ministry is responsible for providing information to the public about government programmes, policies and plans through a variety of mass communication channels, including radio, television, the press, social media and printed publications like posters, booklets, outdoor advertising and traditional means of communication such as dance, drama, folk performances, puppet shows etc. Policy issues pertaining to the private broadcasting sector, the administration of the public broadcasting service Prasar Bharati, multi-media advertising and publicity of the Union Government's policies and programmes, film promotion and certification, print media regulation are all handled by the concerned Ministry (Ministry of Information and Broadcasting, n.d.).

Through the Prasar Bharati Broadcasting Corporation of India Act of 1990, the ministry oversees matters pertaining to All India Radio and Doordarshan in the realm of public service broadcasting. This act regulates the use of All India Radio and Doordarshan by recognized national and regional political parties during elections to the Lok Sabha and State Assemblies, as well as the procedure that the official electronic media must follow during times of national mourning following the death of a high dignitary. The Ministry of Information & Broadcasting is functionally organized into three wings (i) Information Wing, (ii) Broadcasting Wing and (iii) Films Wing (Ministry of Information and Broadcasting, n.d.).



**Figure 45: Screenshot of the Homepage of Ministry of Information and Broadcasting**

## 5.21 Ministry of Jal Shakti

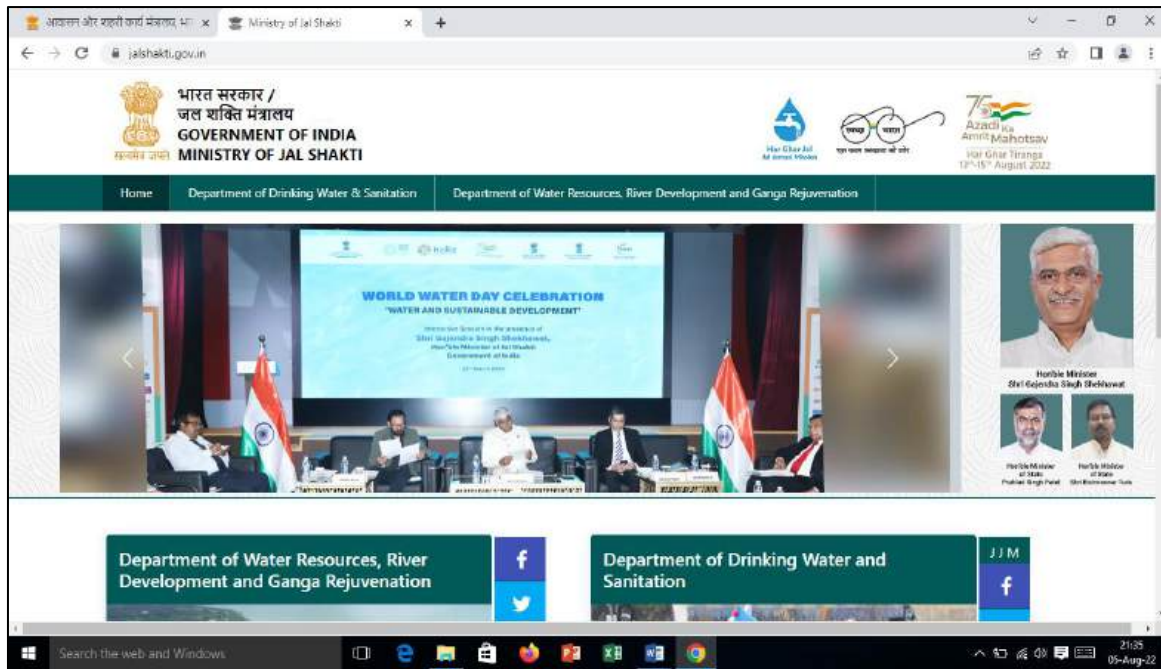
**Official Address:** e-Governance Cell, 6<sup>th</sup> Floor Cabin, Shram Shakti Bhawan, Rafi Marg, New Delhi – 110001

**URL:** <https://jalshakti.gov.in/>

**Cabinet Minister:** Gajendra Singh Shekhawat

**Minister of State:** Prahlad Singh Patel, Bishweswar Tudu

**About the Ministry:** The Government of India's Ministry of Jal Shakti was established in May 2019 as part of the second Modi ministry. This resulted from the combination of two ministries; Ministry of Drinking Water and Sanitation and the Ministry of Water Resources, River Development, and Ganga Rejuvenation. The establishment of this ministry demonstrates India's seriousness regarding the country's mounting water issues over the past few decades. WAPCOS is a multinational Indian consulting and government undertaking that is entirely owned by the Ministry of Jal Shakti, India's government. RK Gupta was the managing director of WAPCOS in the past (Ministry of Jal Shakti, n.d.).



**Figure 46: Screenshot of the Homepage of Ministry of Jal Shakti**

## 5.22 Ministry of Labour and Employment

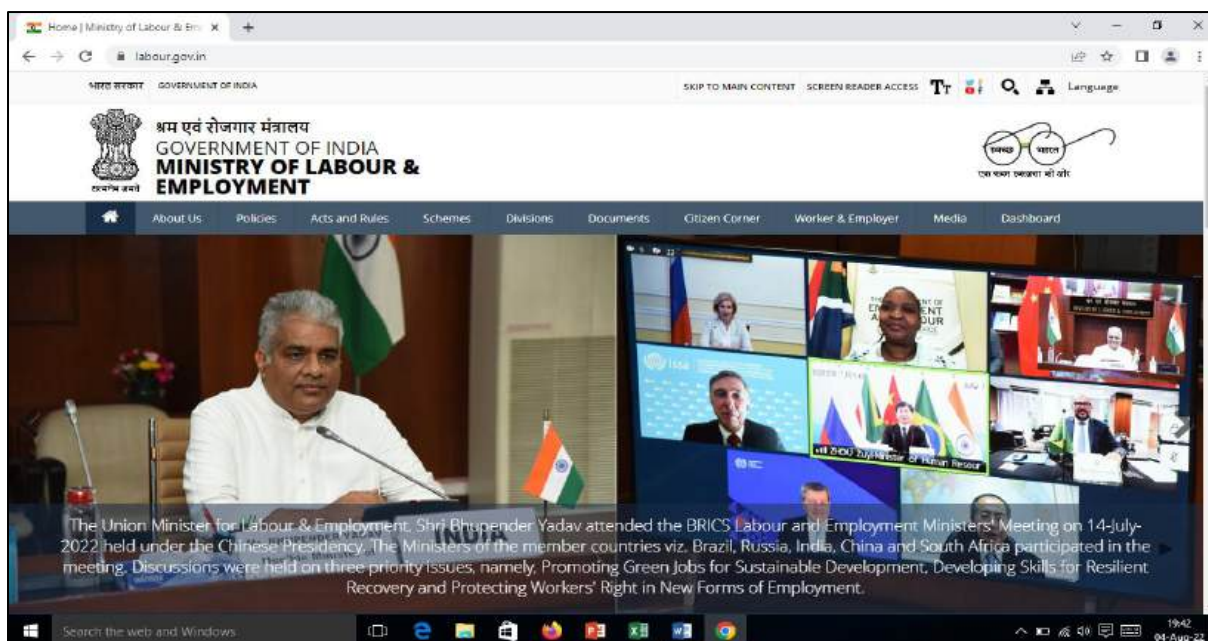
**Official Address:** Shram Shakti Bhawan, Rafi Marg, New Delhi- 110001

**URL:** <https://labour.gov.in/>

**Cabinet Minister:** Shri Bhupender Yadav

**Minister of State:** Shri Rameswar Teli

**About the Ministry:** One of India's oldest and most significant ministries is the Ministry of Labor and Employment. The Ministry's primary responsibility is to develop and coordinate vocational skill training and employment services, as well as to protect and safeguard the interests of workers in general and those from poor, disadvantaged, and disadvantaged sections of society, in particular. This includes creating a healthy work environment for increased production and productivity. Along with the process of liberalization, the government is also focusing on welfare promotion and providing social security to the workforce, both in organized and unorganized sectors. The enactment and implementation of various labor laws, which regulate the terms and conditions of service and employment of workers, is intended to accomplish these goals. Because labor is on the concurrent list under the Indian Constitution, the State Governments are also able to pass laws (Ministry of Labour and Employment, n.d.).



**Figure 47: Screenshot of the Homepage of Ministry of Labour & Employment**

## 5.23 Ministry of Law and Justice

**Official Address:** Room No. 433, A Wing, Shastri Bhawan, New Delhi- 110001

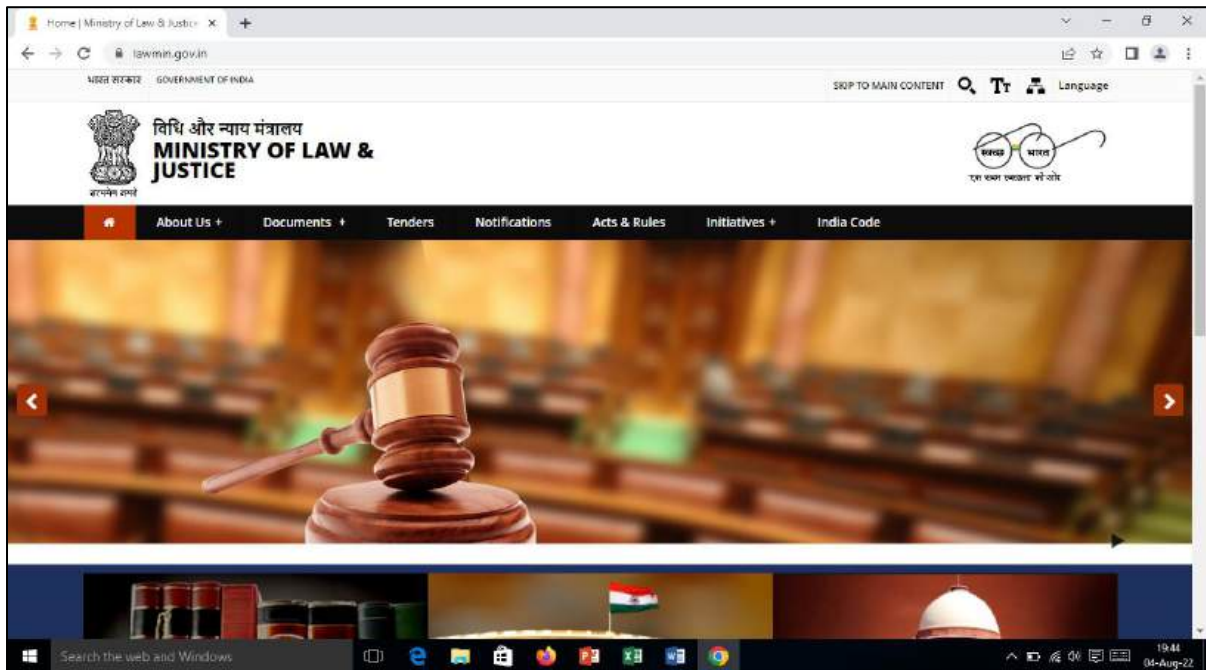
**URL:** <https://lawmin.gov.in/>

**Cabinet Minister:** Shri Kiren Rijiju

**Minister of State:** Prof. S. P. Singh Baghel

**About the Ministry:** The Ministry of Law and Justice is India's oldest government agency, established in 1833 by the British Parliament as part of the Charter Act. The aforementioned Act gave the Governor General in Council legislative power for the first time. From 1834 to 1920, the Governor General in Council enacted laws for the nation using this authority and the authority granted to him by section 22 of the Indian Councils Act 1861. The Indian Legislature, which was established as a result of the Government of India Act of 1919, had the authority to legislate after its passage. After the Government of India Act of 1919, the Government of India Act of 1935 came into effect. India became a Dominion after the Indian Independence Act of 1947 was passed. From 1947 to 1949, the Dominion Legislature enacted laws in accordance with section 100 of the Government of India Act 1935, as modified by the India (Provisional Constitution) Order of 1947. Legislative authority is vested in Parliament under the Indian Constitution, which went into effect on January 26, 1950 (Ministry of Law and Justice, n.d.).

The Legislative Department and the Department of Legal Affairs are part of the Ministry of Law and Justice. The Legislative Department is responsible for drafting the primary legislation for the Central Government, while the Department of Legal Affairs is responsible for advising the various Ministries of the Central Government (Ministry of Law and Justice, n.d.).



**Figure 48: Screenshot of the Homepage of Ministry of Law & Justice**

## **5.24 Ministry of Micro, Small and Medium Enterprises**

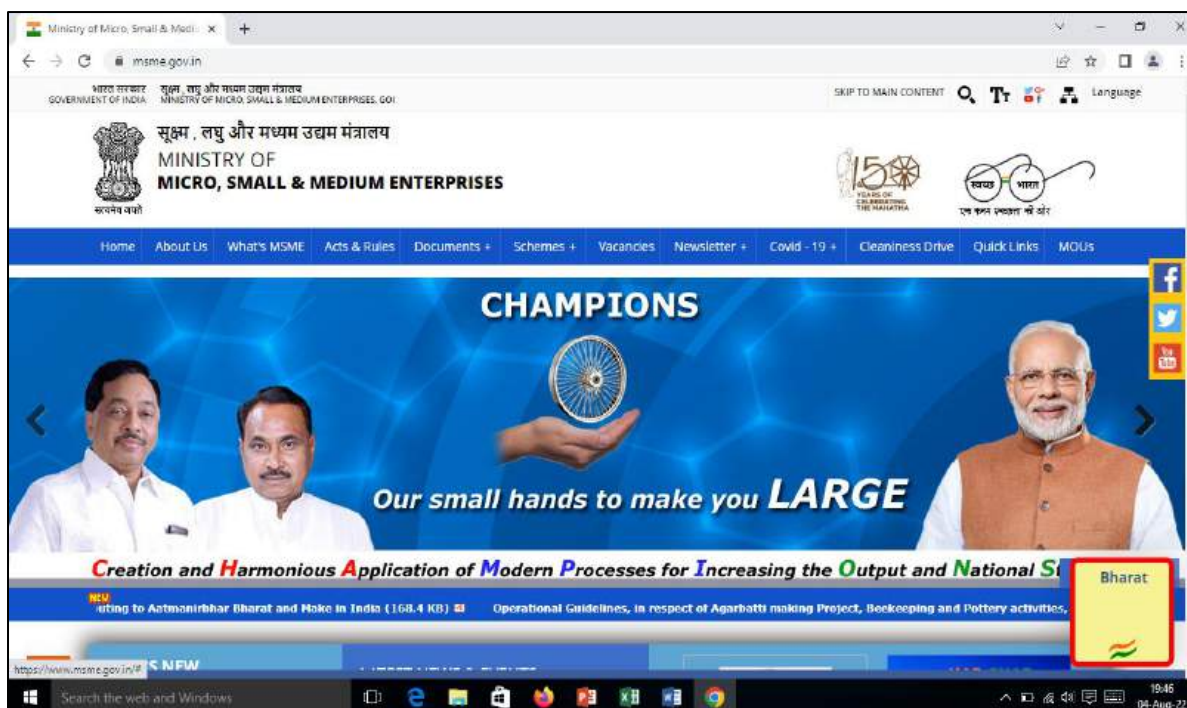
**Official Address:** Udyog Bhawan, Rafi Marg, New Delhi- 110011

**URL:** <https://www.msme.gov.in/>

**Cabinet Minister:** Sh Narayan Tatu Rane

**Minister of State:** Sh Bhanu Pratap Singh Verma

**About the Ministry:** Over the course of the past five decades, the Micro, Small, and Medium Enterprises (MSME) sector of the Indian economy has developed into a highly dynamic and vibrant sector. MSMEs not only help industrialize rural and backward areas, reducing regional imbalances and ensuring a more equitable distribution of national wealth and income, but they also play an important role in providing large employment opportunities at a lower capital cost than large industries. As ancillary units, MSMEs complement large industries and significantly contribute to the country's socioeconomic development (Ministry of Micro, Small and Medium Enterprises, n.d.).



**Figure 49: Screenshot of the Homepage of Ministry of Micro, Small & Medium Enterprises**

## 5.25 Ministry of Mines

**Official Address:** Shastri Bhawan, Dr. Rajendra Prasad Road, New Delhi- 110001

**URL:** <https://mines.gov.in/>

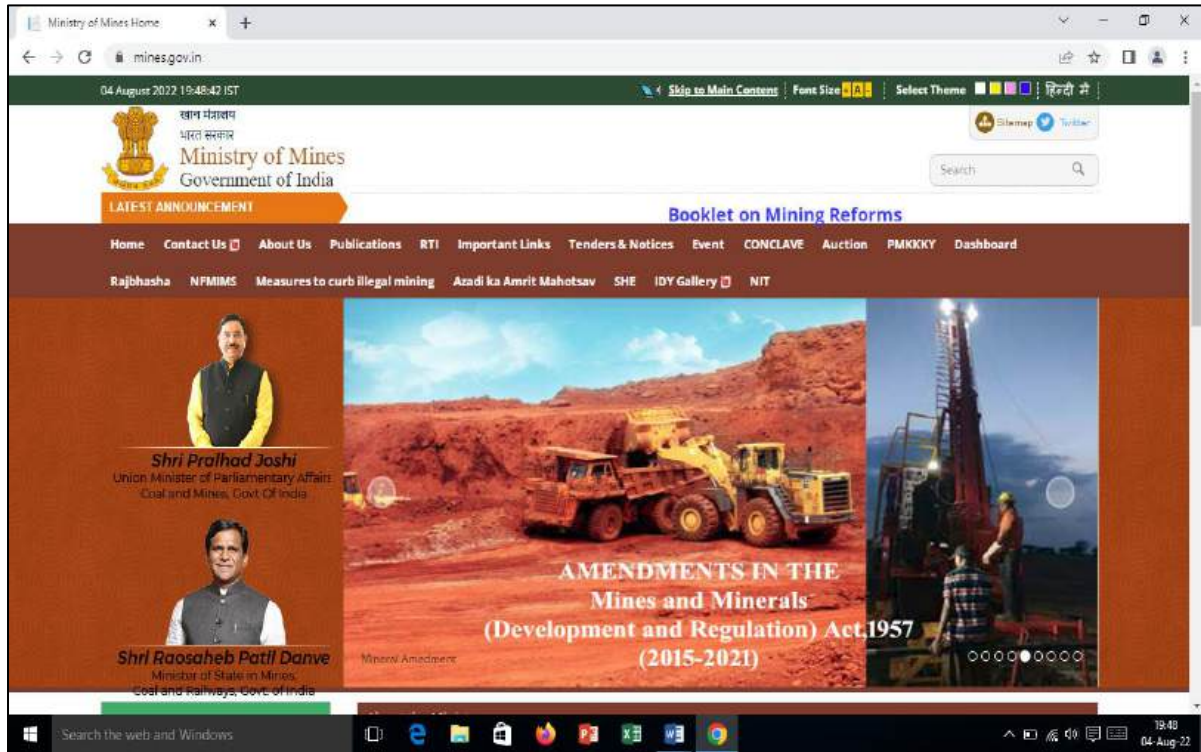
**Cabinet Minister:** Shri Pralhad Joshi

**Minister of State:** Shri Raosaheb Patil Danve

**About the Ministry:** Except for natural gases, petroleum, and atomic minerals, the Ministry of Mines is in charge of surveying and exploring all minerals for mining and metallurgy of non-ferrous metals like aluminum, copper, zinc, lead, gold, and nickel, among others. and to oversee the implementation of the Mines and Minerals (Regulation and Development) Act of 1957 for all mines and minerals other than petroleum, natural gas, and coal (Ministry of Mines, c2022).

During the reporting period, Shri Pralhad Joshi serves as Minister of Mines and is in charge of the Ministry of Mines. After the new government was formed on May 31, 2019, Shri Pralhad Joshi, along with Parliamentary Affairs and Coal, took over. On July 7, 2021, Shri Raosaheb Patil Danve will take over as Minister of State (Mines). One Additional Secretary, three Joint

Secretaries, one Joint Secretary & Financial Adviser (common for Ministry of Coal and Ministry of Mines), one Economic Adviser, and nine Directors / Deputy Secretaries—one Director (Economic Service), one Deputy Director (OL), one Assistant Director (OL)—make up the Ministry of Mines Secretariat. The Secretary is in charge of the organization (Ministry of Mines, c2022).



**Figure 50: Screenshot of the Homepage of Ministry of Mines**

## 5.26 Ministry of Minority Affairs

**Official Address:** 11th Floor, Pt. Deendayal Antyodaya Bhawan, CGO Complex, Lodhi Road, New Delhi- 110003

**URL:** <https://minorityaffairs.gov.in/>

**Cabinet Minister:** Smt. Smriti Zubin Irani

**Minister of State:** Shri John Barla

**About the Ministry:** On January 29, 2006, the Ministry of Minority Affairs was established from the Ministry of Social Justice & Empowerment in order to ensure a more focused approach to issues pertaining to the notified minority communities of Muslims, Christians, Budhists, Sikhs, Parsis, and Jain. Planning, coordination, evaluation, and review of the

regulatory framework and development programs for the benefit of minority communities are all part of the Ministry's mandate (Ministry of Minority Affairs, n.d.).

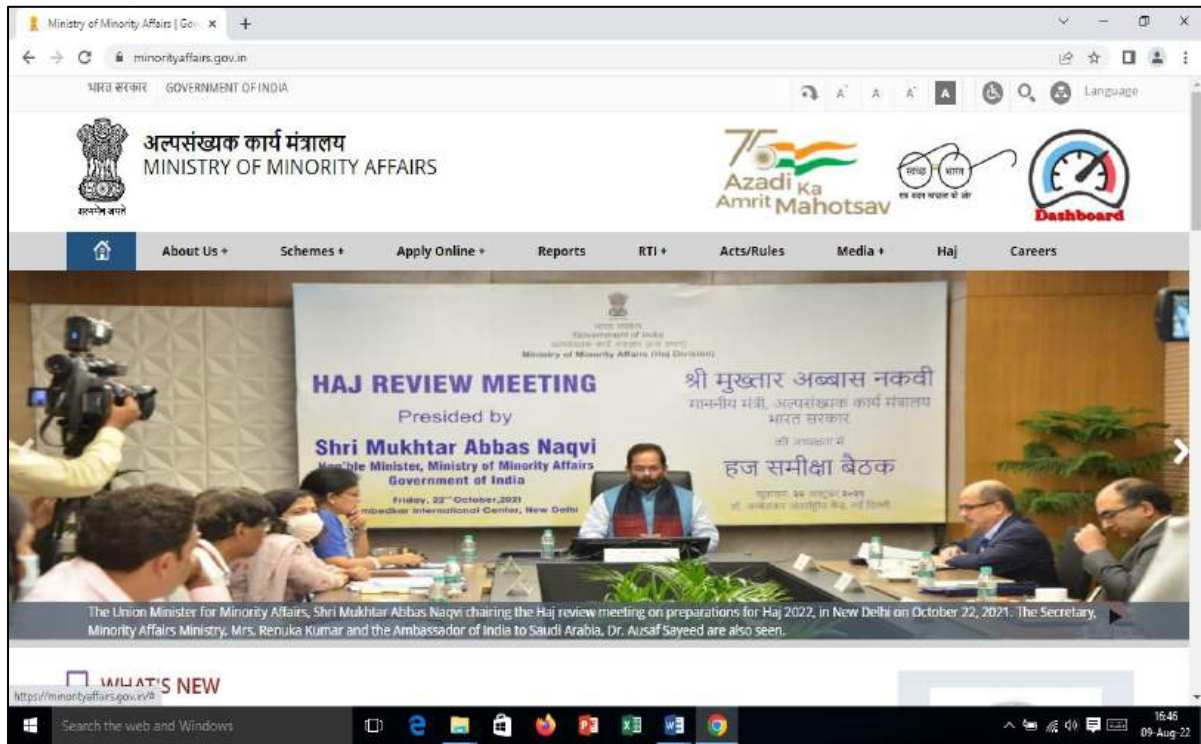


Figure 51: Screenshot of the Homepage of Ministry of Minority Affairs

## 5.27 Ministry of New and Renewable Energy

**Official Address:** Atal Akshay Urja Bhawan, CGO Complex, Lodhi Road, New Delhi-110003

**URL:** <https://mnre.gov.in/>

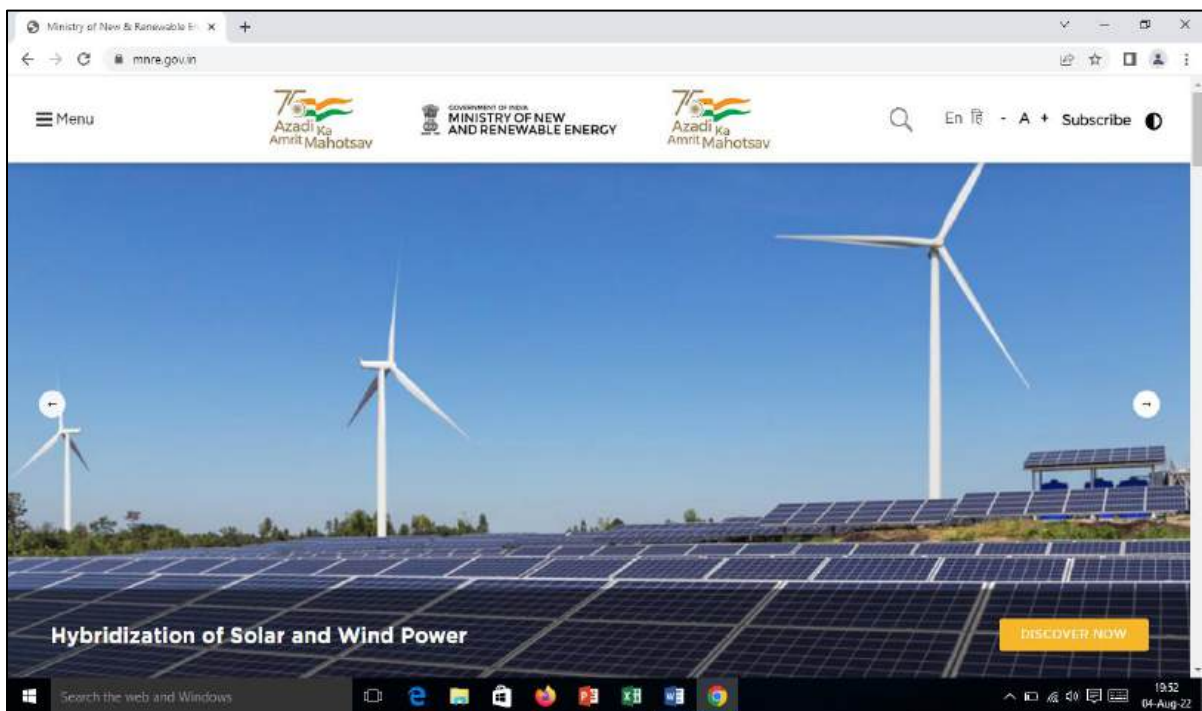
**Cabinet Minister:** Sh. Raj Kumar Singh

**Minister of State:** Sh. Bhagwanth Khuba

**About the Ministry:** the Government of India's primary Ministry for all matters pertaining to new and renewable energy is the Ministry of New and Renewable Energy (MNRE). The Ministry's goal is to create and implement new, renewable energy sources to meet the nation's energy needs. With the growing concern for the nation's energy security, the role of new and renewable energy has taken on a growing significance in recent times. After the two oil shocks of the 1970s, it was determined that the primary driver of new and renewable energy in the country was energy self-sufficiency. The Commission for Additional Sources of Energy was established in the Department of Science & Technology in March 1981 due to the abrupt rise

in the price of oil, the uncertainties surrounding its supply, and the negative impact on the balance of payments position (Ministry of New and Renewable Energy, n.d.).

In addition to coordinating and intensifying research and development in the sector, the Commission was tasked with the creation of policies and their implementation, as well as programmes for the development of new and renewable energy. In 1982, the Ministry of Energy established a brand-new department known as the Department of Non-conventional Energy Sources (DNES), which included CASE. The Ministry of Non-conventional Energy Sources replaced DNES in 1992. The Ministry was renamed as the Ministry of New and Renewable Energy in October 2006 (Ministry of New and Renewable Energy, n.d.).



**Figure 52: Screenshot of the Homepage of Ministry of New and Renewable Energy**

## **5.28 Ministry of Panchayati Raj**

**Official Address:** 7, Krishi Bhawan, Dr. Rajendra Prasad Road, New Delhi- 110001

**URL:** <https://panchayat.gov.in/>

**Cabinet Minister:** Shri Giriraj Singh

**Minister of State:** Shri Kapil Moreshwar Patil

**About the Ministry:** it is a part of the Indian government that oversees the states' ongoing decentralization and local governance. The powers and duties of the government are divided

between two governments in a federation. It is the Union Government as well as the various State Governments in India. However, in 1993, the 73<sup>rd</sup> and 74<sup>th</sup> amendment acts to the Indian Constitution further delegated authority to Local Self Governments (Panchayats at the village and municipal levels, as well as Municipal Corporations in large cities and towns). As a result, India's federal structure now includes not just two but three levels of government (Ministry of Panchayati Raj, n.d.).

The Panchayati Raj and its institutions are the subject of investigation by the Ministry of Panchayati Raj. In May 2004, it was created. A minister with cabinet rank is in charge of the ministry. Shri Giriraj Singh is currently in charge of the ministry (Ministry of Panchayati Raj, n.d.).

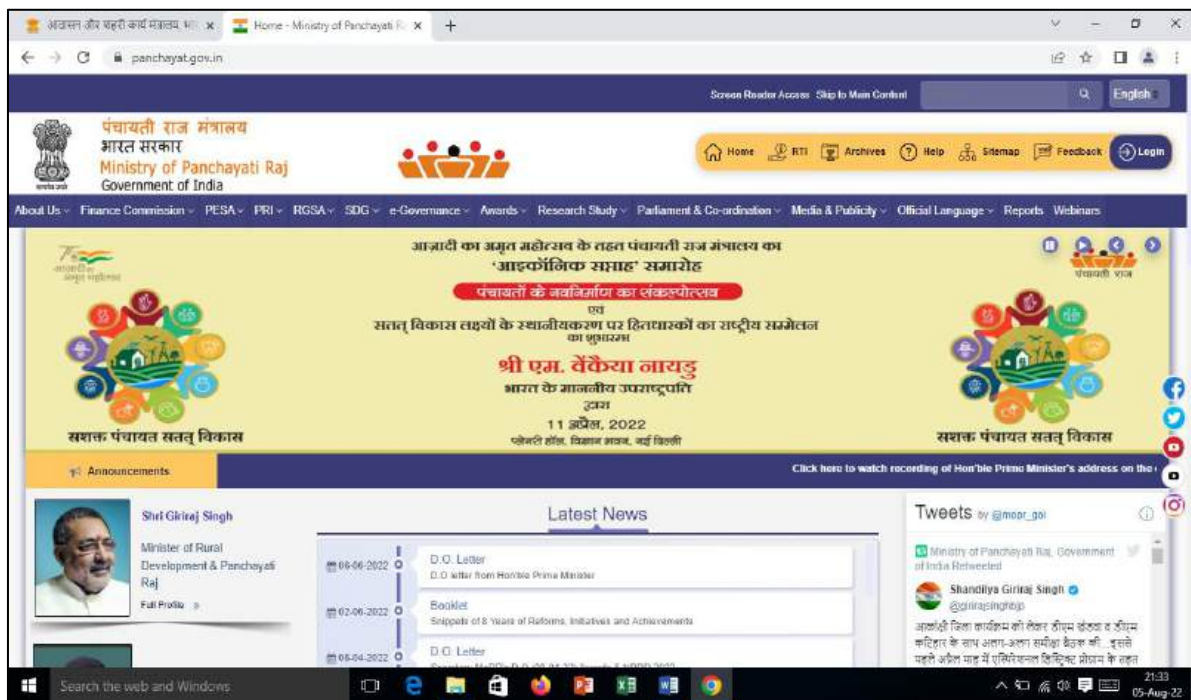


Figure 53: Screenshot of the Homepage of Ministry of Panchayati Raj

## 5.29 Ministry of Parliamentary Affairs

**Official Address:** Room No. 86-B, Parliament House, New Delhi- 110001, Phone No. 91-011-23034844

**URL:** <https://mpa.gov.in/>

**Cabinet Minister:** Shri Pralhad Venkatesh Joshi

**Minister of State:** Shri Arjun Ram Meghwal, Shri V. Muraleedharan

**About the Ministry:** The day-to-day operations of a Parliamentary system of government impose significant demands on the time and resources of the various Ministries and Departments. Over time, the Parliamentary Program addresses a wide range of complex financial, legislative and non-legislative issues pertaining to various Government Ministries and Departments. Despite its small size, the Ministry of Parliamentary Affairs is one of the Union Government's most important ministries. The Ministry of Parliamentary Affairs has been given the responsibility of effectively handling a wide range of and enormous parliamentary work on behalf of the Government in the Parliament. As a result, the Ministry of Parliamentary Affairs is a crucial link between the Government and the two Houses of Parliament regarding government business in Parliament. It was established as a Department in May 1949 but quickly evolved into a full Ministry with additional responsibilities and functions (Ministry of Parliamentary Affairs, n.d.).



**Figure 54: Screenshot of the Homepage of Ministry of Parliamentary Affairs**

### **5.30 Ministry of Personnel, Public Grievances, and Pensions**

**Official Address:** North Block, New Delhi- 110001, Phone No. 011-23092338

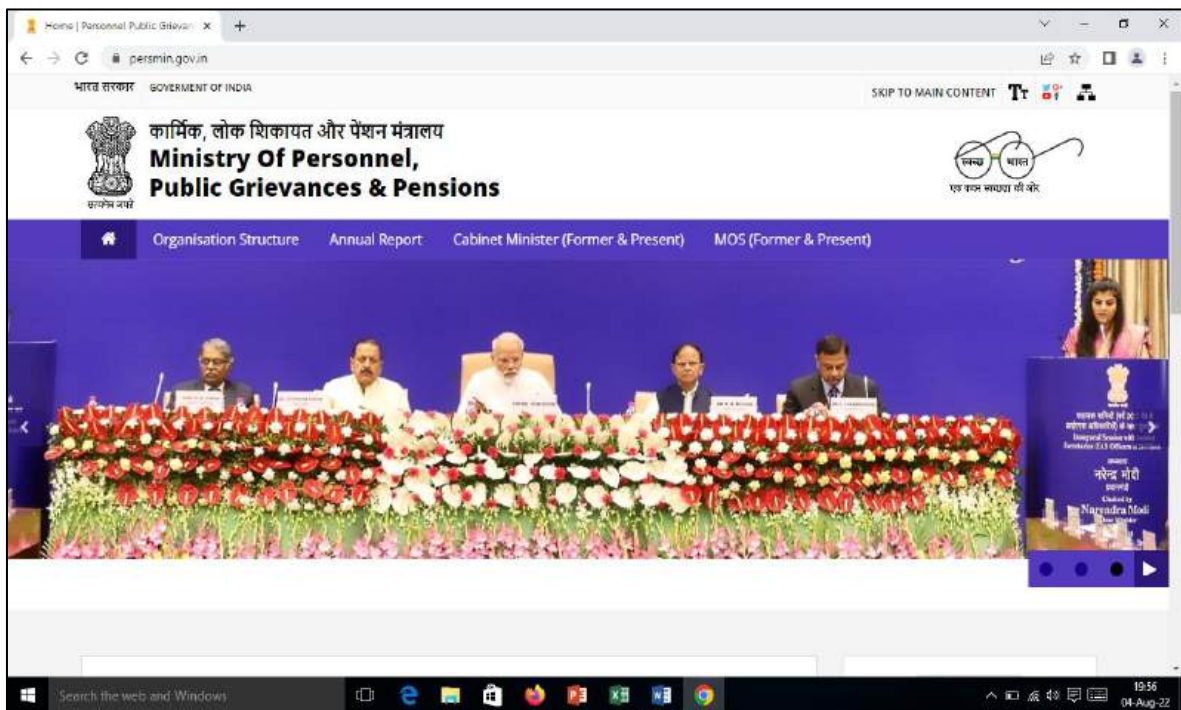
**URL:** <https://persmin.gov.in/>

**Cabinet Minister:** Shri Narendra Modi

**Minister of State:** Dr. Jitendra Singh

**About the Ministry:** The Central Government's coordinating agency for personnel matters, particularly those pertaining to recruitment, training, career development, employee welfare, and postretirement benefits, is the Ministry of Personnel, Public Grievances, and Pensions. The process of responsive, people-centered modern administration is another area of concern for the Ministry. The work assigned to the Ministry is outlined in the Allocation of Business Rules. The Ministry is made up of the three Departments listed below:

- Department of Personnel and Training
- Department of Pension and Pensioners' Welfare
- Department of Administrative Reforms & Public Grievances (Ministry of Personnel, Public Grievances, and Pensions, n.d.).



**Figure 55: Screenshot of the Homepage of Ministry of Personnel, Public Grievances & Pensions**

### 5.31 Ministry of Petroleum & Natural Gas

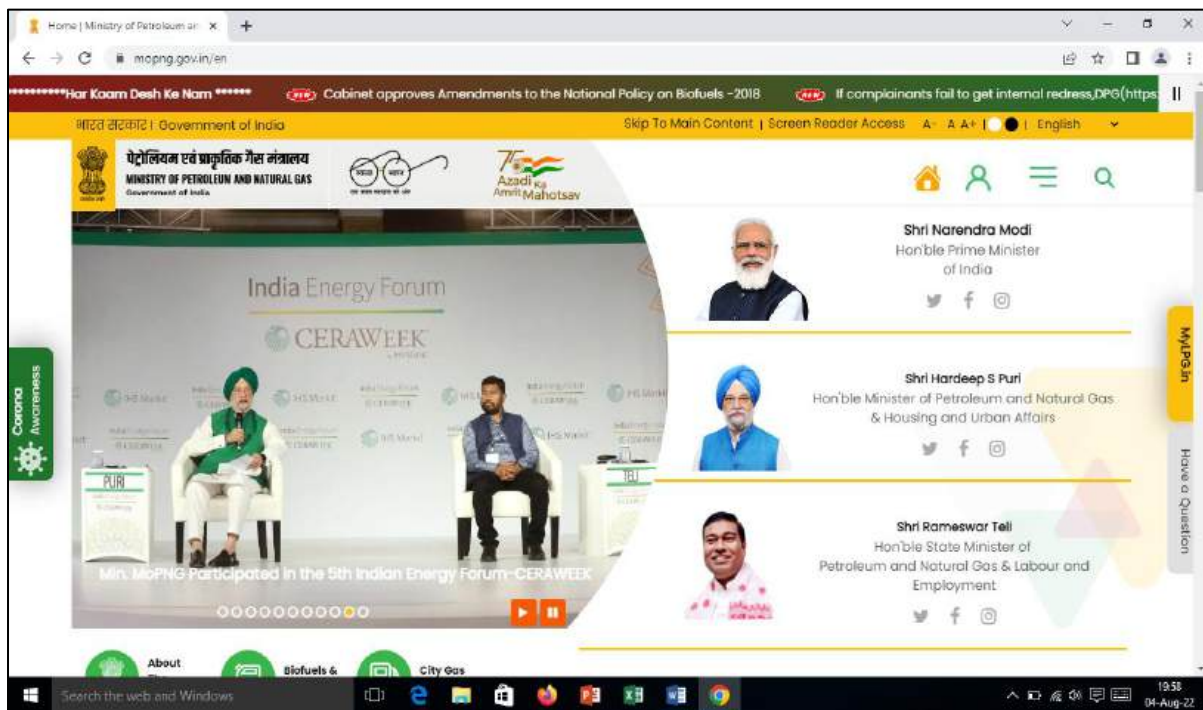
**Official Address:** Shastri Bhavan, New Delhi- 110001

**URL:** <https://mopng.gov.in/en>

**Cabinet Minister:** Shri Hardeep S Puri

**Minister of State:** Shri Rameswar Teli

**About the Ministry:** Oil and natural gas exploration, production, refining, marketing, import, export, and conservation are all responsibilities of the Ministry of Petroleum & Natural Gas. Since oil and gas are important imports for our economy, the Ministry has taken many steps to increase domestic petroleum resource production and exploitation to address issues like energy access, energy efficiency, energy sustainability, and energy security. The Ministry has taken the following initiatives (Ministry of Petroleum & Natural Gas, c2020).



**Figure 56: Screenshot of the Homepage of Ministry of Petroleum & Natural Gas**

### 5.32 Ministry of Ports, Shipping, and Waterways

**Official Address:** Parivahan Bhavan, 1, Parliament Street, New Delhi

**URL:** <https://shipmin.gov.in/>

**Cabinet Minister:** Shri Sarbananda Sonowal

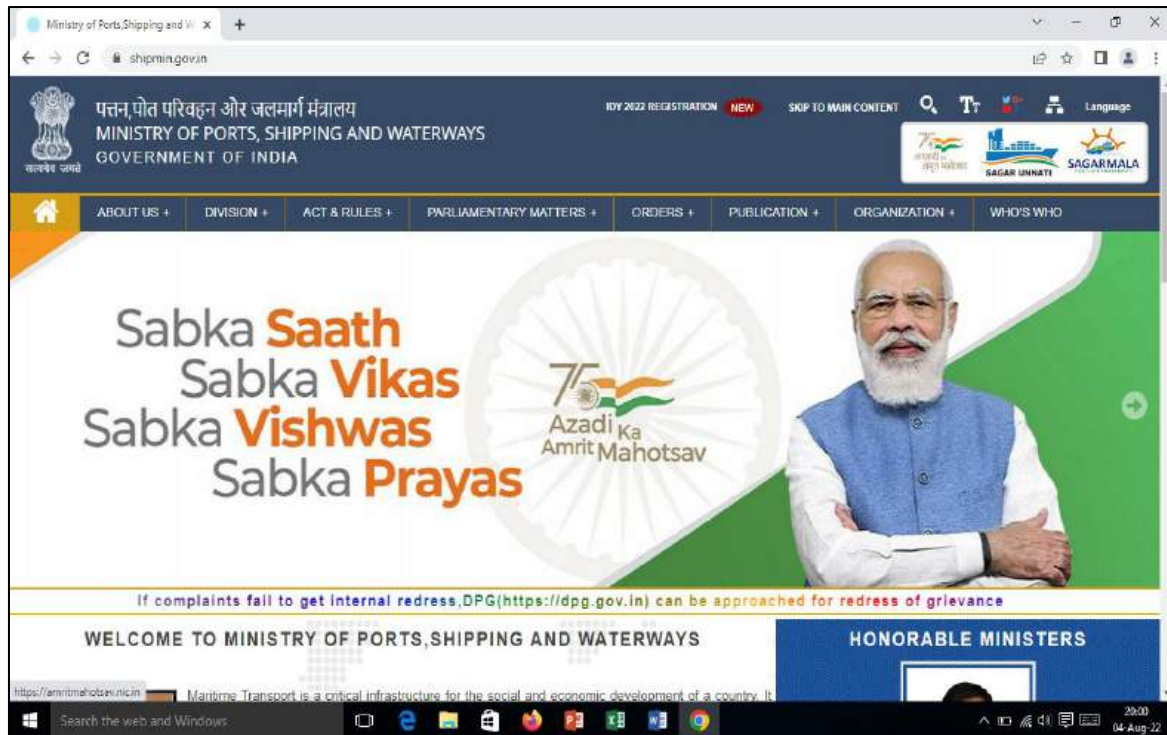
**Minister of State:** Shri Shripad Naik, Shri Shantanu Thakur

**About the Ministry:** A country's social and economic development depends on its maritime transportation infrastructure. It has an effect on development's pace, structure, and pattern. The sectors of shipbuilding and ship-repair, major ports, national waterways, and inland water transportation are all included in the Ministry of Ports, Shipping, and Waterways. The Ministry of Ports, Shipping, and Waterways has been given the task of developing these policies and

programs and carrying them out. To address the various challenges facing the maritime transportation sector, a comprehensive policy package is required (Ministry of Ports, Shipping, and Waterways, n.d.).

To meet the increasing demands of international trade, the ports' capacity in terms of berths and cargo handling equipment must be significantly increased. It is necessary to make it possible for the ports, shipping, and waterways industries to carry a larger portion of the sea-borne trade in indigenous bottoms. States have historically made investments in the transportation sector, particularly in ports, primarily due to the large quantity of resources required, lengthy gestation periods, uncertain returns, and a variety of positive and negative externalities associated with this infrastructure (Ministry of Ports, Shipping, and Waterways, n.d.).

However, in recent times, the active involvement of the private sector in infrastructure services has resulted from the escalating resource requirements, concern for managerial efficacy, and concern for consumer responsiveness. The Ministry of Ports, Shipping, and Waterways has established comprehensive policy guidelines for private sector participation in the Ports sector in order to encourage private participation. The Ministry of Ports, Shipping, and Waterways operates an Information Facilitation counter on the ground floor of Transport Bhavan 1, Parliament Street, New Delhi – 110001 (Ministry of Ports, Shipping, and Waterways, n.d.).



**Figure 57: Screenshot of the Homepage of Ministry of Ports, Shipping & Waterways**

### 5.33 Ministry of Power

**Official Address:** Shram Shakti Bhawan, Rafi Marg, New Delhi- 1

**URL:** <https://powermin.gov.in/>

**Cabinet Minister:** Shri R. K. Singh

**Minister of State:** Shri Krishan Pal

**About the Ministry:** the Ministry of Power is a department within the Indian government. The ministry is in charge of overseeing projects for maintenance and the development of infrastructure for the generation, transmission, and delivery of electricity. The ministry serves as a link between the private sector and the central government as well as state electricity operations. Rural electrification projects are also under the ministry's oversight (Ministry of Power, n.d.).

On July 2, 1992, the P. V. Narasimha Rao administration established the Ministry of Power as a ministry. Prior to that date, the Ministry of Power had been a department within the Ministry of Power, Coal and Non-Conventional Energy Sources. The Ministry of Power, the Ministry of Coal and the Ministry of Non-Conventional Energy Sources were the three divisions of that

ministry, which was renamed as the Ministry of New and Renewable Energy in 2006 (Ministry of Power, n.d.).



**Figure 58: Screenshot of the Homepage of Ministry of Power**

### 5.34 Ministry of Railways

**Official Address:** Room No. 239, Rail Bhawan, Raisina Rd Cp New Delhi- 110001

**URL:** <https://indianrailways.gov.in/>

**Cabinet Minister:** Ashwini Vaishnaw

**Minister of State:** Raosaheb Danve, Darshana Jardosh

**About the Ministry:** India's Ministry of Railways is a government ministry in charge of the country's rail transportation. Indian Railways is a statutory body run by the ministry that is a monopoly in the rail transport industry and is led by the Chairman and CEO of the Railway Board. In New Delhi, Rail Bhawan houses both the Ministry of Railways and the Railway Board (Ministry of Railways, c2011).

There is a Union Minister and a Minister of State in the ministry. The Railway Board receives reports from a number of directorates. The Railway Board Secretariat Service or organized "Group A Railway services" make up the majority of the officers posted in the Ministry of Railways (Ministry of Railways, c2011).



**Figure 59: Screenshot of the Homepage of Ministry of Railways**

### 5.35 Ministry of Road Transport and Highways

**Official Address:** Transport Bhawan, 1, Parliament Street, New Delhi- 110001

**URL:** <https://morth.gov.in/>

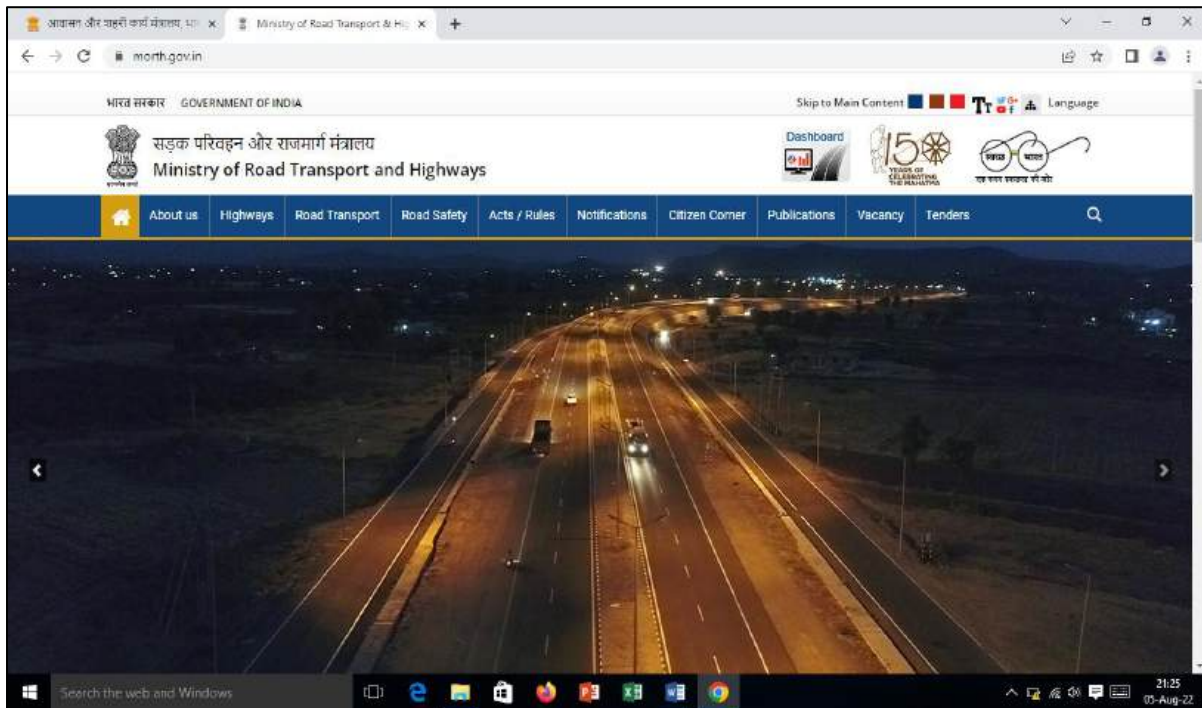
**Cabinet Minister:** Shri Nitin Jairam Gadkari

**Minister of State:** Mansukh L. Mandaviya

**About the Ministry:** It is tasked with the responsibility of formulating and implementing policies for Road Transport, National Highways, and Transport Research in consultation with other Central Ministries/Departments, State Governments/UT Administrations, organizations, and individuals in order to improve the country's road transportation system's mobility and effectiveness. Two wings make up the Ministry: Transportation and roads wings (Ministry of Road Transport and Highways, n.d.).

The apex body for the formulation and administration of the rules, regulations, and laws pertaining to road transport, transport research, and also to increase the mobility and efficiency of the road transport system in India is the Ministry of Road Transport and Highways (MoRTH), a ministry of the Government of India. It is in charge of constructing the nation's national highways through officers of the Central Engineering Services (Roads) cadre. Road transportation is an essential piece of the country's infrastructure for its economic growth. It

has an impact on development's pace, structure, and pattern. Over 60% of the country's total goods and 85% of its passenger traffic are moved via roads. As a result, India places a high value on this sector's growth and allocates a significant portion of its budget to it (Ministry of Road Transport and Highways, n.d.).



**Figure 60: Screenshot of the Homepage of Ministry of Road Transport and Highways**

### **5.36 Ministry of Rural Development**

**Official Address:** Krishi Bhavan, Dr. Rajendra Prasad Road, New Delhi- 110001

**URL:** <https://rural.nic.in/>

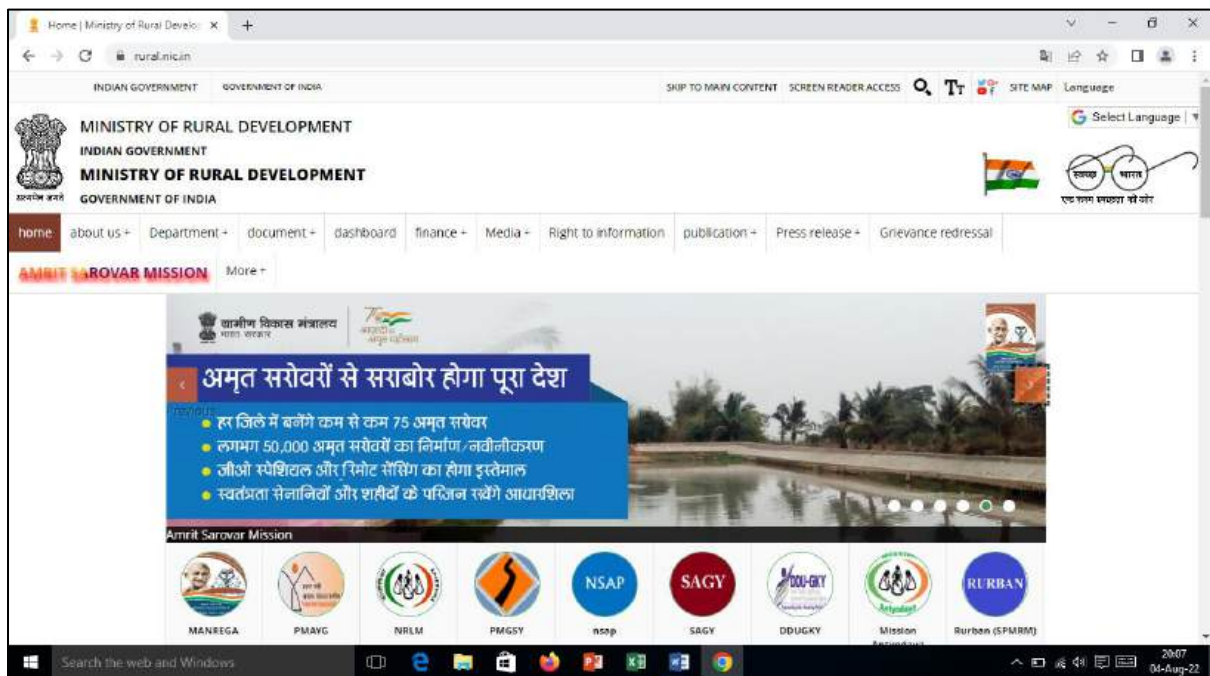
**Cabinet Minister:** Shri Giriraj Singh

**Minister of State:** Sadhvi Niranjan Jyoti, Shri Faggan Singh Kulaste

**About the Ministry:** As a division of the Ministry of Food and Agriculture in October 1974, the Department of Rural Development was established. The Department of Rural Development became the Ministry of Rural Reorganization on August 18, 1979. This ministry was renamed the Ministry of Rural Development on January 23, 1982. The Ministry of Rural Development was once more transformed into a department within the Ministry of Agriculture and Rural Development in January 1985. In September 1985, the Ministry of Agriculture was given its new name. This department was elevated to the Ministry of Rural Development once more on July 5, 1991. The Wastelands Development Department was established as an additional

department within this ministry on July 2, 1992. This Ministry was once more renamed the Ministry of Rural Areas and Employment in March 1995 (Ministry of Rural Development, n.d.).

The Ministry of Rural Development took over from the Ministry of Rural Areas and Employment in 1999. By implementing comprehensive programs, this ministry has been acting as a catalyst with the intention of bringing about change in rural areas. These programs aim to reduce poverty, create employment, build infrastructure, and ensure social security. Numerous programs were altered and new ones were developed over time, taking into account the requirements of the poor and the lessons learned from program implementation. This ministry's primary goal is to alleviate rural poverty and raise the standard of living of rural residents, particularly those living below the poverty line. By developing programs related to various facets of rural life and activities, these goals will be accomplished (Ministry of Rural Development, n.d.).



**Figure 61: Screenshot of the Homepage of Ministry of Rural Development**

### 5.37 Ministry of Skill Development and Entrepreneurship

**Official Address:** Shram Shakti Bhawan, Rafi Marg, New Delhi- 110001

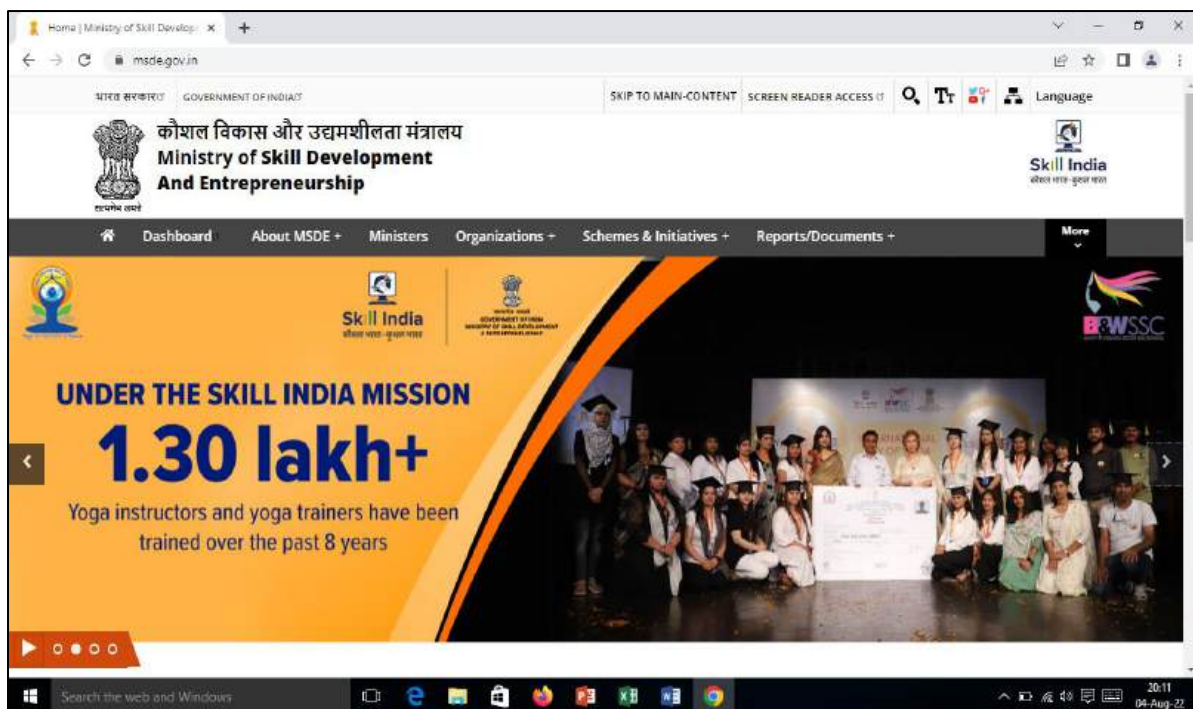
**URL:** <https://www.msde.gov.in/>

**Cabinet Minister:** Shri Dharmendra Pradhan

**Minister of State:** Shri Rajeev Chandrasekhar

**About the Ministry:** The Ministry is in charge of coordinating all of the country's Skill Development efforts, removing the gap between demand and supply of skilled labor, developing the framework for vocational and technical training, skill enhancement, the development of new skills, and creative thinking—not just for jobs that are already in place but also for jobs that are to be created (Ministry of Skill Development and Entrepreneurship, n.d.).

It is aided in these endeavors by its functional arms, which include the Directorate General of Training (DGT), the National Council for Vocational Education and Training (NCVET), the National Skill Development Corporation (NSDC), the National Skill Development Fund (NSDF), 37 Sector Skill Councils (SSCs), 33 National Skill Training Institutes (NSTIs/NSTI(w)), approximately 15000 Industrial Training Institutes (ITIs) under the DGT, and 187 training partners registered. In addition, the Ministry intends to collaborate with the existing alliance of universities, skill development centers, and other organizations in the field. In addition, for multi-level engagement and more effective skill development implementation, collaborations with relevant Central Ministries, State governments, international organizations, industry, and NGOs have been initiated (Ministry of Skill Development and Entrepreneurship, n.d.).



**Figure 62: Screenshot of the Homepage of Ministry of Skill Development and Entrepreneurship**

### **5.38 Ministry of Statistics and Programme Implementation**

**Official Address:** No. 6, Lodhi Estate, New Delhi- 110011

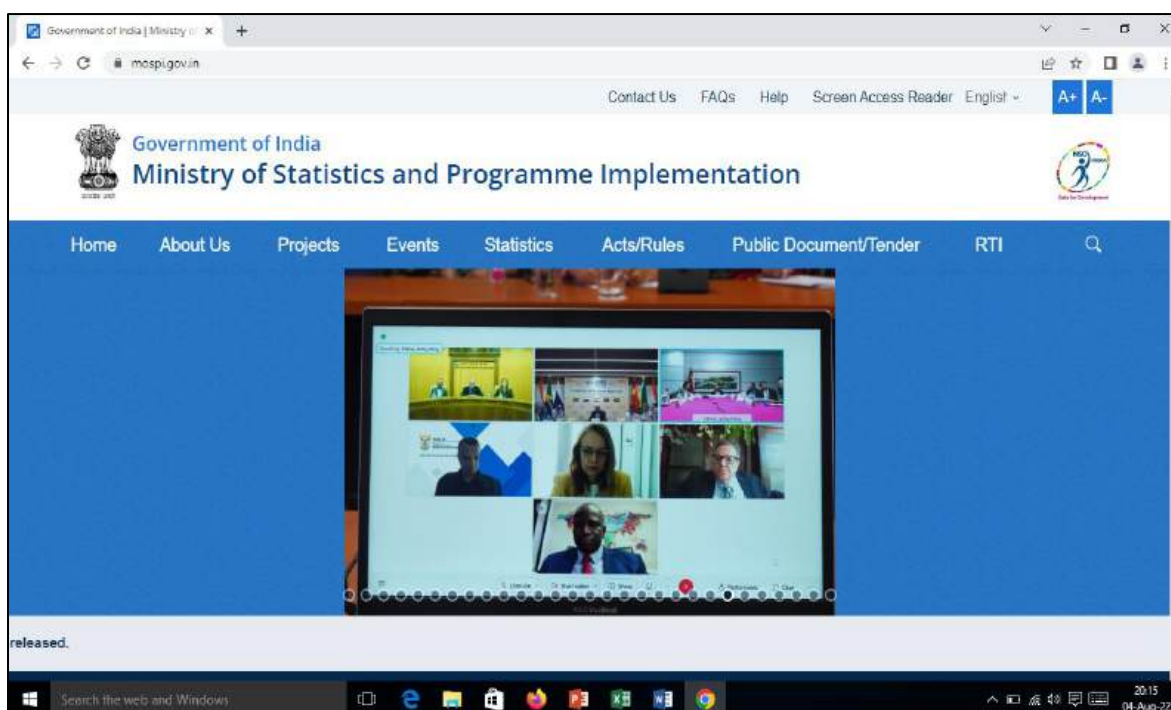
**URL:** <https://mospi.gov.in/>

**Cabinet Minister:** Nil

**Minister of State:** Rao Inderjit Singh (Independent Charge)

**About the Ministry:** After the Departments of Statistics and Program Implementation merged, the Ministry of Statistics and Program Implementation became an independent ministry on October 15, 1999. The Ministry has two wings: one for program implementation and one for statistics. The Central Statistical Office (CSO), the Computer Center, and the National Sample Survey Office (NSSO) make up the Statistics Wing, which is referred to as the National Statistical Office (NSO). The twenty-point program, infrastructure and project monitoring, and the Member of Parliament Local Area Development Scheme are the three divisions of the Programme Implementation Wing. In addition to these two wings, a National Statistical Commission (MOSPI), established by resolution of the Indian Government, and an independent Institute, namely, An Act of Parliament designated the Indian Statistical Institute as an institution of national significance (Ministry of Statistics and Programme Implementation, n.d.).

The coverage and quality of the country's released statistics are very important to the Ministry of Statistics and Program Implementation. The center and state governments' surveys and censuses, as well as non-official sources and studies, serve as the foundation for the released statistics. The Ministry uses scientific sampling techniques for its surveys. The dedicated field staff collects the data in the field. Methodological issues pertaining to the compilation of national accounts are overseen by Committees like the Advisory Committee on National Accounts, Standing Committee on Industrial Statistics, and Technical Advisory Committee on Price Indices in accordance with the Ministry's emphasis on the quality of released statistics. Following extensive scrutiny and supervision, the Ministry creates data sets based on current data by employing standard statistical techniques (Ministry of Statistics and Programme Implementation, n.d.).



**Figure 63: Screenshot of the Homepage of Ministry of Statistics and Programme Implementation**

### 5.39 Ministry of Steel

**Official Address:** Udyog Bhavan, New Delhi- 110011, Phone no. 91-11-23063417

**URL:** <https://steel.gov.in/>

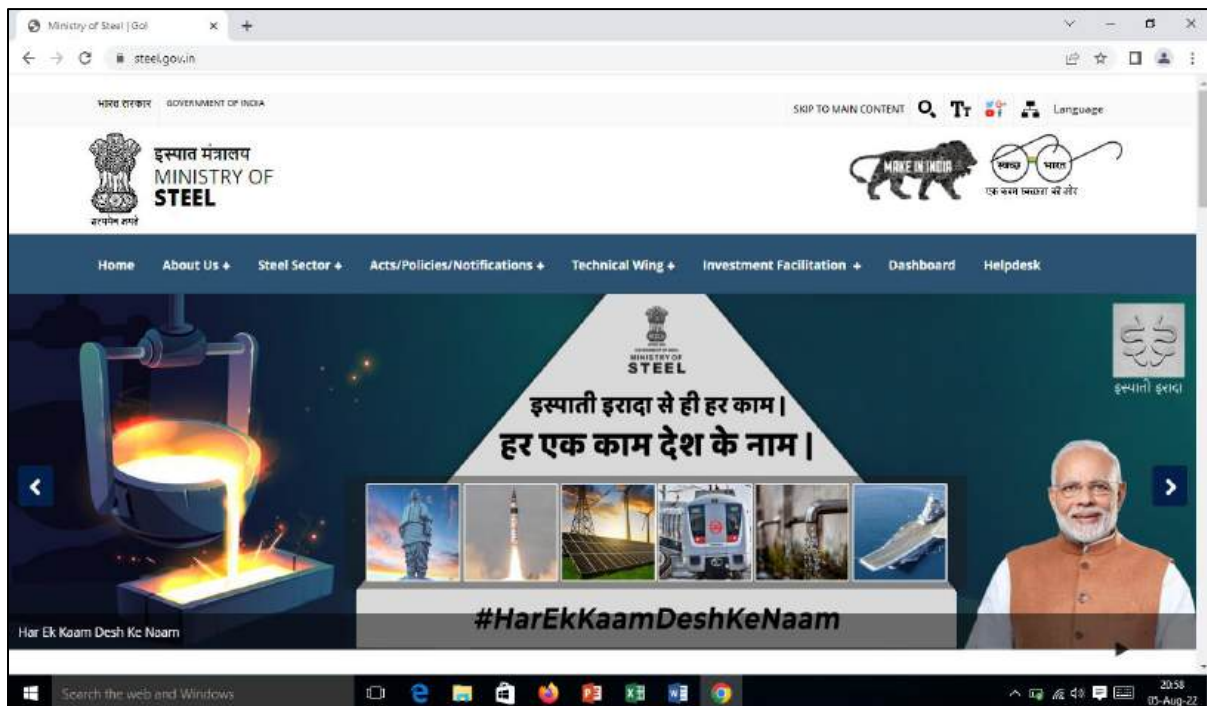
**Cabinet Minister:** Shri Jyotiraditya M. Scindia

**Minister of State:** Shri Faggan Singh Kulaste

**About the Ministry:** The Ministry of Steel is an executive branch agency of the Government of India in charge of developing all policies governing steel production, distribution, and pricing in India. As of July 2021, the ministry is led by a Secretary Rank IAS officer who serves as the administrative head of the ministry. Major activities of the ministry:-

- Co-ordination and planning of the growth and development of Iron and Steel Industry in the country (including Re-rolling Mills, Alloy Steel and Ferro Alloy Industries, Refractories) both in the Public and Private Sectors;
- Formulation of policies in respect of production, pricing, distribution, import and export of iron & steel, ferro alloys and refractories; and

- Development of input industries relating to iron ore, manganese ore, chrome ore and Refractories etc. , required mainly by the steel industry (Ministry of Steel, n.d.).



**Figure 64: Screenshot of the Homepage of Ministry of Steel**

#### **5.40 Ministry of Textiles**

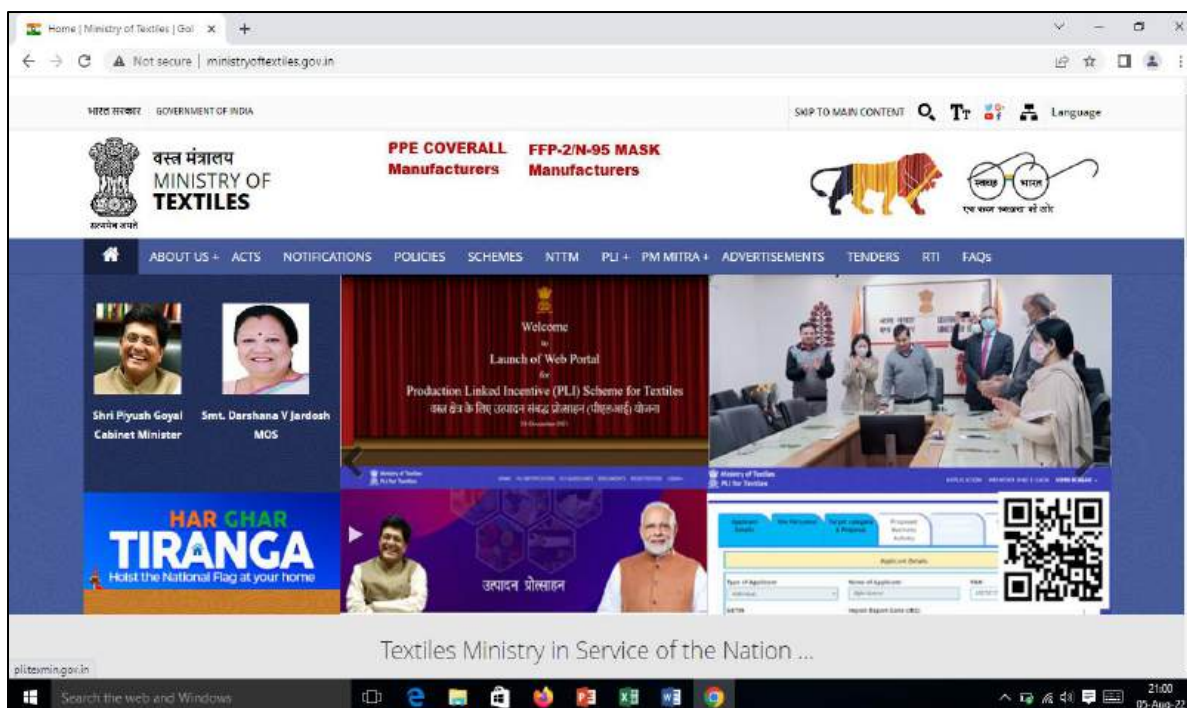
**Official Address:** Udyog Bhawan, New Delhi

**URL:** <http://ministryoftextiles.gov.in/>

**Cabinet Minister:** Piyush Goyal

**Minister of State:** Smt. Darshana Vikram Jardosh

**About the Ministry:** The Ministry of Textiles is an Indian government national agency in charge of policy formulation, planning, development, export promotion, and regulation of India's textile industry. This category includes all natural, synthetic, and cellulosic fibres used in the production of textiles, clothing, and handicrafts (Ministry of Textiles, n.d.).



**Figure 65: Screenshot of the Homepage of Ministry of Textiles**

#### 5.41 Ministry of Tourism

**Official Address:** Room no. 119, Transport Bhawan, 1, Parliament Street, New Delhi-110001

**URL:** <https://tourism.gov.in/>

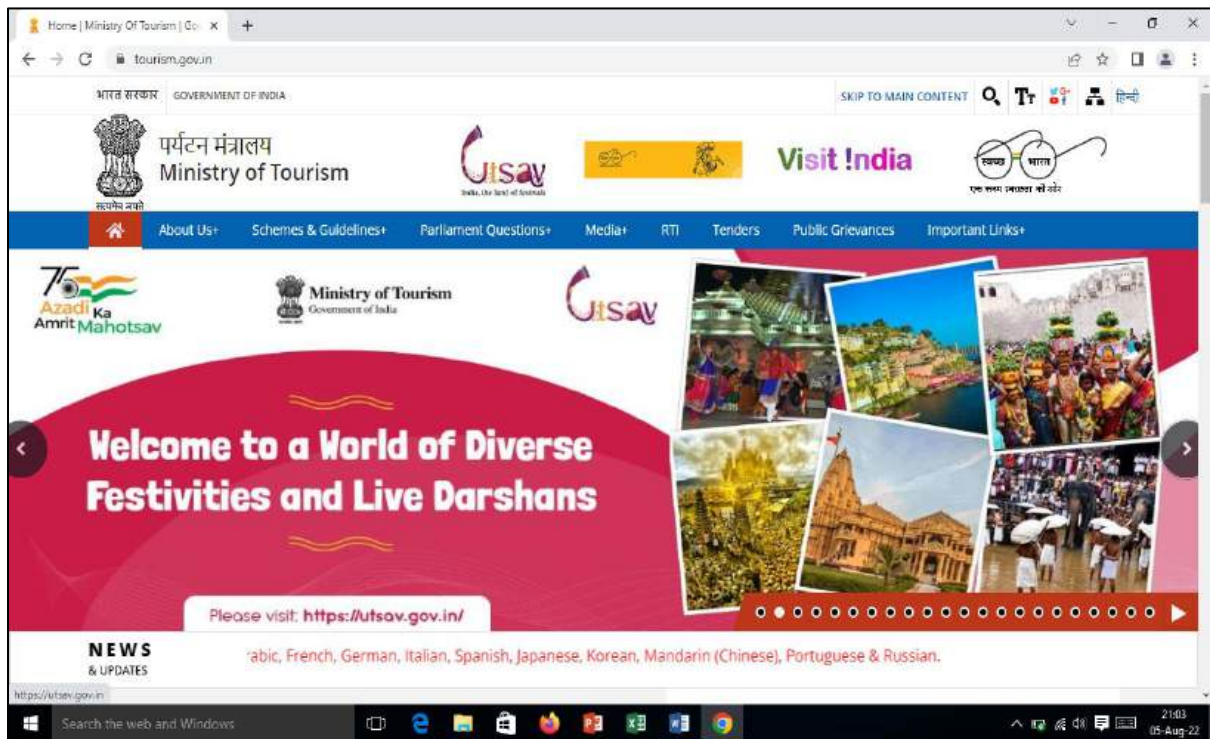
**Cabinet Minister:** Shri G. Kishan Reddy

**Minister of State:** Shri Shripad Yesso Naik, Shri Ajay Bhatt

**About the Ministry:** The nodal agency for the development and promotion of national tourism policies and programs as well as the coordination of the efforts of various Central Government Agencies, State Governments/UTs, and the Private Sector is the Ministry of Tourism. The Union Minister for Tourism and Ministers of State are in charge of the Ministry (Ministry of Tourism, n.d.).

The Secretary (Tourism) is in charge of the Ministry's administration. Executive directions for the implementation of various programs and policies are provided by the Director General's office of Tourism. The Indian Institute of Skiing and Mountaineering (IISM)/Gulmarg Winter Sports Project is one of the subordinate offices or projects that make up the Directorate General of Tourism's field formation. It has 20 offices within the country, 8 abroad, and one subordinate

office or project. The field offices in India are in charge of providing tourists with information and keeping an eye on the progress of field projects, while the overseas offices are primarily in charge of tourism promotion and marketing in their respective regions. The activities of IISM/GWSP have now been revived, and the J&K valley is the location of a variety of ski and other courses (Ministry of Tourism, n.d.).



**Figure 66: Screenshot of the Homepage of Ministry of Tourism**

## 5.42 Ministry of Tribal Affairs

**Official Address:** Shastri Bhawan, Dr. Rajendra Prasad Road, New Delhi, 110011

**URL:** <https://tribal.gov.in/>

**Cabinet Minister:** Sh. Arjun Munda

**Minister of State:** Smt. Renuka Singh Saruta, Sh. Bishweswar Tudu

**About the Ministry:** Following the bifurcation of the Ministry of Social Justice and Empowerment in 1999, the Ministry was established with the goal of providing a more coordinated and planned approach to the integrated socioeconomic development of the Scheduled Tribes, the most underprivileged section of Indian society. Tribal affairs were handled by various Ministries at various times prior to the Ministry's establishment. The Nodal

Ministry for overall policy planning and program coordination for ST development is the Ministry of Tribal Affairs. (Ministry of Tribal Affairs, n.d.).

Financial assistance is provided in order to fill critical gaps in institutions and programs that take into account the situation of STs and to support and supplement other Central Ministries, State Governments, and partially voluntary organizations. The Ministry is in charge of running these programs, which aim to foster social, educational, and economic growth through the construction of new institutions. The majority of the projects are carried out by State Governments or Union Territory Administrations. Through specially tailored schemes, the Ministry also adds to the efforts of other Ministries by implementing a variety of developmental interventions in crucial sectors (Ministry of Tribal Affairs, n.d.).



**Figure 67: Screenshot of the Homepage of Ministry of Tribal Affairs**

### **5.43 Ministry of Women & Child Development**

**Official Address:** Shastri Bhawan, Dr. Rajendra Prasad Road, New Delhi

**URL:** <https://wcd.nic.in/>

**Cabinet Minister:** Smt. Smriti Zubin Irani

**Minister of State:** Dr. Munjpara Mahendrabhai

**About the Ministry:** with effect from January 30, 2006, the Department of Women and Child Development of the Government of India became a separate Ministry. Prior to that, it had been a Department within the Ministry of Human Resources Development since 1985. The primary objective of the Ministry was to fill in the gaps in state action for women and children by encouraging interministerial and sectoral convergence in the development of gender-equitable and child-centered legislation, policies and programs (Ministry of Women & Child Development, n.d.).

The Ministry's broad mandate is to ensure the complete development of women and children. The Ministry develops plans, policies and programs because it serves as the central Ministry for the advancement of women and children; guides and coordinates the efforts of both governmental and non-governmental organizations working in the field of Women and Child Development, enacts or emends legislation, and in addition, the Ministry implements innovative programs for women and children in order to fulfill its nodal function. Welfare and support services, training for employment and income generation, raising awareness and educating people about gender issues are all included in these programs. The other general development programs in the areas of health, education, rural development and so on are supplemented and enhanced by these programs. All of these efforts aim to empower women economically and socially so that they can participate in national development on an equal footing with men (Ministry of Women & Child Development, n.d.).



**Figure 68: Screenshot of the Homepage of Ministry of Women & Child Development**

#### **5.44 Ministry of Youth Affairs and Sports**

**Official Address:** Shastri Bhawan, New Delhi

**URL:** <https://yas.gov.in/>

**Cabinet Minister:** Shri Anurag Singh Thakur

**Minister of State:** Shri Nisith Pramanik

**About the Ministry:** Throughout the course of the year, the Minister of State (Independent Charge) for Youth Affairs & Sports was in charge of the Ministry of Youth Affairs & Sports. Under the Ministry, two distinct Departments, the Department of Youth Affairs and the Department of Sports, were established in April 2008, each headed by a Secretary to the Indian Government (Ministry of Youth Affairs and Sports, n.d.).

The Indian government's Ministry of Youth Affairs and Sports oversees both the Department of Sports and the Department of Youth Affairs. Following his deputy, Nisith Pramanik, the current Minister of Youth Affairs and Sports is Anurag Thakur. The Arjuna Award and Major Dhyan Chand Khel Ratna awards are among the National Sports Awards that are presented annually by the ministry (Ministry of Youth Affairs and Sports, n.d.).



**Figure 69: Screenshot of the Homepage of Ministry of Youth Affairs and Sports**

**Table 2: List of ministries' departments with their website addresses**

| Sr. no. | Central government ministries' departments and their abbreviations | Website addresses   |
|---------|--|---|
| 1       | Department of Administrative Reforms & Public Grievances (DoARPG)  | <a href="https://darpg.gov.in/en">https://darpg.gov.in/en</a>       |
| 2       | Department of Agriculture & Farmers Welfare (DoAFW)                | <a href="https://agricoop.nic.in/en">https://agricoop.nic.in/en</a> |
| 3       | Department of Agricultural Research and Education (DoARE)          | <a href="https://dare.gov.in/">https://dare.gov.in/</a>             |
| 4       | Department of Animal Husbandry and Dairying (DoAHD)                | <a href="https://dahd.nic.in/">https://dahd.nic.in/</a>             |
| 5       | Department of Biotechnology (DoB)                                  | <a href="https://dbtindia.gov.in/">https://dbtindia.gov.in/</a>     |

| Sr. no. | Central government ministries' departments and their abbreviations | Website addresses   |
|---------|--|---|
| 6       | Department of Chemicals and Petrochemicals (DoCPC)                 | <a href="https://chemicals.gov.in/">https://chemicals.gov.in/</a>                                   |
| 7       | Department of Commerce (DoC)                                       | <a href="https://commerce.gov.in/">https://commerce.gov.in/</a>                                     |
| 8       | Department of Consumer Affairs (DoCA)                              | <a href="https://consumeraffairs.nic.in/">https://consumeraffairs.nic.in/</a>                       |
| 9       | Department of Defence Production (DoDP)                            | <a href="https://www.ddpmod.gov.in/">https://www.ddpmod.gov.in/</a>                                 |
| 10      | Department of Drinking Water and Sanitation (DoDWS)                | <a href="https://jalshakti-ddws.gov.in/en">https://jalshakti-ddws.gov.in/en</a>                     |
| 11      | Department of Economic Affairs (DoEA)                              | <a href="https://dea.gov.in/">https://dea.gov.in/</a>   |
| 12      | Department of Empowerment of Persons with Disabilities (DoEPD)     | <a href="https://disabilityaffairs.gov.in//content/">https://disabilityaffairs.gov.in//content/</a> |
| 13      | Department of Expenditure (DoE)                                    | <a href="https://doe.gov.in/">https://doe.gov.in/</a>   |
| 14      | Department of Ex-servicemen Welfare (DoEW)                         | <a href="https://www.desw.gov.in/">https://www.desw.gov.in/</a>                                     |
| 15      | Department of Fertilizers (DoFz)                                   | <a href="https://www.fert.nic.in/">https://www.fert.nic.in/</a>                                     |
| 16      | Department of Financial Services (DoFS)                            | <a href="https://financialservices.gov.in/">https://financialservices.gov.in/</a>                   |
| 17      | Department of Fisheries (DoF)                                      | <a href="https://dof.gov.in/">https://dof.gov.in/</a>   |
| 18      | Department of Food & Public Distribution (DoFPD)                   | <a href="https://dfpd.gov.in/index.htm">https://dfpd.gov.in/index.htm</a>                           |

| Sr. no. | Central government ministries' departments and their abbreviations | Website addresses   |
|---------|--|---|
| 19      | Department of Health Research (DoHR)                               | <a href="https://dhr.gov.in/">https://dhr.gov.in/</a>   |
| 20      | Department of Investment and Public Asset Management (DoIPAM)      | <a href="https://dipam.gov.in/">https://dipam.gov.in/</a>   |
| 21      | Department of Justice (DoJ)  | <a href="https://doj.gov.in/">https://doj.gov.in/</a>   |
| 22      | Department of Land Resources (DoLR)                                | <a href="https://dolr.gov.in/">https://dolr.gov.in/</a>   |
| 23      | Department of Legal Affairs (DoLA)                                 | <a href="https://legalaffairs.gov.in/">https://legalaffairs.gov.in/</a>   |
| 24      | Department of Official Language (DoOL)                             | <a href="https://rajbhasha.gov.in/">https://rajbhasha.gov.in/</a>   |
| 25      | Department of Pension & Pensioners' Welfare (DoPPW)                | <a href="https://doppw.gov.in/en">https://doppw.gov.in/en</a>   |
| 26      | Department of Personnel & Training (DoPT)                          | <a href="https://dopt.gov.in/#">https://dopt.gov.in/#</a>   |
| 27      | Department of Pharmaceuticals (DoPh)                               | <a href="https://pharmaceuticals.gov.in/">https://pharmaceuticals.gov.in/</a>   |
| 28      | Department of Posts (DoP)  | <a href="https://www.indiapost.gov.in/vas/Pages/IndiaPostHome.aspx">https://www.indiapost.gov.in/vas/Pages/IndiaPostHome.aspx</a> |
| 29      | Department for Promotion of Industry and Internal Trade (DPIIT)    | <a href="https://dpiit.gov.in/">https://dpiit.gov.in/</a>   |
| 30      | Department of Public Enterprises (DoPE)                            | <a href="https://dpe.gov.in/">https://dpe.gov.in/</a>   |
| 31      | Department of Revenue (DoR)  | <a href="https://dor.gov.in/">https://dor.gov.in/</a>   |

| Sr. no. | Central government ministries' departments and their abbreviations               | Website addresses   |
|---------|--|---|
| 32      | Department of School Education & Literacy (DoSEL)                                | <a href="https://dse1.education.gov.in/">https://dse1.education.gov.in/</a> |
| 33      | Department of Science & Technology (DoST)  | <a href="https://dst.gov.in/">https://dst.gov.in/</a>                       |
| 34      | Department of Scientific and Industrial Research (DoSIR)                         | <a href="http://www.dsir.gov.in/">http://www.dsir.gov.in/</a>               |
| 35      | Department of Social Justice & Empowerment (DoSJE)                               | <a href="https://socialjustice.gov.in/">https://socialjustice.gov.in/</a>   |
| 36      | Department of Telecommunications (DoT)   | <a href="https://dot.gov.in/">https://dot.gov.in/</a>                       |
| 37      | Department of water Resources, River Development & Ganga Rejuvenation (DoWRRDGR) | <a href="http://jalshakti-dowr.gov.in/">http://jalshakti-dowr.gov.in/</a>   |
| 38      | Legislative Department (LD)  | <a href="https://legislative.gov.in/">https://legislative.gov.in/</a>       |

#### 5.45 Department of Administrative Reforms & Public Grievances

**Name of the Ministry:** Ministry of Personnel, Public Grievances and Pensions

**Official address of the department:** 5<sup>th</sup> Floor Sardar Patel Bhawan, Sansad Marg, New Delhi- 110001

**Website address:** <https://darp.gov.in/en>

**About the Department:** The nodal agency of the Indian government is the Department of Administrative Reforms and Public Grievances, which is responsible for resolving public grievances regarding Central Government agencies and state governments alike. Through audio-visual media and publications, the Department strives to document and disseminate successful good governance practices. To further the cause of public service reform, the

Department also engages in international exchange and cooperation activities (Department of Administrative Reforms & Public Grievances, n.d.).

An Organization and Method (O & M) Division was established in the Cabinet Secretariat in March 1954 as a follow-up to one of Paul H. Appleby's recommendations. The Organization and Method (O & M) Division was moved from the Cabinet Secretariat to the Department of Administrative Reforms within the Ministry of Home Affairs in March 1964. The Department of Administrative Reforms' activity was transferred to the Department of Personnel, which had been established under the Cabinet Secretariat on August 1, 1970, and given the new name of Department of Personnel and Administrative Reforms, on February 7, 1973. The Ministry of Home Affairs acquired the Department of Personnel and Administrative Reforms in April 1977 from the Cabinet Secretariat (Department of Administrative Reforms & Public Grievances, n.d.).



**Figure 70: Screenshot of the Homepage of Department of Administrative Reforms & Public Grievances**

## 5.46 Department of Agricultural Research and Education

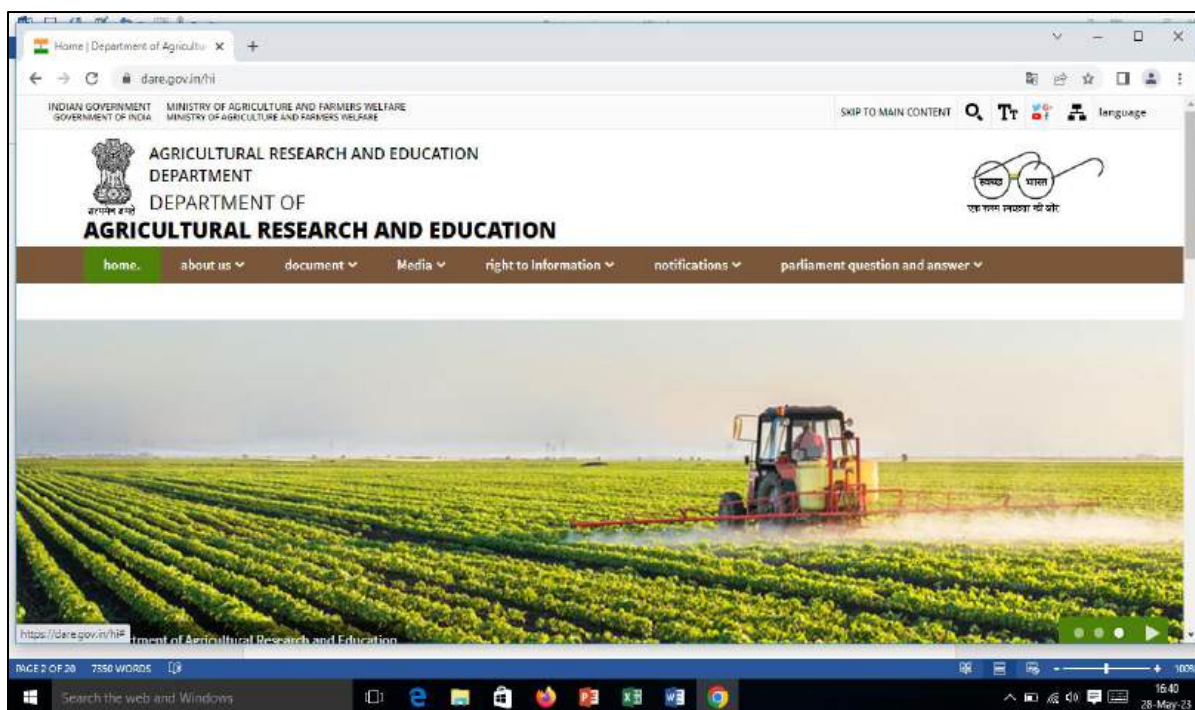
**Name of the Ministry:** Ministry of Agriculture & Farmers Welfare

**Official address of the department:** Krishi Anusandhan Bhawan, Pusa New Delhi- 110012

**Website address:** <https://dare.gov.in/>

**About the department:** In December 1973, the Ministry of Agriculture formed the Department of Agricultural Research and Education (DARE). The country's agricultural research and education are coordinated and promoted by the Department of Agricultural Research and Education (DARE). It has administrative jurisdiction over two independent bodies: Central Agricultural University (CAU), Imphal; Indian Council of Agricultural Research (ICAR). In order to coordinate, direct, and manage agricultural research and education across the nation, including horticulture, fisheries, and animal sciences, Dare provides the required government connections to the Indian Council of Agricultural Research (ICAR). In India, DARE serves as the central organization for international collaboration in agricultural research and education. The department collaborates in several fields of agricultural research with foreign governments, the UN, CGIAR, and other global organizations. Additionally, DARE manages foreign student enrollment at several ICAR/Indian Agricultural Universities. Main functions of the department are:

- To oversee all facets of agricultural education and research, including horticulture, resource management, agricultural engineering, agricultural extension, animal science, economic statistics and marketing, and fisheries.
- To take care of everything related to agriculture, horticulture, natural resource management, agricultural engineering, agricultural extension, animal science, economic statistics, marketing, and fisheries, including the introduction of new plants and animals as well as the investigation and development of cutting-edge technology in soil and land use survey and planning.
- To handle all issues pertaining to the Indian Council of Agricultural Research.
- International collaboration in the area of agricultural research and education, including participation in international conferences, associations, and other entities related to agricultural research and education and the implementation of decisions made in such international conferences, etc.
- Basic, applied, and operational research as well as coordination of such research and higher education in the fields of agriculture, forestry, animal husbandry, dairy, fisheries, agricultural statistics, economics, and marketing (Department of Agricultural Research and Education, n.d.).



**Figure 71: Screenshot of the Homepage of Department of Agricultural Research and Education**

## 5.47 Department of Agriculture & Farmers Welfare

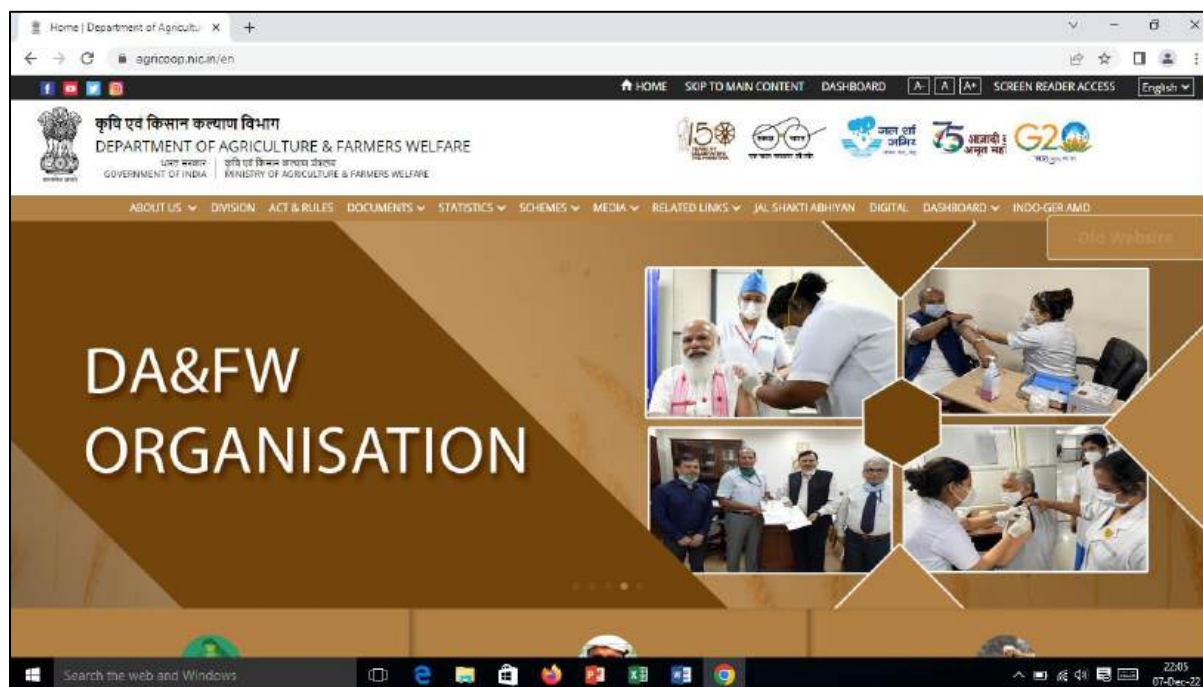
**Name of the Ministry:** Ministry of Agriculture & Farmers Welfare

**Official address of the department:** Krishi Bhavan, Dr. Rajendra Prasad Road, New Delhi

**Website address:** <https://agricoop.nic.in/en>

**About the department:** One of the three departments that make up the Ministry of Agriculture & Farmers Welfare is the Department of Agriculture, Cooperation, and Farmers Welfare (DAC & FW). The other two are the Department of Animal Husbandry, Dairying, and Fisheries (DAHD & F) and the Department of Agricultural Research and Education (DARE). Three Ministers of State assist the head of this department, the Agriculture & Farmers Welfare Minister. The Secretary (AC and FW) is the regulatory top of the Division. The Secretary is helped by one Head Guide, five Extra Secretaries including One Monetary Counselor, Agribusiness Magistrate, 12 Joint Secretaries including Mission Chief (Public Cultivation Mission) and Mission Chief (Public Food Security Mission) Agriculture Official Agriculture Consultant, Financial Counsel and two Agent Chief Commanders. Additionally, the Department receives advice on pricing strategies for particular agricultural crops from the

Chairman of the Commission for Agriculture Costs and Prices (CACPC) (Department of Agriculture & Farmers Welfare, n.d.).



**Figure 72: Screenshot of the Homepage of Department of Agriculture & Farmers Welfare**

#### **5.48 Department of Animal Husbandry and Dairying**

**Name of the Ministry:** Ministry of Fisheries, Animal Husbandry and Dairying

**Official address of the department:** Krishi Bhawan, New Delhi- 110001

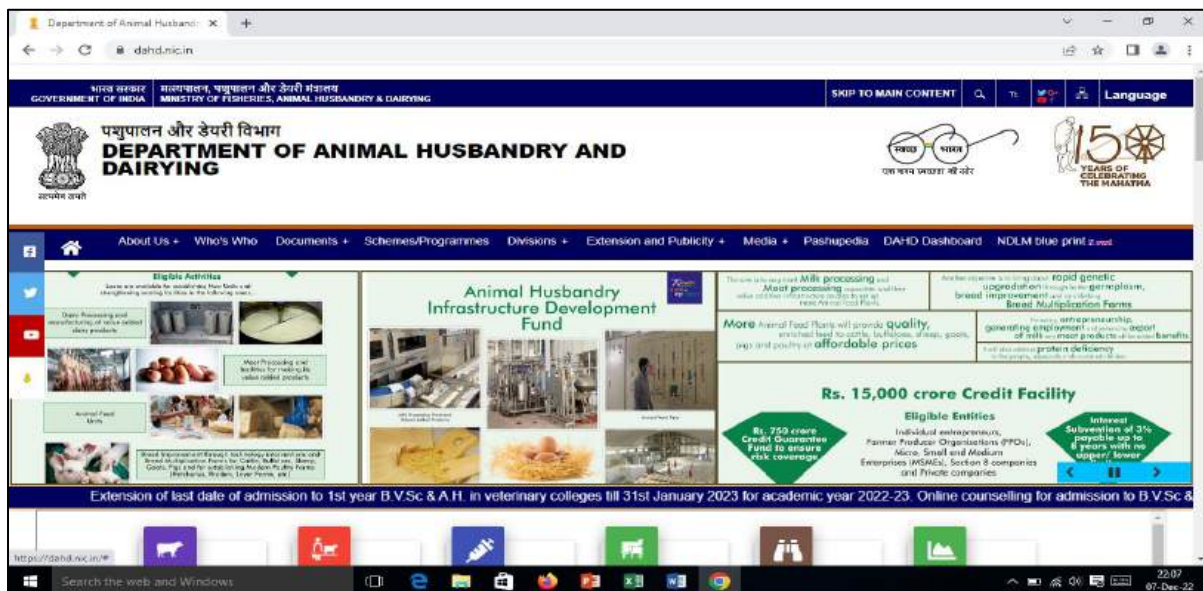
**Website address:** <https://dahd.nic.in/>

**About the department:** According to Cabinet Secretariat's Notification No.1/21/7/2019-Cab dated 17.06.2019 published in eGazette S.O.No.1972(E), one of the departments of the newly established Ministry of Fisheries, Animal Husbandry, and Dairying is the Department of Animal Husbandry and Dairying (AH&D). One of the Departments in the Ministry of Agriculture, the Department of Animal Husbandry and Dairying (AH&D), which was renamed the Department of Animal Husbandry, Dairying, and Fisheries (DADF) in 2005, was established. 1st of February 1991, by creating a new Department of Animal Husbandry and Dairy Development from the Department of Agriculture and Cooperation. The Fisheries Division of the Branch of Horticulture and Collaboration and a piece of the Service of Food Handling Businesses were subsequently moved to this Division w.e.f. October 10, 1997 The Department is based in New Delhi's Krishi Bhawan, and some of its divisions operate from the

Chanderlok Building in Janpath, New Delhi (Department of Animal Husbandry and Dairying, n.d.).

The Delhi Milk Scheme (DMS) and the National Dairy Development Board (NDDB) are managed by the Department, which is also in charge of livestock production, preservation, disease prevention, stock improvement, and dairy development. The Department assists State Governments and Union Territories in developing Animal Husbandry and Dairy Development policies and programs. The primary purpose regions are:

- Creating the necessary infrastructure in States and UTs to boost animal productivity.
- Providing livestock with health care for preservation and protection.
- Strengthening central livestock farms for the production of superior germplasm for distribution to states (cattle, sheep, and poultry) (Department of Animal Husbandry and Dairying, n.d.).



**Figure 73: Screenshot of the Homepage of Department of Animal Husbandry and Dairying**

## 5.49 Department of Biotechnology

**Name of the Ministry:** Ministry of Science and Technology

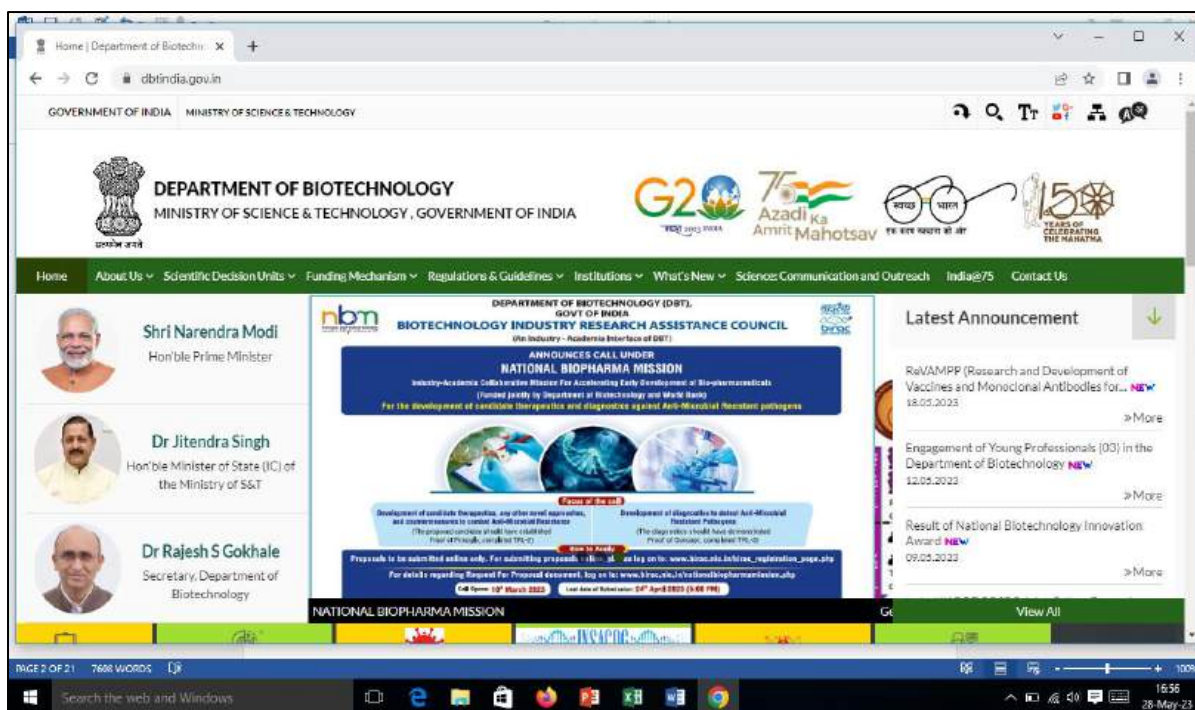
**Official address of the department:** 6<sup>th</sup>-8<sup>th</sup> Floor, Block 2 and 4<sup>th</sup>-5<sup>th</sup> Floor, Block 3 CGO Complex, Lodhi Road, New Delhi- 110003 India

**Website address:** <https://dbtindia.gov.in/>

**About the department:** In 1986, India began a stunning ascent into the fields of the biosciences and cutting-edge technology. The late Rajiv Gandhi, the nation's prime minister at the time, agreed with the idea that India would not advance to the level it intended until it established a distinct Department for Biotechnology inside the Ministry of Science and Technology. This was due to the fact that the advancement of that science encompassed a large number of our macroeconomic growth concerns (Department of Biotechnology, n.d.).

India is now among the first nations to have a distinct department for this area of science and technology as a result of that choice. But discussions to create the department had already begun far earlier. A National Biotechnology Board (NBTB) was established by the Government in 1982 to identify priority areas and develop a long-term perspective for biotechnology in India after extensive discussions with the scientific community and based on recommendations by the then Scientific Advisory Committee to the Cabinet. Additionally, it was in charge of establishing programmes and enhancing domestic capacities in this recently formed discipline (Department of Biotechnology, n.d.).

Professor MGK Menon, a renowned scientist and former Member (Science) of the Indian Planning Commission, presided over the NBTB. This Board's members are all of the secretaries to the several government agencies that deal with science. In February 1986, a distinct Department of Biotechnology (DBT) was established, and the NBTB chose Dr. S. Ramachandran to serve as the department's first Secretary (Department of Biotechnology, n.d.).



**Figure 74: Screenshot of the Homepage of Department of Biotechnology**

## 5.50 Department of Chemicals and Petrochemicals

**Name of the Ministry:** Ministry of Chemicals and Fertilizers

**Official address of the department:** Dept. of Chemicals & Petrochemicals, Ministry of Chemicals and Fertilisers, 230 A, 231 A, A-wing, 2<sup>nd</sup> floor, Shastri Bhawan, New Delhi-110001

**Website address:** <https://chemicals.gov.in/>

**About the department:** Prior to December 1989, when the Ministry of Petroleum and Chemicals took over control of the Department of Chemicals and Petrochemicals, it was a division of the Ministry of Industry. It was transferred to the Ministry of Chemicals and Fertilisers on June 5, 1991, from the Department of Chemicals and Petrochemicals. The Department is divided into five main divisions: Administration, Statistics & Monitoring (S&M), Economic Division, and Chemicals and Petrochemicals. The three Departments under the Ministry of Chemicals and Fertilisers share the Internal Finance Division. In the chemical industry, there are three Central Public Sector Undertakings (CPSUs): Hindustan Organic Chemicals Limited (HOCL), HIL (India) Limited, and Hindustan Fluorocarbons Limited (HFL), a HOCL subsidiary. The Central Institute of Petrochemicals Engineering & Technology

(CIPET) and the Institute of Pesticides Formulation Technology (IPFT) are the autonomous institutes under this department (Department of Chemicals and Petrochemicals, c2022).

The Minister of Chemicals and Fertilisers is Dr. Mansukh Mandaviya. The Minister of State for Chemicals and Petrochemicals is Shri Bhagwanth Khuba. On September 16, 2022, Shri Arun Baroka took over as the Department's Secretary. Objectives of the department include:

- to promote the spirit of public-private collaboration for the overall development of the aforementioned industry sectors;
- to establish and implement policies and programmes to achieve growth and development of the chemical and petrochemical sectors in the nation (Department of Chemicals and Petrochemicals, c2022).



**Figure 75: Screenshot of the Homepage of Department of Chemicals and Petrochemicals**

### 5.51 Department of Commerce

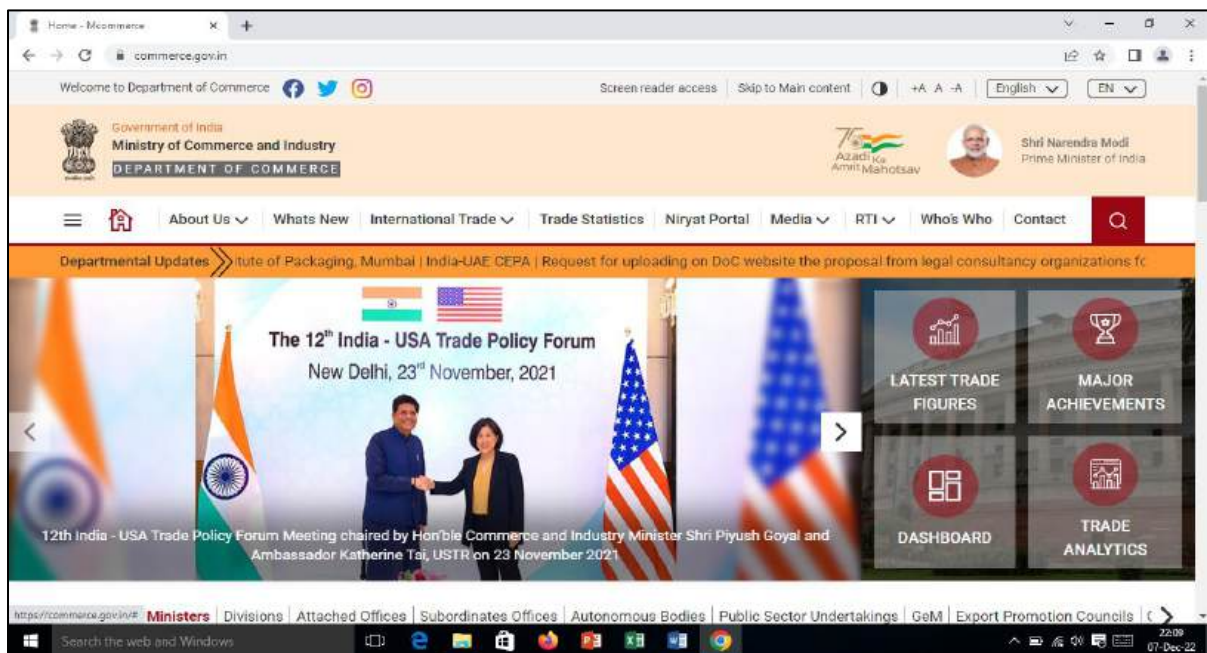
**Name of the Ministry:** Ministry of Commerce and Industry

**Official address of the department:** Vanijya Bhawan, 16, Akbar Road, Sunehri Bagh Road Area, Motilal Nehru Marg Area, New Delhi, Delhi 110001

**Website address:** <https://commerce.gov.in/>

**About the department:** The Foreign Trade Policy (FTP), which offers the fundamental framework of policy and strategy to be followed for promoting exports and trade, is developed, put into effect, and monitored by the Department. The Trade Policy is reviewed on a regular basis in order to make the adjustments required to address new economic scenarios in both the domestic and global economies. Additionally, the Department has duties pertaining to multilateral and bilateral commercial relationships, Special Economic Zones, state trading, export promotion and trade facilitation, as well as the growth and regulation of specific export focused businesses and commodities (Department of Commerce, c2014).

The Secretary of the Department of Commerce is in charge, and they are supported by a number of other senior officers, 13 Joint Secretaries and Joint Secretary level officers, one Officer on Special Duty (OSD), one Special Secretary, one Special Secretary & Financial Advisor, three Additional Secretaries, and two Additional Secretary rank officers (Department of Commerce, c2014).



**Figure 76: Screenshot of the Homepage of Department of Commerce**

## 5.52 Department of Consumer Affairs

**Name of the Ministry:** Ministry of Consumer Affairs, Food and Public Distribution

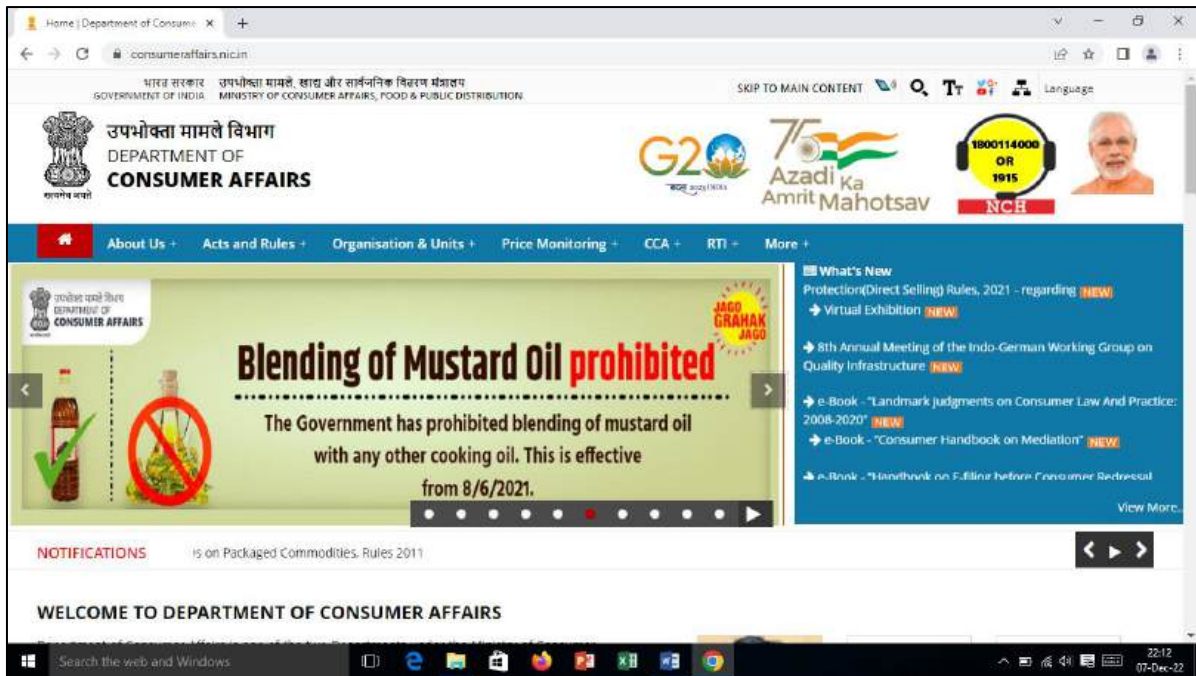
**Official address of the department:** Room No. 456 C, Krishi Bhawan, New Delhi- 110001

Phone No.: 011-23386189

**Website address:** <https://consumeraffairs.nic.in/>

**About the department:** The Ministry of Consumer Affairs, Food & Public Distribution is made up of two departments, one of which is the Department of Consumer Affairs. In order to give the country's emerging consumer movement a boost, it was deemed necessary to create it as a separate Department in June 1997. The following tasks have been assigned to the department:

- The Consumer Protection Act's 2019 implementation
- The Bureau of Indian Standards Act of 2016 was put into effect. • The Legal Metrology Act of 2009 was put into effect.
- The regulation of packaged goods
- The Essential Commodities Act of 1955 (Act No. 10 of 1955) (Supply, Prices, and Distribution of Essential Commodities Not Specially Handled by Any Other Department)
- The 1980 Maintenance of Supply of Essential Commodities and Prevention of Black Marketing Act (7 of 1980).
- Keeping an eye on the prices and availability of essential products.
- Direct Selling
- Preparing in Lawful Metrology.
- The 1952 Emblems and Names (Prevention of Unauthorized Use) Act
- Establishing specifications, standards, and codes, as well as ensuring quality control for end-use biofuels.
- National Test House and Consumer Cooperatives (Department of Consumer Affairs, n.d.).



**Figure 77: Screenshot of the Homepage of Department of Consumer Affairs**

### 5.53 Department of Defence Production

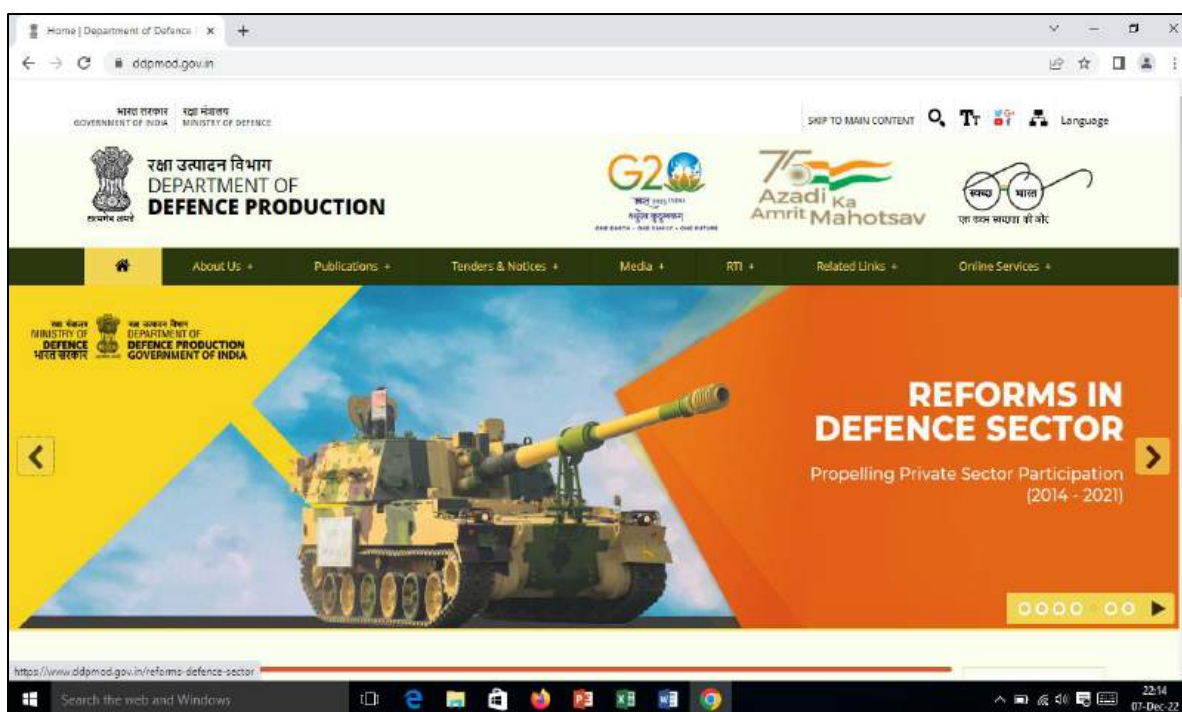
**Name of the Ministry:** Ministry of Defence

**Official address of the department:** 130-E South Block, New Delhi, 110011

TeleFax: +91-11-28036145 Phone No.: 011-23011587, 011-23019902

**Website address:** <https://www.ddpmod.gov.in/>

**About the department:** In November 1962, the Department of Defense Production (DDP) was established with the intention of developing a comprehensive production infrastructure for the production of defense-related weapons, systems, platforms, and equipment. Through Defence Public Sector Undertakings (DPSUs), the Department has established numerous production facilities for various defense equipment over the years. Tanks, armoured vehicles, heavy vehicles, fighter aircraft and helicopters, warships, submarines, missiles, electronic equipment, earth moving equipment, special alloys, and special purpose steels are among the products produced (Department of Defence Production, n.d.).



**Figure 78: Screenshot of the Homepage of Department of Defence Production**

## 5.54 Department of Drinking Water and Sanitation

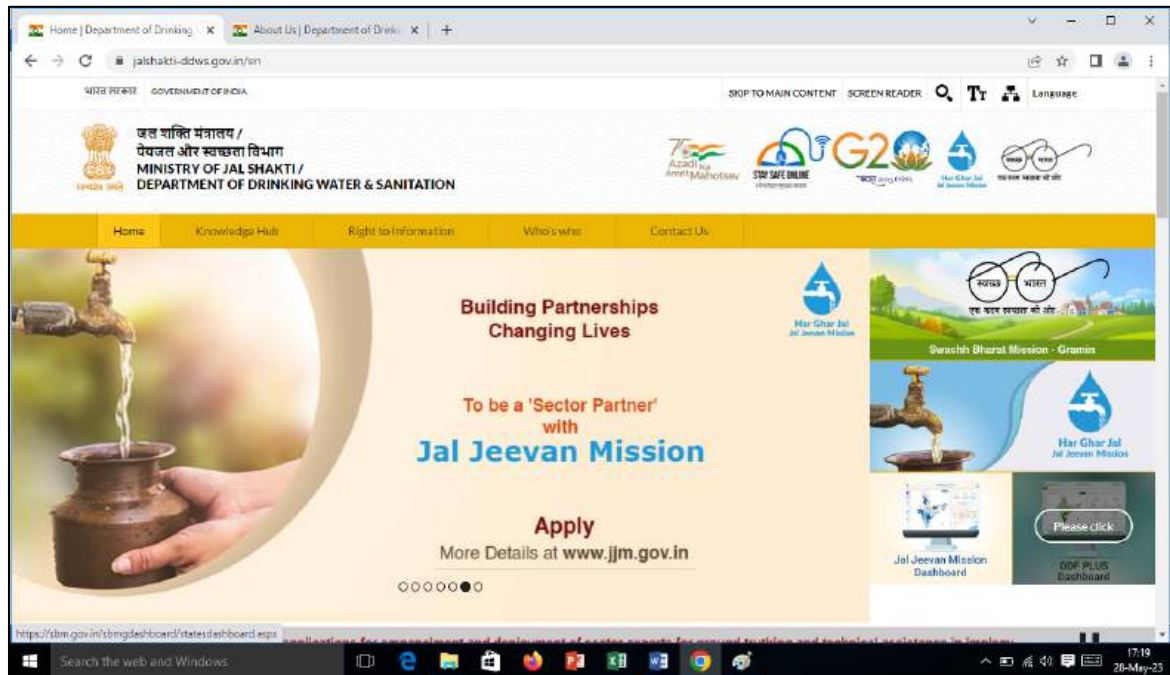
**Name of the Ministry:** Ministry of Jal Shakti

**Official address of the department:** Office of Secretary, Department of Drinking Water and Sanitation, Ministry of Jal Shakti, Govt. of India, C Wing, 4<sup>th</sup> Floor, Pandit Deendayal Antyodaya Bhawan, CGO Complex, Lodhi Road, New Delhi- 110003 Phone: 011-24361011

**Website address:** <https://jalshakti-ddws.gov.in/en>

**About the department:** With a focus on service delivery, the Department of Drinking Water and Sanitation offers technical and financial support to the States so they may supply rural India with safe and sufficient drinking water. The National Rural Drinking Water Programme (NRDWP), a centrally sponsored programme of the department, was reorganised and incorporated into the Jal Jeevan Mission (JJM) with the goal of providing Functional family Tap Connections (FHTC) to every rural family, or Har Ghar Jal, by the year 2024. The types of projects/schemes that are proposed to be undertaken under JJM include in-village water supply (PWS) infrastructure for tap water connection to every home; the development/augmentation of reliable drinking water sources; the transfer of water (multi-village scheme; where quantity & quality issues are present in the local water sources);

technological intervention for treatment to make the water more potable; and the development of reliable drinking water sources (Department of Drinking Water and Sanitation, n.d.).



**Figure 79: Screenshot of the Homepage of Department of Drinking Water and Sanitation**

## 5.55 Department of Economic Affairs

**Name of the Ministry:** Ministry of Finance

**Official address of the department:** 15, Safdarjung Road, New Delhi- 110001

Phone No.: 011-23093230 Fax: 011-23092420

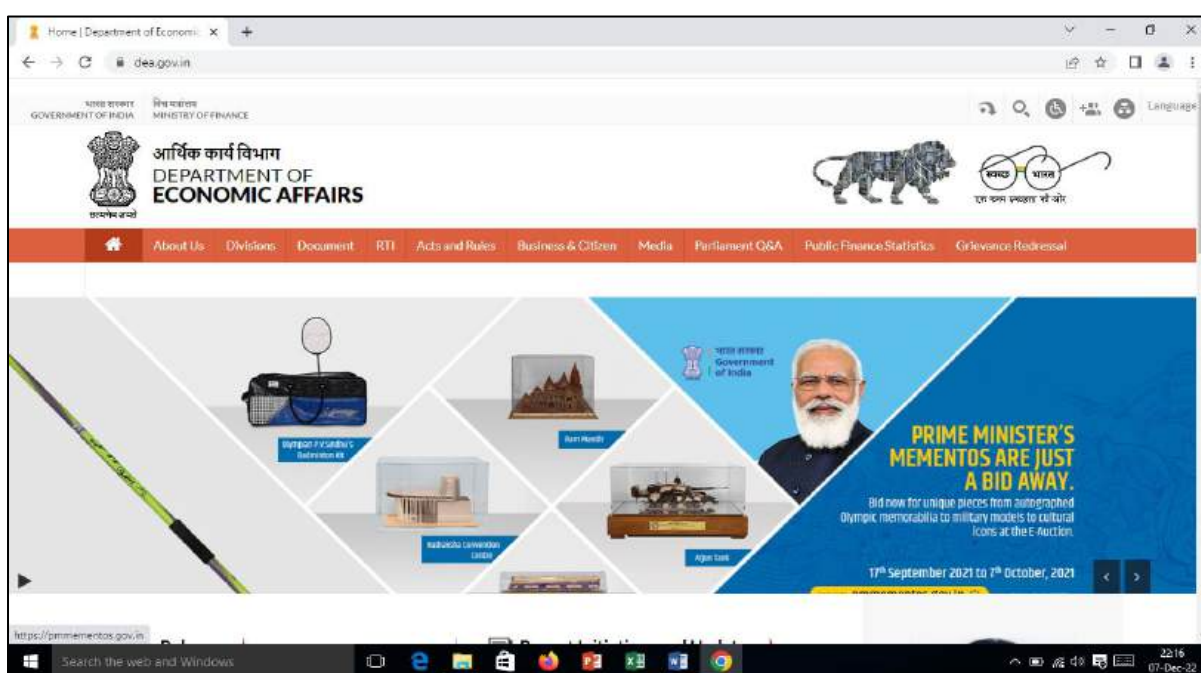
**Website address:** <https://dea.gov.in/>

**About the department:** The Union Government's nodal agency for the formulation and monitoring of national economic policies and programs affecting domestic and international aspects of economic management is the Department of Economic Affairs. The preparation and presentation of the Union Budget to Parliament, as well as the budgets for state governments under President's Rule and union territory administrations, are among this department's primary responsibilities. Other important roles include:

- Macroeconomic policies, such as fiscal policy and public finance, inflation, public debt management, and the operation of the capital market, including stock exchanges, are

formulated and monitored. In this context, it examines taxation, market borrowing, and the mobilization of small savings as means of raising internal resources;

- Keeping an eye on and raising funds from the outside through bilateral and multilateral Official Development Assistance, sovereign borrowings abroad, foreign investments, and monitoring the balance of payments and other resources of the foreign exchange market;
- The production of various denominations of bank notes and coins, postal stationery, and postal stamps; and the Indian Economic Service's Cadre Management, Career Planning, and Training (IES) (Department of Economic Affairs, n.d.).



**Figure 80: Screenshot of the Homepage of Department of Economic Affairs**

### **5.56 Department of Empowerment of Persons with Disabilities**

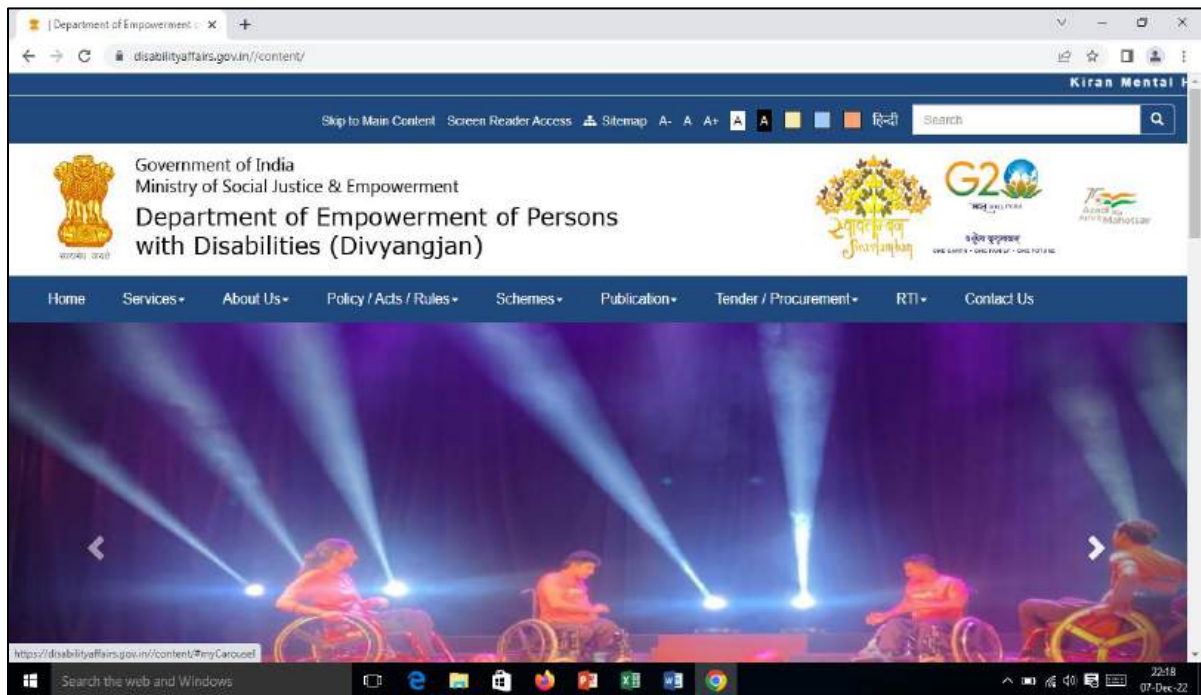
**Name of the Ministry:** Ministry of Social Justice and Empowerment

**Official address:** 5<sup>th</sup> Floor, Pandit Deenadayal Antyodaya Bhawan, CGO Complex, Lodhi Road, New Delhi- 110003; New Delhi & East Block 1 Sector 1, RK Puram, New Delhi

**Website address:** <https://disabilityaffairs.gov.in//content/>

**About the department:** The Ministry of Social Justice & Empowerment's Department of Empowerment of Persons with Disabilities (Divyangjan) was established in May 2012 with the goal of facilitating the empowerment and inclusion of people with disabilities. It also serves as

a nodal agency to handle all of the development agenda for people with disabilities (Divyangjan). The empowerment of people with disabilities is a multidisciplinary approach that addresses a number of issues, including social integration, early detection, early intervention, education, health, and vocational training (Department of Empowerment of Persons with Disabilities, n.d.).



**Figure 81: Screenshot of the Homepage of Department of Empowerment of Persons with Disabilities**

### 5.57 Department of Expenditure

**Name of the Ministry:** Ministry of Finance

**Official address of the department:** Shri Prateek Singh, Director (Expenditure)

Ministry of Finance

Department of Expenditure, Room No. 76

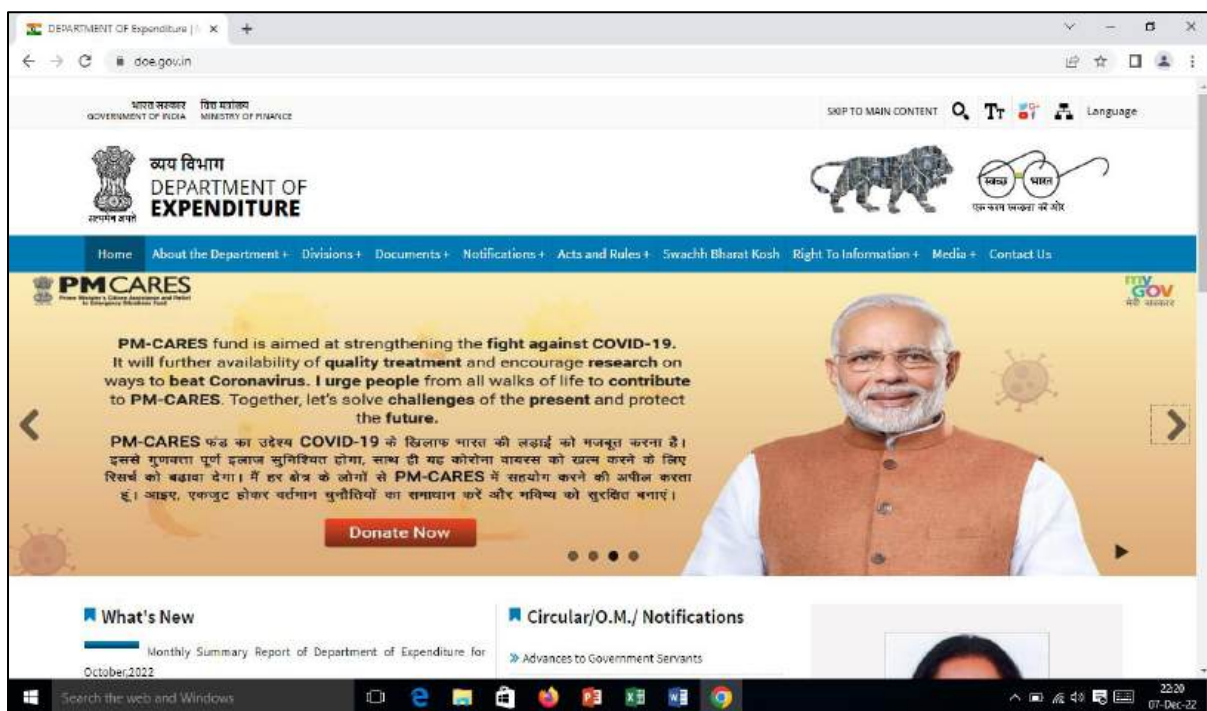
New Delhi- 110001

Telephone No.: 91-11-23095647

**Website address:** <https://doe.gov.in/>

**About the department:** The Department of Expenditure is the main department for managing state financial affairs as well as the public financial management system in the Central Government. It is in charge of carrying out the suggestions made by the Central Pay Commission and the Finance Commission, keeping track of audit findings and recommendations, and creating the Central Government Accounts. Additionally, it helps central Ministries/Departments control the pricing and costs of public services while examining system and method to maximise outputs and results of public expenditure. The Department's main responsibilities include managing expenditures in central Ministries and Departments by interacting with Financial Advisers and administering Financial Rules, Regulations, and Orders, evaluating major schemes and projects prior to approval, and managing the majority of transferred central budgetary resources (Department of Expenditure, n.d.).

The Personnel & Establishment Division, the Public Finance (States) and Public Finance (Central) Divisions, the Office of Controller General of Accounts, the Office of Chief Adviser Cost, and the Central Pension Accounting Office carry out the work assigned to the Department of Expenditure. The Division likewise has under its managerial control the Public Foundation of Monetary Administration (NIFM), Faridabad, which is an independent body (Department of Expenditure, n.d.).



**Figure 82: Screenshot of the Homepage of Department of Expenditure**

## **5.58 Department of Ex-Servicemen Welfare**

**Name of the Ministry:** Ministry of Defence

**Official address of the department:** Dr. Pudi Hari Prasad, Joint Secretary (ESW)

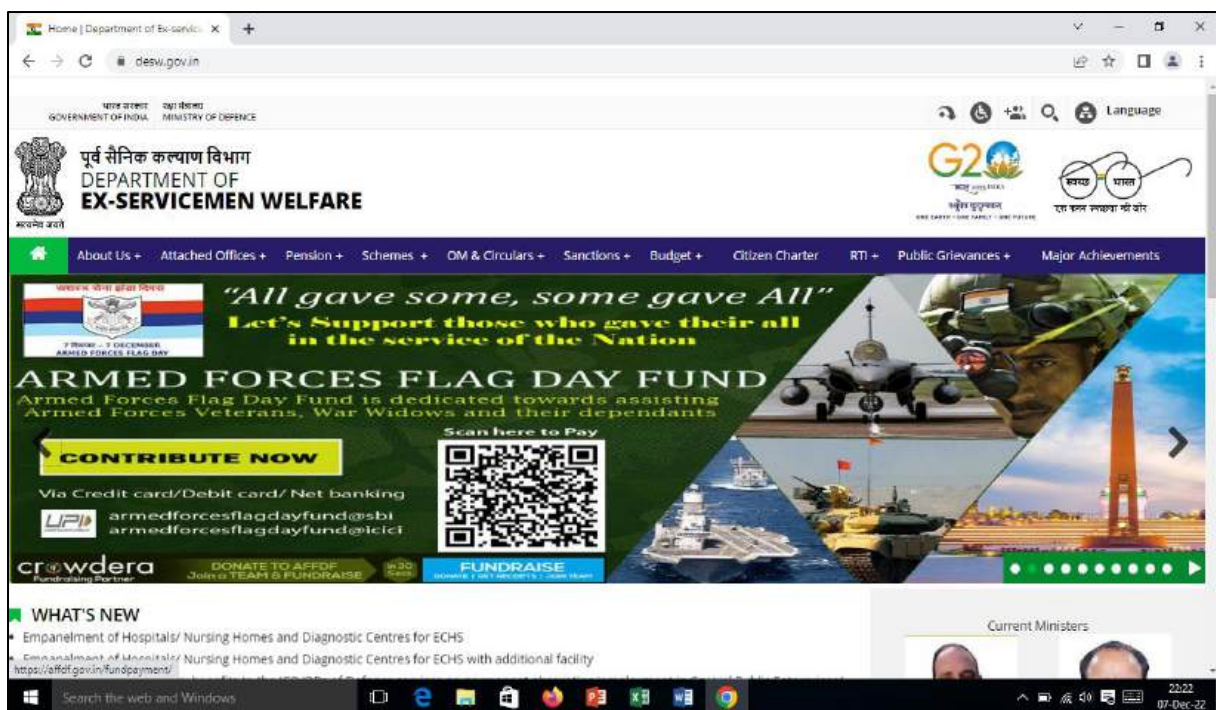
23011804, 23015933 (Fax)

99-A, South Block, New Delhi- 110011

**Website address:** <https://www.desw.gov.in/>

**About the department:** There were persistent requests from service headquarters and various associations for a separate Department to care for the welfare, resettlement, and rehabilitation of ESM, war widows, and their dependents in light of the growing population of ex-servicemen (ESM) and widows. A decision was made in 1986 to establish an independent Department of Defense resettlement division (Department of Ex-Servicemen Welfare, n.d.).

On September 22, 2004, the Ministry of Defence established a new Department of Ex-Servicemen Welfare (DESW) to concentrate on ESM welfare and relocation. The Department of Ex-Servicemen's Welfare (DESW) is tasked with developing and implementing a variety of policies and programs for the country's welfare and resettlement of ex-servicemen. There are two divisions in the department: (i) the Pension Division; and (ii) the Division of Resettlement. The Department of Ex-Servicemen Welfare's Pension Division oversees pension policies for Armed Forces personnel and handles ex-servicemen's complaints, while the Resettlement Division handles the remaining issues. Additionally, DESW has three attached offices: the KSB Sectt. (Kendriya Sainik Board Secretariat), the Central Organization for the Ex-Servicemen Contributory Health Scheme (CO, ECHS) and the Directorate General for Resettlement (DGR) (Department of Ex-Servicemen Welfare, n.d.).



**Figure 83: Screenshot of the Homepage of Department of Ex-Servicemen Welfare**

## 5.59 Department of Fertilizers

**Name of the Ministry:** Ministry of Chemicals and Fertilizers

**Official address of the department:** Department of Fertilizers, Ministry of Chemicals and Fertilizers, Shastri Bhawan, New Delhi - 110001 (India)

**Website address:** <https://www.fert.nic.in/>

**About the department:** The Department of Fertilizers falls under the purview of the Ministry of Chemicals & Fertilizers, which is led by a Cabinet Minister and supported by two Ministers of State. The Department's administrative leader is the Secretary to the Government, who is supported by 3 Joint Secretaries, a Special Secretary, a Financial Adviser, and one Special Secretary. The department receives advice on a variety of economic matters from an economic adviser, a Joint Secretary level officer (Department of Fertilizers, n.d.).

The Department of Fertilizers' major goal is to guarantee the timely and adequate supply of fertilizers at reasonable prices in order to increase national agricultural output. The Department's primary responsibilities include managing financial assistance by way of subsidy or concession for domestic and imported fertilizers as well as planning, promoting, and developing the fertilizers business, planning and monitoring production, importing, and distributing fertilizers (Department of Fertilizers, n.d.).



**Figure 84: Screenshot of the Homepage of Department of Fertilizers**

## **5.60 Department of Financial Services**

**Name of the Ministry:** Ministry of Finance

**Official address of the department:** Department of Financial Services, Ministry of Finance, 3<sup>rd</sup> Floor, Jeevan Deep Building, Sansad Marg

New Delhi- 110001 Fax No.- 23742207

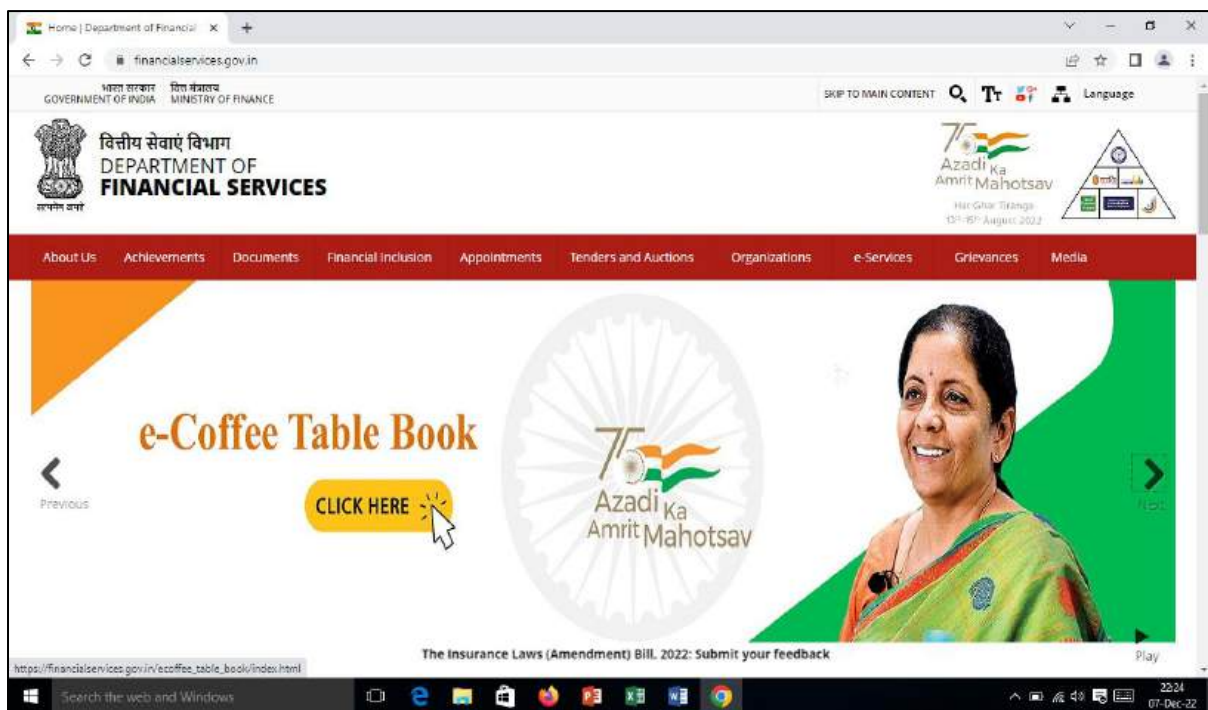
**Website address:** <https://financialservices.gov.in/>

**About the department:** The National Pension System, Insurance Companies, and Banks are all included in the Department of Financial Services' scope of responsibility. The Division is going by the Secretary (FS) who is helped by one Extra Secretary (AS), four Joint Secretaries (JS), two Financial Counselors (EA) and a Delegate Chief General (DDG). In India, the Department of Financial Services (DFS) is in charge of a number of important government programs, initiatives, and reforms pertaining to the Banking, Insurance, and Pension sectors. The following are the Department's primary responsibilities:

1. Organization of Acts-Product Import Bank (EXIM Bank) Act, 1981, Public Bank for Funding Foundation and Improvement Act, 2021, Public Lodging Bank Act, 1987,

Little Ventures Advancement Bank of India Act, 1989, Plan for Supporting Reasonable Framework Tasks (SIFTI), State Monetary Partnership Act, 1951.

2. Authoritative issues connected with Public Area Banks (PSB), Public Area Insurance Agency (PSIC), Public Monetary Establishments (PFIs), Controller and matters connected with arrangements of Entire time directors(WTDs) and Government Chosen one Chiefs in PFIs.
3. Implementation of the Emergency Credit Line Guarantee Scheme (ECLGS), which was launched as part of the Aatmanirbhar Bharat Abhiyaan in May 2020 to assist eligible Micro, Small, and Medium Enterprises (MSMEs) and business enterprises in meeting their operational liabilities and restarting their businesses in the wake of the disruption brought on by the COVID-19 pandemic, and Schemes for financing Viable Infrastructure Projects (SIFTI) of IIFCL.
4. Relationship with International Banks (Department of Financial Services, n.d.).



**Figure 85: Screenshot of the Homepage of Department of Financial Services**

## 5.61 Department of Fisheries

**Name of the Ministry:** Ministry of Fisheries, Animal Husbandry and Dairying

**Official address of the department:** Secretary Office, Room no.- 220, Krishi Bhavan, New Delhi

Phone no.- 23381994

Email: secy-fisheries[at]gov[dot]in

**Website address:** <https://dof.gov.in/>

**About the department:** One of the two departments that fall under the Ministry of Fisheries, Animal Husbandry, and Dairy is the Department of Fisheries. It appeared with impact from 05.02.2019 through cutting out Fishery Division from the recent Branch of Animal Cultivation, Dairying and Fisheries vide Bureau Secretariat's Notice F.No.1/21/21/2018-Taxi dated 05.02.2019.

Shri Parshottam Rupala, the Hon'ble Minister for Fisheries, Animal Husbandry, and Dairying, is in charge of the department overall. He is assisted by two Ministers of State for Fisheries, Animal Husbandry, and Dairying, Dr. Sanjiv Kumar Balyan and Dr. L Murugan. Secretary Fisheries is the department's administrative head. Two Joint Secretaries assist Secretary Fisheries.

The Fisheries Survey of India Mumbai, the Central Institute of Fisheries Nautical and Engineering Training (CIFNET), Kerala, the Central Institute of Coastal Engineering For Fishery (CICEF), Bangalore, the National Institute of Fisheries Post Harvest Technology and Training (NIFPHATT), Kochi, the National Fisheries Development Board (NFDB), Hyderabad, and the Coastal Aquaculture Authority, Chennai are all under the Department's jurisdiction (Department of Fisheries, n.d.).



**Figure 86: Screenshot of the Homepage of Department of Fisheries**

## 5.62 Department of Food & Public Distribution

**Name of the Ministry:** Ministry of Consumer Affairs, Food and Public Distribution

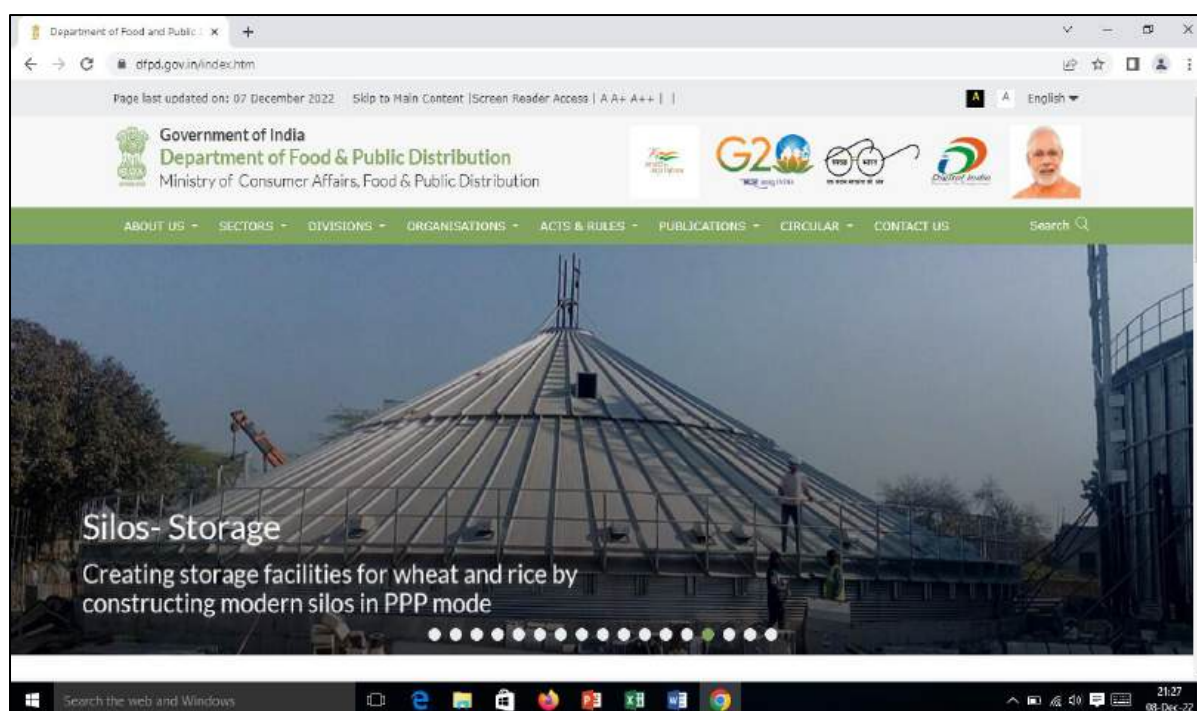
**Official address of the department:** Ministry of Consumer Affairs, Food and Public Distribution, Department of Food & Public Distribution

Krishi Bhawan, New Delhi- 110001

**Website address:** <https://dfpd.gov.in/index.htm>

**About the department:** On August 29, 1947, the Food Department was renamed the Ministry of Food. The Directorate of Sugar and Vanaspati was a part of the Food Ministry in 1947, according to records. The Ministry of Food and Agriculture was formed on February 1, 1951, when the Ministry of Agriculture and the Ministry of Food were combined for the purpose of increasing administrative efficiencies and reducing costs. Over the long run as the work extended fundamentally, two separate services, in particular Service of Food and Service of Farming were shaped in October 1956 however they were again converged on seventeenth April 1957 as Service of Food and Horticulture. The Central and State Warehousing Corporation-related work was transferred to the Ministry of Food and Agriculture's Department of Food on December 30, 1958.

In 1960 the Service was made into two divisions, specifically the Branch of Food and Branch of Farming. The Department of Food was given the task of acquiring food grains for civil and military use, distributing imported food grains to states, coordinating, planning, and directing national food policy, and regulating food grain import and export. Vanaspati and the Directorate of Sugar remained with the Department of Food. The department had a number of plans for the sugar and vanaspati industries. For the advancement of this vital industry, the National Sugar Institute was actively engaged in teaching, training, and research (Department of Food & Public Distribution, n.d.).



**Figure 87: Screenshot of the Homepage of Department of Food & Public Distribution**

### **5.63 Department of Health Research**

**Name of the Ministry:** Ministry of Health and Family Welfare

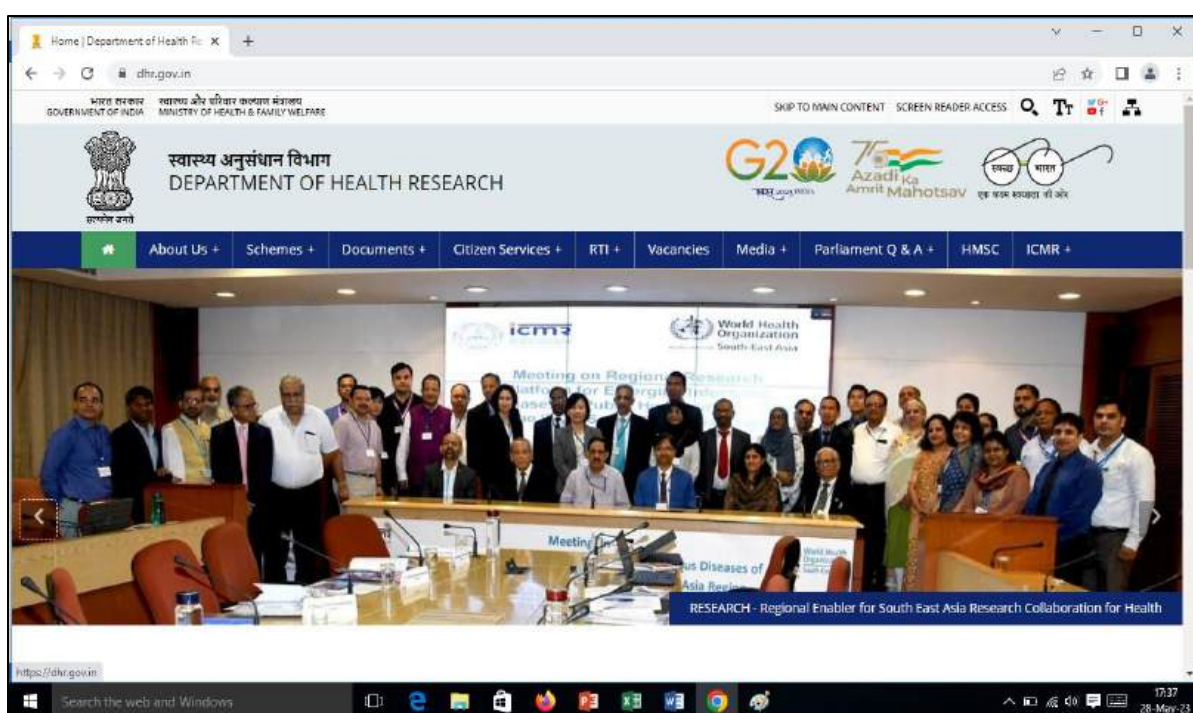
**Official address of the department:** 2<sup>nd</sup> Floor, IRCS Building, 1, Red Cross Road, New Delhi – 110001 Phone: +91 11 23736085

**Website address:** <https://dhr.gov.in/>

**About the department:** On September 17, 2007, the President issued an executive order amending the Government of India (Allocation of Business) Rules, 1961 to create the Department of Health Research under the Ministry of Health and Family Welfare. In a ceremony officiated by the Minister for Health and Family Welfare and attended, among

others, by the Minister of state for Health and Family Welfare, the Minister for Science, Technology, and Earth Sciences officially established the Department of Health Research on October 5, 2007.

On September 17, 2007, the Government of India (Allocation of Business) Rules, 1961 were amended to create the Department of Health Research (DHR) as a separate department within the Ministry of Health and Family Welfare. With the nomination of the first Secretary of the Department, the Department started operating in November 2008. Through research and innovations in diagnosis, treatment and vaccines for prevention, the DHR seeks to make modern health technologies accessible to the general public. These innovations are then translated into products and processes and in collaboration with relevant organizations, introduced into the public health system (Department of Health Research, n.d.).



**Figure 88: Screenshot of the Homepage of Department of Health Research**

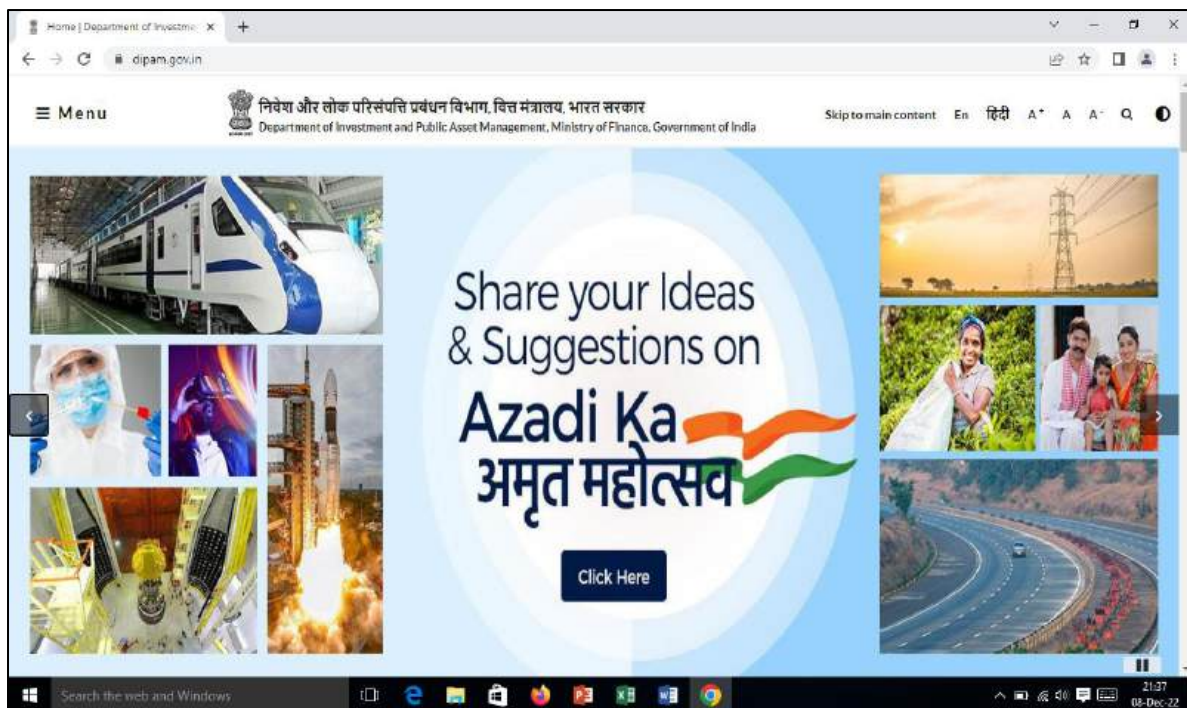
## **5.64 Department of Investment and Public Asset Management**

**Name of the Ministry:** Ministry of Finance

**Official address of the department:** Room No. 408, 4<sup>th</sup> Floor Block No. 11 CGO Complex, Lodhi Road New Delhi- 110003 Phone No.: 011-24366523

**Website address:** <https://dipam.gov.in/>

**About the department:** The Central Government's equity investments are managed by the Department of Investment and Public Asset Management (DIPAM), which also handles the disinvestment of equity in Central Public Sector Undertakings. Minority Stake Sales, Capital Restructuring, and Strategic Disinvestment and Privatization are the three primary areas of its work. DIPAM covers everything to do with the strategic disinvestment of CPSEs and the sale of equity in the Central Government through offer for sale, private placement, or any other method. DIPAM is part of the Ministry of Finance's Department (Department of Investment and Public Asset Management, c2020).



**Figure 89: Screenshot of the Homepage of Department of Investment and Public Asset Management**

### 5.65 Department of Justice

**Name of the Ministry:** Ministry of Law and Justice

**Official address of the department:** Room No. 12-A Jaisalmer House 26, Mansingh Road, New Delhi- 110001

Phone No.: 011-23072149

**Website address:** <https://doj.gov.in/>

**About the department:** The Indian government's Department of Justice, as stated in the Allocation of Business (Rules) of 1961. It is one of the Indian government's oldest ministries. Up until December 31, 2009. The Secretary of the Department of Justice was the Union Home Secretary, and the Department of Justice was a part of the Ministry of Home Affairs. A separate department, the Department of Justice, was created from the Ministry of Human Affairs (MHA) in response to the growing workload and the need to develop numerous programs and policies for judicial reform in India. It was given the responsibility of being Secretary to the Government of India and began operating as such on January 1, 2010, under the Ministry of Law & Justice.

The Indian government's Department of Justice is a division of the Ministry of Law & Justice, as stated in the Allocation of Business (Rules) of 1961. It is one of the Indian government's oldest ministries. Up until December 31, 2009, the Secretary of the Department of Justice was the Union Home Secretary, and the Department of Justice was a part of the Ministry of Home Affairs. A separate department, the Department of Justice, was created from the Ministry of Human Affairs (MHA) in response to the growing workload and the need to develop numerous programs and policies for judicial reform in India. It was given the responsibility of being Secretary to the Government of India and began operating as such on January 1, 2010, under the Ministry of Law & Justice.

The Jaisalmer House, 26, Man Singh Road, New Delhi, is where the Department is located. The Department has one additional secretary, three joint secretaries, seven directors/deputies, and eight undersecretaries in its organizational structure. The elements of the Branch of Equity incorporate the arrangement, renunciation and evacuation of the Central Equity of India, Judges of the High Court of India, Boss Judges and Judges of the Great Courts and their administration matters. In addition, the Department implements important plans for the Development of Judiciary Infrastructure Facilities, the establishment of Special Courts to expedite the trial and resolution of sensitive cases (such as the Fast Track Special Court for cases of rape and the POSCO Act), the E- court Project, legal aid for the poor and access to justice, and financial support for the National Judicial Academy, which trains the nation's judicial officers (Department of Justice, n.d.).



**Figure 90: Screenshot of the Homepage of Department of Justice**

## 5.66 Department of Land Resources

**Name of the Ministry:** Ministry of Rural Development

**Official address of the department:** NBO Building, G-Wings, Nirman Bhawan, Maulana Azad Road, New Delhi- 110011 India

**Website address:** <https://dolr.gov.in/>

**About the department:** The National Wastelands Development Board (NWDB), a division of the Ministry of Environment and Forests, was founded in 1985 with the primary goal of turning the nation's wastelands into productive land by way of an extensive programme of afforestation and tree planting.

The National Wastelands Board was reorganized in July 1992 and given control of the newly established Wastelands Development Department under the Ministry of Rural Development. A Gazette Notification issued 09-04-1999 (Annexure-I) changed the name of the Wastelands Development Department to Land Resources Department. As a result, 32 posts from the Ministry of Environment and Forests were transferred to the Department of Land Resources when it was established. These appointments included both technical and general positions.

The Department of Land Resources performs the following duties:

1. The watershed program's implementation for the restoration of rain-fed and degraded areas.
2. Aiding nations in creating land information systems and modernizing the management of land records.
3. Assisting the states in their attempts to implement a system of final title.
4. Administration of the Registration Act of 1908, the Land Acquisition Act of 1894 (1 of 1894) and the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation, and resettlement Act of 2013 in matters relating to acquisition of land for Union purposes.
5. To make it easier to develop policies for the rehabilitation and resettling of displaced people.
6. Land reforms, land tenure, land records, holding consolidation, and relevant topics (Department of Land Resources, n.d.).



**Figure 91: Screenshot of the Homepage of Department of Land Resources**

## 5.67 Department of Legal Affairs

**Name of the Ministry:** Ministry of Law and Justice

**Official address of the department:** Ministry of Law and Justice 4<sup>th</sup> Floor, A-Wing, Shastri Bhawan New Delhi- 110001

**Website address:** <https://legalaffairs.gov.in/>

**About the department:** the following items have been assigned to the Department in accordance with the Government of India's "Allocation of Business" Rules, 1961:

- a. Advice to Ministries on legal matters, such as how to interpret the Constitution and laws, hire lawyers to represent the Union of India in High Courts and subordinate courts where it is a party, and how to interpret the laws.
- b. The Attorney General of India, the Solicitor General of India, and other law officers from the Central Government of the States whose duties are shared by the Ministries of the Indian Government.
- c. Cases in the Supreme Court and the High Courts for the Central Government and the Governments of the States participating in the Central Agency Scheme.
- d. Reciprocal arrangements with other nations for the service of summons in civil suits, the enforcement of maintenance orders, and the administration of the estates of foreigners who die intestate in India.
- e. Article 299(1) of the Constitution grants officers the authority to sign and verify complaints or written statements in suits brought by or against the Central Government as well as to execute contracts and property assurances on behalf of the President.
- f. Legal Service of India
- g. Agreements and treaties with other nations regarding civil law
- h. Commission on Law
- i. Legitimate Calling including the Backers Act, 1961 (25 of 1961) and people qualified for training under the watchful eye of High Courts.
- j. Granting the Supreme Court additional powers and expanding its jurisdiction; individuals qualified to practice before the Supreme Court, as defined by Article 143 of the Indian Constitution.
- k. implementation of the Notaries Act of 1952 (Act 53 of 1952) Appellate Tribunal for Income Tax

The Law Commission of India and the Income Tax Appellate Tribunal are also under the Department's administrative control. All issues pertaining to the Indian Legal Service are also the subject of administrative concern for the Department. It is also connected to the

appointment of Law Officers, such as the Additional Solicitor General, Attorney General, and Solicitor General of India. This Department approves grant-in-aid to certain law-related institutions, such as the Indian Law Institute, with the intention of advancing legal education and research (Department of Legal Affairs, n.d.).



**Figure 92: Screenshot of the Homepage of Department of Legal Affairs**

## 5.68 Department of Official Language

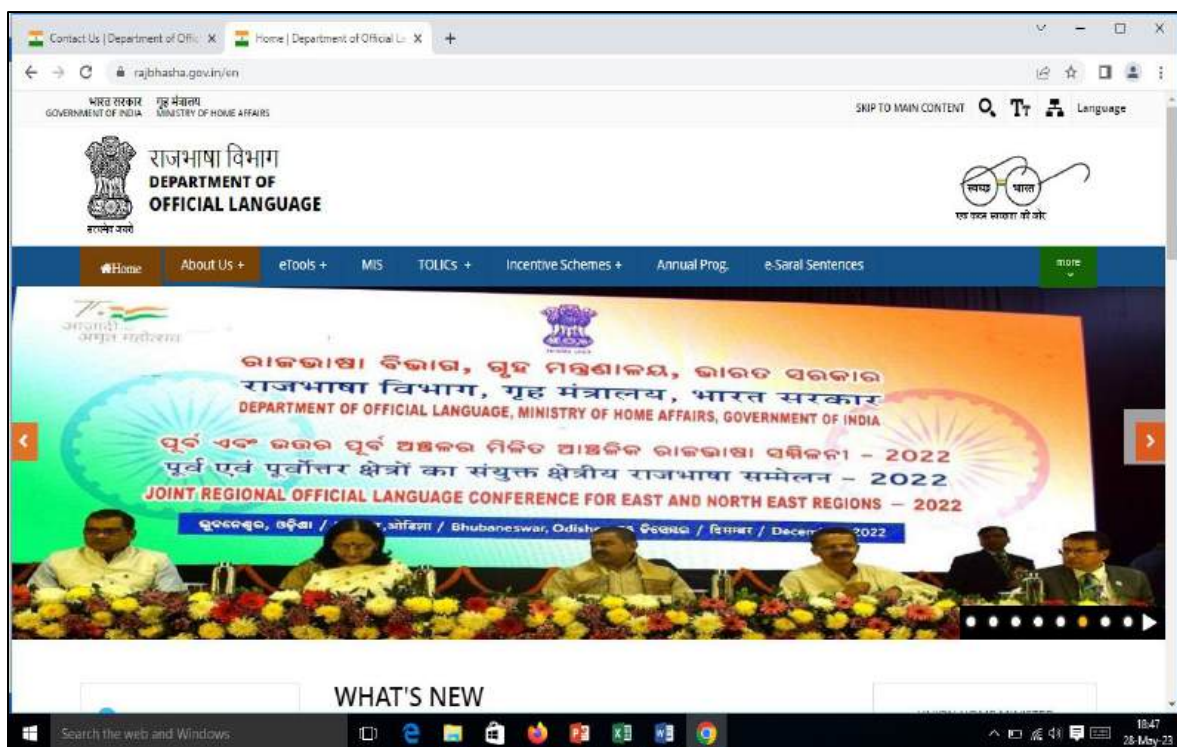
**Name of the Ministry:** Ministry of Home Affairs

**Official address of the department:** NDCC II Bhawan, Jai Singh Road, New Delhi- 110001

**Website address:** <https://rajbhasha.gov.in/>

**About the department:** The Department of Official Language was established as an autonomous Department of the Ministry of Home Affairs in June 1975 with the aim of maintaining compliance with the legal and constitutional requirements of official language and to encourage the use of Hindi for the Union's official purposes. Since then, this Department has been working to hasten the gradual usage of Hindi for Union government business. The following tasks have been assigned to this Department in accordance with the Government of India Allocation of Business Rules, 1961:

- a. Implementing the Official Languages Act, 1963, as well as the provisions of the Constitution's Official Languages Act, except to the extent that such implementation has been delegated to another Department.
- b. The President's prior approval is required in order to permit the limited use of a language other than English in a State's High Court proceedings.
- c. Nodal responsibility for all issues pertaining to the Union's progressive adoption of Hindi as its official language, including the Central Government Employee Hindi Teaching Programme and the production of literature such as magazines and journals.
- d. Coordination in all things relevant to the progressive adoption of Hindi as the Union's official language, including the development of administrative terminology, curricula, textbooks, training programmes, and the necessary tools (with uniform script).
- e. Topics involving Kendriya Hindi Samiti.
- f. Coordinating efforts on the Hindi Salahkar Samities established by various Ministries/Departments.
- g. Subjects associated with the Central Translation Bureau.
- h. Concerns with the Central Hindi Training Institute, such as the Hindi Teaching Scheme.
- i. Topics involving the Regional Implementation Offices.
- j. Matters pertaining to the Committee on Official Languages of Parliament (Department of Official Language, n.d.).



**Figure 93: Screenshot of the Homepage of Department of Official Language**

## 5.69 Department of Pension & Pensioners' Welfare

**Name of the Ministry:** Ministry of Personnel, Public Grievances and Pensions

**Official address of the department:** Department of Pension & Pensioners' Welfare, Janpath Bhawan, B Wing, 8<sup>th</sup> Floor

New Delhi- 110001 Phone No.: 011-23350012

**Website address:** <https://doppw.gov.in/en>

**About the department:** The central government's policymaking agency for pension and other retirement benefits is the Department of Pension & Pensioners' Welfare. Employees covered by the CCS (Pension) Rules of 1972, except for the Central Government's pension policy. Pensioners/Family Pensioners, it also aims to improve the well-being of pensioners and provides a venue for their complaints (Department of Pension & Pensioners' Welfare, n.d.).

However, the pensioners of the Ministries of Railways and Defense are subject to the pension rules of those ministries, which each have their own separate administrative structure. The EPS Scheme, which is run by the Ministry of Labour, covers employees who are employed in establishments that fall into the class of industries or other establishments listed in the schedule that is attached to the EPF & MP Act.1950. In addition, under the National Pension System,

the Ministry of Finance (Department of Financial Services) handles pension issues for Central Government employees who joined or would join after 1.1.2004 (Department of Pension & Pensioners' Welfare, n.d.).



**Figure 94: Screenshot of the Homepage of Department of Pension & Pensioners' Welfare**

### 5.70 Department of Personnel & Training

**Name of the Ministry:** Ministry of Personnel, Public Grievances and Pensions

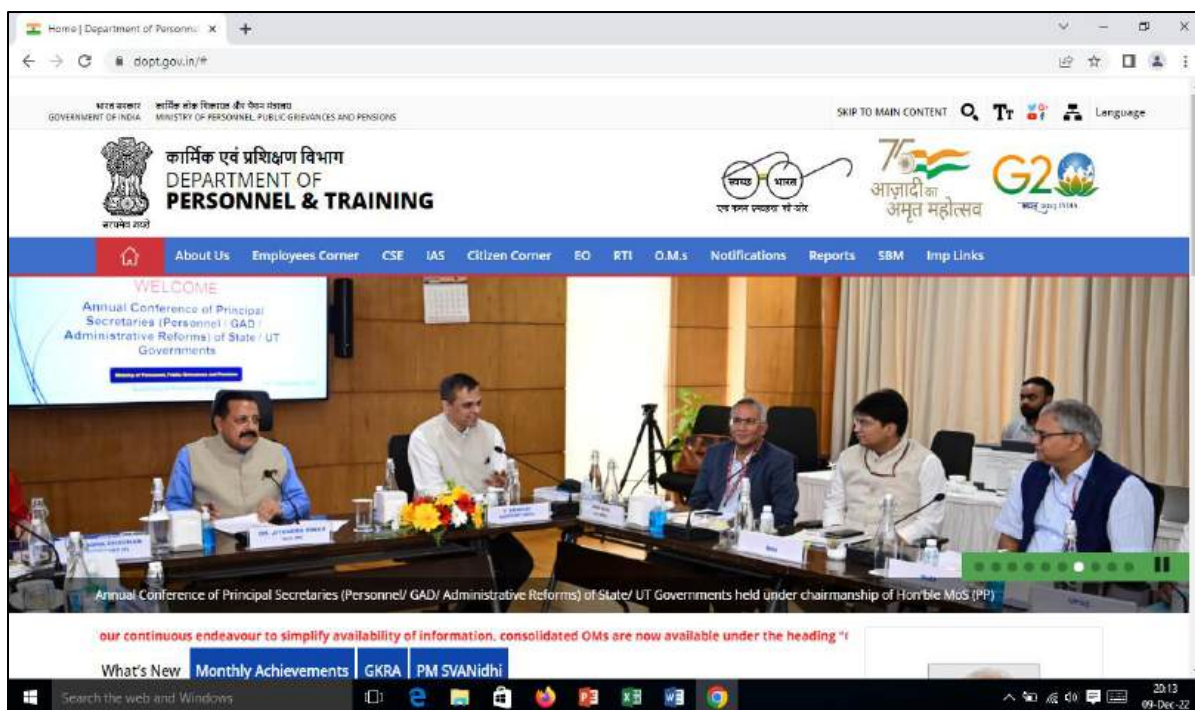
**Official address of the department:** Director (Admin.) Department of Personnel & Training

Ministry of Personnel, Public Grievances and Pensions

North Block, New Delhi- 110001 Phone No.: 011-23092338

**Website address:** <https://dopt.gov.in/#>

**About the department:** The Department of Personnel and Training (DOPT) is in charge of setting policy and acting as the government's watchdog to ensure that all ministries and departments adhere to certain accepted standards and norms in the areas of personnel recruitment, service conditions regulation, posting transfers, deputation, and other related matters. It only has control over the cadres of the Central Secretariat Service (CSS) and the Indian Administrative Service (IAS) (Department of Personnel & Training, n.d.).



**Figure 95: Screenshot of the Homepage of Department of Personnel & Training**

### 5.71 Department of Pharmaceuticals

**Name of the Ministry:** Ministry of Chemicals and Fertilizers

**Official address of the department:** Ministry of Chemicals and Fertilizers, Department of Pharmaceuticals

‘B’ Wing, Janpath Bhawan, New Delhi Telephone: 011-23074010

**Website address:** <https://pharmaceuticals.gov.in/>

**About the department:** The Ministry of Chemicals & Fertilizers established the Department of Pharmaceuticals on July 1, 2008, with the intention of putting a greater emphasis on the development of the country's pharmaceutical sector and regulating a variety of complex issues related to the pricing and availability of affordable medicines, research and development, intellectual property rights protection, and international pharmaceutical sector commitments that necessitated collaboration with other Ministries (Department of Pharmaceuticals, n.d.).



**Figure 96: Screenshot of the Homepage of Department of Pharmaceuticals**

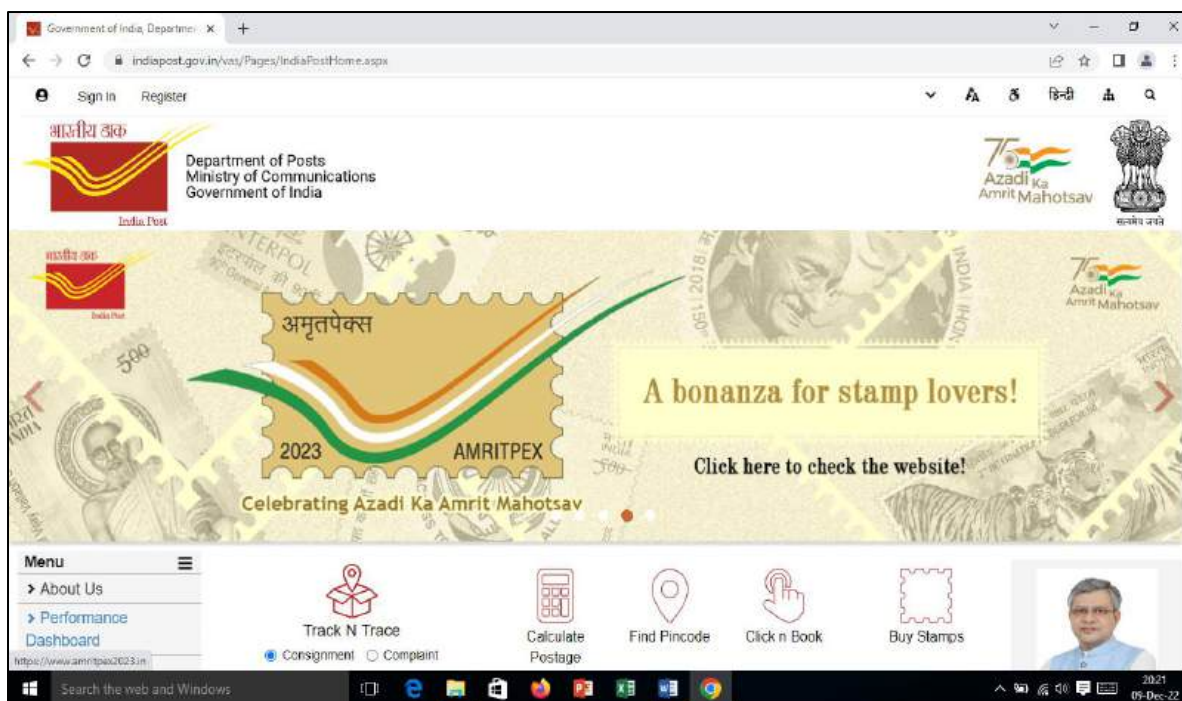
## 5.72 Department of Posts

**Name of the Ministry:** Ministry of Communications

**Official address of the department:** Postal Directorate, Dak Bhavan, New Delhi- 110001

**Website address:** <https://www.indiapost.gov.in/vas/Pages/IndiaPostHome.aspx>

**About the department:** The Department of Posts (DoP) has been the backbone of the country's communication for more than 150 years and has been an important part of the country's social and economic development. It has many effects on Indian citizens' lives: delivering mail, accepting deposits from Small Savings Schemes, providing coverage for life under Postal Life Insurance (PLI) and Rural Postal Life Insurance (RPLI), and providing retail services such as bill collection and form sales, among other things. Other services that the DoP provides for Indian citizens include the payment of old-age pensions and wages under the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). Within excess of 1,55,000 mail depots, the DoP has the most broadly disseminated postal organization on the planet (Department of Posts, n.d.).



**Figure 97: Screenshot of the Homepage of Department of Posts**

### **5.73 Department for Promotion of Industry and Internal Trade**

**Name of the Ministry:** Ministry of Commerce and Industry

**Official address of the department:** Udyog Bhawan, New Delhi 110011

EPABX: 011-23061222,

Fax : 011-23062626

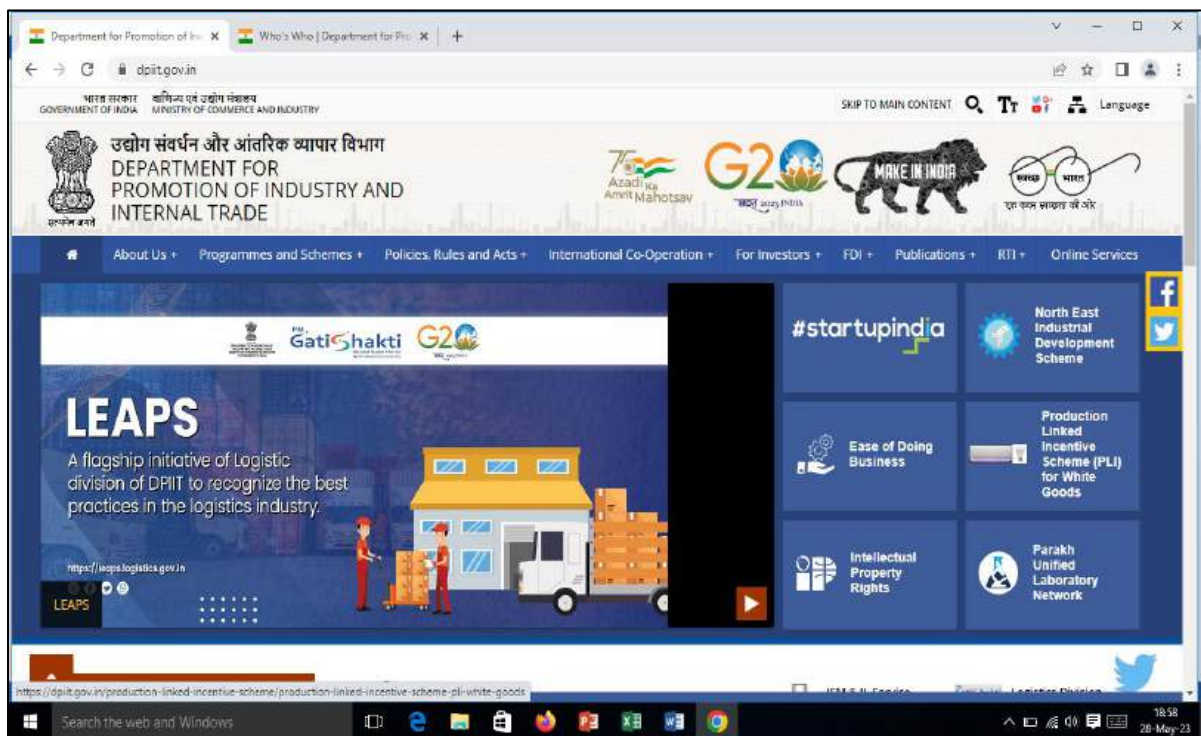
**Website address:** <https://dpiit.gov.in/>

**About the department:** Department for Promotion of Industry and Internal Trade (DPIIT) was founded in 1995 and reconstructed in 2000 following the merger of the Department of Industrial Development. The department was formerly known as the Department of Industrial Policy & Promotion and changed its name to DPIIT in January 2019. The Department was granted responsibility for topics relating to e-commerce in 2018 and internal trade, the welfare of business owners and their staff, and startups in 2019. Additionally, DPIIT was given the responsibility for the integrated development of the logistic sector in November 2021 (Department for Promotion of Industry and Internal Trade, n.d.).

The purpose of DPIIT is to accelerate foreign direct investment, support balanced industry and trade development, and facilitate investment in novel and emerging technology in order to advance industrial development of the nation. According to the most recent version of the

Allocation of Business (AOB) Rules, the Department is in charge of deciding on the Industrial Policy at the level of the Central Government, encompassing the following issues:

- a. General Industrial Policy
- b. Industry productivity
- c. E-commerce-related issues
- d. Internal Trade Promotion, Including Retail Trade.
- e. The welfare of business owners and their staff.
- f. Concerning "Ease of Doing Business" Facilitation
- g. Start-Up-Related Issues
- h. The integrated growth of the logistics industry.
- i. Project implementation is being watched to ensure a quick conclusion.
- j. Implementation of the National Master Plan under PM Gati Shakti (Department for Promotion of Industry and Internal Trade, n.d.)



**Figure 98: Screenshot of the Homepage of Department for Promotion of Industry and Internal Trade**

## **5.74 Department of Public Enterprises**

**Name of the Ministry:** Ministry of Heavy Industries

**Official address of the department:** Public Enterprises Bhawan

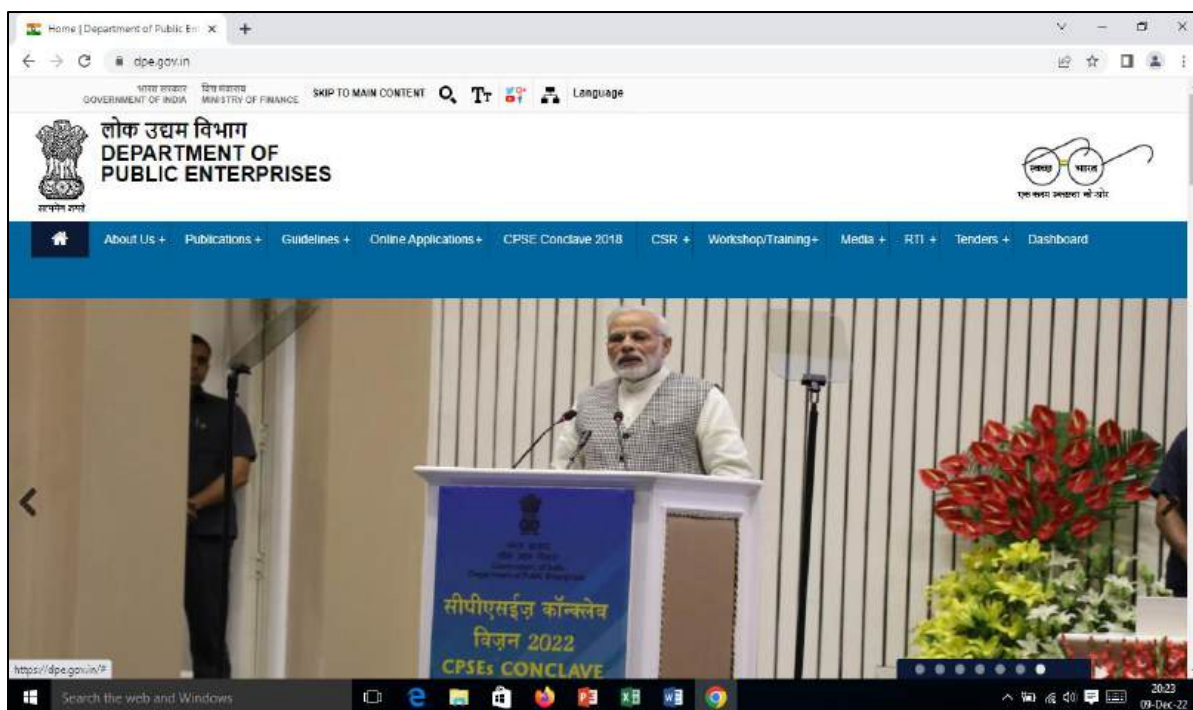
Lodhi Road, CGO Complex, Block No. 14, New Delhi- 110003

Contact No.: 24362646

**Website address:** <https://dpe.gov.in/>

**About the department:** The Estimates Committee of the Third Lok Sabha (1962–1967) emphasized the need for establishing a centralized coordinating unit in their 52nd Report. This organization might also conduct ongoing evaluations of the performance of state companies. As a result, the Ministry of Finance established the Bureau of Public Enterprises (BPE) in 1965. BPE was subsequently added to the Ministry of Industry as a result of the reorganization of the Ministries/Departments of the Union Government in September 1985. BPE became a full-fledged department in May 1990 and was given the name Department of Public Enterprises (DPE). It currently belongs to the Ministry of Finance (Department of Public Enterprises, n.d.).

All Central Public Sector Enterprises (CPSEs) are coordinated under the Department of Public Enterprises, which also develops CPSE-specific policies. In particular, it lays out policy standards for human management in CPSEs, financial delegation, autonomy, and performance evaluation. Additionally, it gathers and keeps data in the form of a Public Enterprises Survey on several CPSE-related topics (Department of Public Enterprises, n.d.).



**Figure 99: Screenshot of the Homepage of Department of Public Enterprises**

### **5.75 Department of Revenue**

**Name of the Ministry:** Ministry of Finance

**Official address of the department:** Shri Shashank Misra (Director)

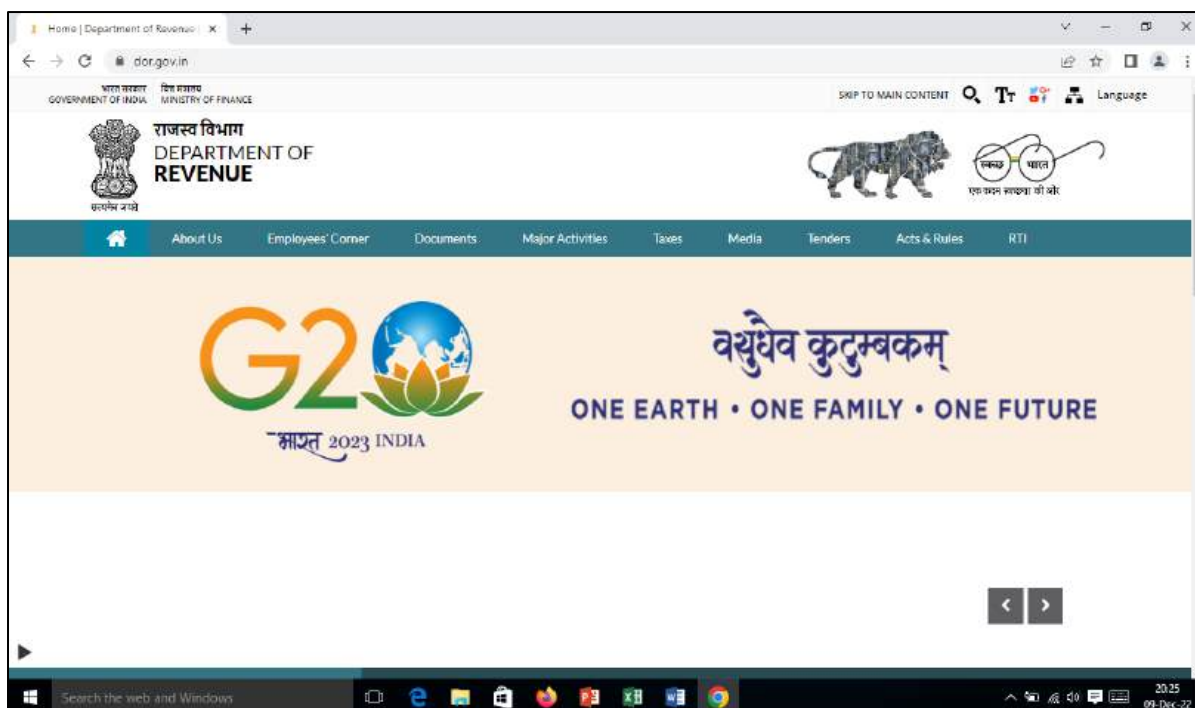
Ministry of Finance, Department of Revenue

Room No. 48C, New Delhi- 110001

Telephone No.: 91-11-23092103

**Website address:** <https://dor.gov.in/>

**About the department:** The Secretary of Revenue has overall authority and guidance over how the Department of Revenue operates (Revenue). Via two statutory Boards, the Central Board of Direct Taxes (CBDT) and the Central Board of Indirect Taxes and Customs, it exercises authority over issues pertaining to all Direct and Indirect Union Taxes (CBIC). Each Board is led by a Chairman who also serves as the ex-officio Special Secretary to the Government of India. The CBDT is responsible for matters relating to the levy and collection of all direct taxes, whilst the CBIC is in charge of matters relating to the levy and collection of customs and excise charges as well as other indirect taxes. Under the Central Board of Revenue Act of 1963, the two Boards were established (Department of Revenue, n.d.).



**Figure 100: Screenshot of the Homepage of Department of Revenue**

## 5.76 Department of School Education & Literacy

**Name of the Ministry:** Ministry of Education

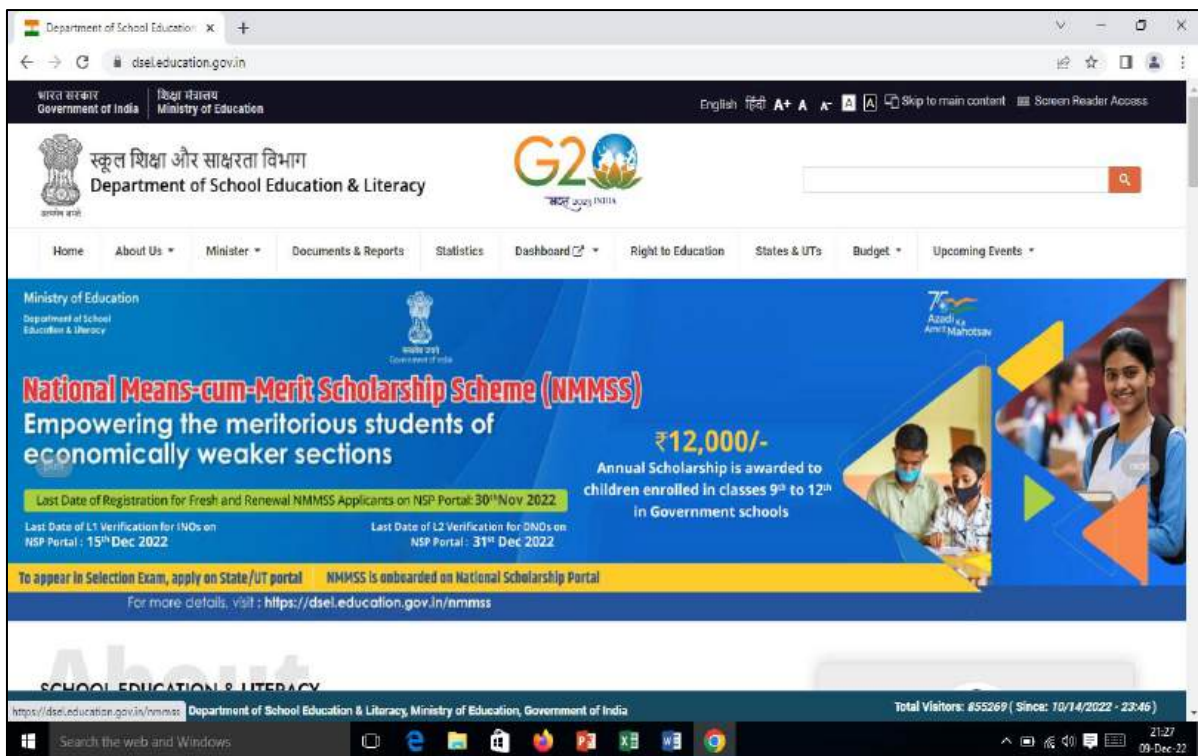
**Official address of the department:** Ministry of Education, Department of School Education & Literacy

Shastri Bhawan, Dr. Rajendra Prasad Road, Rajpath Area, Central Secretariat

New Delhi- 110001

**Website address:** <https://dsel.education.gov.in/>

**About the department:** The creation of an equal and just society, as well as the growth of national development, science, national integration, and cultural preservation, all depend on universal access to high-quality education. The Department of School Education and Literacy, through its autonomous/statutory bodies, such as the CBSE, KVS, JNV, NIOS, and NCTE, as well as its centrally sponsored programmes such as Samagra Shiksha, PM Poshan, Padhna Likhna Abhiyan, and the central sector programme known as National Means Cum Merit Scholarships, is dedicated to developing a quality educational system with a focus on historically marginalized, disadvantaged, and underrepresented groups (Department of School Education & Literacy, n.d.).



**Figure 101: Screenshot of the Homepage of Department of School Education & Literacy**

## 5.77 Department of Science & Technology

**Name of the Ministry:** Ministry of Science and Technology

**Official address of the department:** Department of Science & Technology,

Technology Bhavan, New Mehrauli Road,

New Delhi- 110016

Telephone: +91 11 26590215

**Website address:** <https://dst.gov.in/>

**About the department:** In the field of fundamental research, India is one of the world's leading nations. Indian science is now widely regarded as one of the most potent growth and development tools, particularly in today's rapidly changing environment and competitive economy. It is necessary for us to embark on some major science projects that have relevance to national needs and will also be relevant for technology of the future in light of the recent developments and the new demands that are being placed on the S & T system. The country's promotion of science and technology relies heavily on the Department of science and technology (Department of Science & Technology, n.d.).

In May 1971, the Department of science and technology was established with the intention of expanding existing S & T areas and serving as the nation's primary department for organizing, coordinating and promoting S & T endeavors. The following are some of the major projects and programs for which the Department is responsible:

1. formulation of science and technology related policies
2. issues pertaining to the Cabinet's Scientific Advisory Committee
3. promotion of new areas of science and technology, with an emphasis on those that are still in their infancy.
4. innovative work through its exploration foundations or labs for improvement of native advancements concerning bio-fuel creation, handling, normalization and applications in co-appointment with the concerned service or division;
5. innovative work excercises to advance use of results to improvement esteem added synthetic compounds.
6. Futurology
7. integration and coordination of science and technology fields with cross-sectoral connections in which a number of institutions and departments have an interest and expertise
8. conducting scientific and technological surveys, designing and developing research etc., or providing financial support for them (Department of Science & Technology, n.d.).



**Figure 102: Screenshot of the Homepage of Department of Science & Technology**

## 5.78 Department of Scientific and Industrial Research

**Name of the Ministry:** Ministry of Science and Technology

**Official address of the department:** Department of Scientific & Industrial Research,  
Ministry of Science & Technology

Room No. 14-B, S&T Block I

Technology Bhawan, New Mehrauli Road

New Delhi-110016. India

**Tel:** (011) 26516078, 26590416

**Fax:** (011) 26516078

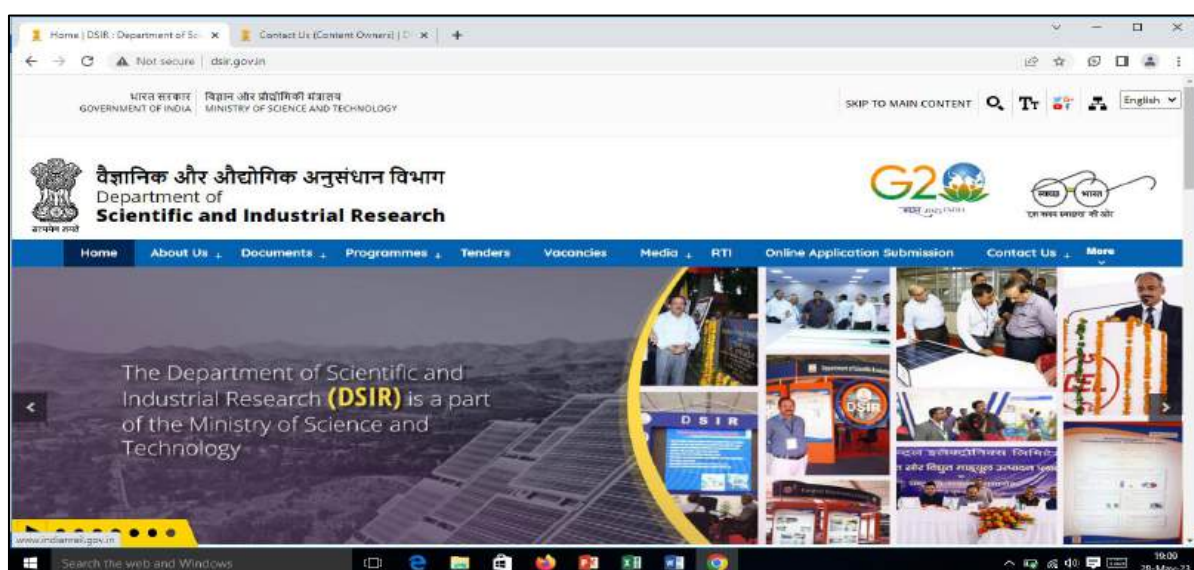
**E-mail:** wim[dot]dsir[at]gov[dot]in

**Website address:** <http://www.dsir.gov.in/>

**About the department:** The Department of Scientific and Industrial Research (DSIR) is a division of the Ministry of Science and Technology, as stated in the 164th Amendment to the Government of India (Allocation of Business) Rules, 1961, which was announced by a Presidential Notification dated January 4, 1985 (74/2/1/8 Cab.). It is the responsibility of the Department of Scientific and Industrial Research (DSIR) to carry out the promotion,

development, utilization, and transfer of indigenous technology (Department of Scientific and Industrial Research, n.d.).

The main goal of DSIR is to support small and medium-sized businesses in their efforts to develop cutting-edge, globally competitive technologies with high commercial potential, to catalyze faster commercialization of lab-scale research, to increase the share of technology-intensive exports in total exports, to strengthen industrial consultancy & technology management capabilities, and to establish a user-friendly information network to facilitate business transactions. Additionally, it serves as a conduit for technology transfer between academic research facilities and commercial businesses through the National Research Development Corporation (NRDC) and encourages R&D investment through Central Electronics Limited (CEL) (Department of Scientific and Industrial Research, n.d.).



**Figure 103: Screenshot of the Homepage of Department of Scientific and Industrial Research**

### **5.79 Department of Social Justice & Empowerment**

**Name of the Ministry:** Ministry of Social Justice and Empowerment

**Official address of the department:** Web Information Manager

Ms. Pratima Gupta, Deputy Director General

Ground Floor, Antyodaya Bhawan,

CGO Complex, New Delhi- 110003

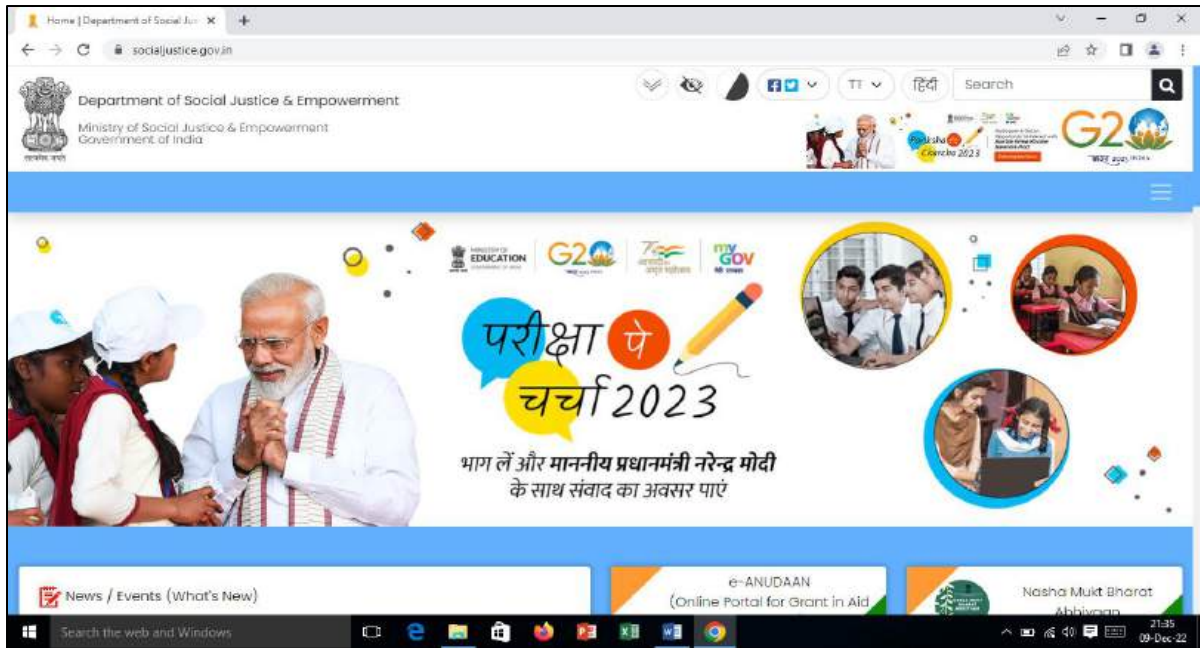
**Website address:** <https://socialjustice.gov.in/>

**About the department:** The former Ministry of Welfare was split into the Department of Welfare and the Department of Women and Child Development in 1985-86. The Scheduled Castes Development Division, the Tribal Development Division, the Minorities and Backward Classes Welfare Division, and the Wakf Division were all transferred from the Ministry of Home Affairs to form the Ministry of Welfare at the same time. In May 1998, the Ministry's name was changed to the Ministry of Social Justice & Empowerment. Also, the Tribal Development Division had left in October 1999 to form a new Ministry of Tribal Affairs. The Minorities Division and the Wakf Unit were merged into a new ministry in January 2007, and the Child Development Division joined the Ministry of Women and Children's Development (Department of Social Justice & Empowerment, n.d.).

Even though "Disability" is on the State List in the Seventh Schedule of the Constitution, the Indian government has always taken an active role in the disability sector. It not only manages seven National Institutes (NIs) that focus on a variety of disabilities and seven Composite Regional Centers (CRCs), which offer rehabilitation services to people with disabilities and offer training for rehabilitation professionals, but it also funds a large number of NGOs that provide services similar to these, as well as a National Handicapped Finance & Development Corporation (NHFDC), which offers loans to PwDs who want to start their own businesses at interest rates that are lower than the industry average. In addition, the Union Government is a signatory to (i) the Beijing-adopted Proclamation on the Full Participation and Equality of People with Disabilities in the Asian and Pacific Region in December 1992 and (ii) the UN Convention on the Rights of Persons with Disabilities (UNCRPD), which went into effect in May 2008 (Department of Social Justice & Empowerment, n.d.).

In varying degrees, the topic has received attention from state governments. Because disability is one of the many responsibilities of the Ministry of Social Justice and Empowerment (M/o SJ&E) and is managed by a single bureau, it has received insufficient attention at the central level. The majority of its time and energy is spent only on implementing the Ministry's own schemes, meeting their expenditure and physical targets, and organizing annual time-bound activities like the National Awards for Empowering People with Disabilities. "The 'Disability Division' of the Ministry of Social Justice & Empowerment will be strengthened by converting it into a separate Department, so that it can liaise effectively with all the other concerned Ministries/Departments and fulfill its responsibilities towards the disabled," was stated in the 11th Five Year Plan in light of the preceding context. In accordance with a notification issued on May 12, 2012, the Ministry of Social Justice & Empowerment now has two departments:

the Department of Disability Affairs (Nishaktata Karya Vibhag) and the Department of Social Justice and Empowerment (Samajik Nyaya and Adhikarita Vibhag) (Department of Social Justice & Empowerment, n.d.).



**Figure 104: Screenshot of the Homepage of Department of Social Justice & Empowerment**

## 5.80 Department of Telecommunications

**Name of the Ministry:** Ministry of Communications

**Official address of the department:** Ministry of Communications, Department of Telecommunications

Sanchar Bhawan, 20 Ashoka Road

New Delhi- 110001

Phone No.: 011-23372071

**Website address:** <https://dot.gov.in/>

**About the department:** Telecom infrastructure is regarded as a crucial factor in India's pursuit of socioeconomic goals because telecom services have been recognized worldwide as an important tool for a nation's socioeconomic development. As a result, the Department of Telecom has been developing growth policies to support the rapid expansion of telecommunication services. The department is also in charge of issuing licenses for various

telecom services like VSAT service and Unified Access Service Internet. In close collaboration with international organizations, the Department is also in charge of managing radio communication frequency. By monitoring the wireless transmission of all users in the country, it also enforces wireless regulatory measures (Department of Telecommunications, n.d.).



**Figure 105: Screenshot of the Homepage of Department of Telecommunications**

## 5.81 Department of Water Resources, River Development & Ganga Rejuvenation

**Name of the Ministry:** Ministry of Jal Shakti

**Official address of the department:** Deputy Secretary (e-Governance)

Department of water Resources, River Development & Ganga Rejuvenation

e- Gov Cell, 6<sup>th</sup> Floor Cabin, Shram Shakti Bhawan, Rafi Marg, New Delhi- 110001

**Website address:** <http://jalshakti-dowr.gov.in/>

**About the department:** In 1952, a separate Ministry of Irrigation and Power was established to handle irrigation issues. A Flood Control Board was established to consider the flood control program at the highest level following unprecedented floods. An Irrigation Commission was established in 1969 to investigate the country's future irrigation development program in depth. To help in guaranteeing brought together and facilitated program for the expedient execution of Water system and Order Region Improvement Ventures, as well with respect to giving

different contributions to expanding farming produce, a different Division of Water system was set up in November, 1974 under the reconstituted Service of Horticulture and Water system, subsequent upon the bifurcation of recent Service of Water system and Power (Department of water Resources, River Development & Ganga Rejuvenation, n.d.).

The Department of Irrigation became part of the Ministry of Energy and Irrigation in January 1980. In order to have a coordinated and comprehensive view of the entire irrigation sector, the former Department of Irrigation was elevated to the level of Ministry on 9<sup>th</sup> June 1980, when the Ministry of Energy and Irrigation was split in two. The Ministry of Irrigation is now in charge of both major and medium irrigation, as well as the major surface and ground irrigation sector. The Ministry of Irrigation was once more merged into the Ministry of Irrigation and Power in January, 1985. However, when the Ministries of the Central Government were reorganized in September 1985, the Department of Irrigation was reconstituted as the Ministry of Water Resources; and the Ministry of Irrigation and Power was split in two. The Ministry had to take on a more central role in all matters pertaining to the country's water resources (Department of water Resources, River Development & Ganga Rejuvenation, n.d.).

On 31<sup>st</sup> July, 2014, the Ministry was renamed as “Ministry of Water Resources, River Development and Ganga Rejuvenation.” On 14<sup>th</sup> June, 2019, the Ministry was renamed “Ministry of Jal Shakti” or “Jal Shakti Mantralaya” with two Departments: “Department of Drinking Water and Sanitation” and “Department of Water Resources, River Development and Ganga Rejuvenation.” Department of Water Resources, River Development and Ganga Rejuvenation is responsible for the following tasks:

- a. Developing, conserving and managing water as a national resource, a broader national perspective on water planning and coordination in relation to various water uses and river interconnections;
- b. The National Resources Defense Council;
- c. All aspects of irrigation, including multi-purpose, major, medium, and minor irrigation works, as well as research and development training and general policy; hydro-electric and navigational structures; tube wells and the exploration and exploitation of groundwater; safeguarding and maintaining groundwater resources; combining the use of ground and surface water, agricultural irrigation, water management, and the development of command areas; management of reservoirs and sedimentation in

reservoirs; problems with flooding (control), drainage, drought prevention, water logging, and sea erosion; security at the dam;

- d. Inter-State river and valley development and regulation. Implementation of Tribunal Awards via Schemes and River Boards;
- e. Water regulations and laws;
- f. Evaluation of water quality;
- g. Unit control and the board of the Focal Water Designing Administrations (Gathering A);
- h. River conservation, development, management, and pollution reduction.
- i. International aspects
- j. Conferences, international organizations, and commissions dealing with the development and management of water resources, drainage, and flood control;
- k. The Law of the World's Waters;
- l. Matters connecting with streams normal to India and adjoining nations; the Indus Waters Treaty of 1960 and the Joint Rivers Commission with Bangladesh; the Permanent Commission on the Indus
- m. Water resource development assistance and cooperation programs from within and outside the country (Department of water Resources, River Development & Ganga Rejuvenation, n.d.).



**Figure 106: Screenshot of the Homepage of Department of Water Resources, River Development & Ganga Rejuvenation**

## 5.82 Legislative Department

**Name of the Ministry:** Ministry of Law and Justice

**Official address of the department:** Shri Udaya Kumara

Joint Secretary and Legislative Counsel,

Ministry of Law and Justice

Room No. 436, A Wing, 4<sup>th</sup> Floor, Shastri Bhawan,

New Delhi- 110001

Telephone: 011-23389163

**Website address:** <https://legislative.gov.in/>

**About the department:** Service of Regulation and Equity is the most seasoned appendage of the Public authority of India tracing all the way back to 1833 when the Sanction Act 1833 instituted by the English Parliament. The aforementioned Act gave the Governor General in Council legislative power for the first time. From 1834 to 1920, the Governor General in Council enacted laws for the nation using this authority and the authority granted to him by

section 22 of the Indian Councils Act 1861. The Indian Legislature, which was established as a result of the Government of India Act of 1919, had the authority to legislate after its passage. After the Government of India Act of 1919, the Government of India Act of 1935 came into effect. India became a Dominion after the Indian Independence Act of 1947 was passed. From 1947 to 1949, the Dominion Legislature enacted laws in accordance with section 100 of the Government of India Act 1935, as modified by the India (Provisional Constitution) Order of 1947. Legislative authority is vested in Parliament under the Indian Constitution, which went into effect on January 26, 1950 (Legislative Department, n.d.).

The Legislative Department, the Department of Legal Affairs, and the Department of Justice are the three departments that make up the Ministry of Law and Justice. The Legislative Department's primary responsibilities include the drafting of the primary legislation for the Central Government, its publication, and the review and approval of subordinate legislation drafted by various Ministries and Departments of the Indian Government under Central Acts. In addition to addressing legislation pertaining to certain concurrent field laws, such as personal law and civil procedure, it also addresses election law administration and electoral reforms. The Legislative Department's website contains the India Code, which is made up of unrepealed Central Acts of all-India legislation from the previous century that are still in effect throughout India (Legislative Department, n.d.).



Figure 107: Screenshot of the Homepage of Legislative Department

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Ministry of Finance. (n.d.). Retrieved on May 12, 2022 from <https://www.finmin.nic.in/>

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## Chapter 6

### Observation and Analysis

#### 6.0 Background information

The components of information architecture discussed in the book 'Information Architecture for the World Wide Web' by Peter Morville and Louis Rosenfeld have been utilized in this study for analyzing the existing information architecture of the websites under study.

Webometric research (specifically, link analysis) is another part of data analysis in this study. Three types of WIFs (Simple, Self and External) of the respective websites have been calculated. According to the scores of different WIFs, the concerned websites have been ranked. Domain authority, page authority and Google's Page Rank of the respective websites have been retrieved from the online tool, <http://checkpagerank.net/index.php>; link network diagrams of the selected websites are also prepared by using the software GraphViz.

#### 6.1 List of selected information architectural components for the analysis of websites:

Several information architectural components for analyzing websites have been elaborated in previous chapter. For doing analysis the significant IA components are selected from among those. The following is a list of chosen IA components.

##### 6.1.1 Organization system

##### 6.1.1.1 Organization scheme

##### 6.1.1.1.1 Logical grouping of information & content

##### 6.1.1.1.2 Exact scheme

##### 6.1.1.1.2.1 Alphabetical

##### 6.1.1.1.2.2 Chronological

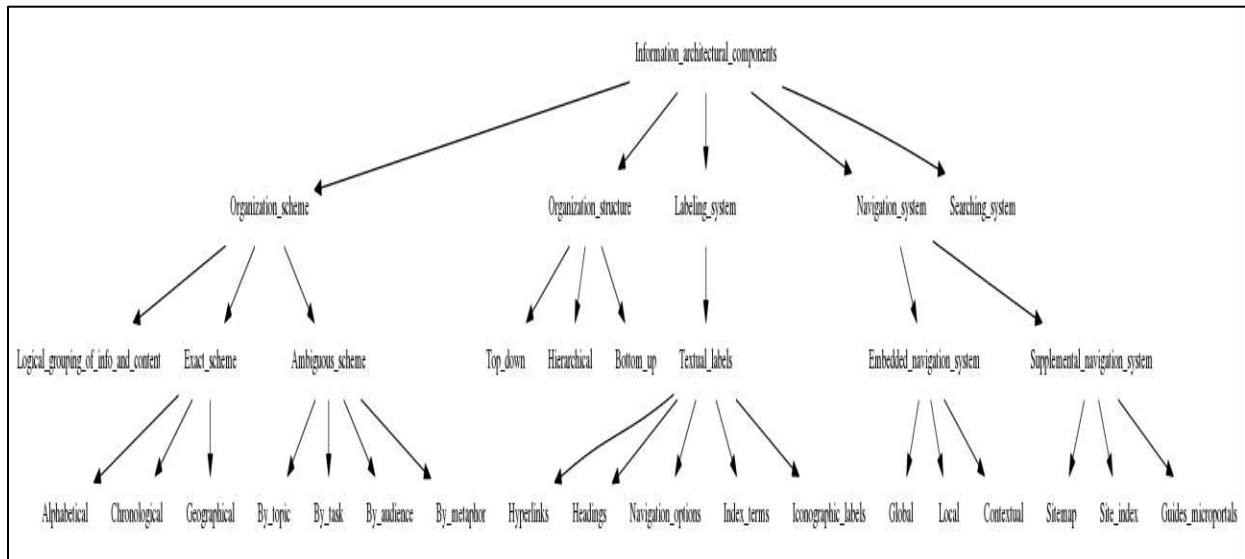
##### 6.1.1.1.2.3 Geographical

##### 6.1.1.1.3 Ambiguous scheme

- 6.1.1.1.3.1 By topic
- 6.1.1.1.3.2 By task
- 6.1.1.1.3.3 By audience
- 6.1.1.1.3.4 By metaphor
- 6.1.1.2 Organization structure
  - 6.1.1.2.1 Top-down
  - 6.1.1.2.2 Hierarchical
  - 6.1.1.2.3 Bottom-up
  - 6.1.1.2.4 Hypertext model
- 6.1.2 Labeling system
  - 6.1.2.1 Textual label
    - 6.1.2.1.1 Hyperlinks
    - 6.1.2.1.2 Headings
    - 6.1.2.1.3 Navigation options
    - 6.1.2.1.4 Index terms
    - 6.1.2.1.5 Iconographic labels
- 6.1.3 Navigation system
  - 6.1.3.1 Embedded navigation system
    - 6.1.3.1.1 Global
    - 6.1.3.1.2 Local
    - 6.1.3.1.3 Contextual
  - 6.1.3.2 Supplemental navigation system
    - 6.1.3.2.1 Sitemap
    - 6.1.3.2.2 Site-index

### 6.1.3.2.3 Guides (guided tours, tutorials, micro-portals)

### 6.1.4 Searching system



**Figure 108: Information architectural components**

**(Source: Mahato & Chatterjee, 2023)**

Figure 108 exhibits various components of website information architecture. These components have been utilized in the current study for observation and analysis.

## **6.2 Information architecture analysis of central government ministries' websites**

In this section (Table 3 to Table 8 and Figure 109 to Figure 114), the analysis of information architecture of central government ministries' websites has been done by applying different information architectural components and sub-components.

**Table 3: Organization scheme of central government ministries' websites (Y=Yes, N=No)**

|         |   | Information architectural components |              |               |              |                  |         |             |             |    |    |               |      |                 |  |
|---------|---|--------------------------------------|--------------|---------------|--------------|------------------|---------|-------------|-------------|----|----|---------------|------|-----------------|--|
| Sr. no. | Central government ministries' websites | Organization scheme                  |              |               |              |                  |         |             |             |    |    |               |      |                 |  |
|         |   | Logical grouping of information and  | Exact scheme |               |              | Ambiguous scheme |         |             |             |    |    | Total (Max.8) |      | Percent age (%) |  |
|         |   |                                      | Alphabetical | Chronological | Geographical | By topic         | By task | By audience | By metaphor | Y  | N  | Y             | N    |                 |  |
|         |   |                                      |              |               |              |                  |         |             |             |    |    |               |      |                 |  |
| 1       | MoA                                     | Y                                    | Y            | Y             | N            | Y                | Y       | Y           | N           | 06 | 02 | 75            | 25   |                 |  |
| 2       | MoCA                                    | N                                    | Y            | Y             | N            | Y                | Y       | Y           | N           | 05 | 03 | 62.5          | 37.5 |                 |  |
| 3       | MoC                                     | N                                    | N            | Y             | N            | Y                | Y       | Y           | N           | 04 | 04 | 50            | 50   |                 |  |
| 4       | MoCO                                    | N                                    | N            | Y             | N            | Y                | Y       | N           | N           | 03 | 05 | 37.5          | 62.5 |                 |  |
| 5       | MoCRA                                   | N                                    | Y            | Y             | N            | Y                | Y       | Y           | N           | 05 | 03 | 62.5          | 37.5 |                 |  |
| 6       | MoCL                                    | Y                                    | Y            | Y             | N            | Y                | Y       | Y           | N           | 06 | 02 | 75            | 25   |                 |  |
| 7       | MoD                                     | N                                    | N            | Y             | N            | Y                | N       | N           | N           | 02 | 06 | 25            | 75   |                 |  |
| 8       | MoDNER                                  | Y                                    | Y            | Y             | Y            | Y                | Y       | Y           | N           | 07 | 01 | 87.5          | 12.5 |                 |  |
| 9       | MoES                                    | N                                    | N            | Y             | N            | Y                | Y       | N           | N           | 03 | 05 | 37.5          | 62.5 |                 |  |
| 10      | MoE                                     | N                                    | Y            | Y             | N            | Y                | N       | Y           | N           | 04 | 04 | 50            | 50   |                 |  |
| 11      | MoEIT                                   | Y                                    | Y            | Y             | N            | Y                | Y       | N           | N           | 05 | 03 | 62.5          | 37.5 |                 |  |
| 12      | MoEFCC                                  | N                                    | Y            | Y             | N            | Y                | Y       | Y           | N           | 05 | 03 | 62.5          | 37.5 |                 |  |
| 13      | MoEA                                    | N                                    | Y            | Y             | Y            | Y                | Y       | Y           | N           | 06 | 02 | 75            | 25   |                 |  |
| 14      | MoF                                     | Y                                    | Y            | Y             | N            | Y                | Y       | N           | N           | 05 | 03 | 62.5          | 37.5 |                 |  |
| 15      | MoFPI                                   | N                                    | N            | Y             | N            | Y                | Y       | Y           | N           | 04 | 04 | 50            | 50   |                 |  |

|    |        |   |   |   |   |   |   |   |   |    |    |      |      |
|----|--------|---|---|---|---|---|---|---|---|----|----|------|------|
| 16 | MoHFW  | N | Y | Y | N | Y | Y | N | N | 04 | 04 | 50   | 50   |
| 17 | MoHI   | N | N | Y | N | Y | Y | Y | N | 04 | 04 | 50   | 50   |
| 18 | MoHA   | N | Y | Y | N | Y | N | N | N | 03 | 05 | 37.5 | 62.5 |
| 19 | MoHUA  | N | Y | Y | N | Y | Y | N | N | 04 | 04 | 50   | 50   |
| 20 | MoIB   | N | N | Y | N | Y | Y | N | N | 03 | 05 | 37.5 | 62.5 |
| 21 | MoJS   | Y | N | Y | N | Y | Y | Y | N | 05 | 03 | 62.5 | 37.5 |
| 22 | MoLE   | N | Y | Y | N | Y | Y | N | N | 04 | 04 | 50   | 50   |
| 23 | MoLJ   | Y | N | Y | N | Y | Y | N | N | 04 | 04 | 50   | 50   |
| 24 | MoMSME | N | N | Y | N | Y | Y | Y | N | 04 | 04 | 50   | 50   |
| 25 | MoM    | N | Y | Y | N | Y | Y | Y | N | 05 | 03 | 62.5 | 37.5 |
| 26 | MoMA   | N | Y | Y | N | Y | Y | Y | N | 05 | 03 | 62.5 | 37.5 |
| 27 | MoNRE  | N | Y | Y | Y | Y | Y | N | N | 05 | 03 | 62.5 | 37.5 |
| 28 | MoPR   | N | Y | Y | N | Y | N | Y | N | 04 | 04 | 50   | 50   |
| 29 | MoPA   | N | Y | Y | N | Y | Y | Y | N | 05 | 03 | 62.5 | 37.5 |
| 30 | MoPPGP | Y | N | Y | N | Y | N | N | N | 03 | 05 | 37.5 | 62.5 |
| 31 | MoPNG  | Y | Y | Y | N | Y | Y | Y | N | 06 | 02 | 75   | 25   |
| 32 | MoPSW  | N | N | Y | N | Y | Y | N | N | 03 | 05 | 37.5 | 62.5 |
| 33 | MoP    | N | N | Y | N | Y | N | N | N | 02 | 06 | 25   | 75   |
| 34 | MoRTH  | N | Y | Y | N | Y | Y | N | N | 04 | 04 | 50   | 50   |
| 35 | MoR    | N | Y | Y | N | Y | Y | Y | N | 05 | 03 | 62.5 | 37.5 |
| 36 | MoRD   | N | Y | Y | N | Y | Y | Y | N | 05 | 03 | 62.5 | 37.5 |
| 37 | MoSDE  | N | Y | Y | N | Y | Y | N | N | 04 | 04 | 50   | 50   |

|                       |       |       |       |     |       |     |       |       |     |    |    |      |      |
|-----------------------|-------|-------|-------|-----|-------|-----|-------|-------|-----|----|----|------|------|
| 38                    | MoSPI | N     | N     | Y   | N     | Y   | Y     | Y     | N   | 04 | 04 | 50   | 50   |
| 39                    | MoS   | N     | Y     | Y   | N     | Y   | Y     | Y     | N   | 05 | 03 | 62.5 | 37.5 |
| 40                    | MoTT  | N     | N     | Y   | N     | Y   | N     | Y     | N   | 03 | 05 | 37.5 | 62.5 |
| 41                    | MoT   | Y     | Y     | Y   | N     | Y   | Y     | N     | N   | 05 | 03 | 62.5 | 37.5 |
| 42                    | MoTA  | N     | Y     | Y   | N     | Y   | Y     | N     | N   | 04 | 04 | 50   | 50   |
| 43                    | MoWCD | N     | N     | Y   | N     | Y   | Y     | N     | N   | 03 | 05 | 37.5 | 62.5 |
| 44                    | MoYAS | N     | Y     | Y   | N     | Y   | Y     | Y     | N   | 05 | 03 | 62.5 | 37.5 |
| <b>Total</b>          | Y     | 10    | 28    | 44  | 03    | 44  | 37    | 25    | 00  |    |    |      |      |
|                       | N     | 34    | 16    | 00  | 41    | 00  | 07    | 19    | 44  |    |    |      |      |
| <b>Percentage (%)</b> | Y     | 22.72 | 63.63 | 100 | 6.81  | 100 | 84.09 | 56.81 | 0   |    |    |      |      |
|                       | N     | 77.27 | 36.36 | 0   | 93.18 | 0   | 15.90 | 43.18 | 100 |    |    |      |      |

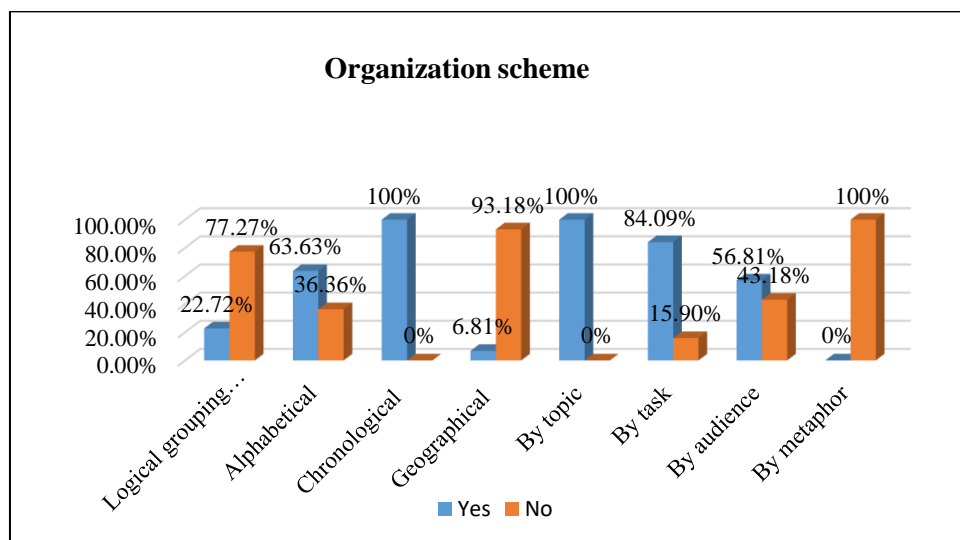
Table 3 demonstrates that the information and content of the majority of the ministries' websites are not systematically categorized. In the case of MoR, the section 'News & Recruitment' contains a series of items under the heading 'Photogallery' that are blank. Some of the links under "Medical Education" on the MoHFW website are broken. The MoWCD website's 'Training & Programmes' section is empty of content. There is no error in the content organization or information display of only 10 ministries' websites.

This Table makes it evident that 28 out of 44 ministries' websites have information arranged alphabetically. The content on all ministries' websites is arranged in chronological order, particularly in the "What's New" or "Press Releases" sections. Only three websites i.e. MoDNER, MoEA, and MoNRE have adopted a geographic layout. Information is arranged according to subject or topic in the topic-wise organization scheme, which is both a practical and difficult method. Most nonfiction books and newspaper chapters use a subject structure to arrange their content. All of the ministries' websites have adopted this style of organizational structure.

Task-oriented schemes are used to organize content and applications into a collection of processes, functions or tasks. These systems are suitable when some actions are associated and users will wish to carry out those tasks (Morville & Rosenfeld, 2006). Each of 37 (out of 44) ministries' websites have a task specific layout where visitors can offer recommendation or feedback form.

An audience-specific organization scheme occurs in that “cases where there are two or more clearly identifiable audiences for a website or Intranet” (Morville & Rosenfeld, 2006). The personal feelings, experiences, and viewpoints of a specific audience are taken into account in this unique scheme. Out of 44 ministries, only 25 have tailored their informational content to the needs of their target audience. Metaphors are frequently used to help users grasp new or unfamiliar things by linking them to previously understood ones. The websites of the chosen ministries have not adopted the metaphor-driven concept.

Table 3 also shows the ranking of each ministry's website based on its organizational scheme. It reveals that MoDNER received the highest score, (i.e. 87.5%) because it maintains 7 (out of 8) sub-components of organization scheme. The websites of MoD and MoP contain 2 sub-components (out of 8) which received 25%, the lowest score.



**Figure 109: Organization scheme of ministries' websites**

Figure 109 exhibits that 22.72% of websites follow logical grouping of information and content. Alphabetical and chronological schemes have been occurred by 63.63% and 100% of websites. 84.09% and 56.81% of websites follow 'by task' and 'by audience' scheme. 'By metaphor' scheme is not found in any of the selected websites.

**Table 4: Organization structure of central government ministries' websites (Y=Yes, N=No)**

|         |   | Information architectural components |              |           |                 |               |    |                |    |
|---------|---|--------------------------------------|--------------|-----------|-----------------|---------------|----|----------------|----|
| Sr. no. | Central government ministries' websites | Organization structure               |              |           |                 |               |    |                |    |
|         |   | Top-down                             | Hierarchical | Bottom-up | Hypertext model | Total (Max.4) |    | Percentage (%) |    |
|         |   |                                      |              |           |                 | Y             | N  | Y              | N  |
| 1       | MoA                                     | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 2       | MoCA                                    | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 3       | MoC                                     | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 4       | MoCO                                    | Y                                    | Y            | N         | Y               | 03            | 01 | 75             | 25 |
| 5       | MoCRA                                   | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 6       | MoCL                                    | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 7       | MoD                                     | Y                                    | Y            | N         | Y               | 03            | 01 | 75             | 25 |
| 8       | MoDNER                                  | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 9       | MoES                                    | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 10      | MoE                                     | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 11      | MoEIT                                   | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 12      | MoEFCC                                  | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 13      | MoEA                                    | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 14      | MoF                                     | Y                                    | Y            | N         | N               | 02            | 02 | 50             | 50 |

|    |        |   |   |   |   |    |    |     |    |
|----|--------|---|---|---|---|----|----|-----|----|
| 15 | MoFPI  | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 16 | MoHFW  | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 17 | MoHI   | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 18 | MoHA   | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 19 | MoHUA  | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 20 | MoIB   | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 21 | MoJS   | Y | N | Y | Y | 03 | 01 | 75  | 25 |
| 22 | MoLE   | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 23 | MoLJ   | Y | Y | N | Y | 03 | 01 | 75  | 25 |
| 24 | MoMSME | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 25 | MoM    | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 26 | MoMA   | Y | Y | N | Y | 03 | 01 | 75  | 25 |
| 27 | MoNRE  | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 28 | MoPR   | Y | Y | N | Y | 03 | 01 | 75  | 25 |
| 29 | MoPA   | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 30 | MoPPGP | Y | N | N | N | 01 | 03 | 25  | 75 |
| 31 | MoPNG  | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 32 | MoPSW  | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 33 | MoP    | Y | Y | N | Y | 03 | 01 | 75  | 25 |
| 34 | MoRTH  | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 35 | MoR    | Y | Y | Y | Y | 04 | 00 | 100 | 0  |
| 36 | MoRD   | Y | Y | Y | Y | 04 | 00 | 100 | 0  |

|                           |       |     |       |       |       |    |    |     |    |
|---------------------------|-------|-----|-------|-------|-------|----|----|-----|----|
| 37                        | MoSDE | Y   | Y     | Y     | Y     | 04 | 00 | 100 | 0  |
| 38                        | MoSPI | Y   | Y     | Y     | Y     | 04 | 00 | 100 | 0  |
| 39                        | MoS   | Y   | Y     | Y     | Y     | 04 | 00 | 100 | 0  |
| 40                        | MoTT  | Y   | Y     | Y     | Y     | 04 | 00 | 100 | 0  |
| 41                        | MoT   | Y   | Y     | Y     | Y     | 04 | 00 | 100 | 0  |
| 42                        | MoTA  | Y   | Y     | Y     | Y     | 04 | 00 | 100 | 0  |
| 43                        | MoWCD | Y   | Y     | N     | Y     | 03 | 01 | 75  | 25 |
| 44                        | MoYAS | Y   | Y     | Y     | Y     | 04 | 00 | 100 | 0  |
| <b>Total<br/>(Max.44)</b> | Y     | 44  | 42    | 35    | 42    |    |    |     |    |
|                           | N     | 00  | 02    | 09    | 02    |    |    |     |    |
| <b>Percentage<br/>(%)</b> | Y     | 100 | 95.45 | 79.54 | 95.45 |    |    |     |    |
|                           | N     | 0   | 4.54  | 20.45 | 4.54  |    |    |     |    |

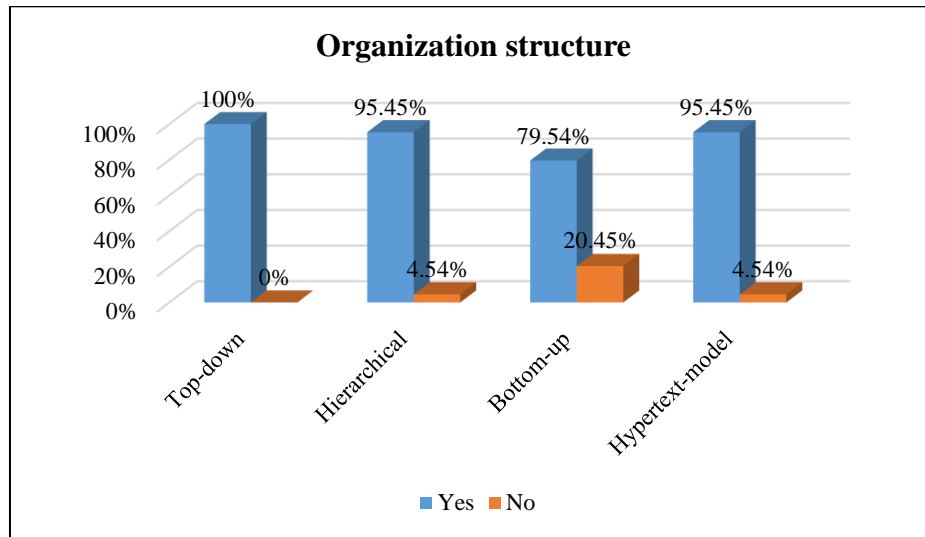
Table 4 demonstrates that top-down organization structure is used by all (44) of the chosen websites. 42 (out of 44) ministries' websites have a hierarchical structure. “Metadata is the primary key that links information architecture to the design of database schema. By tagging documents and other information objects with metadata, we enable powerful searching, browsing, filtering and dynamic linking” (Morville & Rosenfeld, 2006).

Application of the database model or bottom-up strategy within reasonably homogeneous subsites, such as product catalogues and personnel directories, has proven to be useful (Morville & Rosenfeld, 2006). This table shows that 35 (79.54%) ministry websites have used the bottom-up approach. These websites either display a staff directory or offer a data search option on a different page.

“A hypertext system involves two primary types of components - the items or chunks of information that will be linked, and the links between those items or chunks. These components can build hypermedia systems that connect text, data, image, video and audio

chunks” (Morville & Rosenfeld, 2006). Hypertext model is being kept up with by 42 (95.45%) ministries' websites which can be seen from Table 4.

Table 4 also indicates that most of the ministries’ websites have obtained 100% under the criterion organization structure. The website of MoPPGP contains only one sub-component i.e. ‘top-down’, other sub-components are absent in this website.



**Figure 110: Organization structure of ministries' websites**

The graphical representation of the positions of ministries’ websites in organization structure has been shown in Figure 110. All the websites (100%) follow top-down structure. Hierarchical and hypertext models have been maintained by 95.45% of websites. 79.54% of websites have bottom-up structure.

**Table 5: Labeling system of central government ministries' websites (Y=Yes, N=No)**

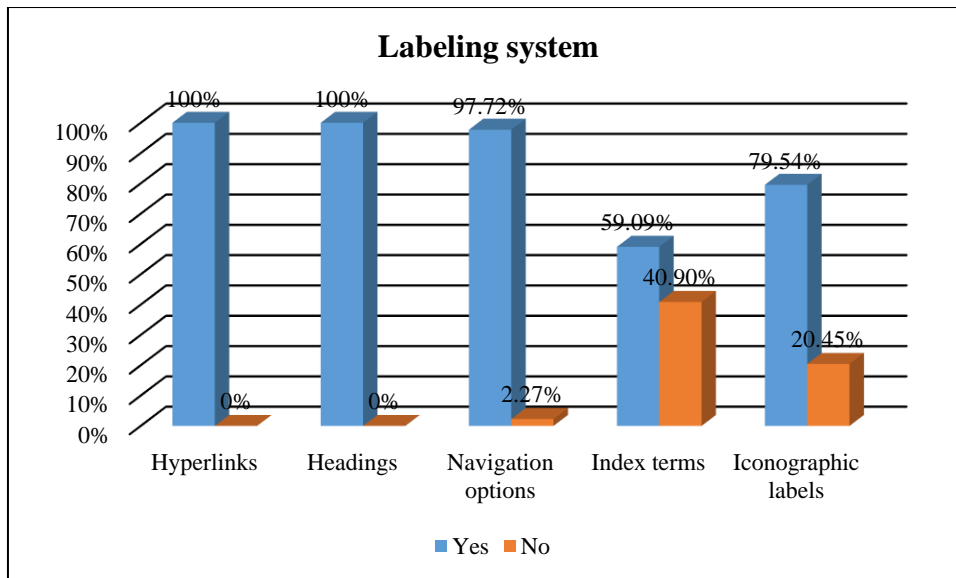
|         |   | Information architectural components |          |                    |             |                     |               |    |                |    |
|---------|---|--------------------------------------|----------|--------------------|-------------|---------------------|---------------|----|----------------|----|
| Sr. no. | Central government ministries' websites | Labeling system                      |          |                    |             |                     |               |    |                |    |
|         |   | Textual labels                       |          |                    |             |                     |               |    |                |    |
|         |   | Hyperlinks                           | Headings | Navigation options | Index terms | Iconographic labels | Total (Max.5) |    | Percentage (%) |    |
| Y       | N                                       |                                      |          |                    |             |                     | Y             | N  |                |    |
| 1       | MoA                                     | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 2       | MoCA                                    | Y                                    | Y        | Y                  | N           | Y                   | 04            | 01 | 80             | 20 |
| 3       | MoC                                     | Y                                    | Y        | Y                  | Y           | N                   | 04            | 01 | 80             | 20 |
| 4       | MoCO                                    | Y                                    | Y        | Y                  | N           | N                   | 03            | 02 | 60             | 40 |
| 5       | MoCRA                                   | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 6       | MoCL                                    | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 7       | MoD                                     | Y                                    | Y        | Y                  | N           | Y                   | 04            | 01 | 80             | 20 |
| 8       | MoDNER                                  | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 9       | MoES                                    | Y                                    | Y        | Y                  | Y           | N                   | 04            | 01 | 80             | 20 |
| 10      | MoE                                     | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 11      | MoEIT                                   | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 12      | MoEFCC                                  | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 13      | MoEA                                    | Y                                    | Y        | Y                  | N           | Y                   | 04            | 01 | 80             | 20 |
| 14      | MoF                                     | Y                                    | Y        | Y                  | Y           | N                   | 04            | 01 | 80             | 20 |
| 15      | MoFPI                                   | Y                                    | Y        | Y                  | N           | N                   | 03            | 02 | 60             | 40 |

|    |        |   |   |   |   |   |    |    |     |    |
|----|--------|---|---|---|---|---|----|----|-----|----|
| 16 | MoHFW  | Y | Y | Y | Y | Y | 05 | 00 | 100 | 0  |
| 17 | MoHI   | Y | Y | Y | Y | Y | 05 | 00 | 100 | 0  |
| 18 | MoHA   | Y | Y | Y | N | Y | 04 | 01 | 80  | 20 |
| 19 | MoHUA  | Y | Y | Y | Y | Y | 05 | 00 | 100 | 0  |
| 20 | MoIB   | Y | Y | Y | N | Y | 04 | 01 | 80  | 20 |
| 21 | MoJS   | Y | Y | Y | N | N | 03 | 02 | 60  | 40 |
| 22 | MoLE   | Y | Y | Y | Y | Y | 05 | 00 | 100 | 0  |
| 23 | MoLJ   | Y | Y | Y | Y | N | 04 | 01 | 80  | 20 |
| 24 | MoMSME | Y | Y | Y | N | Y | 04 | 01 | 80  | 20 |
| 25 | MoM    | Y | Y | Y | N | Y | 04 | 01 | 80  | 20 |
| 26 | MoMA   | Y | Y | Y | Y | Y | 05 | 00 | 100 | 0  |
| 27 | MoNRE  | Y | Y | Y | Y | Y | 05 | 00 | 100 | 0  |
| 28 | MoPR   | Y | Y | Y | Y | Y | 05 | 00 | 100 | 0  |
| 29 | MoPA   | Y | Y | Y | N | Y | 04 | 01 | 80  | 20 |
| 30 | MoPPGP | Y | Y | N | N | Y | 03 | 02 | 60  | 40 |
| 31 | MoPNG  | Y | Y | Y | Y | Y | 05 | 00 | 100 | 0  |
| 32 | MoPSW  | Y | Y | Y | N | Y | 04 | 01 | 80  | 20 |
| 33 | MoP    | Y | Y | Y | Y | N | 04 | 01 | 80  | 20 |
| 34 | MoRTH  | Y | Y | Y | Y | Y | 05 | 00 | 100 | 0  |
| 35 | MoR    | Y | Y | Y | N | Y | 04 | 01 | 80  | 20 |
| 36 | MoRD   | Y | Y | Y | Y | Y | 05 | 00 | 100 | 0  |
| 37 | MoSDE  | Y | Y | Y | Y | Y | 05 | 00 | 100 | 0  |

|                                      |       |     |     |       |       |       |    |    |     |    |
|--------------------------------------|-------|-----|-----|-------|-------|-------|----|----|-----|----|
| 38                                   | MoSPI | Y   | Y   | Y     | Y     | Y     | 05 | 00 | 100 | 0  |
| 39                                   | MoS   | Y   | Y   | Y     | N     | Y     | 04 | 01 | 80  | 20 |
| 40                                   | MoTT  | Y   | Y   | Y     | N     | Y     | 04 | 01 | 80  | 20 |
| 41                                   | MoT   | Y   | Y   | Y     | Y     | Y     | 05 | 00 | 100 | 0  |
| 42                                   | MoTA  | Y   | Y   | Y     | N     | Y     | 04 | 01 | 80  | 20 |
| 43                                   | MoWCD | Y   | Y   | Y     | N     | N     | 03 | 02 | 60  | 40 |
| 44                                   | MoYAS | Y   | Y   | Y     | Y     | Y     | 05 | 00 | 100 | 0  |
| <b>Percentage Total<br/>(Max.44)</b> | Y     | 44  | 44  | 43    | 26    | 35    |    |    |     |    |
|                                      | N     | 00  | 00  | 01    | 18    | 09    |    |    |     |    |
| <b>Percentage (%)</b>                | Y     | 100 | 100 | 97.72 | 59.09 | 79.54 |    |    |     |    |
|                                      | N     | 0   | 0   | 2.27  | 40.90 | 20.45 |    |    |     |    |

Table 5 demonstrates that the textual labels hyperlinks and headings, appear on the websites of each of the 44 ministries. The websites of 43 ministries have navigation options to arrange their information content.

Table 5 makes it evident that the information on the websites of 26 ministries (out of 44) is presented using various searchable index terms. This table also shows that 35 ministries' websites have used iconic labels. The websites of all ministries are in a good and satisfactory situation under labeling system. In this category, a lot of the websites have scored 100% and 80%.



**Figure 111: Labeling system of ministries' websites**

It is depicted from Figure 111 that hyperlinks and headings are followed by 100% of ministries' websites. Navigation options, index terms and iconographic labels are displayed by 97.72%, 59.09% and 79.54% of websites respectively.

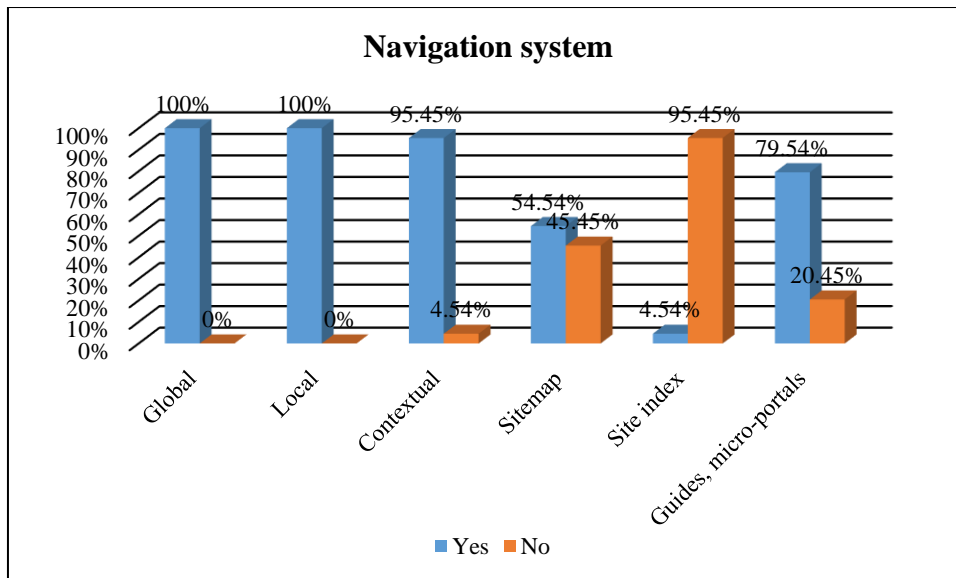
**Table 6: Navigation system of central government ministries' websites (Y=Yes, N=No)**

|         |   | Information architectural components |       |            |                                |            |                       |               |    |                |       |
|---------|---|--------------------------------------|-------|------------|--------------------------------|------------|-----------------------|---------------|----|----------------|-------|
| Sr. no. | Central government ministries' websites | Navigation system                    |       |            |                                |            |                       |               |    |                |       |
|         |   | Embedded navigation system           |       |            | Supplemental navigation system |            |                       | Total (Max.6) |    | Percentage (%) |       |
|         |   | Global                               | Local | Contextual | Sitemap                        | Site index | Guides, micro-portals |               |    |                |       |
|         |   |                                      |       |            |                                |            |                       | Y             | N  | Y              | N     |
| 1       | MoA                                     | Y                                    | Y     | Y          | Y                              | N          | Y                     | 05            | 01 | 83.33          | 16.66 |
| 2       | MoCA                                    | Y                                    | Y     | Y          | Y                              | N          | N                     | 04            | 02 | 66.66          | 33.33 |
| 3       | MoC                                     | Y                                    | Y     | Y          | N                              | N          | Y                     | 04            | 02 | 66.66          | 33.33 |
| 4       | MoCO                                    | Y                                    | Y     | Y          | N                              | N          | N                     | 03            | 03 | 50             | 50    |
| 5       | MoCRA                                   | Y                                    | Y     | Y          | N                              | N          | Y                     | 04            | 02 | 66.66          | 33.33 |
| 6       | MoCL                                    | Y                                    | Y     | Y          | Y                              | N          | Y                     | 05            | 01 | 83.33          | 16.66 |
| 7       | MoD                                     | Y                                    | Y     | Y          | N                              | N          | N                     | 03            | 03 | 50             | 50    |
| 8       | MoDNER                                  | Y                                    | Y     | Y          | Y                              | N          | Y                     | 05            | 01 | 83.33          | 16.66 |
| 9       | MoES                                    | Y                                    | Y     | Y          | N                              | N          | Y                     | 04            | 02 | 66.66          | 33.33 |
| 10      | MoE                                     | Y                                    | Y     | Y          | Y                              | N          | Y                     | 05            | 01 | 83.33          | 16.66 |
| 11      | MoEIT                                   | Y                                    | Y     | Y          | Y                              | Y          | Y                     | 06            | 00 | 100            | 0     |
| 12      | MoEFCC                                  | Y                                    | Y     | Y          | Y                              | N          | Y                     | 05            | 01 | 83.33          | 16.66 |
| 13      | MoEA                                    | Y                                    | Y     | Y          | Y                              | Y          | Y                     | 06            | 00 | 100            | 0     |

|    |        |   |   |   |   |   |   |    |    |       |       |
|----|--------|---|---|---|---|---|---|----|----|-------|-------|
| 14 | MoF    | Y | Y | N | N | N | N | 02 | 04 | 33.33 | 66.66 |
| 15 | MoFPI  | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |
| 16 | MoHFW  | Y | Y | Y | N | N | N | 03 | 03 | 50    | 50    |
| 17 | MoHI   | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |
| 18 | MoHA   | Y | Y | Y | N | N | N | 03 | 03 | 50    | 50    |
| 19 | MoHUA  | Y | Y | Y | Y | N | N | 04 | 02 | 66.66 | 33.33 |
| 20 | MoIB   | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |
| 21 | MoJS   | Y | Y | Y | N | N | Y | 04 | 02 | 66.66 | 33.33 |
| 22 | MoLE   | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |
| 23 | MoLJ   | Y | Y | Y | N | N | N | 03 | 03 | 50    | 50    |
| 24 | MoMSME | Y | Y | Y | N | N | Y | 04 | 02 | 66.66 | 33.33 |
| 25 | MoM    | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |
| 26 | MoMA   | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |
| 27 | MoNRE  | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |
| 28 | MoPR   | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |
| 29 | MoPA   | Y | Y | Y | N | N | Y | 04 | 02 | 66.66 | 33.33 |
| 30 | MoPPGP | Y | Y | N | N | N | Y | 03 | 03 | 50    | 50    |
| 31 | MoPNG  | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |
| 32 | MoPSW  | Y | Y | Y | N | N | N | 03 | 03 | 50    | 50    |
| 33 | MoP    | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |
| 34 | MoRTH  | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |
| 35 | MoR    | Y | Y | Y | Y | N | Y | 05 | 01 | 83.33 | 16.66 |

|                       |       |     |     |       |       |       |       |    |    |       |       |
|-----------------------|-------|-----|-----|-------|-------|-------|-------|----|----|-------|-------|
| 36                    | MoRD  | Y   | Y   | Y     | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 37                    | MoSDE | Y   | Y   | Y     | N     | N     | Y     | 04 | 02 | 66.66 | 33.33 |
| 38                    | MoSPI | Y   | Y   | Y     | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 39                    | MoS   | Y   | Y   | Y     | N     | N     | Y     | 04 | 02 | 66.66 | 33.33 |
| 40                    | MoTT  | Y   | Y   | Y     | N     | N     | Y     | 04 | 02 | 66.66 | 33.33 |
| 41                    | MoT   | Y   | Y   | Y     | N     | N     | Y     | 04 | 02 | 66.66 | 33.33 |
| 42                    | MoTA  | Y   | Y   | Y     | N     | N     | Y     | 04 | 02 | 66.66 | 33.33 |
| 43                    | MoWCD | Y   | Y   | Y     | N     | N     | Y     | 04 | 02 | 66.66 | 33.33 |
| 44                    | MoYAS | Y   | Y   | Y     | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| <b>Total</b>          | Y     | 44  | 44  | 42    | 24    | 02    | 35    |    |    |       |       |
|                       | N     | 00  | 00  | 02    | 20    | 42    | 09    |    |    |       |       |
| <b>Percentage (%)</b> | Y     | 100 | 100 | 95.45 | 54.54 | 4.54  | 79.54 |    |    |       |       |
|                       | N     | 0   | 0   | 4.54  | 45.45 | 95.45 | 20.45 |    |    |       |       |

Table 6 indicates that all ministry websites (i.e. 44) have implemented the global navigation system. Each of the ministry's website uses local navigation system. The above table (Table 6) demonstrates, the websites of 42 ministries present their content of information by using contextual navigation. Table 6 displays the websites of 24 ministries (out of 44) present sitemap; only 2 ministries' websites have the typical site-index. 35 ministries' websites have guides, micro-portals etc. inside their content. Table 6 also shows, the website of MoF receives 33.33%, the lowest score under the criterion navigation system, while MoEIT and MoEA scored 100%.



**Figure 112: Navigation system of ministries' websites**

It is revealed from figure 112 that global and local navigation systems have been featured by all websites (i.e. 100%). Sitemap and site-index are followed by 54.54% and 4.54% of websites. 79.54% of websites contain guides, micro-portals etc. in their content.

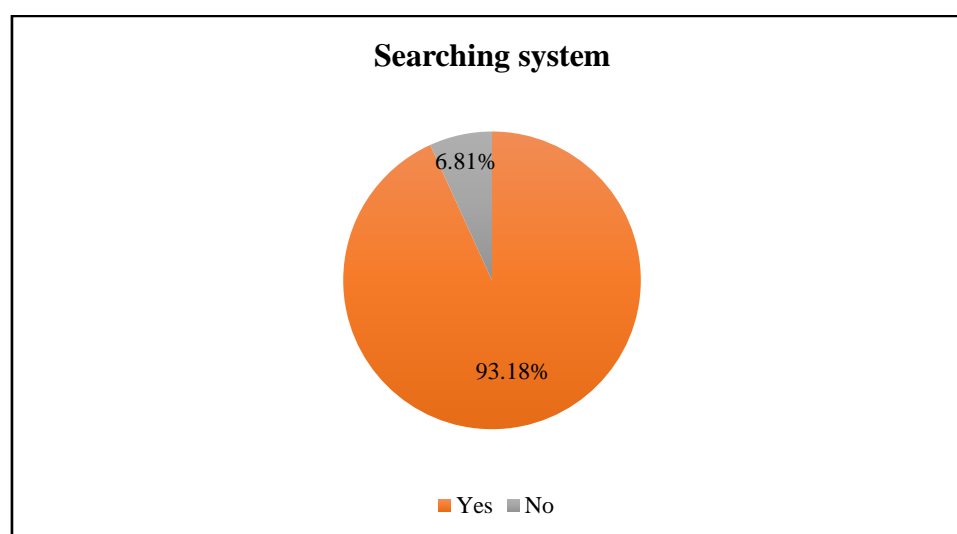
**Table 7: Searching system of central government ministries' websites (Y=Yes, N=No)**

|                |  | <b>Information architectural components</b> |                       |          |                   |          |
|----------------|--|---|-----------------------|----------|-------------------|----------|
| <b>Sr. no.</b> | <b>Central government ministries' websites</b> | <b>Searching system</b>                     | <b>Total (Max.01)</b> |          | <b>Percentage</b> |          |
|                |  |   | <b>Y</b>              | <b>N</b> | <b>Y</b>          | <b>N</b> |
| 1              | MoA  | Y   | 01                    | 00       | 100               | 0        |
| 2              | MoCA   | Y   | 01                    | 00       | 100               | 0        |
| 3              | MoC  | Y   | 01                    | 00       | 100               | 0        |
| 4              | MoCO   | N   | 00                    | 01       | 0                 | 100      |
| 5              | MoCRA  | Y   | 01                    | 00       | 100               | 0        |
| 6              | MoCL   | Y   | 01                    | 00       | 100               | 0        |
| 7              | MoD  | Y   | 01                    | 00       | 100               | 0        |
| 8              | MoDNER   | Y   | 01                    | 00       | 100               | 0        |
| 9              | MoES   | Y   | 01                    | 00       | 100               | 0        |
| 10             | MoE  | Y   | 01                    | 00       | 100               | 0        |
| 11             | MoEIT  | Y   | 01                    | 00       | 100               | 0        |
| 12             | MoEFCC   | Y   | 01                    | 00       | 100               | 0        |
| 13             | MoEA   | Y   | 01                    | 00       | 100               | 0        |
| 14             | MoF  | Y   | 01                    | 00       | 100               | 0        |
| 15             | MoFPI  | Y   | 01                    | 00       | 100               | 0        |

|    |        |   |    |    |     |     |
|----|--------|---|----|----|-----|-----|
| 16 | MoHFW  | Y | 01 | 00 | 100 | 0   |
| 17 | MoHI   | Y | 01 | 00 | 100 | 0   |
| 18 | MoHA   | Y | 01 | 00 | 100 | 0   |
| 19 | MoHUA  | Y | 01 | 00 | 100 | 0   |
| 20 | MoIB   | Y | 01 | 00 | 100 | 0   |
| 21 | MoJS   | N | 00 | 01 | 0   | 100 |
| 22 | MoLE   | Y | 01 | 00 | 100 | 0   |
| 23 | MoLJ   | Y | 01 | 00 | 100 | 0   |
| 24 | MoMSME | Y | 01 | 00 | 100 | 0   |
| 25 | MoM    | Y | 01 | 00 | 100 | 0   |
| 26 | MoMA   | Y | 01 | 00 | 100 | 0   |
| 27 | MoNRE  | Y | 01 | 00 | 100 | 0   |
| 28 | MoPR   | Y | 01 | 00 | 100 | 0   |
| 29 | MoPA   | Y | 01 | 00 | 100 | 0   |
| 30 | MoPPGP | N | 00 | 01 | 0   | 100 |
| 31 | MoPNG  | Y | 01 | 00 | 100 | 0   |
| 32 | MoPSW  | Y | 01 | 00 | 100 | 0   |
| 33 | MoP    | Y | 01 | 00 | 100 | 0   |
| 34 | MoRTH  | Y | 01 | 00 | 100 | 0   |
| 35 | MoR    | Y | 01 | 00 | 100 | 0   |
| 36 | MoRD   | Y | 01 | 00 | 100 | 0   |
| 37 | MoSDE  | Y | 01 | 00 | 100 | 0   |

|                                 |       |       |    |    |     |   |
|---------------------------------|-------|-------|----|----|-----|---|
| 38                              | MoSPI | Y     | 01 | 00 | 100 | 0 |
| 39                              | MoS   | Y     | 01 | 00 | 100 | 0 |
| 40                              | MoTT  | Y     | 01 | 00 | 100 | 0 |
| 41                              | MoT   | Y     | 01 | 00 | 100 | 0 |
| 42                              | MoTA  | Y     | 01 | 00 | 100 | 0 |
| 43                              | MoWCD | Y     | 01 | 00 | 100 | 0 |
| 44                              | MoYAS | Y     | 01 | 00 | 100 | 0 |
| <b>Total</b><br><b>(Max.44)</b> | Y     | 41    |    |    |     |   |
|                                 | N     | 03    |    |    |     |   |
| <b>Percentage (%)</b>           | Y     | 93.18 |    |    |     |   |
|                                 | N     | 6.81  |    |    |     |   |

Table 7 clears out that, searching system has been appeared on the websites of 41 (out of 44) ministries. This system is not available on the websites of MoCO, MoJS and MoPPGP. Additionally, it has been noted that sometimes the search function is not working rightly or not returning the desired result in quickly manner.



**Figure 113: Searching system of ministries' websites**

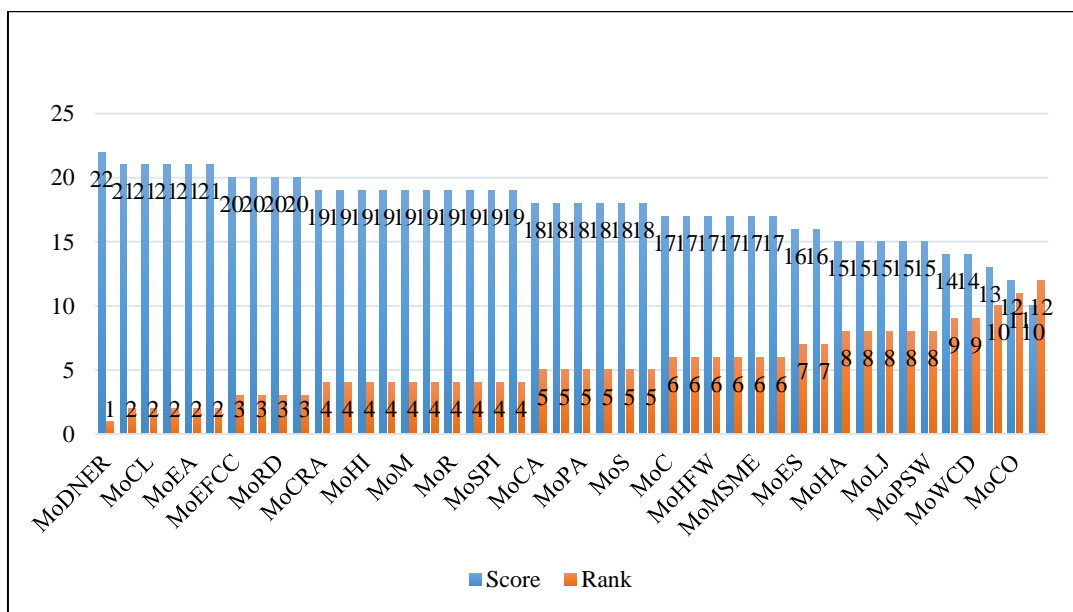
Figure 113 shows that 93.18% of websites follow searching system where as only 6.81% of websites do not have this feature.

**Table 8: Scores obtained by the ministries' websites under different IA components**

| Sr.no. | Central government ministries' websites | Particulars                                      |                                       |                                |                                  |                                 |                       |      |
|--------|---|--|---------------------------------------|--------------------------------|----------------------------------|---------------------------------|-----------------------|------|
|        |   | Information architectural components of websites |                                       |                                |                                  |                                 |                       |      |
|        |   | Organization scheme (Max. score 8)               | Organization structure (Max. score 4) | Labeling system (Max. score 5) | Navigation system (Max. score 6) | Searching system (Max. score 1) | Total (Max. score 24) | Rank |
| 1      | MoDNER                                  | 07   | 04                                    | 05                             | 05                               | 01                              | 22                    | 01   |
| 2      | MoA                                     | 06   | 04                                    | 05                             | 05                               | 01                              | 21                    | 02   |
| 3      | MoCL                                    | 06   | 04                                    | 05                             | 05                               | 01                              | 21                    | 02   |
| 4      | MoEIT                                   | 05   | 04                                    | 05                             | 06                               | 01                              | 21                    | 02   |
| 5      | MoEA                                    | 06   | 04                                    | 04                             | 06                               | 01                              | 21                    | 02   |
| 6      | MoPNG                                   | 06   | 04                                    | 05                             | 05                               | 01                              | 21                    | 02   |
| 7      | MoEFCC                                  | 05   | 04                                    | 05                             | 05                               | 01                              | 20                    | 03   |
| 8      | MoNRE                                   | 05   | 04                                    | 05                             | 05                               | 01                              | 20                    | 03   |
| 9      | MoRD                                    | 05   | 04                                    | 05                             | 05                               | 01                              | 20                    | 03   |
| 10     | MoYAS                                   | 05   | 04                                    | 05                             | 05                               | 01                              | 20                    | 03   |
| 11     | MoCRA                                   | 05   | 04                                    | 05                             | 04                               | 01                              | 19                    | 04   |
| 12     | MoE                                     | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 13     | MoHI                                    | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 14     | MoLE                                    | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 15     | MoM                                     | 05   | 04                                    | 04                             | 05                               | 01                              | 19                    | 04   |
| 16     | MoMA                                    | 05   | 03                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 17     | MoR                                     | 05   | 04                                    | 04                             | 05                               | 01                              | 19                    | 04   |
| 18     | MoRTH                                   | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 19     | MoSPI                                   | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |

|    |        |    |    |    |    |    |    |    |
|----|--------|----|----|----|----|----|----|----|
| 20 | MoT    | 05 | 04 | 05 | 04 | 01 | 19 | 04 |
| 21 | MoCA   | 05 | 04 | 04 | 04 | 01 | 18 | 05 |
| 22 | MoHUA  | 04 | 04 | 05 | 04 | 01 | 18 | 05 |
| 23 | MoPA   | 05 | 04 | 04 | 04 | 01 | 18 | 05 |
| 24 | MoPR   | 04 | 03 | 05 | 05 | 01 | 18 | 05 |
| 25 | MoS    | 05 | 04 | 04 | 04 | 01 | 18 | 05 |
| 26 | MoSDE  | 04 | 04 | 05 | 04 | 01 | 18 | 05 |
| 27 | MoC    | 04 | 04 | 04 | 04 | 01 | 17 | 06 |
| 28 | MoFPI  | 04 | 04 | 03 | 05 | 01 | 17 | 06 |
| 29 | MoHFW  | 04 | 04 | 05 | 03 | 01 | 17 | 06 |
| 30 | MoIB   | 03 | 04 | 04 | 05 | 01 | 17 | 06 |
| 31 | MoMSME | 04 | 04 | 04 | 04 | 01 | 17 | 06 |
| 32 | MoTA   | 04 | 04 | 04 | 04 | 01 | 17 | 06 |
| 33 | MoES   | 03 | 04 | 04 | 04 | 01 | 16 | 07 |
| 34 | MoTT   | 03 | 04 | 04 | 04 | 01 | 16 | 07 |
| 35 | MoHA   | 03 | 04 | 04 | 03 | 01 | 15 | 08 |
| 36 | MoJS   | 05 | 03 | 03 | 04 | 00 | 15 | 08 |
| 37 | MoLJ   | 04 | 03 | 04 | 03 | 01 | 15 | 08 |
| 38 | MoP    | 02 | 03 | 04 | 05 | 01 | 15 | 08 |
| 39 | MoPSW  | 03 | 04 | 04 | 03 | 01 | 15 | 08 |
| 40 | MoF    | 05 | 02 | 04 | 02 | 01 | 14 | 09 |
| 41 | MoWCD  | 03 | 03 | 03 | 04 | 01 | 14 | 09 |
| 42 | MoD    | 02 | 03 | 04 | 03 | 01 | 13 | 10 |
| 43 | MoCO   | 03 | 03 | 03 | 03 | 00 | 12 | 11 |
| 44 | MoPPGP | 03 | 01 | 03 | 03 | 00 | 10 | 12 |

Table 8 and Figure 114 represent individual value of each ministry website under different IA components. It can be seen from this table and figure that the website of MoDNER stands at first rank with the highest score 22 out of 24. Second rank has been taken by five websites (i.e. MoA, MoCL, MoEIT, MoEA and MoPNG) with score 21 out of 24. Third position has been occupied by the websites of MoEFCC, MoNRE, MoRD and MoYAS with score 20. The websites of MoF and MoWCD obtain 14 out of 24 and they occupy 9<sup>th</sup> rank. The website of MoD holds 10<sup>th</sup> rank with score 13 (out of 24). It is followed by MoCO and MoPPGP with rank 11<sup>th</sup> and 12<sup>th</sup>. Good IA scores of the websites indicate the effective use of more IA components in the contents of the concerned websites.



**Figure 114: Score and rank of ministries' websites under IA components**

### 6.3 Information architecture analysis of central government departmental websites

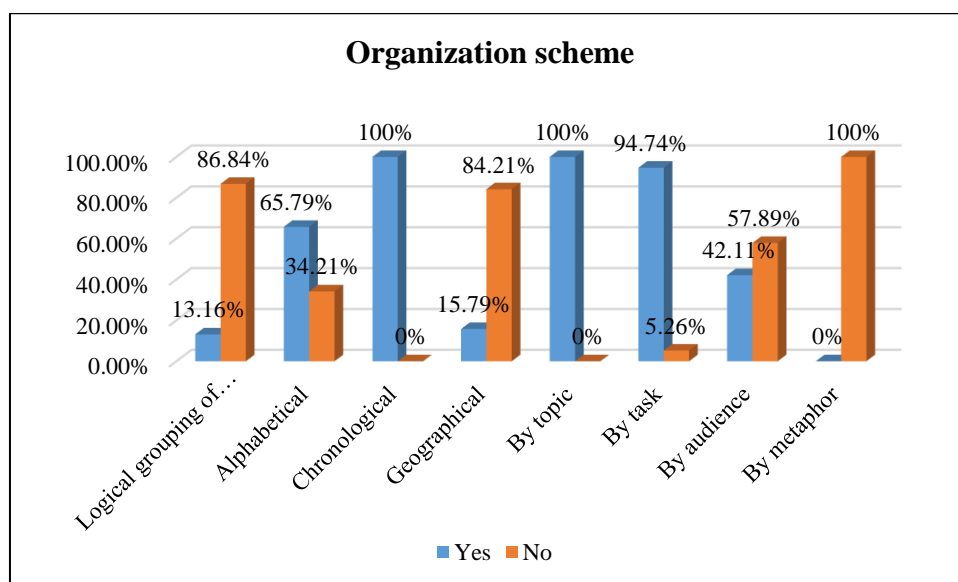
The analysis of information architecture of the selected central government departmental websites through different information architectural components has been presented in this part i.e. from Table 9 to Table 14 and from Figure 115 Figure 120.

**Table 9: Organization scheme of central government departmental websites (Y=Yes, N=No)**

|         |  | Information architectural components        |              |               |              |                  |         |             |             |       |       |            |            |  |  |
|---------|--|---|--------------|---------------|--------------|------------------|---------|-------------|-------------|-------|-------|------------|------------|--|--|
| Sr. no. | Central government departmental websites | Organization scheme                         |              |               |              |                  |         |             |             |       |       |            |            |  |  |
|         |  | Logical grouping of information and content | Exact scheme |               |              | Ambiguous scheme |         |             |             |       |       |            |            |  |  |
|         |  |   | Alphabetic   | Chronological | Geographical | By topic         | By task | By audience | By metaphor | Total | (Max) | Percentage | Percentage |  |  |
| Y       | N  | Y   | N            | Y             | N            | Y                | N       | Y           | N           | Y     | N     | Y          | N          |  |  |
| 1       | DoAFW                                    | N   | Y            | Y             | N            | Y                | Y       | Y           | N           | 05    | 03    | 62.5       | 37.5       |  |  |
| 2       | DoAHD                                    | N   | Y            | Y             | Y            | Y                | Y       | N           | N           | 05    | 03    | 62.5       | 37.5       |  |  |
| 3       | DoARE                                    | N   | N            | Y             | N            | Y                | Y       | N           | N           | 03    | 05    | 37.5       | 62.5       |  |  |
| 4       | DoARPG                                   | N   | Y            | Y             | N            | Y                | Y       | N           | N           | 04    | 04    | 50         | 50         |  |  |
| 5       | DoB                                      | N   | Y            | Y             | N            | Y                | Y       | N           | N           | 04    | 04    | 50         | 50         |  |  |
| 6       | DoC                                      | Y   | Y            | Y             | Y            | Y                | Y       | Y           | N           | 07    | 01    | 87.5       | 12.5       |  |  |
| 7       | DoCA                                     | N   | Y            | Y             | N            | Y                | N       | N           | N           | 03    | 05    | 37.5       | 62.5       |  |  |
| 8       | DoCPC                                    | N   | N            | Y             | Y            | Y                | Y       | Y           | N           | 05    | 03    | 62.5       | 37.5       |  |  |
| 9       | DoDP                                     | N   | N            | Y             | N            | Y                | Y       | N           | N           | 03    | 05    | 37.5       | 62.5       |  |  |
| 10      | DoDWS                                    | N   | N            | Y             | Y            | Y                | Y       | Y           | N           | 05    | 03    | 62.5       | 37.5       |  |  |
| 11      | DoE                                      | N   | N            | Y             | N            | Y                | Y       | N           | N           | 03    | 05    | 37.5       | 62.5       |  |  |
| 12      | DoEA                                     | N   | N            | Y             | N            | Y                | Y       | Y           | N           | 04    | 04    | 50         | 50         |  |  |
| 13      | DoEPD                                    | N   | Y            | Y             | N            | Y                | Y       | N           | N           | 04    | 04    | 50         | 50         |  |  |
| 14      | DoEW                                     | N   | Y            | Y             | N            | Y                | Y       | N           | N           | 04    | 04    | 50         | 50         |  |  |
| 15      | DoF                                      | N   | Y            | Y             | N            | Y                | Y       | N           | N           | 04    | 04    | 50         | 50         |  |  |
| 16      | DoFPD                                    | N   | Y            | Y             | N            | Y                | Y       | N           | N           | 04    | 04    | 50         | 50         |  |  |
| 17      | DoFS                                     | N   | Y            | Y             | N            | Y                | Y       | N           | N           | 04    | 04    | 50         | 50         |  |  |
| 18      | DoFZ                                     | N   | N            | Y             | N            | Y                | Y       | Y           | N           | 04    | 04    | 50         | 50         |  |  |

|  |          |       |       |     |       |     |       |       |     |    |    |      |      |
|--|----------|-------|-------|-----|-------|-----|-------|-------|-----|----|----|------|------|
| 19   | DoHR     | N     | N     | Y   | N     | Y   | Y     | Y     | N   | 04 | 04 | 50   | 50   |
| 20   | DoIPAM   | N     | Y     | Y   | N     | Y   | Y     | N     | N   | 04 | 04 | 50   | 50   |
| 21   | DoJ      | N     | Y     | Y   | N     | Y   | Y     | Y     | N   | 05 | 03 | 62.5 | 37.5 |
| 22   | DoLA     | N     | N     | Y   | N     | Y   | Y     | Y     | N   | 04 | 04 | 50   | 50   |
| 23   | DoLR     | N     | Y     | Y   | N     | Y   | Y     | N     | N   | 04 | 04 | 50   | 50   |
| 24   | DoOL     | N     | N     | Y   | N     | Y   | Y     | Y     | N   | 04 | 04 | 50   | 50   |
| 25   | DoP      | Y     | Y     | Y   | N     | Y   | Y     | Y     | N   | 06 | 02 | 75   | 25   |
| 26   | DoPE     | Y     | Y     | Y   | N     | Y   | Y     | Y     | N   | 06 | 02 | 75   | 25   |
| 27   | DoPh     | N     | N     | Y   | N     | Y   | N     | Y     | N   | 03 | 05 | 37.5 | 62.5 |
| 28   | DoPPW    | Y     | Y     | Y   | N     | Y   | Y     | N     | N   | 05 | 03 | 62.5 | 37.5 |
| 29   | DoPT     | N     | Y     | Y   | N     | Y   | Y     | Y     | N   | 05 | 03 | 62.5 | 37.5 |
| 30   | DoSEL    | N     | Y     | Y   | Y     | Y   | Y     | N     | N   | 05 | 03 | 62.5 | 37.5 |
| 31   | DoSIR    | N     | N     | Y   | N     | Y   | Y     | N     | N   | 03 | 05 | 37.5 | 62.5 |
| 32   | DoSJE    | N     | Y     | Y   | N     | Y   | Y     | N     | N   | 04 | 04 | 50   | 50   |
| 33   | DoST     | Y     | N     | Y   | N     | Y   | Y     | N     | N   | 04 | 04 | 50   | 50   |
| 34   | DoR      | N     | Y     | Y   | N     | Y   | Y     | N     | N   | 04 | 04 | 50   | 50   |
| 35   | DoT      | N     | Y     | Y   | N     | Y   | Y     | Y     | N   | 05 | 03 | 62.5 | 37.5 |
| 36   | DoWRRDGR | N     | Y     | Y   | N     | Y   | Y     | N     | N   | 04 | 04 | 50   | 50   |
| 37   | DPIIT    | N     | Y     | Y   | Y     | Y   | Y     | Y     | N   | 06 | 02 | 75   | 25   |
| 38   | LD       | N     | Y     | Y   | N     | Y   | Y     | N     | N   | 04 | 04 | 50   | 50   |
| <b>Percentage Total</b><br><b>(Max.38)</b> | Y        | 05    | 25    | 38  | 06    | 38  | 36    | 16    | 00  |    |    |      |      |
|  | N        | 33    | 13    | 00  | 32    | 00  | 02    | 22    | 38  |    |    |      |      |
| <b>Percentage</b><br><b>(%)</b>            | Y        | 13.16 | 65.79 | 100 | 15.79 | 100 | 94.74 | 42.11 | 0   |    |    |      |      |
|  | N        | 86.84 | 34.21 | 0   | 84.21 | 0   | 5.26  | 57.89 | 100 |    |    |      |      |

This table (Table 9) shows the individual score of each departmental website under the component organization scheme. The website of DoC attains the highest score i. e. 7 out of 8. The websites of three departments (DoP, DoPE and DPIIT) has got 6 out of 8. 50% score has been attained by most of the departmental websites i.e. 19. The websites of six departments obtain the lowest score i.e. 3 out of 8. These websites need to improve their website contents by applying different sub-components of organization scheme. This table further tells that the exact organization scheme, ‘chronological’ and ambiguous scheme, ‘by topic’ appear in the web content of all departmental websites (i.e. 38). Metaphor driven scheme has not been followed by any of the websites under study.



**Figure 115: Organization scheme of departmental websites**

Figure 115 shows that 13.16% of websites follow logical grouping of information and content. Rest of the websites do not maintain this system wholly for organizing their web content. Alphabetical, chronological and geographical schemes have been presented by 65.79%, 100% and 15.79% of websites. 42.11% of websites hold ‘by audience’ scheme and ‘by metaphor’ scheme is not followed by any of the websites under study.

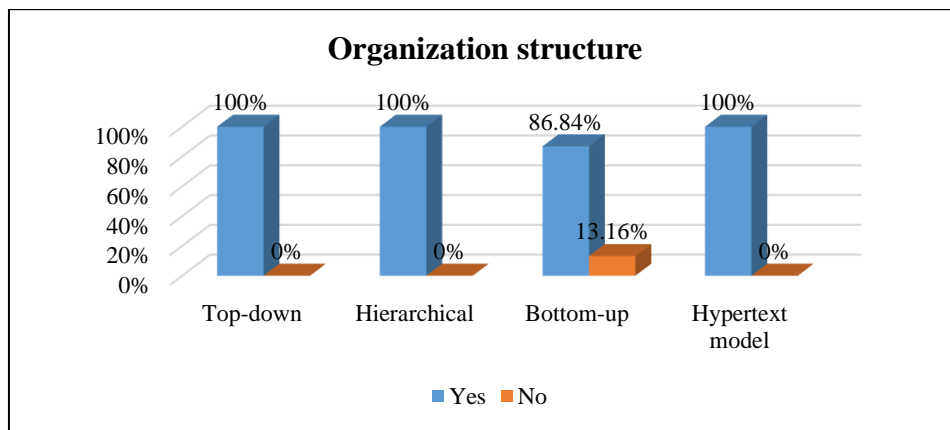
**Table 10: Organization structure of central government departmental websites (Y=Yes, N=No)**

|         |  | Information architectural components |              |           |                 |                |    |                |    |
|---------|--|--------------------------------------|--------------|-----------|-----------------|----------------|----|----------------|----|
| Sr. no. | Central government departmental websites | Organization structure               |              |           |                 |                |    |                |    |
|         |  | Top-down                             | Hierarchical | Bottom-up | Hypertext model | Total (Max. 4) |    | Percentage (%) |    |
|         |  |                                      |              |           |                 | Y              | N  | Y              | N  |
| 1       | DoAFW                                    | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 2       | DoAHD                                    | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 3       | DoARE                                    | Y                                    | Y            | N         | Y               | 03             | 01 | 75             | 25 |
| 4       | DoARPG                                   | Y                                    | Y            | N         | Y               | 03             | 01 | 75             | 25 |
| 5       | DoB                                      | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 6       | DoC                                      | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 7       | DoCA                                     | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 8       | DoCPC                                    | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 9       | DoDP                                     | Y                                    | Y            | N         | Y               | 03             | 01 | 75             | 25 |
| 10      | DoDWS                                    | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 11      | DoE                                      | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 12      | DoEA                                     | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 13      | DoEPD                                    | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 14      | DoEW                                     | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 15      | DoF                                      | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 16      | DoFPD                                    | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 17      | DoFS                                     | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |
| 18      | DoFZ                                     | Y                                    | Y            | Y         | Y               | 04             | 00 | 100            | 0  |

|                         |          |     |     |       |     |    |    |     |    |
|-------------------------|----------|-----|-----|-------|-----|----|----|-----|----|
| 19                      | DoHR     | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 20                      | DoIPAM   | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 21                      | DoJ      | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 22                      | DoLA     | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 23                      | DoLR     | Y   | Y   | N     | Y   | 03 | 01 | 75  | 25 |
| 24                      | DoOL     | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 25                      | DoP      | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 26                      | DoPE     | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 27                      | DoPh     | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 28                      | DoPPW    | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 29                      | DoPT     | Y   | Y   | N     | Y   | 03 | 01 | 75  | 25 |
| 30                      | DoSEL    | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 31                      | DoSIR    | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 32                      | DoSJE    | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 33                      | DoST     | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 34                      | DoR      | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 35                      | DoT      | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 36                      | DoWRRDGR | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 37                      | DPIIT    | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| 38                      | LD       | Y   | Y   | Y     | Y   | 04 | 00 | 100 | 0  |
| <b>Percentage Total</b> | Y        | 38  | 38  | 33    | 38  |    |    |     |    |
|                         | N        | 00  | 00  | 05    | 00  |    |    |     |    |
| <b>(%)</b>              | Y        | 100 | 100 | 86.84 | 100 |    |    |     |    |
|                         | N        | 0   | 0   | 13.16 | 0   |    |    |     |    |

Table 10 represents the picture of organization structure displayed in the web content of the selected websites of central government departments. It can be seen from this table that most of the departments websites i.e. 30 got highest score i.e. 4 (100%). The lowest score 3 (75%) has been obtained by only 5 websites.

Top-down, hierarchical and hypertext model have been followed by all the selected websites of central government departments. Bottom-up structure is not appeared in the web content of only 5 websites (out of 38).



**Figure 116: Organization structure of departmental websites**

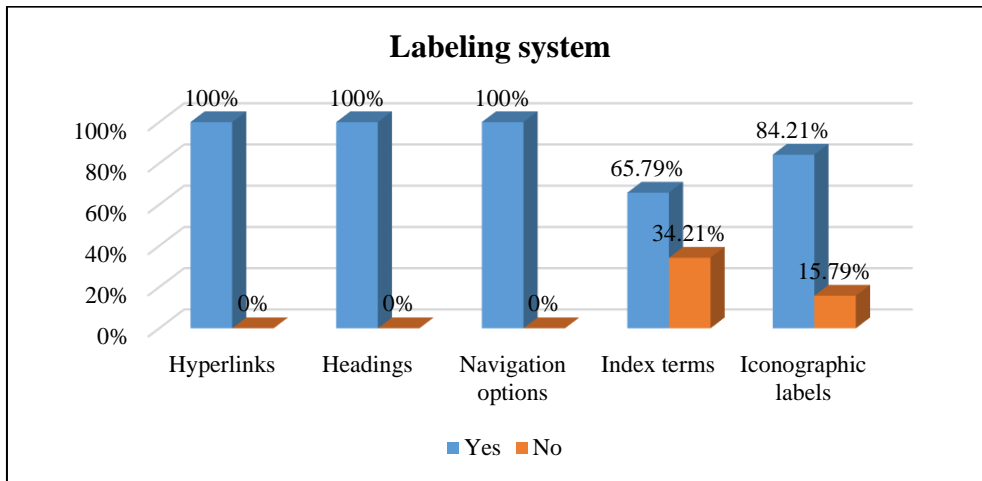
The position of departmental websites under organization structure is very satisfactory. According to Figure 116, Top-down, hierarchical and hypertext models are displayed by all websites (100%). 86.84% of websites are characterized by bottom-up structure.

**Table 11: Labeling system of central government departmental websites (Y=Yes, N=No)**

|         |  | Information architectural components |          |                    |             |                     |               |    |                |    |
|---------|--|--------------------------------------|----------|--------------------|-------------|---------------------|---------------|----|----------------|----|
| Sr. no. | Central government departmental websites | Labeling system                      |          |                    |             |                     |               |    |                |    |
|         |  | Textual labels                       |          |                    |             |                     |               |    |                |    |
|         |  | Hyperlinks                           | Headings | Navigation options | Index terms | Iconographic labels | Total (Max.5) |    | Percentage (%) |    |
| Y       | N  |                                      |          |                    |             |                     | Y             | N  |                |    |
| 1       | DoAFW                                    | Y                                    | Y        | Y                  | N           | N                   | 03            | 02 | 60             | 40 |
| 2       | DoAHD                                    | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 3       | DoARE                                    | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 4       | DoARPG                                   | Y                                    | Y        | Y                  | N           | Y                   | 04            | 01 | 80             | 20 |
| 5       | DoB                                      | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 6       | DoC                                      | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 7       | DoCA                                     | Y                                    | Y        | Y                  | N           | Y                   | 04            | 01 | 80             | 20 |
| 8       | DoCPC                                    | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 9       | DoDP                                     | Y                                    | Y        | Y                  | N           | Y                   | 04            | 01 | 80             | 20 |
| 10      | DoDWS                                    | Y                                    | Y        | Y                  | N           | Y                   | 04            | 01 | 80             | 20 |
| 11      | DoE                                      | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 12      | DoEA                                     | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |
| 13      | DoEPD                                    | Y                                    | Y        | Y                  | Y           | N                   | 04            | 01 | 80             | 20 |
| 14      | DoEW                                     | Y                                    | Y        | Y                  | N           | N                   | 03            | 02 | 60             | 40 |
| 15      | DoF                                      | Y                                    | Y        | Y                  | N           | N                   | 03            | 02 | 60             | 40 |
| 16      | DoFPD                                    | Y                                    | Y        | Y                  | N           | Y                   | 04            | 01 | 80             | 20 |
| 17      | DoFS                                     | Y                                    | Y        | Y                  | Y           | Y                   | 05            | 00 | 100            | 0  |

|                       |          |     |     |     |       |       |    |    |     |    |
|-----------------------|----------|-----|-----|-----|-------|-------|----|----|-----|----|
| 18                    | DoFZ     | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 19                    | DoHR     | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 20                    | DoIPAM   | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 21                    | DoJ      | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 22                    | DoLA     | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 23                    | DoLR     | Y   | Y   | Y   | N     | Y     | 04 | 01 | 80  | 20 |
| 24                    | DoOL     | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 25                    | DoP      | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 26                    | DoPE     | Y   | Y   | Y   | N     | Y     | 04 | 01 | 80  | 20 |
| 27                    | DoPh     | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 28                    | DoPPW    | Y   | Y   | Y   | N     | Y     | 04 | 01 | 80  | 20 |
| 29                    | DoPT     | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 30                    | DoSEL    | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 31                    | DoSIR    | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 32                    | DoSJE    | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 33                    | DoST     | Y   | Y   | Y   | Y     | N     | 04 | 01 | 80  | 20 |
| 34                    | DoR      | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 35                    | DoT      | Y   | Y   | Y   | N     | Y     | 04 | 01 | 80  | 20 |
| 36                    | DoWRRDGR | Y   | Y   | Y   | N     | N     | 03 | 02 | 60  | 40 |
| 37                    | DPIIT    | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| 38                    | LD       | Y   | Y   | Y   | Y     | Y     | 05 | 00 | 100 | 0  |
| <b>Total</b>          | Y        | 38  | 38  | 38  | 25    | 32    |    |    |     |    |
|                       | N        | 00  | 00  | 00  | 13    | 06    |    |    |     |    |
| <b>Percentage (%)</b> | Y        | 100 | 100 | 100 | 65.79 | 84.21 |    |    |     |    |
|                       | N        | 0   | 0   | 0   | 34.21 | 15.79 |    |    |     |    |

The position of labeling system in the web content of different departmental websites has been depicted in Table 11. This table shows that, 100% score is obtained by 23 websites (out of 38) under study. 11 websites got 80% and 4 websites secured 60% under the component labeling system. This table also tells that, all the selected 38 websites contain hyperlinks, headings and navigation options in their web content. Index terms and iconographic labels have been located in the websites of 25 and 32 departments respectively.



**Figure 117: Labeling system of departmental websites**

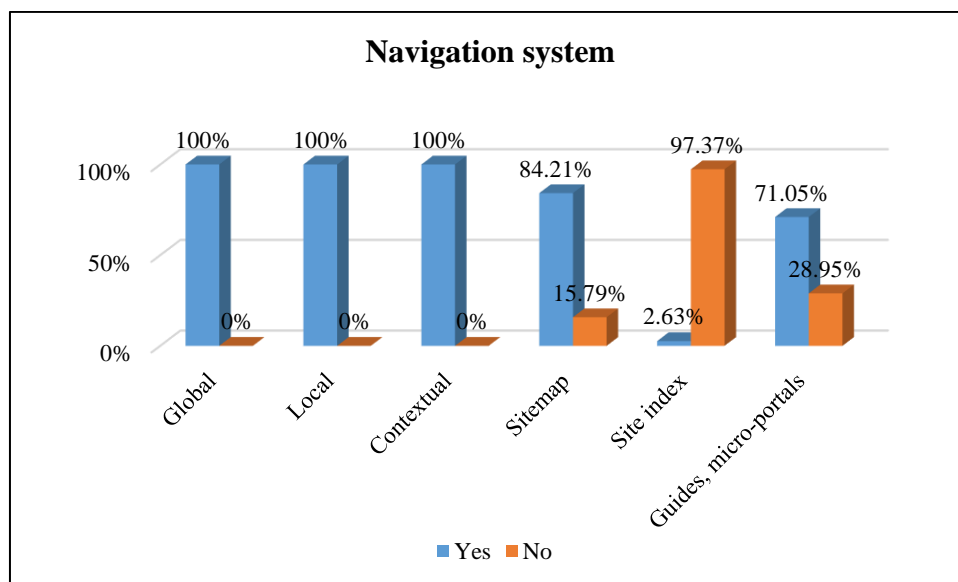
It is depicted in Figure 117 that 100% of websites present hyperlinks, headings and navigation options for structuring their content. Index terms and iconographic labels are being followed by 65.79% and 84.21% of websites respectively.

**Table 12: Navigation system of central government departmental websites (Y=Yes, N=No)**

|         |  | Information architectural components |       |            |                                |            |               |    |               |       |                |  |
|---------|--|--------------------------------------|-------|------------|--------------------------------|------------|---------------|----|---------------|-------|----------------|--|
| Sr. no. | Central government departmental websites | Navigation system                    |       |            |                                |            |               |    |               |       |                |  |
|         |  | Embedded navigation system           |       |            | Supplemental navigation system |            |               |    | Total (Max:6) |       | Percentage (%) |  |
|         |  | Global                               | Local | Contextual | Sitemap                        | Site index | Guides, micro | Y  |               |       |                |  |
|         |  |                                      |       |            |                                |            |               |    |               |       |                |  |
| 1       | DoAFW                                    | Y                                    | Y     | Y          | N                              | N          | Y             | 04 | 02            | 66.66 | 33.33          |  |
| 2       | DoAHD                                    | Y                                    | Y     | Y          | N                              | N          | Y             | 04 | 02            | 66.66 | 33.33          |  |
| 3       | DoARE                                    | Y                                    | Y     | Y          | Y                              | N          | N             | 04 | 02            | 66.66 | 33.33          |  |
| 4       | DoARPG                                   | Y                                    | Y     | Y          | N                              | N          | N             | 03 | 03            | 50    | 50             |  |
| 5       | DoB                                      | Y                                    | Y     | Y          | Y                              | N          | Y             | 05 | 01            | 83.33 | 16.66          |  |
| 6       | DoC                                      | Y                                    | Y     | Y          | Y                              | N          | Y             | 05 | 01            | 83.33 | 16.66          |  |
| 7       | DoCA                                     | Y                                    | Y     | Y          | N                              | N          | Y             | 04 | 02            | 66.66 | 33.33          |  |
| 8       | DoCPC                                    | Y                                    | Y     | Y          | Y                              | N          | N             | 04 | 02            | 66.66 | 33.33          |  |
| 9       | DoDP                                     | Y                                    | Y     | Y          | N                              | N          | Y             | 04 | 02            | 66.66 | 33.33          |  |
| 10      | DoDWS                                    | Y                                    | Y     | Y          | Y                              | N          | Y             | 05 | 01            | 83.33 | 16.66          |  |
| 11      | DoE                                      | Y                                    | Y     | Y          | Y                              | N          | N             | 04 | 02            | 66.66 | 33.33          |  |
| 12      | DoEA                                     | Y                                    | Y     | Y          | Y                              | N          | N             | 04 | 02            | 66.66 | 33.33          |  |
| 13      | DoEPD                                    | Y                                    | Y     | Y          | Y                              | N          | Y             | 05 | 01            | 83.33 | 16.66          |  |
| 14      | DoEW                                     | Y                                    | Y     | Y          | Y                              | N          | N             | 04 | 02            | 66.66 | 33.33          |  |
| 15      | DoF                                      | Y                                    | Y     | Y          | Y                              | N          | N             | 04 | 02            | 66.66 | 33.33          |  |
| 16      | DoFPD                                    | Y                                    | Y     | Y          | Y                              | N          | N             | 04 | 02            | 66.66 | 33.33          |  |
| 17      | DoFS                                     | Y                                    | Y     | Y          | Y                              | N          | Y             | 05 | 01            | 83.33 | 16.66          |  |

|                        |          |     |     |     |       |       |       |    |    |       |       |
|------------------------|----------|-----|-----|-----|-------|-------|-------|----|----|-------|-------|
| 18                     | DoFZ     | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 19                     | DoHR     | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 20                     | DoPAM    | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 21                     | DoJ      | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 22                     | DoLA     | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 23                     | DoLR     | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 24                     | DoOL     | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 25                     | DoP      | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 26                     | DoPE     | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 27                     | DoPh     | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 28                     | DoPPW    | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 29                     | DoPT     | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 30                     | DoSEL    | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 31                     | DoSIR    | Y   | Y   | Y   | Y     | Y     | Y     | 06 | 00 | 100   | 0     |
| 32                     | DoSJE    | Y   | Y   | Y   | N     | N     | N     | 03 | 03 | 50    | 50    |
| 33                     | DoST     | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 34                     | DoR      | Y   | Y   | Y   | Y     | N     | N     | 04 | 02 | 66.66 | 33.33 |
| 35                     | DoT      | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 36                     | DoWRRDGR | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 37                     | DPIIT    | Y   | Y   | Y   | Y     | N     | Y     | 05 | 01 | 83.33 | 16.66 |
| 38                     | LD       | Y   | Y   | Y   | Y     | N     | N     | 04 | 02 | 66.66 | 33.33 |
| <b>Total (Max. 38)</b> | Y        | 38  | 38  | 38  | 32    | 01    | 27    |    |    |       |       |
|                        | N        | 00  | 00  | 00  | 06    | 37    | 11    |    |    |       |       |
| <b>Percentage (%)</b>  | Y        | 100 | 100 | 100 | 84.21 | 2.63  | 71.05 |    |    |       |       |
|                        | N        | 0   | 0   | 0   | 15.79 | 97.37 | 28.95 |    |    |       |       |

Table 12 represents the individual score of each departmental website under the component navigation system. DoSIR receives the highest score 6 (100%). The websites of 22 departments earn the score 5 (83.33%). Only 2 of the selected websites got 3 (50%) score. The remaining websites obtain 66.66%. This table also shows that, global, local and contextual navigation system have been maintained by all (i.e. 38) selected websites. Site-index is found in the website content of DoSIR. Sitemap has been followed by 32 websites (out of 38). There are 27 websites which contain guides or micro-portals in their web content for serving specific purpose.



**Figure 118: Navigation system of departmental websites**

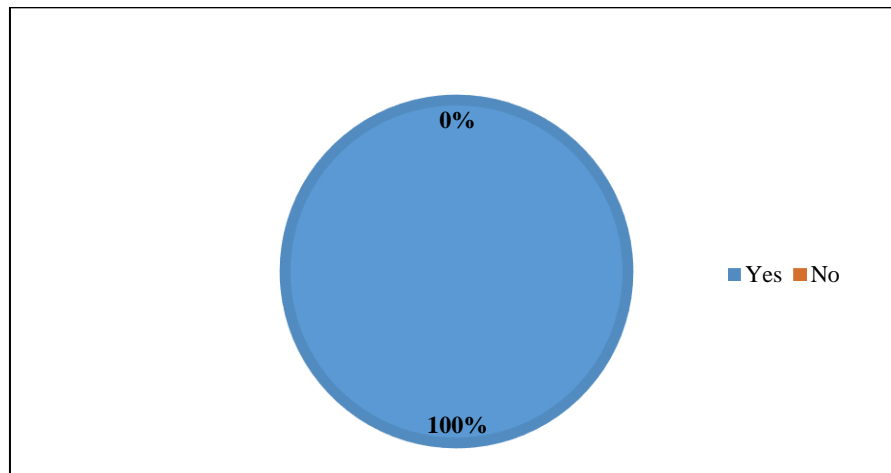
Global, local and contextual navigation systems are followed by 100% of websites which is visible from Figure 118. This graph also shows that 84.21% of websites contain sitemap, whereas 2.63% of websites have site-index for easy retrieval of information and guides, micro-portals are being followed by 71.05% of websites.

**Table 13: Searching system of central government departmental websites (Y=Yes, N=No)**

|        |  | Information architectural components |                |    |                |   |
|--------|--|--------------------------------------|----------------|----|----------------|---|
| Sr. no | Central government departmental websites | Searching system                     | Total (Max.01) |    | Percentage (%) |   |
|        |  |                                      | Y              | N  | Y              | N |
| 1      | DoAFW                                    | Y                                    | 01             | 00 | 100            | 0 |
| 2      | DoAHD                                    | Y                                    | 01             | 00 | 100            | 0 |
| 3      | DoARE                                    | Y                                    | 01             | 00 | 100            | 0 |
| 4      | DoARPG                                   | Y                                    | 01             | 00 | 100            | 0 |
| 5      | DoB                                      | Y                                    | 01             | 00 | 100            | 0 |
| 6      | DoC                                      | Y                                    | 01             | 00 | 100            | 0 |
| 7      | DoCA                                     | Y                                    | 01             | 00 | 100            | 0 |
| 8      | DoCPC                                    | Y                                    | 01             | 00 | 100            | 0 |
| 9      | DoDP                                     | Y                                    | 01             | 00 | 100            | 0 |
| 10     | DoDWS                                    | Y                                    | 01             | 00 | 100            | 0 |
| 11     | DoE                                      | Y                                    | 01             | 00 | 100            | 0 |
| 12     | DoEA                                     | Y                                    | 01             | 00 | 100            | 0 |
| 13     | DoEPD                                    | Y                                    | 01             | 00 | 100            | 0 |
| 14     | DoEW                                     | Y                                    | 01             | 00 | 100            | 0 |
| 15     | DoF                                      | Y                                    | 01             | 00 | 100            | 0 |
| 16     | DoFPD                                    | Y                                    | 01             | 00 | 100            | 0 |
| 17     | DoFS                                     | Y                                    | 01             | 00 | 100            | 0 |
| 18     | DoFZ                                     | Y                                    | 01             | 00 | 100            | 0 |
| 19     | DoHR                                     | Y                                    | 01             | 00 | 100            | 0 |

|                                  |          |     |    |    |     |   |
|----------------------------------|----------|-----|----|----|-----|---|
| 20                               | DoIPAM   | Y   | 01 | 00 | 100 | 0 |
| 21                               | DoJ      | Y   | 01 | 00 | 100 | 0 |
| 22                               | DoLA     | Y   | 01 | 00 | 100 | 0 |
| 23                               | DoLR     | Y   | 01 | 00 | 100 | 0 |
| 24                               | DoOL     | Y   | 01 | 00 | 100 | 0 |
| 25                               | DoP      | Y   | 01 | 00 | 100 | 0 |
| 26                               | DoPE     | Y   | 01 | 00 | 100 | 0 |
| 27                               | DoPh     | Y   | 01 | 00 | 100 | 0 |
| 28                               | DoPPW    | Y   | 01 | 00 | 100 | 0 |
| 29                               | DoPT     | Y   | 01 | 00 | 100 | 0 |
| 30                               | DoSEL    | Y   | 01 | 00 | 100 | 0 |
| 31                               | DoSIR    | Y   | 01 | 00 | 100 | 0 |
| 32                               | DoSJE    | Y   | 01 | 00 | 100 | 0 |
| 33                               | DoST     | Y   | 01 | 00 | 100 | 0 |
| 34                               | DoR      | Y   | 01 | 00 | 100 | 0 |
| 35                               | DoT      | Y   | 01 | 00 | 100 | 0 |
| 36                               | DoWRRDGR | Y   | 01 | 00 | 100 | 0 |
| 37                               | DPIT     | Y   | 01 | 00 | 100 | 0 |
| 38                               | LD       | Y   | 01 | 00 | 100 | 0 |
| <b>Total</b><br><b>(Max. 38)</b> | Y        | 38  |    |    |     |   |
|                                  | N        | 00  |    |    |     |   |
| <b>Percentage</b><br><b>(%)</b>  | Y        | 100 |    |    |     |   |
|                                  | N        | 0   |    |    |     |   |

Table 13 clears out the presence of searching system in the web content of concerned websites. It is visible from this table that, all the selected websites (i.e. 38) follow searching system to serve the information demand of the targeted audience.



**Figure 119: Searching system of departmental websites**

All the selected departmental websites (100%) have searching system which is shown in Figure 119.

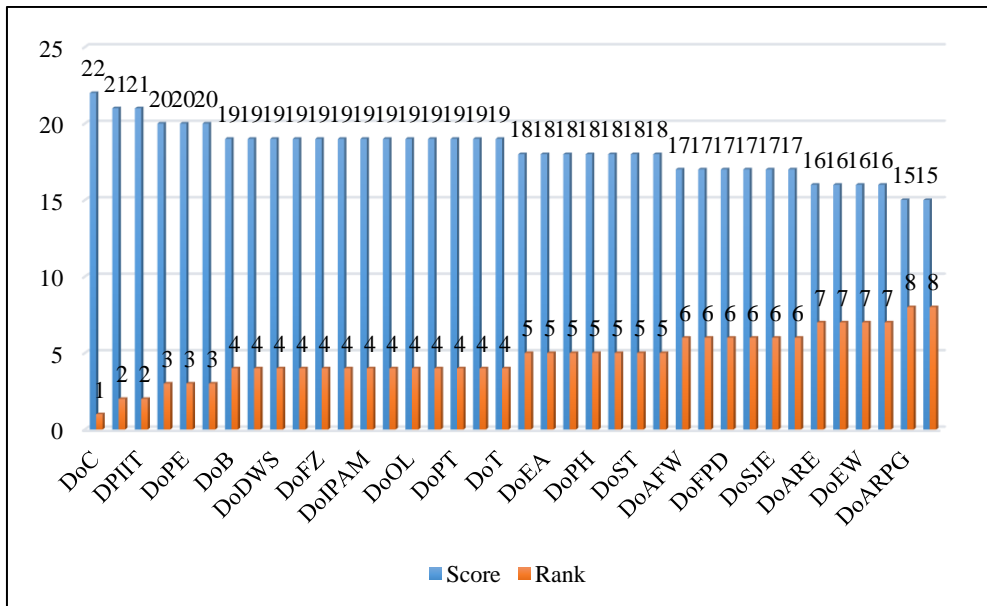
**Table 14: Score and rank of departmental websites under information architectural components**

| Sr.no. | Central government departmental websites | Particulars                                      |                                       |                                |                                  |                                 |                       |      |
|--------|--|--|---------------------------------------|--------------------------------|----------------------------------|---------------------------------|-----------------------|------|
|        |  | Information architectural components of websites |                                       |                                |                                  |                                 |                       |      |
|        |  | Organization scheme (Max. score 8)               | Organization structure (Max. score 4) | Labeling system (Max. score 5) | Navigation system (Max. score 6) | Searching system (Max. score 1) | Total (Max. score 24) | Rank |
| 1      | DoC                                      | 07   | 04                                    | 05                             | 05                               | 01                              | 22                    | 01   |
| 2      | DoP                                      | 06   | 04                                    | 05                             | 05                               | 01                              | 21                    | 02   |
| 3      | DPIIT                                    | 06   | 04                                    | 05                             | 05                               | 01                              | 21                    | 02   |
| 4      | DoJ                                      | 05   | 04                                    | 05                             | 05                               | 01                              | 20                    | 03   |
| 5      | DoPE                                     | 06   | 04                                    | 04                             | 05                               | 01                              | 20                    | 03   |
| 6      | DoSEL                                    | 05   | 04                                    | 05                             | 05                               | 01                              | 20                    | 03   |
| 7      | DoB                                      | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 8      | DoCPC                                    | 05   | 04                                    | 05                             | 04                               | 01                              | 19                    | 04   |
| 9      | DoDWS                                    | 05   | 04                                    | 04                             | 05                               | 01                              | 19                    | 04   |
| 10     | DoFS                                     | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 11     | DoFZ                                     | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 12     | DoHR                                     | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 13     | DoIPAM                                   | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 14     | DoLA                                     | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 15     | DoOL                                     | 04   | 04                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 16     | DoPPW                                    | 05   | 04                                    | 04                             | 05                               | 01                              | 19                    | 04   |
| 17     | DoPT                                     | 05   | 03                                    | 05                             | 05                               | 01                              | 19                    | 04   |
| 18     | DoSIR                                    | 03   | 04                                    | 05                             | 06                               | 01                              | 19                    | 04   |

|    |          |    |    |    |    |    |    |    |
|----|----------|----|----|----|----|----|----|----|
| 19 | DoT      | 05 | 04 | 04 | 05 | 01 | 19 | 04 |
| 20 | DoAHD    | 04 | 04 | 05 | 04 | 01 | 18 | 05 |
| 21 | DoEA     | 04 | 04 | 05 | 04 | 01 | 18 | 05 |
| 22 | DoEPD    | 04 | 04 | 04 | 05 | 01 | 18 | 05 |
| 23 | DoPH     | 03 | 04 | 05 | 05 | 01 | 18 | 05 |
| 24 | DoR      | 04 | 04 | 05 | 04 | 01 | 18 | 05 |
| 25 | DoST     | 04 | 04 | 04 | 05 | 01 | 18 | 05 |
| 26 | LD       | 04 | 04 | 05 | 04 | 01 | 18 | 05 |
| 27 | DoAFW    | 05 | 04 | 03 | 04 | 01 | 17 | 06 |
| 28 | DoE      | 03 | 04 | 05 | 04 | 01 | 17 | 06 |
| 29 | DoFPD    | 04 | 04 | 04 | 04 | 01 | 17 | 06 |
| 30 | DoLR     | 04 | 03 | 04 | 05 | 01 | 17 | 06 |
| 31 | DoSJE    | 04 | 04 | 05 | 03 | 01 | 17 | 06 |
| 32 | DoWRRDGR | 04 | 04 | 03 | 05 | 01 | 17 | 06 |
| 33 | DoARE    | 03 | 03 | 05 | 04 | 01 | 16 | 07 |
| 34 | DoCA     | 03 | 04 | 04 | 04 | 01 | 16 | 07 |
| 35 | DoEW     | 04 | 04 | 03 | 04 | 01 | 16 | 07 |
| 36 | DoF      | 04 | 04 | 03 | 04 | 01 | 16 | 07 |
| 37 | DoARPG   | 04 | 03 | 04 | 03 | 01 | 15 | 08 |
| 38 | DoDP     | 03 | 03 | 04 | 04 | 01 | 15 | 08 |

The individual score and rank of the selected departmental website under different IA components has been demonstrated in Table 14 and Figure 120. It shows that the website of DoC has taken 1<sup>st</sup> rank with the highest value 22 (out of 24). The second position has been occupied by the websites of DoP and DPIIT with score 21. Third rank is taken by the websites of DoJ, DoPE and DoSEL. Thirteen departmental websites receive the same rank 4 with score 19. This score is followed by 18 and 7 websites obtain this score (i.e. 18) with

rank 5. The lowest rank i.e. 8 is obtained by two websites (i.e. DoARPG and DoDP) with score 15. Effective and efficient utilization of IA components in the websites can help to achieve good score under IA.



**Figure 120: Score and rank of departmental websites**

## 6.4 Webometric analysis of central government ministries' websites

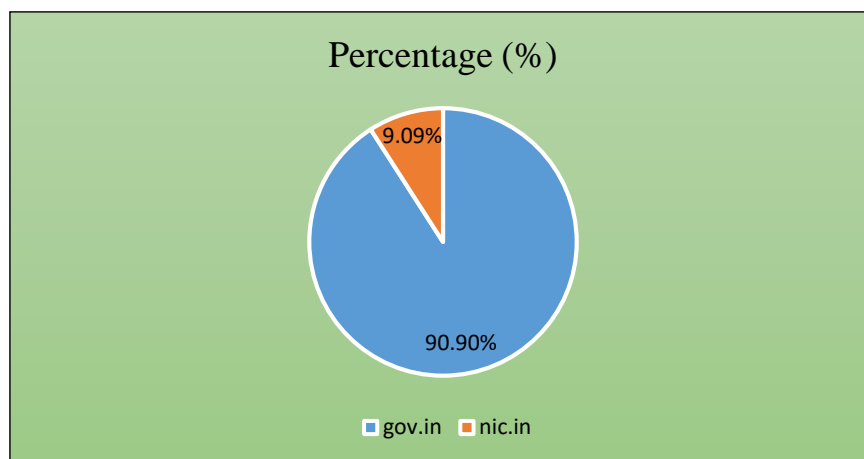
### 6.4.1 Distribution of ministries' websites by domain

A domain name is the core identifier of a website. It is actually the string of characters that users type into their browser to get access to their required website.

**Table 15: Domain name percentage of ministries' websites**

| Domain name | No. of ministries | Percentage (%) |
|-------------|-------------------|----------------|
| gov.in      | 40                | 90.90          |
| nic.in      | 04                | 9.09           |

Domain name percentage of ministries' websites has been shown in Table 15 and Figure 121. It demonstrates that 90.90% of websites carry gov.in domain name, only 9.09% of websites hold nic.in domain name.



**Figure 121: Domain name percentage of ministries' websites**

### 6.4.2 Simple WIF of ministries' websites

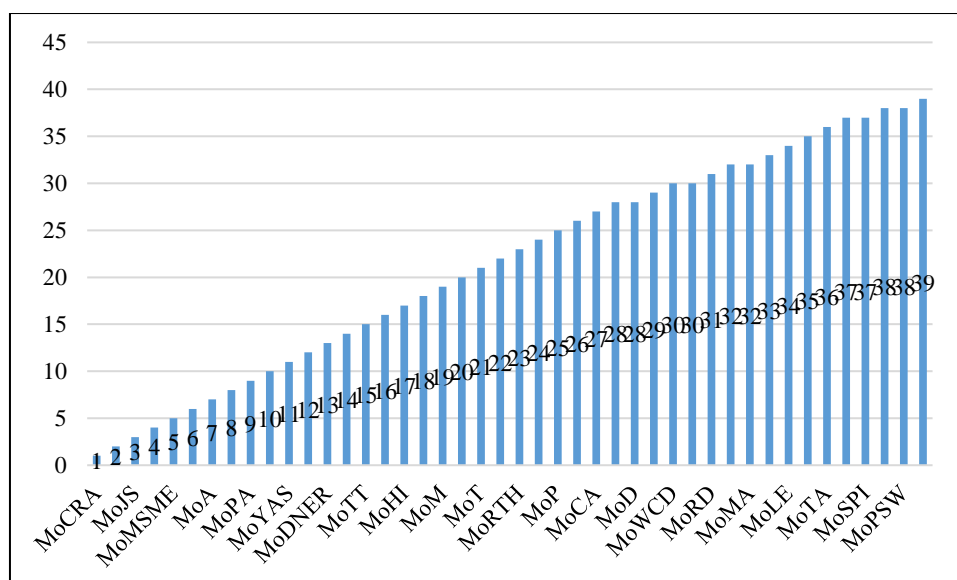
The Simple Web Impact Factor of each website has been shown in Table 16. It exhibits link pages of ministries' websites and their rank distribution according to their simple Web Impact Factor. Dividing the number of link pages (B) by the number of web pages (A), the score of simple WIF (B/A) of each website is found.

**Table 16: Ranking of ministries' websites as per Simple WIFs**

| <b>Sr. no.</b> | <b>Name of ministries' websites</b> | <b>No. of web pages (A)</b> | <b>No. of link pages (B)</b> | <b>Simple WIF (B/A)</b> | <b>Rank by Simple WIF</b> |
|----------------|-------------------------------------|-----------------------------|------------------------------|-------------------------|---------------------------|
| 1              | MoCRA                               | 01                          | 376                          | 376                     | 01                        |
| 2              | MoEFCC                              | 01                          | 307                          | 307                     | 02                        |
| 3              | MoJS                                | 04                          | 46                           | 11.5                    | 03                        |
| 4              | MoCO                                | 31                          | 125                          | 4.032                   | 04                        |
| 5              | MoMSME                              | 104                         | 183                          | 1.759                   | 05                        |
| 6              | MoPNG                               | 315                         | 350                          | 1.111                   | 06                        |
| 7              | MoA                                 | 748                         | 166                          | 0.221                   | 07                        |
| 8              | MoSDE                               | 1330                        | 179                          | 0.134                   | 08                        |
| 9              | MoPA                                | 1350                        | 171                          | 0.126                   | 09                        |
| 10             | MoLJ                                | 540                         | 59                           | 0.109                   | 10                        |
| 11             | MoYAS                               | 1360                        | 118                          | 0.086                   | 11                        |
| 12             | MoNRE                               | 1760                        | 141                          | 0.080                   | 12                        |
| 13             | MoDNER                              | 2860                        | 228                          | 0.079                   | 13                        |
| 14             | MoIB                                | 3740                        | 293                          | 0.078                   | 14                        |
| 15             | MoTT                                | 2020                        | 154                          | 0.076                   | 15                        |
| 16             | MoFPI                               | 4600                        | 322                          | 0.07                    | 16                        |
| 17             | MoHI                                | 2670                        | 180                          | 0.067                   | 17                        |
| 18             | MoPR                                | 3830                        | 239                          | 0.062                   | 18                        |
| 19             | MoM                                 | 6620                        | 381                          | 0.057                   | 19                        |
| 20             | MoC                                 | 4340                        | 200                          | 0.046                   | 20                        |
| 21             | MoT                                 | 5020                        | 175                          | 0.034                   | 21                        |
| 22             | MoF                                 | 2390                        | 79                           | 0.033                   | 22                        |
| 23             | MoRTH                               | 10600                       | 339                          | 0.031                   | 23                        |
| 24             | MoS                                 | 5550                        | 169                          | 0.030                   | 24                        |
| 25             | MoP                                 | 5430                        | 155                          | 0.028                   | 25                        |
| 26             | MoHUA                               | 8630                        | 238                          | 0.027                   | 26                        |

|    |        |         |     |         |    |
|----|--------|---------|-----|---------|----|
| 27 | MoCA   | 14700   | 367 | 0.024   | 27 |
| 28 | MoPPGP | 1890    | 40  | 0.021   | 28 |
| 29 | MoD    | 5380    | 118 | 0.021   | 28 |
| 30 | MoHFW  | 11000   | 224 | 0.020   | 29 |
| 31 | MoWCD  | 10700   | 178 | 0.016   | 30 |
| 32 | MoCL   | 14100   | 231 | 0.016   | 30 |
| 33 | MoRD   | 14000   | 183 | 0.013   | 31 |
| 34 | MoEIT  | 10200   | 125 | 0.012   | 32 |
| 35 | MoMA   | 12200   | 153 | 0.012   | 32 |
| 36 | MoE    | 30800   | 338 | 0.010   | 33 |
| 37 | MoLE   | 32500   | 245 | 0.007   | 34 |
| 38 | MoHA   | 34600   | 207 | 0.005   | 35 |
| 39 | MoTA   | 35400   | 168 | 0.004   | 36 |
| 40 | MoEA   | 144000  | 437 | 0.003   | 37 |
| 41 | MoSPI  | 59700   | 234 | 0.003   | 37 |
| 42 | MoES   | 76900   | 175 | 0.002   | 38 |
| 43 | MoPSW  | 4200    | 11  | 0.002   | 38 |
| 44 | MoR    | 1240000 | 144 | 0.00011 | 39 |

Table 16 clears out both the score and rank of different ministries' websites under Simple WIF. The website of MoCRA get 1<sup>st</sup> rank with 1 webpage, 376 link pages and 376 simple WIF. It is followed by MoEFCC with 1 web page, 307 link pages and 307 simple WIF. MoJS secures 3<sup>rd</sup> position with 4 web pages, 46 link pages and 11.5 simple WIF. 4<sup>th</sup> and 5<sup>th</sup> rank have been taken by the websites of MoCO and MoMSME with value 4.032 and 1.759 respectively. MoPA receives 9<sup>th</sup> rank with 1350 web pages, 171 link pages and 0.126 simple WIF. MoNRE achieves 12<sup>th</sup> position with score 0.080. 16<sup>th</sup> rank has been occupied by MoFPI with 4600 webpages, 322 link pages and 0.07 simple WIF. 19<sup>th</sup> position is occupied by MoM with 6620 web pages, 381 link pages and 0.057 simple WIF. MoWCD and MoCL receive 30<sup>th</sup> rank with score 0.016. 39<sup>th</sup> rank is the lowest, it is carried by MoR with score 0.00011. It is indicated that if the websites carry good number of webpages and link pages, they can receive higher WIFs.



**Figure 122: Rank of ministries as per Simple WIFs**

Individual rank of each ministry based on Simple WIF has been shown in Figure 122.

#### 6.4.3 External link WIF of ministries' websites with rank

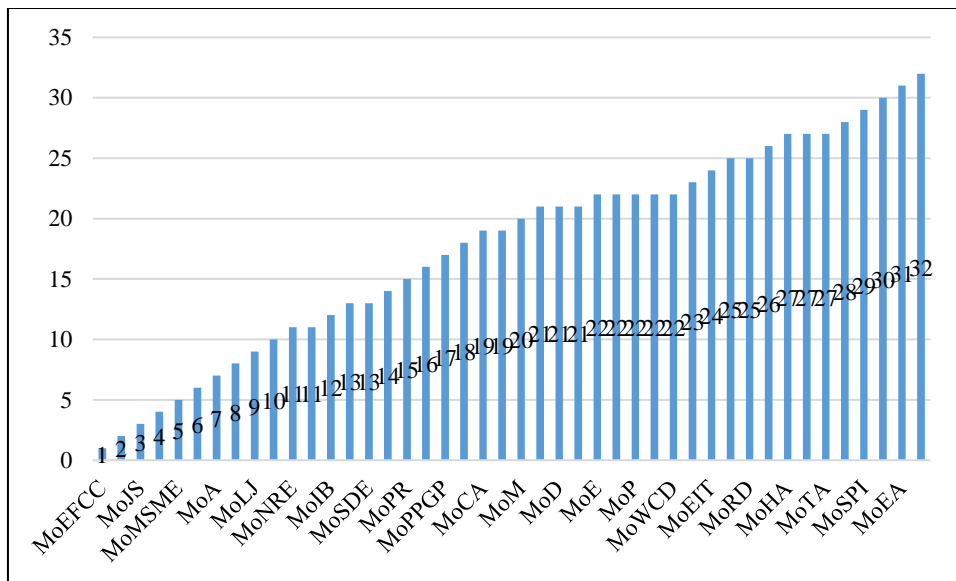
Table 17 shows External Link WIF of ministries' websites in India. Here, A and C indicate number of web pages and number of External linked web pages respectively in the websites. Dividing the number of External linked web pages (C) by the number of web pages (A), the score of External Link WIF (C/A) of each website is found.

**Table 17: Ministries' scores and ranks under External Link WIF**

| Sr. no. | Name of ministries' websites | No. of web pages (A) | No. of External linked web pages (C) | External Link WIF (C/A) | Rank by External Link WIF |
|---------|------------------------------|----------------------|--------------------------------------|-------------------------|---------------------------|
| 1       | MoEFCC                       | 01                   | 58                                   | 58                      | 01                        |
| 2       | MoCRA                        | 01                   | 24                                   | 24                      | 02                        |
| 3       | MoJS                         | 04                   | 42                                   | 10.5                    | 03                        |
| 4       | MoCO                         | 31                   | 57                                   | 1.838                   | 04                        |
| 5       | MoMSME                       | 104                  | 66                                   | 0.634                   | 05                        |
| 6       | MoPNG                        | 315                  | 48                                   | 0.152                   | 06                        |
| 7       | MoA                          | 748                  | 46                                   | 0.061                   | 07                        |
| 8       | MoYAS                        | 1360                 | 56                                   | 0.041                   | 08                        |
| 9       | MoLJ                         | 540                  | 22                                   | 0.040                   | 09                        |
| 10      | MoTT                         | 2020                 | 62                                   | 0.030                   | 10                        |

|    |        |         |     |         |    |
|----|--------|---------|-----|---------|----|
| 11 | MoNRE  | 1760    | 48  | 0.027   | 11 |
| 12 | MoPA   | 1350    | 37  | 0.027   | 11 |
| 13 | MoIB   | 3740    | 100 | 0.026   | 12 |
| 14 | MoHI   | 2670    | 64  | 0.023   | 13 |
| 15 | MoSDE  | 1330    | 31  | 0.023   | 13 |
| 16 | MoF    | 2390    | 51  | 0.021   | 14 |
| 17 | MoPR   | 3830    | 79  | 0.020   | 15 |
| 18 | MoFPI  | 4600    | 89  | 0.019   | 16 |
| 19 | MoPPGP | 1890    | 25  | 0.013   | 17 |
| 20 | MoDNER | 2860    | 32  | 0.011   | 18 |
| 21 | MoCA   | 14700   | 152 | 0.010   | 19 |
| 22 | MoT    | 5020    | 52  | 0.010   | 19 |
| 23 | MoM    | 6620    | 55  | 0.008   | 20 |
| 24 | MoC    | 4340    | 33  | 0.007   | 21 |
| 25 | MoD    | 5380    | 38  | 0.007   | 21 |
| 26 | MoRTH  | 10600   | 75  | 0.007   | 21 |
| 27 | MoE    | 30800   | 204 | 0.006   | 22 |
| 28 | MoHFW  | 11000   | 74  | 0.006   | 22 |
| 29 | MoP    | 5430    | 38  | 0.006   | 22 |
| 30 | MoS    | 5550    | 36  | 0.006   | 22 |
| 31 | MoWCD  | 10700   | 66  | 0.006   | 22 |
| 32 | MoCL   | 14100   | 83  | 0.005   | 23 |
| 33 | MoEIT  | 10200   | 41  | 0.004   | 24 |
| 34 | MoMA   | 12200   | 44  | 0.003   | 25 |
| 35 | MoRD   | 14000   | 50  | 0.003   | 25 |
| 36 | MoHUA  | 8630    | 18  | 0.002   | 26 |
| 37 | MoHA   | 34600   | 55  | 0.001   | 27 |
| 38 | MoLE   | 32500   | 49  | 0.001   | 27 |
| 39 | MoTA   | 35400   | 69  | 0.001   | 27 |
| 40 | MoPSW  | 4200    | 04  | 0.0009  | 28 |
| 41 | MoSPI  | 59700   | 35  | 0.0005  | 29 |
| 42 | MoES   | 76900   | 37  | 0.0004  | 30 |
| 43 | MoEA   | 144000  | 54  | 0.0003  | 31 |
| 44 | MoR    | 1240000 | 80  | 0.00006 | 32 |

This table (Table 17) exhibits external link WIF of each website with rank. MoEFCC occupies 1<sup>st</sup> rank with 1 webpage, 58 external linked web pages and 58 external link WIF. It is followed by MoCRA with 1 web page, 24 external linked web pages and 24 external link WIF. MoJS receives 3<sup>rd</sup> position with 10.5 external link WIF. 4<sup>th</sup> and 5<sup>th</sup> rank has been occupied by MoCO and MoMSME with 1.838 and 0.634 external link WIF. MoNRE and MoPA receive 11<sup>th</sup> rank with score 0.027. 19<sup>th</sup> rank is taken by MoCA and MoT with 0.010 external link WIF. 22<sup>nd</sup> rank is occupied by 5 websites with 0.006 external link WIF. The websites of MoHA, MoLE and MoTA get 27<sup>th</sup> rank with score 0.001. MoR holds 32 rank with the lowest score 0.00006, but this website holds the highest number of web pages i.e. 1240000.



**Figure 123: Ministries' rank by External link WIFs**

Figure 123 represents the rank of ministries' websites as per their scores of External link WIF.

#### 6.4.4 Self-link WIF of ministries' websites

Table 18 exhibits Self link WIFs of ministries' websites in India. In this table, A specifies number of web pages and D indicates number of Self linked web pages in the websites. Dividing the number of Self linked web pages (D) by the number of web pages (A), the score of Self Link WIF (D/A) of each website is found. Websites are ranked according to their Self Link WIFs.

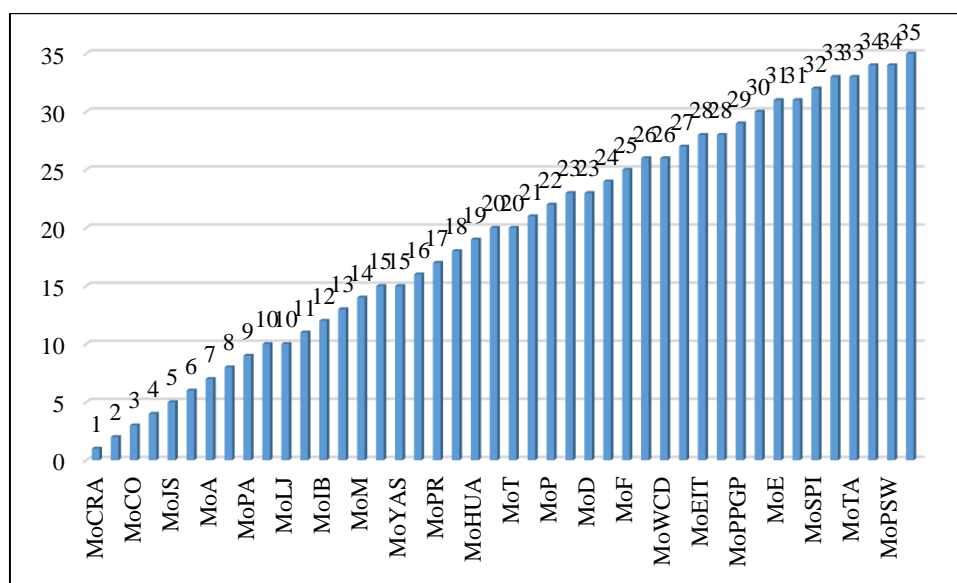
**Table 18: Scores and ranks of ministries' websites under Self-link WIF**

| Sr. no. | Name of ministries' websites | No. of web pages (A) | No. of Self linked web pages (D) | Self-Link WIF (D/A) | Rank by Self Link WIF |
|---------|------------------------------|----------------------|----------------------------------|---------------------|-----------------------|
| 1       | MoCRA                        | 01                   | 352                              | 352                 | 01                    |
| 2       | MoEFCC                       | 01                   | 249                              | 249                 | 02                    |
| 3       | MoCO                         | 31                   | 68                               | 2.19                | 03                    |
| 4       | MoMSME                       | 104                  | 117                              | 1.125               | 04                    |
| 5       | MoJS                         | 04                   | 04                               | 01                  | 05                    |
| 6       | MoPNG                        | 315                  | 302                              | 0.958               | 06                    |
| 7       | MoA                          | 748                  | 120                              | 0.160               | 07                    |
| 8       | MoSDE                        | 1330                 | 148                              | 0.111               | 08                    |
| 9       | MoPA                         | 1350                 | 134                              | 0.099               | 09                    |
| 10      | MoDNER                       | 2860                 | 196                              | 0.068               | 10                    |
| 11      | MoLJ                         | 540                  | 37                               | 0.068               | 10                    |
| 12      | MoNRE                        | 1760                 | 93                               | 0.052               | 11                    |
| 13      | MoIB                         | 3740                 | 193                              | 0.051               | 12                    |
| 14      | MoFPI                        | 4600                 | 233                              | 0.050               | 13                    |
| 15      | MoM                          | 6620                 | 326                              | 0.049               | 14                    |
| 16      | MoTT                         | 2020                 | 92                               | 0.045               | 15                    |
| 17      | MoYAS                        | 1360                 | 62                               | 0.045               | 15                    |
| 18      | MoHI                         | 2670                 | 116                              | 0.043               | 16                    |
| 19      | MoPR                         | 3830                 | 160                              | 0.041               | 17                    |

|    |        |         |     |         |    |
|----|--------|---------|-----|---------|----|
| 20 | MoC    | 4340    | 167 | 0.038   | 18 |
| 21 | MoHUA  | 8630    | 220 | 0.025   | 19 |
| 22 | MoRTH  | 10600   | 264 | 0.024   | 20 |
| 23 | MoT    | 5020    | 123 | 0.024   | 20 |
| 24 | MoS    | 5550    | 133 | 0.023   | 21 |
| 25 | MoP    | 5430    | 117 | 0.021   | 22 |
| 26 | MoCA   | 14700   | 215 | 0.014   | 23 |
| 27 | MoD    | 5380    | 80  | 0.014   | 23 |
| 28 | MoHFW  | 11000   | 150 | 0.013   | 24 |
| 29 | MoF    | 2390    | 28  | 0.011   | 25 |
| 30 | MoCL   | 14100   | 148 | 0.010   | 26 |
| 31 | MoWCD  | 10700   | 112 | 0.010   | 26 |
| 32 | MoRD   | 14000   | 133 | 0.009   | 27 |
| 33 | MoEIT  | 10200   | 84  | 0.008   | 28 |
| 34 | MoMA   | 12200   | 109 | 0.008   | 28 |
| 35 | MoPPGP | 1890    | 15  | 0.007   | 29 |
| 36 | MoLE   | 32500   | 196 | 0.006   | 30 |
| 37 | MoE    | 30800   | 134 | 0.004   | 31 |
| 38 | MoHA   | 34600   | 152 | 0.004   | 31 |
| 39 | MoSPI  | 59700   | 199 | 0.003   | 32 |
| 40 | MoEA   | 144000  | 383 | 0.002   | 33 |
| 41 | MoTA   | 35400   | 99  | 0.002   | 33 |
| 42 | MoES   | 76900   | 138 | 0.001   | 34 |
| 43 | MoPSW  | 4200    | 07  | 0.001   | 34 |
| 44 | MoR    | 1240000 | 64  | 0.00005 | 35 |

The individual score and rank of each ministry website under self-link WIF is represented in Table 18. MoCRA takes first position with 1 webpage, 352 self-linked web pages and 352 self-link WIF. Second rank has been occupied by MoEFCC with 249 self-link WIF. Third and fourth positions are taken by MoCO and MoMSME. MoJS and MoPNG receive 5<sup>th</sup> and 6<sup>th</sup> rank with 01 and 0.958 self-link WIFs respectively. Tenth rank is received by MoDNER with 2860 web pages, 196 self-linked web pages and 0.068 self-link WIF. MoTT and

MoYAS have got 15<sup>th</sup> position with 0.045 self-link WIF. 20<sup>th</sup> position has been taken by MoRTH and MoT with score 0.024. MoEIT and MoMA hold 28<sup>th</sup> rank with 0.008 self-link WIF. 33<sup>rd</sup> rank has been occupied by MoEA and MoTA with score 0.002. MoR is placed at last position (i.e. 35) with 0.00005 self-link WIF.



**Figure 124: Rank of ministries' websites by Self Link WIFs**

Rank of ministries' websites according to Self-link WIF is depicted in Figure 124.

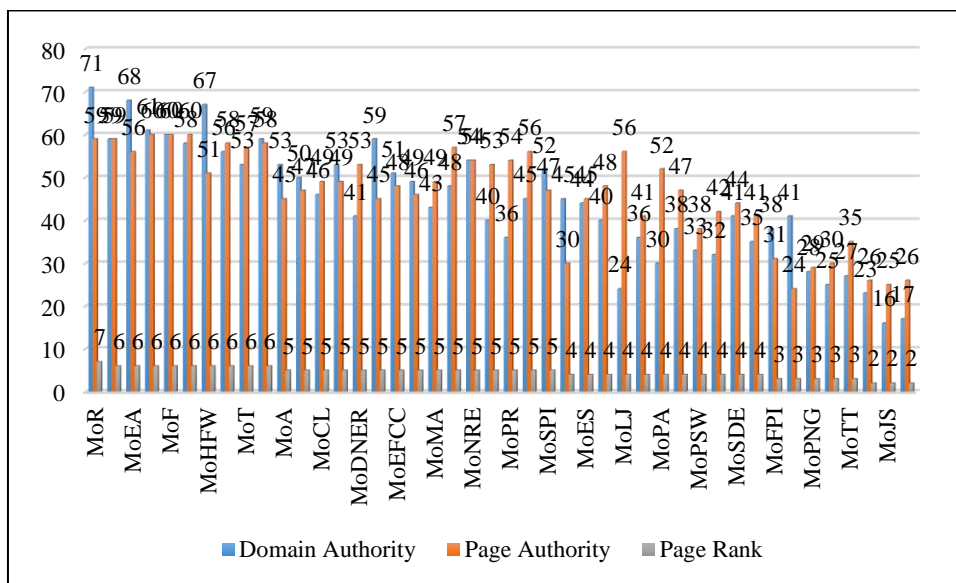
#### 6.4.5 Domain authority, page authority and Google's page rank of ministries' websites

**Table 19: Domain authority, page authority and page rank of ministries' websites**

| Sr. no. | Name of ministries' websites | Domain Authority | Page Authority | Page Rank (out of 10) |
|---------|------------------------------|------------------|----------------|-----------------------|
| 1       | MoR                          | 71               | 59             | 07                    |
| 2       | MoCRA                        | 59               | 59             | 06                    |
| 3       | MoEA                         | 68               | 56             | 06                    |
| 4       | MoEIT                        | 61               | 60             | 06                    |
| 5       | MoF                          | 60               | 60             | 06                    |
| 6       | MoHA                         | 58               | 60             | 06                    |
| 7       | MoHFW                        | 67               | 51             | 06                    |
| 8       | MoLE                         | 56               | 58             | 06                    |
| 9       | MoT                          | 53               | 57             | 06                    |
| 10      | MoWCD                        | 59               | 58             | 06                    |
| 11      | MoA                          | 53               | 45             | 05                    |

|    |        |    |    |    |
|----|--------|----|----|----|
| 12 | MoCA   | 50 | 47 | 05 |
| 13 | MoCL   | 46 | 49 | 05 |
| 14 | MoD    | 53 | 49 | 05 |
| 15 | MoDNER | 41 | 53 | 05 |
| 16 | MoE    | 59 | 45 | 05 |
| 17 | MoEFCC | 51 | 48 | 05 |
| 18 | MoIB   | 49 | 46 | 05 |
| 19 | MoMA   | 43 | 49 | 05 |
| 20 | MoMSME | 48 | 57 | 05 |
| 21 | MoNRE  | 54 | 54 | 05 |
| 22 | MoP    | 40 | 53 | 05 |
| 23 | MoPR   | 36 | 54 | 05 |
| 24 | MoRD   | 45 | 56 | 05 |
| 25 | MoSPI  | 52 | 47 | 05 |
| 26 | MoC    | 45 | 30 | 04 |
| 27 | MoES   | 44 | 45 | 04 |
| 28 | MoHUA  | 40 | 48 | 04 |
| 29 | MoLJ   | 24 | 56 | 04 |
| 30 | MoM    | 36 | 41 | 04 |
| 31 | MoPA   | 30 | 52 | 04 |
| 32 | MoPPGP | 38 | 47 | 04 |
| 33 | MoPSW  | 33 | 38 | 04 |
| 34 | MoS    | 32 | 42 | 04 |
| 35 | MoSDE  | 41 | 44 | 04 |
| 36 | MoTA   | 35 | 41 | 04 |
| 37 | MoFPI  | 38 | 31 | 03 |
| 38 | MoHI   | 41 | 24 | 03 |
| 39 | MoPNG  | 28 | 29 | 03 |
| 40 | MoRTH  | 25 | 30 | 03 |
| 41 | MoTT   | 27 | 35 | 03 |
| 42 | MoCO   | 23 | 26 | 02 |
| 43 | MoJS   | 16 | 25 | 02 |
| 44 | MoYAS  | 17 | 26 | 02 |

Table 19 and Figure 125 highlight the scores of the selected ministries' websites on the basis of domain authority, page authority and Google's page rank. The topmost position has been taken by MoR with 71 domain authority, 59 page authority and page rank 7. It is followed by MoCRA with 59 domain authority, 59 page authority and page rank 6. MoEA obtains 68, 56 and 6 under domain authority, page authority and page rank. MoHFW has received 67, 51 and 6 under the criteria domain authority, page authority and page rank respectively. The position of MoWCD is good in respect of domain authority (59), page authority (58) and page rank (6). MoCO, MoJS and MoYAS are placed in lower positions with page rank 2. It is indicated that the webpages of the selected websites should be more informational and should contain more links to obtain good score in domain authority, page authority and page rank.



**Figure 125: Domain authority, page authority and page rank of ministries' websites**

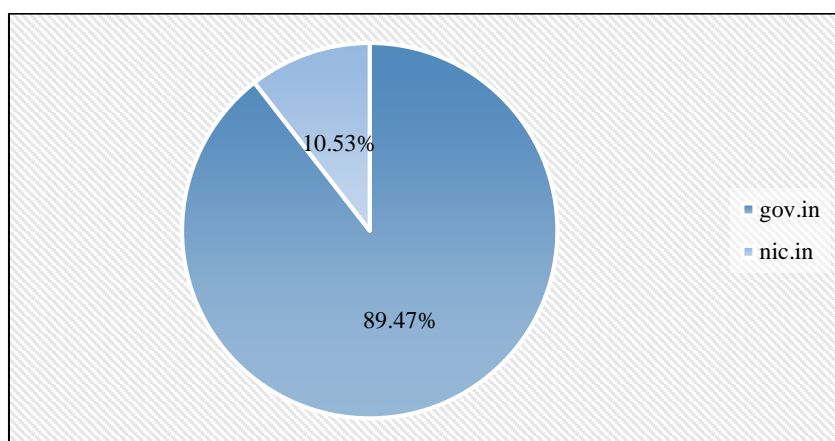


## 6.5 Webometric analysis of central government departmental websites

### 6.5.1 Distribution of departments' websites as per domain name

**Table 20: Domain name percentage of departmental websites**

| Domain name | No. of government departmental websites | Percentage (%) |
|-------------|---|----------------|
| gov.in      | 34                                      | 89.47          |
| nic.in      | 04                                      | 10.53          |



**Figure 127: Domain name percentage of departmental websites**

The percentage of departmental websites under domain name have been represented in Table 20 and Figure 127. It reveals that 89.47% of websites follow gov.in domain and rest of the websites (i.e. 10.53%) contain nic.in domain name.

### 6.5.2 Simple WIF of the websites of departments

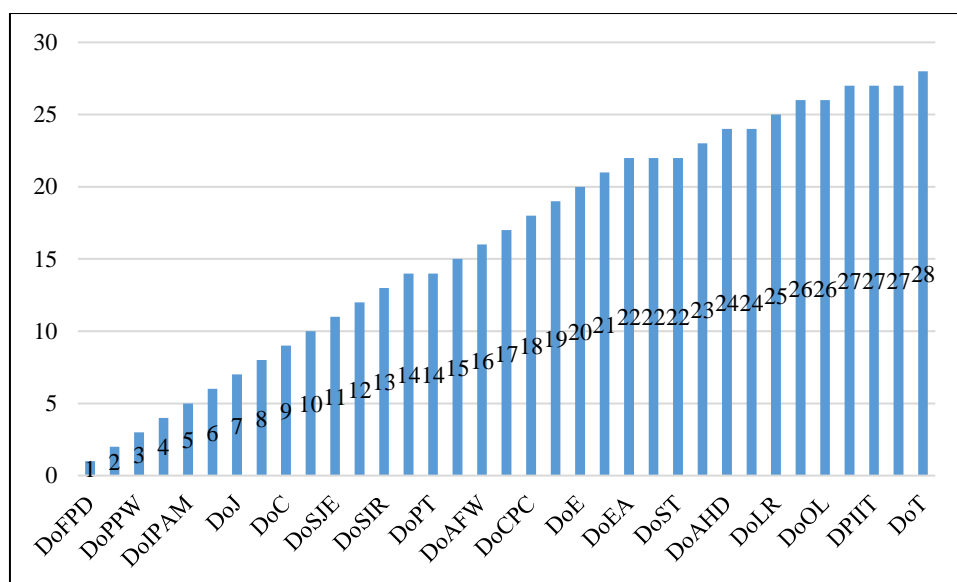
Table 21 displays the scores of Simple Web Impact Factor of ministries' departmental websites. It shows the number of link pages of departmental websites together with their rank positions based on Simple WIF. The score of Simple WIF (B/A) of each website is derived from dividing the number of link pages (B) by total number of web pages (A) of a website.

**Table 21: Simple Web Impact Factor (WIF) of departmental websites (NF = Not found)**

| Sr. no. | Name of departmental websites | No. of web pages (A) | No. of link pages (B) | Simple WIF (B/A) | Rank by Simple WIF |
|---------|-------------------------------|----------------------|-----------------------|------------------|--------------------|
| 1       | DoFPD                         | 01                   | 196                   | 196              | 01                 |
| 2       | DoP                           | 02                   | 108                   | 54               | 02                 |
| 3       | DoPPW                         | 127                  | 99                    | 0.779            | 03                 |
| 4       | DoARPG                        | 428                  | 182                   | 0.425            | 04                 |
| 5       | DoIPAM                        | 557                  | 187                   | 0.335            | 05                 |
| 6       | DoDP                          | 708                  | 125                   | 0.176            | 06                 |
| 7       | DoJ                           | 1710                 | 263                   | 0.153            | 07                 |
| 8       | DoWRRDGR                      | 2140                 | 292                   | 0.136            | 08                 |
| 9       | DoC                           | 5400                 | 567                   | 0.105            | 09                 |
| 10      | DoF                           | 2130                 | 200                   | 0.093            | 10                 |
| 11      | DoSJE                         | 2020                 | 169                   | 0.083            | 11                 |
| 12      | DoSEL                         | 2390                 | 169                   | 0.070            | 12                 |
| 13      | DoSIR                         | 3250                 | 214                   | 0.065            | 13                 |
| 14      | DoFz                          | 2690                 | 172                   | 0.063            | 14                 |
| 15      | DoPT                          | 550                  | 352                   | 0.063            | 14                 |
| 16      | DoB                           | 4180                 | 235                   | 0.056            | 15                 |
| 17      | DoAFW                         | 3400                 | 188                   | 0.055            | 16                 |
| 18      | DoEW                          | 3200                 | 133                   | 0.041            | 17                 |
| 19      | DoCPC                         | 4350                 | 177                   | 0.040            | 18                 |
| 20      | DoR                           | 3680                 | 140                   | 0.038            | 19                 |
| 21      | DoE                           | 8080                 | 173                   | 0.021            | 20                 |
| 22      | DoPh                          | 6510                 | 130                   | 0.019            | 21                 |
| 23      | DoEA                          | 8910                 | 167                   | 0.018            | 22                 |
| 24      | DoFS                          | 7120                 | 133                   | 0.018            | 22                 |
| 25      | DoST                          | 9760                 | 179                   | 0.018            | 22                 |
| 26      | DoPE                          | 11600                | 201                   | 0.017            | 23                 |
| 27      | DoAHD                         | 9810                 | 144                   | 0.014            | 24                 |

|    |       |       |     |       |    |
|----|-------|-------|-----|-------|----|
| 28 | DoDWS | 71    | 01  | 0.014 | 24 |
| 29 | DoLR  | 11300 | 141 | 0.012 | 25 |
| 30 | DoCA  | 63000 | 690 | 0.010 | 26 |
| 31 | DoOL  | 11200 | 118 | 0.010 | 26 |
| 32 | DoLA  | 14000 | 125 | 0.008 | 27 |
| 33 | DPIIT | 24700 | 209 | 0.008 | 27 |
| 34 | LD    | 13200 | 108 | 0.008 | 27 |
| 35 | DoT   | 75100 | 338 | 0.004 | 28 |
| 36 | DoHR  | 1290  | NF  | --    | -- |
| 37 | DoARE | 1150  | NF  | --    | -- |
| 38 | DoEPD | NF    | 236 | --    | -- |

Table 21 illustrates that the website of DoFPD holds the highest position with 196 link pages, only one web page and 196 Simple WIF. Second rank is occupied by DoP with 108 link pages, 2 web pages and 54 Simple WIF. The website of DoPPW is placed at 3<sup>rd</sup> rank with 99 link pages, 127 web pages and 0.779 Simple WIF. Fourth and fifth rank has been achieved by the website of DoARPG and DoIPAM with 0.425 and 0.335 Simple WIF respectively. DoF has received 10<sup>th</sup> position with 0.093 Simple WIF. The websites of DoFz and DoPT have received 14<sup>th</sup> rank with score 0.063. 22<sup>nd</sup> position is occupied by three departmental websites i.e. DoEA, DoFS and DoST with 0.018 Simple WIF. The websites of DoAHD and DoDWS are placed in 24<sup>th</sup> position with score 0.014. Three websites, DoLA, DPIIT and LD have gained 27<sup>th</sup> rank with score 0.008. The website of DoT has taken the last position with 338 link pages, 75100 webpages and 0.004 Simple WIF.



**Figure 128: Rank of departmental websites by Simple WIFs**

The rank of departmental websites under simple WIF has been shown in Figure 128.

### 6.5.3 External link WIF of departments' websites

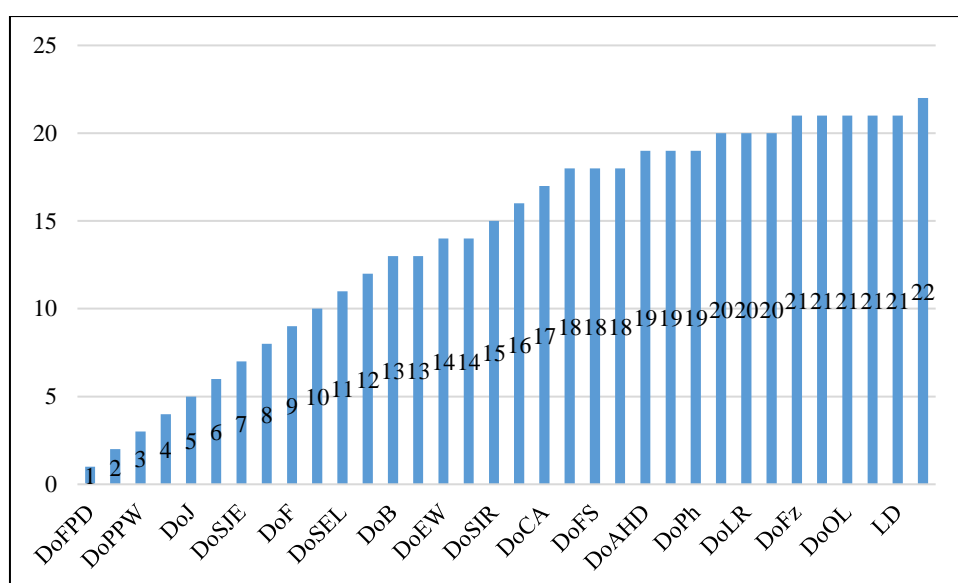
Table 22 interprets External Link WIFs of departmental websites under study. Here, A and C stand for the websites' number of total web pages and total number of external linked web pages, respectively. The score of External Link WIF (C/A) for each website is derived by dividing the entire number of externally linked web pages (C) by the number of total web pages (A).

**Table 22: External link Web Impact Factor of departmental websites (NF = Not found)**

| Sr. no. | Name of departmental websites | No. of web pages (A) | No. of External linked web pages (C) | External Link WIF (C/A) | Rank by External Link WIF |
|---------|-------------------------------|----------------------|--------------------------------------|-------------------------|---------------------------|
| 1       | DoFPD                         | 01                   | 33                                   | 33                      | 01                        |
| 2       | DoP                           | 02                   | 13                                   | 6.5                     | 02                        |
| 3       | DoPPW                         | 127                  | 52                                   | 0.409                   | 03                        |
| 4       | DoARPG                        | 428                  | 44                                   | 0.102                   | 04                        |
| 5       | DoJ                           | 1710                 | 121                                  | 0.070                   | 05                        |
| 6       | DoDP                          | 708                  | 31                                   | 0.043                   | 06                        |
| 7       | DoSJE                         | 2020                 | 57                                   | 0.028                   | 07                        |
| 8       | DoPT                          | 5550                 | 145                                  | 0.026                   | 08                        |

|    |          |       |     |       |    |
|----|----------|-------|-----|-------|----|
| 9  | DoF      | 2130  | 51  | 0.023 | 09 |
| 10 | DoWRRDGR | 2140  | 49  | 0.022 | 10 |
| 11 | DoSEL    | 2390  | 48  | 0.020 | 11 |
| 12 | DoAFW    | 3400  | 55  | 0.016 | 12 |
| 13 | DoB      | 4180  | 53  | 0.012 | 13 |
| 14 | DoC      | 5400  | 68  | 0.012 | 13 |
| 15 | DoEW     | 3200  | 38  | 0.011 | 14 |
| 16 | DoR      | 3680  | 43  | 0.011 | 14 |
| 17 | DoSIR    | 3250  | 31  | 0.009 | 15 |
| 18 | DoCPC    | 4350  | 38  | 0.008 | 16 |
| 19 | DoCA     | 63000 | 497 | 0.007 | 17 |
| 20 | DoEA     | 8910  | 45  | 0.005 | 18 |
| 21 | DoFS     | 7120  | 41  | 0.005 | 18 |
| 22 | DoIPAM   | 557   | 03  | 0.005 | 18 |
| 23 | DoAHD    | 9810  | 43  | 0.004 | 19 |
| 24 | DoPE     | 11600 | 57  | 0.004 | 19 |
| 25 | DoPh     | 6510  | 30  | 0.004 | 19 |
| 26 | DoE      | 8080  | 27  | 0.003 | 20 |
| 27 | DoLR     | 11300 | 39  | 0.003 | 20 |
| 28 | DoST     | 9760  | 39  | 0.003 | 20 |
| 29 | DoFz     | 2690  | 07  | 0.002 | 21 |
| 30 | DoLA     | 14000 | 39  | 0.002 | 21 |
| 31 | DoOL     | 11200 | 31  | 0.002 | 21 |
| 32 | DPIIT    | 24700 | 51  | 0.002 | 21 |
| 33 | LD       | 13200 | 27  | 0.002 | 21 |
| 34 | DoT      | 75100 | 101 | 0.001 | 22 |
| 35 | DoHR     | 1290  | NF  | --    | -- |
| 36 | DoARE    | 1150  | NF  | --    | -- |
| 37 | DoDWS    | 71    | NF  | --    | -- |
| 38 | DoEPD    | NF    | 42  | --    | -- |

The External link WIFs of all central government departmental websites in this study have been depicted in Table 22. The websites are ranked based on their scores. The website of DoFPD has taken the first rank with 1 web page, 33 external linked web pages and 33 External link WIF. Second rank is taken by the website of DoP with 2 web pages, 13 external linked web pages and 6.5 External link WIF. Third and fourth positions have been occupied by the websites of DoPPW and DoARPG with 0.409 and 0.102 External link WIFs respectively. The websites of two departments, DoB and DoC have taken 13<sup>th</sup> position with 0.012 External link WIF. The websites of DoEA, DoFS and DoIPAM occupy 18<sup>th</sup> rank with 0.005 External link WIF. Twenty first position is occupied by the websites of five departments – DoFz, DoLA, DoOL, DPIIT and LD with 0.002 External link WIF. The website of DoT is placed in last rank i.e. 22<sup>nd</sup> with 75100 web pages, 101 external linked web pages and 0.001 External link WIF.



**Figure 129: Departmental websites’ rank by External link WIFs**

The individual rank of departmental websites under External link WIF has been depicted in Figure 129.

#### 6.5.4 Self-link WIF of departments’ websites

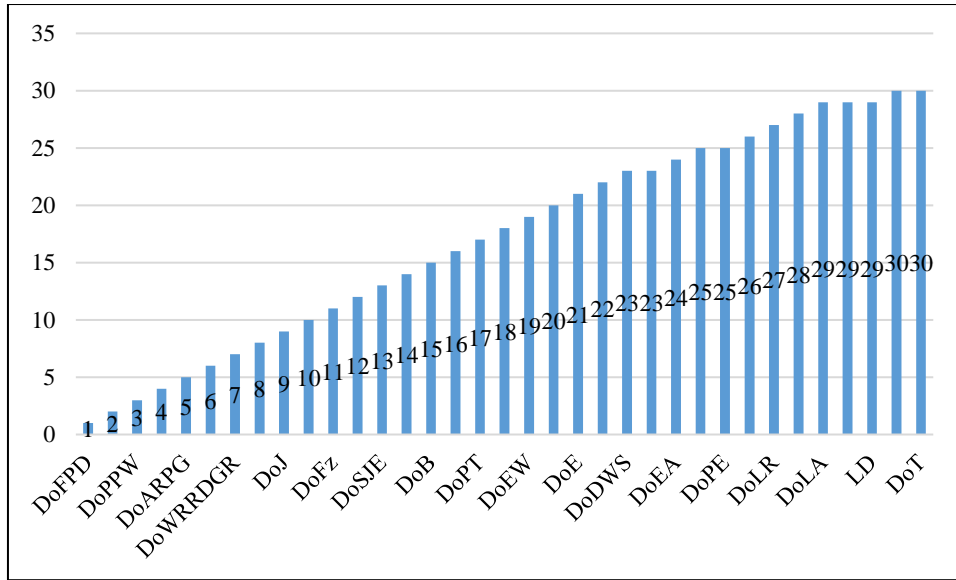
Table 23 highlights the individual score and rank (on the basis of Self Link WIF) of each departmental website included in this study. In this table, A denotes total number of web pages, and D denotes total number of self-linked web pages inside the websites. The score of Self link WIF of each website is retrieved by dividing the number of self-linked web pages (D) by number of web pages (A). Websites are ranked as per their scores of Self link WIFs.

**Table 23: Self link Web Impact Factor of departmental websites (NF = Not found)**

| Sr. no. | Name of departmental websites | No. of web pages (A) | No. of Self linked web pages (D) | Self-Link WIF (D/A) | Rank by Self Link WIF |
|---------|-------------------------------|----------------------|----------------------------------|---------------------|-----------------------|
| 1       | DoFPD                         | 01                   | 163                              | 163                 | 01                    |
| 2       | DoP                           | 02                   | 95                               | 47.5                | 02                    |
| 3       | DoPPW                         | 127                  | 47                               | 0.370               | 03                    |
| 4       | DoIPAM                        | 557                  | 184                              | 0.330               | 04                    |
| 5       | DoARPG                        | 428                  | 138                              | 0.322               | 05                    |
| 6       | DoDP                          | 708                  | 94                               | 0.132               | 06                    |
| 7       | DoWRRDGR                      | 2140                 | 243                              | 0.113               | 07                    |
| 8       | DoC                           | 5400                 | 499                              | 0.092               | 08                    |
| 9       | DoJ                           | 1710                 | 142                              | 0.083               | 09                    |
| 10      | DoF                           | 2130                 | 149                              | 0.069               | 10                    |
| 11      | DoFz                          | 2690                 | 165                              | 0.061               | 11                    |
| 12      | DoSIR                         | 3250                 | 183                              | 0.056               | 12                    |
| 13      | DoSJE                         | 2020                 | 112                              | 0.055               | 13                    |
| 14      | DoSEL                         | 2390                 | 121                              | 0.050               | 14                    |
| 15      | DoB                           | 4180                 | 182                              | 0.043               | 15                    |
| 16      | DoAFW                         | 3400                 | 133                              | 0.039               | 16                    |
| 17      | DoPT                          | 5550                 | 207                              | 0.037               | 17                    |
| 18      | DoCPC                         | 4350                 | 139                              | 0.031               | 18                    |
| 19      | DoEW                          | 3200                 | 95                               | 0.029               | 19                    |
| 20      | DoR                           | 3680                 | 97                               | 0.026               | 20                    |
| 21      | DoE                           | 8080                 | 146                              | 0.018               | 21                    |
| 22      | DoPh                          | 6510                 | 100                              | 0.015               | 22                    |
| 23      | DoDWS                         | 71                   | 01                               | 0.014               | 23                    |
| 24      | DoST                          | 9760                 | 140                              | 0.014               | 23                    |
| 25      | DoEA                          | 8910                 | 122                              | 0.013               | 24                    |
| 26      | DoFS                          | 7120                 | 92                               | 0.012               | 25                    |

|    |       |       |     |       |    |
|----|-------|-------|-----|-------|----|
| 27 | DoPE  | 11600 | 144 | 0.012 | 25 |
| 28 | DoAHD | 9810  | 101 | 0.010 | 26 |
| 29 | DoLR  | 11300 | 102 | 0.009 | 27 |
| 30 | DoOL  | 11200 | 87  | 0.007 | 28 |
| 31 | DoLA  | 14000 | 86  | 0.006 | 29 |
| 32 | DPIIT | 24700 | 158 | 0.006 | 29 |
| 33 | LD    | 13200 | 81  | 0.006 | 29 |
| 34 | DoCA  | 63000 | 193 | 0.003 | 30 |
| 35 | DoT   | 75100 | 237 | 0.003 | 30 |
| 36 | DoHR  | 1290  | NF  | --    | -- |
| 37 | DoARE | 1150  | NF  | --    | -- |
| 38 | DoEPD | NF    | 194 | --    | -- |

Table 23 is showing that the website of DoFPD occupies the first rank with 1 web page, 163 Self linked web pages and 163 Self link WIF. DoP and DoPPW are placed in second and third position with 47.5 and 0.370 Self link WIFs respectively. Fifth rank is achieved by DoARPG with 428 web pages, 138 Self linked web pages and 0.322 Self link WIF. The website of DoF receives tenth rank with 2130 web pages, 149 Self linked web pages and 0.069 Self link WIF. Twenty third position is occupied by the websites of DoDWS and DoST with 0.014 Self link WIF. The websites of DoLA, DPIIT and LD are placed in 29<sup>th</sup> rank with 0.006 Self link WIF. The websites of DoCA and DoT have the lowest ranking (i.e. 30<sup>th</sup>) with 0.003 Self link WIF.



**Figure 130: Rank of departmental websites according to Self-link WIFs**

Figure 130 represents the ranks of departmental websites under Self-link WIF.

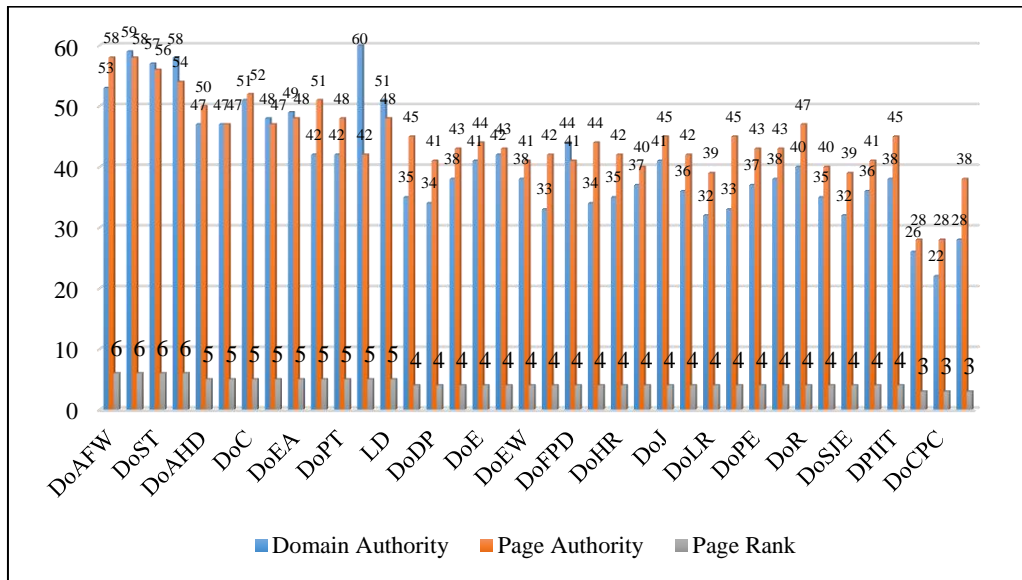
### 6.5.5 Domain authority, page authority and Google’s page rank of departments’ websites

**Table 24: Domain authority, page authority and page rank of departmental websites**

| Sr. no. | Name of departmental websites | Domain Authority | Page Authority | Page Rank (out of 10) |
|---------|-------------------------------|------------------|----------------|-----------------------|
| 1       | DoAFW                         | 53               | 58             | 06                    |
| 2       | DoP                           | 59               | 58             | 06                    |
| 3       | DoST                          | 57               | 56             | 06                    |
| 4       | DoT                           | 58               | 54             | 06                    |
| 5       | DoAHD                         | 47               | 50             | 05                    |
| 6       | DoB                           | 47               | 47             | 05                    |
| 7       | DoC                           | 51               | 52             | 05                    |
| 8       | DoCA                          | 48               | 47             | 05                    |
| 9       | DoEA                          | 49               | 48             | 05                    |
| 10      | DoFS                          | 42               | 51             | 05                    |
| 11      | DoPT                          | 42               | 48             | 05                    |
| 12      | DoSEL                         | 60               | 42             | 05                    |
| 13      | LD                            | 51               | 48             | 05                    |

|    |          |    |    |    |
|----|----------|----|----|----|
| 14 | DoARPG   | 35 | 45 | 04 |
| 15 | DoDP     | 34 | 41 | 04 |
| 16 | DoDWS    | 38 | 43 | 04 |
| 17 | DoE      | 41 | 44 | 04 |
| 18 | DoEPD    | 42 | 43 | 04 |
| 19 | DoEW     | 38 | 41 | 04 |
| 20 | DoF      | 33 | 42 | 04 |
| 21 | DoFPD    | 44 | 41 | 04 |
| 22 | DoFz     | 34 | 44 | 04 |
| 23 | DoHR     | 35 | 42 | 04 |
| 24 | DoIPAM   | 37 | 40 | 04 |
| 25 | DoJ      | 41 | 45 | 04 |
| 26 | DoLA     | 36 | 42 | 04 |
| 27 | DoLR     | 32 | 39 | 04 |
| 28 | DoOL     | 33 | 45 | 04 |
| 29 | DoPE     | 37 | 43 | 04 |
| 30 | DoPh     | 38 | 43 | 04 |
| 31 | DoR      | 40 | 47 | 04 |
| 32 | DoSIR    | 35 | 40 | 04 |
| 33 | DoSJE    | 32 | 39 | 04 |
| 34 | DoWRRDGR | 36 | 41 | 04 |
| 35 | DPIIT    | 38 | 45 | 04 |
| 36 | DoARE    | 26 | 28 | 03 |
| 37 | DoCPC    | 22 | 28 | 03 |
| 38 | DoPPW    | 28 | 38 | 03 |

The departmental websites' scores under Domain Authority, Page Authority and Google's Page Rank are exhibited in Table 24 and Figure 131. According to Domain Authority, the website of DoSEL has the highest score 60. In terms of Page Authority, the websites of DoAFW and DoP secured the maximum score 58. Google's Page Rank indicates that the websites of DoAFW, DoP, DoST and DoT have the highest ranking i.e. 6 out of 10.



**Figure 131: Domain authority, page authority and page rank of departmental websites**

### 6.5.6 Link network diagram of departmental websites

A link network diagram of the chosen websites under investigation has been created by utilizing the renowned graph visualization software GraphViz. The network diagram is depicted in Figure 132 which exhibits link (mostly external links) among twenty four departmental websites. This figure illustrates that a large number of departmental websites are connected to DoPE (<https://dpe.gov.in>). It is connected to the websites of DoC, LD, DoIPAM, DoE, DoEA and DoPT. DoE (<https://doe.gov.in/>) is linked with four other websites i.e. DoEA, DoFS, DoIPAM and DoR. As a result, the collaborative initiative amongst Indian central government departmental websites encourages users to search and receive more information based on their needs.



## Chapter 7

### Findings and Conclusion

#### 7.0 Chapter information

This chapter discusses the major findings of the study in four separate sections (i.e. 7.1.1, 7.1.2, 7.2.1 & 7.2.2). Execution of the determined objectives of the study is elaborated in section 7.3 The important suggestions coming out from the study have been grouped in section 7.4 The future scope of the research has been stated in section 7.5 The conclusion of the study has been drawn in section 7.6 of this chapter.

#### 7.1 Information architecture analysis of central government ministries' and departmental websites

Information architecture analysis of the selected central government ministries' and departmental websites is the first part of analysis in this study. In order to analyze data 44 central government ministries' websites and 38 departmental websites have been selected. The components of the information architecture have been taken from the book 'Information Architecture for the World Wide Web' by Peter Morville and Louis Rosenfeld. These components are used in this study for analyzing information architecture of the concerned websites under study.

##### 7.1.1 Findings from the information architecture analysis of central government ministries' websites

The study reveals that –

- ❖ There is no error in the content organization or information display of only few of ministries' websites.
- ❖ 28 out of 44 ministries' websites have arranged their information alphabetically.
- ❖ The content on all ministries' websites is arranged in chronological order, particularly in the "What's New" or "Press Releases" sections.
- ❖ Geographical scheme has been adopted by only 3 websites.

- ❖ The website of MoDNER contains almost all sub-components of organization scheme, so this website resides in the finest position under this category.
- ❖ All of the ministries' websites have adopted topic-wise organizational structure.
- ❖ The websites of 37 ministries have a task specific layout where visitors can offer recommendation or feedback form.
- ❖ Out of 44 ministries, only 25 have tailored their informational content to the needs of their targeted audience.
- ❖ Metaphors are frequently used to help users grasp new or unfamiliar things by linking them to previously understood ones. The websites of the chosen ministries have not adopted the metaphor-driven concept.
- ❖ On the basis of organization scheme, the website of MoDNER received the highest score, i.e. 87.5%. The websites of MoD and MoP received 25%, the lowest score.
- ❖ 10 (out of 44) ministries' websites follow logical grouping of information and content.
- ❖ Alphabetical scheme has been occurred by 28 ministries' websites. All of the selected ministries' websites follow chronological scheme.
- ❖ 37 and 25 websites follow 'by task' and 'by audience' scheme respectively. 'By metaphor' scheme is not found in any of the selected websites.
- ❖ Top-down organization structure is used by all (44) of the chosen websites. 42 (out of 44) ministries' websites have a hierarchical structure.
- ❖ 35 (79.54%) ministry websites have used the bottom-up approach. These websites either display a staff directory or offer a data search option on a different page.
- ❖ All the websites (100%) follow top-down structure. Hierarchical and hypertext models have been maintained by 42 websites. 35 websites have bottom-up structure.
- ❖ Textual labels hyperlinks and headings, appear on the websites of each of the 44 ministries. The websites of 43 ministries have navigation options to arrange their information content.
- ❖ The information on the websites of 26 ministries (out of 44) is presented using various searchable index terms. It shows that, 35 ministries' websites have used iconic labels.

The websites of all ministries are in a good and satisfactory situation under labeling system.

- ❖ Hyperlinks and headings are followed by all of the ministries' websites. All ministry websites (i.e. 44) have implemented the global navigation system. Each of the ministry's website uses local navigation system.
- ❖ The websites of 42 ministries present their content of information by using contextual navigation. The websites of 24 ministries (out of 44) present sitemap; only 2 ministries' websites have the typical site-index. 35 ministries' websites have guides, micro-portals etc. inside their content.
- ❖ Sitemap is followed by 24 websites and only 2 of ministries' websites contain site index. 35 websites contain guides, micro-portals etc. in their content.
- ❖ Under the component navigation system, the websites of MoEIT and MoEA have received the highest score, they carry all the sub-components of navigation system.
- ❖ Searching system has been appeared on the websites of 41 (out of 44) ministries. This system is not available on the websites of MoCO, MoJS and MoPPGP.
- ❖ According to the scores attained by the concerned websites under various components of information architecture, the website of MoDNER stands at first rank with the highest score 22 out of 24. Second rank has been taken by five websites (i.e. MoA, MoCL, MoEIT, MoEA and MoPNG) with score 21 out of 24.

### **7.1.2 Findings from the information architecture analysis of central government departmental websites**

The study provides the following results –

- ❖ Under the component organization scheme, 50% score has been attained by most of the departmental websites (i.e. 19). The websites of six departments obtain the lowest score i.e. 3 out of 8.
- ❖ The exact organization scheme, 'chronological' and ambiguous scheme, 'by topic' appear in the web content of all departmental websites (i.e. 38). Metaphor driven scheme has not been followed by any of the websites under study.

- ❖ Only 5 websites follow logical grouping of information and content. 16 websites hold ‘by audience’ scheme.
- ❖ The website of DoC carries almost all sub-components of organization scheme that’s why it secures the highest score under this category.
- ❖ Top-down, hierarchical and hypertext model have been followed by all the selected websites of central government departments. Bottom-up structure is not appeared in the web content of only 5 websites (out of 38).
- ❖ All of the websites present hyperlinks, headings and navigation options for structuring their content. Index terms and iconographic labels are being followed by 25 and 32 websites respectively.
- ❖ Global, local and contextual navigation system have been maintained by all (i.e. 38) selected websites. Site-index is found in the website content of DoSIR. Sitemap has been followed by 32 websites (out of 38). There are 27 websites which contain guides or micro-portals in their web content for serving specific purpose.
- ❖ The website of DoSIR occupies the highest score under navigation system.
- ❖ All the selected websites (i.e. 38) follow searching system to serve the information demand of the targeted audience.
- ❖ The IA ranking table of the departments indicates that the website of DoC has taken 1<sup>st</sup> rank with the highest value 22 (out of 24). The second position has been occupied by the websites of DoP and DPIIT with score 21. The lowest rank i.e. 8 is obtained by two websites (i.e. DoARPG and DoDP) with score 15.

## **7.2 Webometric analysis of central government ministries’ and departmental websites**

The second part of analysis in this study is the webometric research, particularly the link structure analysis. For conducting this analysis, websites have been chosen from central government ministries and departments of India. WIF (Simple, External and Self) has been calculated for each selected website. According to the scores of different WIF the concerned websites have been ranked.

### **7.2.1 Findings from the webometric analysis of central government ministries’ websites**

In this section, the concerned study has revealed the following –

- ❖ According to domain name extension, 40 websites carry gov.in domain name, only 4 websites hold nic.in domain name.
- ❖ The website of MoCRA takes 1<sup>st</sup> rank under simple and self-link WIFs.
- ❖ MoEFCC occupies 1<sup>st</sup> rank with 1 webpage, 58 external linked web pages and 58 external link WIF. MoR holds 32 rank with the lowest score 0.00006, but this website holds the highest number of web pages i.e. 1240000.
- ❖ The topmost position has been taken by MoR with 71 domain authority, 59 page authority and page rank 7. It is followed by MoCRA with 59 domain authority, 59 page authority and page rank 6.
- ❖ Figure 126 illustrates that out of 44 ministries' websites, only 13 have made connection with each other. Rest of the websites are not linked with each other for sharing information or any other purposes.

### **7.2.2 Findings from the webometric analysis of central government departmental websites**

The result of the current study shows that –

- ❖ Maximum number of websites (i.e. 34) follow gov.in domain and rest of the websites contain nic.in domain name.
- ❖ The website of DoFPD holds the highest position under simple, external and self-link WIFs.
- ❖ According to Domain Authority, the website of DoSEL has the highest score 60. In terms of Page Authority, the websites of DoAFW and DoP secured the maximum score 58. Google's Page Rank indicates that the websites of DoAFW, DoP, DoST and DoT have the highest ranking i.e. 6 out of 10.
- ❖ The study reveals that a significant number of departmental websites are connected to DoPE (<https://dpe.gov.in>). It is connected to the websites of DoC, LD, DoIPAM, DoE, DoEA and DoPT.
- ❖ Most of the websites are not linked with each other for information sharing through their websites.

### 7.3 Execution of objectives

**Objective 1:** to analyze the organization and content of various information presented on the websites.

In Table 3, Table 4, Table 9, Table 10 and Figure 109, Figure 110, Figure 115, Figure 116 organization scheme and organization structure of central government ministries' and departmental websites are presented. The scores of the selected ministries' and departmental websites under different sub-components of organization scheme and organization structure are shown in these tables and figures. The following results have come.

The number of 28 (63.63%) ministries' websites have arranged their information and content in alphabetical order. Chronological order is maintained by all of these websites. 22.72% of ministries' websites follow logical grouping of information and content. All of the ministries' websites have adopted topic-wise organization scheme. 84.09% and 56.81% of websites follow 'by task' and 'by audience' scheme. 'By metaphor' scheme is not found in any of the selected websites (Table 3 & Figure 109).

All the ministries' websites (100%) follow top-down structure. Hierarchical and hypertext models have been maintained by 95.45% of websites. 79.54% of websites have followed bottom-up structure (Table 4 & Figure 110).

13.16% of departmental websites follow logical grouping of information and content. Alphabetical, chronological and geographical schemes have been presented by 65.79%, 100% and 15.79% of websites. 42.11% of websites hold 'by audience' scheme and 'by metaphor' scheme is not followed by any of the departmental websites under study (Table 9 & Figure 115).

Top-down, hierarchical and hypertext models are displayed by all departmental websites (100%). 86.84% of websites are characterized by bottom-up structure (Table 10 & Figure 116).

In this way, the above observation executes objective 1 of the study.

**Objective 2:** to find out and analyze the exact labeling system followed by the websites.

The analysis of labeling system of the concerned websites has been demonstrated in Table 5, Table 11 and Figure 111, Figure 117. The outcome of this analysis represents:

Hyperlinks and headings are followed by 100% of ministries' websites. Navigation options, index terms and iconographic labels are displayed by 97.72%, 59.09% and 79.54% of websites respectively (Table 5 & Figure 111).

100% of departmental websites present hyperlinks, headings and navigation options for structuring their content. Index terms and iconographic labels are being followed by 65.79% and 84.21% of websites respectively (Table 11 & Figure 117).

Thus, objective 2 has been executed by making the above observations.

**Objective 3:** to identify and analyze the navigation structure of the concerned websites.

The navigation pattern of the selected ministries' and departmental websites has been shown in Table 6, Table 12 and Figure 112, Figure 118. This analysis gives the following output:

Global and local navigation systems have been featured by all ministries' websites (i.e. 100%). Sitemap and site-index are followed by 54.54% and 4.54% of websites. 79.54% of websites contain guides, micro-portals etc. in their content (Table 6 & Figure 112).

Global, local and contextual navigation systems are followed by 100% of departmental websites. 84.21% of websites contain sitemap, whereas 2.63% of websites have site-index for easy retrieval of information and guides, micro-portals are being followed by 71.05% of websites (Table 12 & Figure 118).

Therefore, the aforementioned observations fulfill objective 3.

**Objective 4:** to examine an active searching system.

Table 7, Table 13 and Figure 113, Figure 119 represent the analysis of searching system followed by the websites under study. This analysis tries to fulfill the objective 4 and retrieves the following:

93.18% of websites of ministries follow searching system where as only 6.81% of websites do not have this feature (Table 7 & Figure 113).

All the selected departmental websites (100%) have featured with searching system (Table 13 & Figure 119).

Thus, objective 4 is carried out by the above observations.

**Objective 5:** to rank the respective websites according to their scores obtained under different IA components.

The ranking of the selected ministries' and departments' websites under the IA components has been depicted in Table 8, Table 14, Figure 114 and Figure 120. It clears out that:

The website of MoDNER stands at first rank with the highest score 22 out of 24. Second rank has been taken by five websites (i.e. MoA, MoCL, MoEIT, MoEA and MoPNG) with score 21 out of 24. Third position has been occupied by the websites of MoEFCC, MoNRE, MoRD and MoYAS with score 20. The websites of MoF and MoWCD obtain 14 out of 24 and they occupy 9<sup>th</sup> rank. The website of MoD holds 10<sup>th</sup> rank with score 13 (out of 24). It is followed by MoCO and MoPPGP with rank 11<sup>th</sup> and 12<sup>th</sup> (Table 8 & Figure 114).

The website of DoC has taken 1<sup>st</sup> rank with the highest value 22 (out of 24). The second position has been occupied by the websites of DoP and DPIIT with score 21. Third rank is taken by the websites of DoJ, DoPE and DoSEL. Thirteen departmental websites receive the same rank 4 with score 19. This score is followed by 18 and 7 websites obtain this score (i.e. 18) with rank 5. The lowest rank i.e. 8 is obtained by two websites (i.e. DoARPG and DoDP) with score 15 (Table 14 & Figure 120).

Thus, objective 5 is satisfied by the observations above.

**Objective 6:** to find the number of web pages, number of link pages, number of self-link pages, external link pages and calculate WIFs (Simple, External and Self) with rank of the concerned websites under study.

To serve this objective the relevant analysis has been done in Table 16, Figure 122, Table 17, Figure 123, Table 18, Figure 124, Table 21, Figure 128, Table 22, Figure 129, Table 23, Figure 130. The analysis demonstrates the following results:

The website of MoCRA get 1<sup>st</sup> rank with 1 webpage, 376 link pages and 376 simple WIF. It is followed by MoEFCC with 1 web page, 307 link pages and 307 simple WIF. MoJS secures 3<sup>rd</sup> position with 4 web pages, 46 link pages and 11.5 simple WIF. 4<sup>th</sup> and 5<sup>th</sup> rank have been taken by the websites of MoCO and MoMSME with value 4.032 and 1.759 respectively. MoPA receives 9<sup>th</sup> rank with 1350 web pages, 171 link pages and 0.126 simple WIF. MoNRE achieves 12<sup>th</sup> position with score 0.080. 16<sup>th</sup> rank has been occupied by MoFPI with 4600 webpages, 322 link pages and 0.07 simple WIF. 19<sup>th</sup> position is occupied by MoM with 6620 web pages, 381 link pages and 0.057 simple WIF. MoWCD and MoCL receive 30<sup>th</sup> rank with score 0.016. 39<sup>th</sup> rank is the lowest, it is carried by MoR with score 0.00011 (Table 16 & Figure 122).

MoEFCC occupies 1<sup>st</sup> rank with 1 webpage, 58 external linked web pages and 58 external link WIF. It is followed by MoCRA with 1 web page, 24 external linked web pages and 24 external link WIF. MoJS receives 3<sup>rd</sup> position with 10.5 external link WIF. 4<sup>th</sup> and 5<sup>th</sup> rank has been occupied by MoCO and MoMSME with 1.838 and 0.634 external link WIF. MoNRE and MoPA receive 11<sup>th</sup> rank with score 0.027. 19<sup>th</sup> rank is taken by MoCA and MoT with 0.010 external link WIF. 22<sup>nd</sup> rank is occupied by 5 websites with 0.006 external link WIF. The websites of MoHA, MoLE and MoTA get 27<sup>th</sup> rank with score 0.001. MoR holds 32 rank with the lowest score 0.00006, but this website holds the highest number of web pages i.e. 1240000 (Table 17 & Figure 123).

MoCRA takes first position with 1 webpage, 352 self-linked web pages and 352 self-link WIF. Second rank has been occupied by MoEFCC with 249 self-link WIF. Third and fourth positions are taken by MoCO and MoMSME. MoJS and MoPNG receive 5<sup>th</sup> and 6<sup>th</sup> rank with 01 and 0.958 self-link WIFs respectively. Tenth rank is received by MoDNER with 2860 web pages, 196 self-linked web pages and 0.068 self-link WIF. MoTT and MoYAS have got 15<sup>th</sup> position with 0.045 self-link WIF. 20<sup>th</sup> position has been taken by MoRTH and MoT with score 0.024. MoEIT and MoMA hold 28<sup>th</sup> rank with 0.008 self-link WIF. 33<sup>rd</sup> rank has been occupied by MoEA and MoTA with score 0.002. MoR is placed at last position (i.e. 35) with 0.00005 self-link WIF (Table 18 & Figure 124).

The website of DoFPD holds the highest position with 196 link pages, only one web page and 196 Simple WIF. Second rank is occupied by DoP with 108 link pages, 2 web pages and 54 Simple WIF. The website of DoPPW is placed at 3<sup>rd</sup> rank with 99 link pages, 127 web pages and 0.779 Simple WIF. Fourth and fifth rank has been achieved by the website of DoARPG and DoIPAM with 0.425 and 0.335 Simple WIF respectively. DoF has received 10<sup>th</sup> position with 0.093 Simple WIF. The websites of DoFz and DoPT have received 14<sup>th</sup> rank with score 0.063. 22<sup>nd</sup> position is occupied by three departmental websites i.e. DoEA, DoFS and DoST with 0.018 Simple WIF. The websites of DoAHD and DoDWS are placed in 24<sup>th</sup> position with score 0.014. Three websites, DoLA, DPIIT and LD have gained 27<sup>th</sup> rank with score 0.008. The website of DoT has taken the last position with 338 link pages, 75100 webpages and 0.004 Simple WIF (Table 21 & Figure 128).

The website of DoFPD has taken the first rank with 1 web page, 33 external linked web pages and 33 External link WIF. Second rank is taken by the website of DoP with 2 web pages, 13 external linked web pages and 6.5 External link WIF. Third and fourth positions have been

occupied by the websites of DoPPW and DoARPG with 0.409 and 0.102 External link WIFs respectively. The websites of two departments, DoB and DoC have taken 13<sup>th</sup> position with 0.012 External link WIF. The websites of DoEA, DoFS and DoIPAM occupy 18<sup>th</sup> rank with 0.005 External link WIF. Twenty first position is occupied by the websites of five departments – DoFz, DoLA, DoOL, DPIIT and LD with 0.002 External link WIF. The website of DoT is placed in last rank i.e. 22<sup>nd</sup> with 75100 web pages, 101 external linked web pages and 0.001 External link WIF (Table 22 & Figure 129).

The website of DoFPD occupies the first rank with 1 web page, 163 Self linked web pages and 163 Self link WIF. DoP and DoPPW are placed in second and third position with 47.5 and 0.370 Self link WIFs respectively. Fifth rank is achieved by DoARPG with 428 web pages, 138 Self linked web pages and 0.322 Self link WIF. The website of DoF receives tenth rank with 2130 web pages, 149 Self linked web pages and 0.069 Self link WIF. Twenty third position is occupied by the websites of DoDWS and DoST with 0.014 Self link WIF. The websites of DoLA, DPIIT and LD are placed in 29<sup>th</sup> rank with 0.006 Self link WIF. The websites of DoCA and DoT have the lowest ranking (i.e. 30<sup>th</sup>) with 0.003 Self link WIF (Table 23 & Figure 130).

Therefore, the aforementioned results fulfill objective 6.

**Objective 7:** to find out visibility and performance of Indian government ministries and departmental websites;

In order to serve this objective the relevant analysis has been performed in Table 19, Figure 125, Table 24 and Figure 131. This analysis shows that:

The topmost position has been taken by MoR with 71 domain authority, 59 page authority and page rank 7. It is followed by MoCRA with 59 domain authority, 59 page authority and page rank 6. MoEA obtains 68, 56 and 6 under domain authority, page authority and page rank. MoHFW has received 67, 51 and 6 under the criteria domain authority, page authority and page rank respectively. The position of MoWCD is good in respect of domain authority (59), page authority (58) and page rank (6). MoCO, MoJS and MoYAS are placed in lower positions with page rank 2 (Table 19, Figure 125).

According to Domain Authority, the website of DoSEL has the highest score 60. In terms of Page Authority, the websites of DoAFW and DoP secured the maximum score 58. Google's

Page Rank indicates that the websites of DoAFW, DoP, DoST and DoT have the highest ranking i.e. 6 out of 10 (Table 24, Figure 131).

In this way, objective 7 is fulfilled by the observations mentioned above.

**Objective 8:** to observe how the different pages of the sites relate to one another;

The analysis drawn in Figure 126 and Figure 132 has tried to meet the objective 8. It is observed from this analysis that:

Out of 44 ministries' websites, only 13 have made connection with each other. Rest of the websites are not linked with each other for sharing information or any other purposes (Figure 126).

Links (mostly external links) have been found among twenty four departmental websites. A large number of departmental websites are connected to DoPE (<https://dpe.gov.in>). It is connected to the websites of DoC, LD, DoIPAM, DoE, DoEA and DoPT. DoE (<https://doe.gov.in/>) is linked with four other websites i.e. DoEA, DoFS, DoIPAM and DoR. As a result, the collaborative initiative amongst Indian central government departmental websites encourages users to search and receive more information based on their needs (Figure 132).

Thus, the above findings satisfy objective 8.

**Objective 9:** to identify and classify the domain of central government websites (ministries and departments) of India.

Domain name percentage of the respective ministries' and departmental websites has been shown in Table 15, Figure 121, Table 20 and Figure 127. The analysis reveals the following results:

90.90% of ministries' websites carry gov.in domain name, only 9.09% of websites hold nic.in domain name (Table 15 & Figure 121).

89.47% of departmental websites follow gov.in domain and rest of the websites (i.e. 10.53%) contain nic.in domain name (Table 20 & Figure 127).

Therefore, objective 9 is fulfilled by the observations mentioned above.

## 7.4 Suggestions

- Data or material ought to be arranged rationally in any navigation link or menu label. A link must have its dedicated destination.
- An alphabetical arrangement strategy should be used to organize various items, such as different topics or subjects, department names etc. A chronological format should be maintained in the “News & Events” and “Notices” sections of the websites.
- Information content needs to be organized by relevant topic or theme. There should be many ways to provide comments, recommendations and the like. Information needs to be grouped according to the demand of various user groups.
- A top-down organizational structure is required to uphold hierarchy. A bottom-up structure will be implemented in the staff/report directory for the ease of searching.
- To link one theme or item to another, there ought to be hyperlinks. Relevant navigation options are also required. In order to make keyword searching easier, index terms are utilized as the heading of each unit of information. It is necessary to use pertinent iconographic labels in proper places.
- Every page of a website should have the home page link and the top navigation bar. Local navigation systems are required to represent local and significant content. There should be options for contextual navigation so that one can learn more about a topic.
- A sitemap aids in providing a visual depiction of a website’s structure. Micro-portals are utilized for displaying specific functions or services provided by the respective ministry or department.
- A searching system with a shared search space is required for keyword searching.
- Basic search engine optimization (SEO) guidelines of major search engines should be followed in order to make the websites searchable
- The concerned websites should not have any broken link.
- The websites with fewer webpages need to increase the number of web pages indexed by search engines in order to facilitate users’ access to the information provided by the respective ministries and ministries’ departments.

- The web design and links between the pages require to be rectified so that search engines can easily access and index the most recent content added to the websites.

### **7.5 Future scope of the research**

The method or techniques of this research could be employed to any website or group of websites where information is presented for the targeted audience. The users are an important part of research, but they are not involved in this current study. Users' experiences and opinions about using a particular website could be an important part of this research. Therefore, user involvement is an unexplored area of this research. A researcher must include this part in their research particularly on the analyses of website information architecture.

### **7.6 Conclusion**

An information space, often known as digital workplace, could be advanced by a good information architecture. Users should be able to efficiently locate the information query they mentioned in this area without being overloaded with data. Among the various classification schemes found in literature, the scheme developed by Peter Morville and Louis Rosenfeld for their well-known book "Information Architecture for the World Wide Web" has been chosen because it provides the reader with a clear and thorough understanding of the fundamentals of website information architecture. The current study aims to give a clear-cut picture of website information architecture. It is therefore conceivable that this work of research will pave the way for new approaches to the analyses of website information architecture and further improve the existing literature in this area.

Web Impact Factor (WIF) has been widely used as a webometric indicator in this study to evaluate the quality of websites. Although the WIF is an important tool for site assessment, sufficient care should be taken at the time of using this tool. A website's WIF is unstable because some website administrators routinely remove outdated inlinks to a large number of sites, and some add newly created links to the site in continuous basis. The current study provides a fair assessment and data regarding Indian ministries' and departmental websites; additionally, the selected websites have been ranked based on the scores retrieved from the ranking tool Google's Page Rank. Therefore, the study illustrates the performance, visibility and link quality of the relevant websites. The outcome of this study will aid in the diagnosis of the issue and point future research in the direction of webometric website evaluation.

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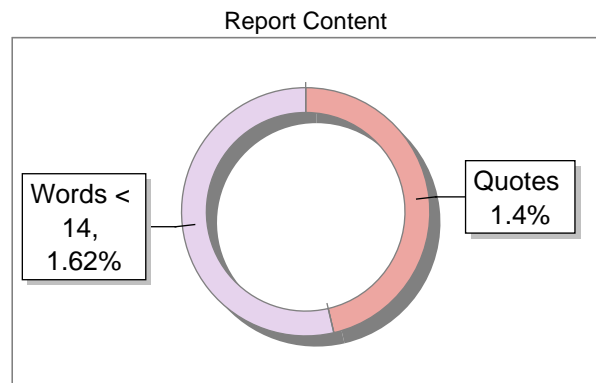
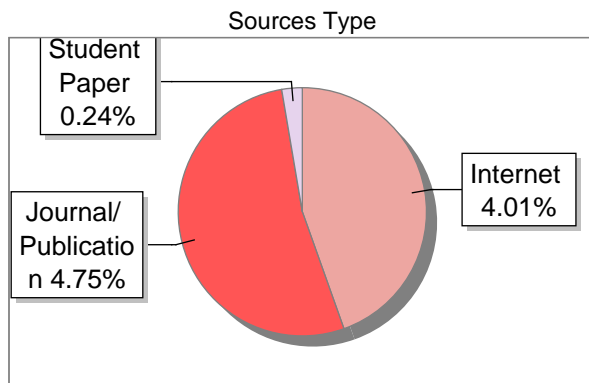
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|                          |  |
|--------------------------|--|
| Author Name              | Shampa Mahato  |
| Title                    | Information Architecture Analysis and Webometric Evaluation of Central Government Ministries' and Departmental Websites of India |
| Paper/Submission ID      | 4227770  |
| Submitted by             | sunilkc61@gmail.com  |
| Submission Date          | 2025-08-11 17:13:14  |
| Total Pages, Total Words | 251, 48227   |
| Document type            | Thesis   |

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| 35 | <a href="http://infoport.inflibnet.ac.in">infoport.inflibnet.ac.in</a>                        | <1 | Internet Data |
| 36 | Thesis Submitted to Shodhganga Repository   | <1 | Publication   |
| 37 | <a href="http://nuir.inflibnet.ac.in8080">nuir.inflibnet.ac.in8080</a>                        | <1 | Publication   |
| 38 | <a href="http://docplayer.net">docplayer.net</a>  | <1 | Internet Data |
| 39 | <a href="http://indianstartupnews.com">indianstartupnews.com</a>                              | <1 | Internet Data |
| 40 | Thesis Submitted to Shodhganga Repository   | <1 | Publication   |
| 41 | <a href="http://www.mospi.gov.in">www.mospi.gov.in</a>  | <1 | Publication   |
| 42 | <a href="http://blog.sconline.com">blog.sconline.com</a>                                      | <1 | Internet Data |
| 43 | <a href="http://radiannews.pbworks.com">radiannews.pbworks.com</a>                            | <1 | Publication   |
| 44 | Thesis Submitted to Shodhganga Repository   | <1 | Publication   |
| 45 | <a href="http://manage.gov.in">manage.gov.in</a>  | <1 | Publication   |
| 46 | <a href="http://nirdpr.org.in">nirdpr.org.in</a>  | <1 | Publication   |
| 47 | Thesis Submitted to Shodhganga Repository   | <1 | Publication   |
| 48 | <a href="http://usea.org">usea.org</a>  | <1 | Publication   |
| 49 | <a href="http://jalshakti-dowr.gov.in">jalshakti-dowr.gov.in</a>                              | <1 | Internet Data |
| 50 | Mixed monolingual homepage finding in 34 languages the role of language script by Ro-2009     | <1 | Publication   |
| 51 | <a href="http://sigmm.org">sigmm.org</a>  | <1 | Internet Data |
| 52 | Counting Family Making the Family of International Students Visible in Higher E by Doyle-2016 | <1 | Publication   |

## **Appendices: Published Articles**

## **Appendix A**

**Information architecture analysis of academic degree college websites of Sidho-Kanho-Birsha University in Purulia: a study**



# Information Architecture Analysis of Academic Degree College Websites of Sidho-Kanho-Birsha University in Purulia: a study

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## Abstract

This study aims to examine and analyse the information organisation strategy, presentation style, labeling and navigation techniques, etc. that are displayed on websites of some selected degree colleges affiliated with Sidho-Kanho-Birsha University and assess those strategies in a methodical manner using different information architectural components. The necessary data for this study have been gathered by utilising web-based survey and observation techniques. Various information architectural components were used to analyse and then tabulate the collected data. The findings of this study show that all the selected (i.e. 19) college websites contain chronological schemes for organising their web content. They all have three sub-components of labeling system: hyperlinks, headings and navigation options. The geographical scheme is not followed by any of the selected websites. This article will help to construct an information architecture model for the websites of academic institutions. It may also assist other researchers working in this area.

**Keywords:** Information architecture, Information architectural components, Sidho-Kanho-Birsha University, Website information architecture

## 1. Introduction

In today's information environment, the World Wide Web is certainly the primary source for locating and finding information. It is crucial for users to find information quickly because they feel overwhelmed by the amount of information available on a webpage or website.

Therefore, it is important to organise content for the purpose of providing people with the ability to understand, explain and control things. The main objective of information architecture is to help users retrieve information according to the requirements of users. A good organisation of

information assists users in browsing and finding their required information effectively. Hence, an efficient organisation of information is very much needed in an information space (Hamad, 2018). Information architecture (IA) is generally understood to be the art and science of structuring and arranging information environment to maximise their accessibility and usefulness in helping people effectively meet their information demands. The general definition of IA development for websites is the process of organising the structure and content of the website, labeling, categorising and indexing information, and designing a



navigation system to facilitate information searching and browsing (Isa, Noor, & Mehad, 2006).

The present study attempts to examine and analyse the websites of 19 general degree colleges under SKBU. In this connection, website information architectural components have been used to assess how well these colleges are utilising their websites to provide their patrons with quick and easy access to various information, services and facilities.

## **2. Concept of different website information architectural components**

The purpose of this section is to understand and identify different IA components that websites consist of. According to Rosenfeld et al., 2015, the overall website IA is composed of four main systems: organisation, labeling, navigation and searching.

An organisation system is a system or policy that is used to organise information so that it is easy to understand and use. Organisation scheme and organisation structure are two important components of organisation system. An organisation scheme describes the shared properties of content items and influences their logical grouping. The types of relationships between content items and groups are defined by an organisation structure (Morville & Rosenfeld, 2006).

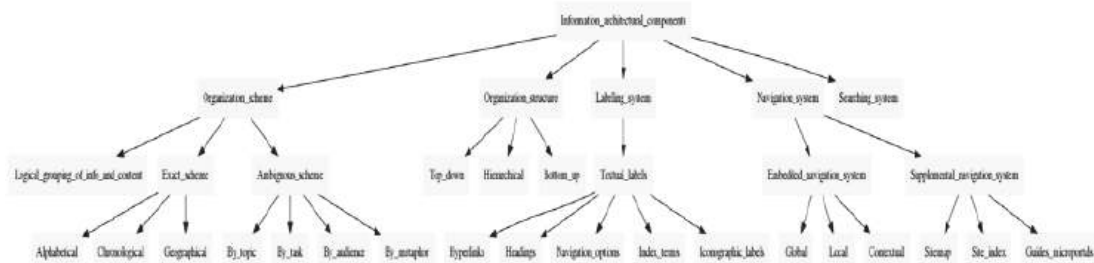
Organisation scheme is of two types: exact organisation scheme and ambiguous or subjective organisation scheme. Exact organisation scheme divide information into sections that are clearly defined and mutually

exclusive. An ambiguous or subjective organisation scheme is influenced by ambiguity of language and organisation. There are four kinds of Ambiguous organisation scheme: topic-wise, task oriented, audience-specific and metaphor-driven scheme (Morville & Rosenfeld, 2006).

Organisation structure is a set of rules and guidelines that play a significant role in website design. It provides the primary ways to easily move around the website. The sub-components of organisation structure are: top-down approach, hierarchical, database-oriented model or bottom-up approach and hypertext model (Morville & Rosenfeld, 2006).

Labeling is an important way of representing content. Labels are assigned for content that represents a chunk of information. There are two types of labels: textual and iconic. Labels can be used as headings to describe chunk of information. Labels can also be occurred as navigation options. Index terms enable more precise searches than traditional full-text searches (Morville & Rosenfeld, 2006).

The navigation system makes it possible to move from one place to another. Developed navigation tools help us to prevent us from getting lost. There are two basic subsystems of navigation system: embedded navigation system and supplemental navigation system. Supplemental navigation system provides complementary ways of finding content, topic or task. A site map provides a broad overview of the website's content and allows for random access to segmented parts of that content (Morville & Rosenfeld, 2006).



**Figure 1: Website information architectural components**

Figure 1 represents different components and sub-components of website information architecture. The graph has been prepared by using Graph Visualisation Software (GraphViz).

### 3. Literature review

Biswas (2019) discussed some basic embodiments for making a library website effective keeping in view the branding and promoting aspects.

Pant (2015) in his study focused on six usability characteristics (i.e. usefulness, efficiency, effectiveness, learnability, satisfaction and accessibility) for presenting an innovative multi-method approach to website usability evaluation. For this purpose, he utilised a standard checklist and questionnaire survey of representative users.

Gullikson, et al. (1999) evaluated the impact of an academic website's information architecture; how information is organised, labeled, and presented, as well as how access and navigation are made easier. Navarro, Sergio and Antonio (2008) looked at two models that are the foundation of websites' formal architecture. They provided a range of software tools that make it possible to see how the website is structured in terms of nodes and links.

Silvis, Bothma and de Beer (2019) provided a framework and heuristics that

academic library personnel, web developers, usability specialists may use to evaluate academic library websites and make recommendations for improving their usability.

The related literature of the concerned study reveals that the analysis of website information architecture of general degree college websites through information architectural components is an unstudied field of social science research. The observation, analysis and findings of this study may pave the way for further investigation into this topic.

### 4. Scope of the study

The study has made an attempt to examine and observe the websites of all 21 general degree colleges affiliated with Sidho-Kanho-Birsha University in Purulia district; but significantly, the link addresses of 2 degree colleges were not working at the time of data collection. As a result, the websites of these 2 colleges have not been included in this study. The rest of the college websites (i.e. 19) are considered for observation and analysis for the study (listed in Table 1).

### 5. Objectives of the study

In order to accomplish the objective the current study carefully seeks:-

- i. To observe the variety of information, services and facilities provided on the websites of concerned colleges



- ii. To identify organisation strategy, labeling of content, types of navigation or links, searching techniques etc. presented on the websites
- iii. To get ranking of the college websites according to the score earned by them.

## 6. Methodology of the study

The examination and analysis of textual links, information organisation, presentation style and other factors can be used to assess the importance of webpages or websites. The necessary data for this study have been gathered by utilising web-based survey and observation techniques. Various information architectural components were used to analyse and then tabulate the collected data. The Google search engine has been utilised to gather information from the relevant websites. The process of data collection took place from 26th November to 10th December, 2022.

## 7. Data analysis and interpretation

All the data collected during the period have been placed in different tables (Table 1 to Table 7) for analysis. Simple statistical calculations are used to analyse the collected data in a systematic way. A ranking table has been prepared to provide the individual score and a clear-cut view of all selected degree college websites under study.

### ❖ Sidho-Kanho-Birsha University in Purulia

Sidho-Kanho-Birsha University (SKBU) is a public state university located in Purulia district of West Bengal. It was founded on 6th July 2010 by the Sidho-Kanho-Birsha University Act, 2010, which was approved by the West Bengal legislature. The university comprises 31 colleges; among them there are 10 B.Ed. and professional colleges and 21 are degree-granting institutions.

**Table 1: List of selected general degree colleges with establishment year and website**

| SI No. | Name of Colleges with abbreviation             | Year of Establishment | Website Address   |
|--------|--|-----------------------|---|
| 1      | Achhruram Memorial College (ARMC)              | 1975                  | <a href="https://amcollege.ac.in/">https://amcollege.ac.in/</a>                                     |
| 2      | Ananda Marga College (AMC)                     | 1966                  | <a href="http://anandamargacollege.org/">http://anandamargacollege.org/</a>                         |
| 3      | Arsha College (AC)                             | 2009                  | <a href="http://arshacollege.org/">http://arshacollege.org/</a>                                     |
| 4      | Bandwan Mahavidyalaya (BM)                     | 2010                  | <a href="http://www.bandwanmahavidyalaya.com/">http://www.bandwanmahavidyalaya.com/</a>             |
| 5      | Barabazar Bikram Tudu Memorial College (BBTMC) | 2006                  | <a href="http://www.bbtmc.net/">http://www.bbtmc.net/</a>   |
| 6      | Bikramjeet Goswami Memorial College (BGMC)     | 2009                  | <a href="https://www.bgmcollegejoypur.in/">https://www.bgmcollegejoypur.in/</a>                     |
| 7      | Chitta Mahato Memorial College (CMMC)          | 2010                  | <a href="https://chittamahatomemorialcollege.ac.in/">https://chittamahatomemorialcollege.ac.in/</a> |
| 8      | Government General Degree College (GGDC)       | 2015                  | <a href="https://ggdcm.ac.in/">https://ggdcm.ac.in/</a>   |
| 9      | Jagannath Kishore College (JKC)                | 1948                  | <a href="https://www.jkcprl.ac.in/home.php">https://www.jkcprl.ac.in/home.php</a>                   |



| SI No. | Name of Colleges with abbreviation               | Year of Establishment | Website Address   |
|--------|--|-----------------------|---|
| 10     | Kashipur Michael Madhusudan Mahavidyalaya (KMMM) | 2000                  | <a href="https://www.kashipurmmm.org/">https://www.kashipurmmm.org/</a>   |
| 11     | Kotshila Mahavidyalaya (KM)                      | 2010                  | <a href="https://kotshilamahavidyalaya.ac.in/">https://kotshilamahavidyalaya.ac.in/</a>   |
| 12     | Manbhum Mahavidyalaya (MM)                       | 1986                  | <a href="https://manbhummv.ac.in/">https://manbhummv.ac.in/</a>   |
| 13     | Netaji Subhas Ashram Mahavidyalaya (NSAM)        | 1985                  | <a href="http://nsamsuisa.org.in/index.aspx">http://nsamsuisa.org.in/index.aspx</a>   |
| 14     | Nistarini College (NC)                           | 1958                  | <a href="https://www.nistarinicollege.ac.in/">https://www.nistarinicollege.ac.in/</a>   |
| 15     | Panchakot Mahavidyalaya (PM)                     | 2000                  | <a href="https://panchakotmv.ac.in/">https://panchakotmv.ac.in/</a>   |
| 16     | Raghunathpur College (RC)                        | 1961                  | <a href="https://raghunathpurcollege.ac.in/">https://raghunathpurcollege.ac.in/</a>   |
| 17     | Ramananda Centenary College (RCC)                | 1971                  | <a href="http://www.ramanandacentenarycollege.in/index.php#ad-image-1">http://www.ramanandacentenarycollege.in/index.php#ad-image-1</a> |
| 18     | Santaldih College (SC)                           | 2008                  | <a href="https://santaldihcollege.org/">https://santaldihcollege.org/</a>   |
| 19     | Sitaram Mahato Memorial College (SMMC)           | 2013                  | <a href="https://smmccollege.ac.in/">https://smmccollege.ac.in/</a>   |

Table 1 reveals the name, abbreviation, year of establishment and website address of the selected general degree colleges under

study. The domain name ac.in is common for many college websites.

**Table 2: Organisation scheme of general degree college websites (Y=Yes, N=No)**

|         |                                 | Information architectural components        |              |               |              |                  |         |             |             |    |    |               |      |                |   |
|---------|---------------------------------|---|--------------|---------------|--------------|------------------|---------|-------------|-------------|----|----|---------------|------|----------------|---|
| Sl. No. | General degree college websites | Organisation scheme                         |              |               |              |                  |         |             |             |    |    |               |      |                |   |
|         |                                 | Logical grouping of information and content | Exact scheme |               |              | Ambiguous scheme |         |             |             |    |    | Total (max.8) |      | Percentage (%) |   |
|         |                                 |   | Alphabetical | Chronological | Geographical | By topic         | By task | By audience | By metaphor | Y  | N  | Y             | N    |                |   |
|         |                                 |   |              |               |              |                  |         |             |             |    |    |               |      | Y              | N |
| 1       | ARMC                            | N   | Y            | Y             | N            | Y                | Y       | Y           | N           | 05 | 03 | 62.5          | 37.5 |                |   |
| 2       | AMC                             | N   | N            | Y             | N            | Y                | Y       | Y           | N           | 04 | 04 | 50            | 50   |                |   |
| 3       | AC                              | N   | N            | Y             | N            | Y                | N       | Y           | N           | 03 | 05 | 37.5          | 62.5 |                |   |
| 4       | BM                              | N   | N            | Y             | N            | Y                | N       | Y           | N           | 03 | 05 | 37.5          | 62.5 |                |   |
| 5       | BBTMC                           | N   | N            | Y             | N            | Y                | N       | Y           | N           | 03 | 05 | 37.5          | 62.5 |                |   |



|                       |      |     |       |     |     |     |       |       |     |    |    |      |      |
|-----------------------|------|-----|-------|-----|-----|-----|-------|-------|-----|----|----|------|------|
| 6                     | BGMC | N   | N     | Y   | N   | Y   | Y     | Y     | N   | 04 | 04 | 50   | 50   |
| 7                     | CMMC | N   | N     | Y   | N   | Y   | N     | Y     | N   | 03 | 05 | 37.5 | 62.5 |
| 8                     | GGDC | N   | Y     | Y   | N   | Y   | Y     | Y     | N   | 05 | 03 | 62.5 | 37.5 |
| 9                     | JKC  | N   | N     | Y   | N   | Y   | Y     | Y     | N   | 04 | 04 | 50   | 50   |
| 10                    | KMMM | N   | Y     | Y   | N   | Y   | N     | Y     | N   | 04 | 04 | 50   | 50   |
| 11                    | KM   | N   | N     | Y   | N   | Y   | Y     | Y     | N   | 04 | 04 | 50   | 50   |
| 12                    | MM   | N   | N     | Y   | N   | Y   | Y     | Y     | N   | 04 | 04 | 50   | 50   |
| 13                    | NSAM | N   | N     | Y   | N   | Y   | Y     | N     | N   | 03 | 05 | 37.5 | 62.5 |
| 14                    | NC   | N   | Y     | Y   | N   | Y   | Y     | N     | N   | 04 | 04 | 50   | 50   |
| 15                    | PM   | N   | Y     | Y   | N   | Y   | Y     | Y     | N   | 05 | 03 | 62.5 | 37.5 |
| 16                    | RC   | N   | Y     | Y   | N   | Y   | Y     | Y     | N   | 05 | 03 | 62.5 | 37.5 |
| 17                    | RCC  | N   | N     | Y   | N   | Y   | N     | Y     | N   | 03 | 05 | 37.5 | 62.5 |
| 18                    | SC   | N   | Y     | Y   | N   | Y   | N     | Y     | N   | 04 | 04 | 50   | 50   |
| 19                    | SMMC | N   | N     | Y   | N   | Y   | N     | Y     | N   | 03 | 05 | 37.5 | 62.5 |
| Total<br>(Max.<br>19) | Y    | 00  | 07    | 19  | 00  | 19  | 11    | 17    | 00  |    |    |      |      |
|                       | N    | 19  | 12    | 00  | 19  | 00  | 08    | 02    | 19  |    |    |      |      |
| Percentage<br>(%)     | Y    | 100 | 36.84 | 100 | 0   | 100 | 57.89 | 89.47 | 0   |    |    |      |      |
|                       | N    | 0   | 63.15 | 0   | 100 | 0   | 42.10 | 10.52 | 100 |    |    |      |      |

Table 2 shows that the information and content of the selected college websites (i.e.19) are not grouped logically by following the criterion organisation scheme. Alphabetical arrangement has been found in the website content of 7 degree colleges out of 19. All the 19 college websites contain chronological scheme for organising their web content in "Notice" or "What's New" section.. The ambiguous scheme "by topic" has been maintained by all selected college websites. The website content of 11 (out of

19) colleges contain task-specific scheme by providing the facility of submitting feedback form, suggestions, complaint, etc.

In some areas of websites, information is arranged according to the needs of a specific user group or audience; for example, the option for user login or admin login can be mentioned. This audience-specific scheme is resided on the websites of 17 colleges. Metaphor-driven scheme has not been followed by any of the selected college websites (Table 2).

**Table 3: Organisation structure of general degree college websites (Y=Yes, N=No)**

|                |                                 | Information architectural components |              |           |                 |               |    |                |    |
|----------------|---------------------------------|--------------------------------------|--------------|-----------|-----------------|---------------|----|----------------|----|
| Sr. no.        | General degree college websites | Organisation structure               |              |           |                 |               |    |                |    |
|                |                                 | Top-down                             | Hierarchical | Bottom-up | Hypertext model | Total (Max.4) |    | Percentage (%) |    |
|                |                                 |                                      |              |           |                 | Y             | N  | Y              | N  |
| 1              | ARMC                            | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 2              | AMC                             | Y                                    | Y            | N         | Y               | 03            | 01 | 75             | 25 |
| 3              | AC                              | Y                                    | Y            | N         | N               | 02            | 02 | 50             | 50 |
| 4              | BM                              | Y                                    | Y            | N         | Y               | 03            | 01 | 75             | 25 |
| 5              | BBTMC                           | Y                                    | Y            | Y         | N               | 03            | 01 | 75             | 25 |
| 6              | BGMC                            | Y                                    | Y            | N         | Y               | 03            | 01 | 75             | 25 |
| 7              | CMMC                            | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 8              | GGDC                            | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 9              | JKC                             | Y                                    | Y            | N         | Y               | 03            | 01 | 75             | 25 |
| 10             | KMMM                            | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 11             | KM                              | Y                                    | Y            | N         | Y               | 03            | 01 | 75             | 25 |
| 12             | MM                              | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 13             | NSAM                            | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 14             | NC                              | Y                                    | Y            | N         | Y               | 03            | 01 | 75             | 25 |
| 15             | PM                              | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 16             | RC                              | Y                                    | Y            | N         | Y               | 03            | 01 | 75             | 25 |
| 17             | RCC                             | Y                                    | Y            | Y         | Y               | 04            | 00 | 100            | 0  |
| 18             | SC                              | Y                                    | Y            | N         | Y               | 03            | 01 | 75             | 25 |
| 19             | SMMC                            | Y                                    | Y            | N         | Y               | 03            | 01 | 75             | 25 |
| Total (Max.19) | Y                               | 19                                   | 19           | 09        | 17              |               |    |                |    |
|                | N                               | 00                                   | 00           | 10        | 02              |               |    |                |    |
| Percentage (%) | Y                               | 100                                  | 100          | 47.36     | 89.47           |               |    |                |    |
|                | N                               | 0                                    | 0            | 52.63     | 10.52           |               |    |                |    |



Table 3 represents the two important sub-components of organisation structure, top-down and hierarchical followed by all degree college websites (i.e. 19) under study. The database model or bottom-up structure has been carried out by 9 (47.36%) college websites. These websites provide the

opportunity to search for needed data in staff directory or on another web page. Table 3 also shows the scores attained (out of 4) by each of college websites separately. The websites of 8 colleges attained the highest score 4 (100%) under the component organisation structure.

**Table 4: Labeling system of general degree college websites (Y=Yes, N=No)**

|         |                                 | Information architectural components |          |                    |             |                     |    |               |                |    |
|---------|---------------------------------|--------------------------------------|----------|--------------------|-------------|---------------------|----|---------------|----------------|----|
| Sl. No. | General degree college websites | Labeling system                      |          |                    |             |                     |    |               |                |    |
|         |                                 | Textual labels                       |          |                    |             |                     |    | Total (Max.5) | Percentage (%) |    |
|         |                                 | Hyperlinks                           | Headings | Navigation options | Index terms | Iconographic labels | Y  |               | N              | Y  |
| 1       | ARMC                            | Y                                    | Y        | Y                  | N           | N                   | 03 | 02            | 60             | 40 |
| 2       | AMC                             | Y                                    | Y        | Y                  | N           | N                   | 03 | 02            | 60             | 40 |
| 3       | AC                              | Y                                    | Y        | Y                  | N           | N                   | 03 | 02            | 60             | 40 |
| 4       | BM                              | Y                                    | Y        | Y                  | N           | N                   | 03 | 02            | 60             | 40 |
| 5       | BBTMC                           | Y                                    | Y        | Y                  | N           | N                   | 03 | 02            | 60             | 40 |
| 6       | BGMC                            | Y                                    | Y        | Y                  | N           | N                   | 03 | 02            | 60             | 40 |
| 7       | CMMC                            | Y                                    | Y        | Y                  | N           | Y                   | 04 | 01            | 80             | 20 |
| 8       | GGDC                            | Y                                    | Y        | Y                  | N           | Y                   | 04 | 01            | 80             | 20 |
| 9       | JKC                             | Y                                    | Y        | Y                  | N           | Y                   | 04 | 01            | 80             | 20 |
| 10      | KMMM                            | Y                                    | Y        | Y                  | N           | N                   | 03 | 02            | 60             | 40 |
| 11      | KM                              | Y                                    | Y        | Y                  | Y           | N                   | 04 | 01            | 80             | 20 |
| 12      | MM                              | Y                                    | Y        | Y                  | Y           | Y                   | 05 | 00            | 100            | 0  |
| 13      | NSAM                            | Y                                    | Y        | Y                  | N           | Y                   | 04 | 01            | 80             | 20 |
| 14      | NC                              | Y                                    | Y        | Y                  | N           | Y                   | 04 | 01            | 80             | 20 |
| 15      | PM                              | Y                                    | Y        | Y                  | Y           | N                   | 04 | 01            | 80             | 20 |
| 16      | RC                              | Y                                    | Y        | Y                  | Y           | N                   | 04 | 01            | 80             | 20 |



|                   |      |     |     |     |       |       |    |    |    |    |
|-------------------|------|-----|-----|-----|-------|-------|----|----|----|----|
| 17                | RCC  | Y   | Y   | Y   | N     | Y     | 04 | 01 | 80 | 20 |
| 18                | SC   | Y   | Y   | Y   | N     | Y     | 04 | 01 | 80 | 20 |
| 19                | SMMC | Y   | Y   | Y   | N     | N     | 03 | 02 | 60 | 40 |
| Total<br>(Max.19) | Y    | 19  | 19  | 19  | 04    | 08    |    |    |    |    |
|                   | N    | 00  | 00  | 00  | 15    | 11    |    |    |    |    |
| Percentage<br>(%) | Y    | 100 | 100 | 100 | 21.05 | 42.10 |    |    |    |    |
|                   | N    | 0   | 0   | 0   | 78.94 | 57.89 |    |    |    |    |

The scores and positions of all college websites under the component labeling system are presented in table 4. It can be seen from this table that all the selected college websites have three sub-components of the labeling system: hyperlinks, headings and navigation options. The presence of index terms has occurred on the websites of only 4

colleges. The websites of 8 colleges (out of 19) contain iconographic labels for organizing their content. Table 4 further represents that most of the college websites attain a score of 4 out of 5 under the labeling system. The website of MM obtains the top score 5 (100%).

**Table 5: Navigation system of general degree college websites (Y=Yes, N=No)**

|         |                                 | Information architectural components |       |            |                                |            |                         |    |               |       |                |  |
|---------|---------------------------------|--------------------------------------|-------|------------|--------------------------------|------------|-------------------------|----|---------------|-------|----------------|--|
| Sl. no. | General degree college websites | Navigation system                    |       |            |                                |            |                         |    |               |       |                |  |
|         |                                 | Embedded navigation system           |       |            | Supplemental navigation system |            |                         |    | Total (Max.6) |       | Percentage (%) |  |
|         |                                 | Global                               | Local | Contextual | Sitemap                        | Site index | Guides, micro - portals |    |               |       |                |  |
|         |                                 |                                      |       |            |                                |            |                         | Y  | N             | Y     | N              |  |
| 1       | ARMC                            | Y                                    | Y     | Y          | N                              | N          | Y                       | 04 | 02            | 66.66 | 33.33          |  |
| 2       | AMC                             | Y                                    | Y     | Y          | N                              | N          | Y                       | 04 | 02            | 66.66 | 33.33          |  |
| 3       | AC                              | Y                                    | Y     | N          | N                              | N          | Y                       | 03 | 03            | 50    | 50             |  |
| 4       | BM                              | Y                                    | N     | Y          | N                              | N          | Y                       | 03 | 03            | 50    | 50             |  |
| 5       | BBTMC                           | Y                                    | Y     | N          | N                              | N          | Y                       | 03 | 03            | 50    | 50             |  |



|                           |      |     |       |       |     |     |     |    |    |       |       |
|---------------------------|------|-----|-------|-------|-----|-----|-----|----|----|-------|-------|
| 6                         | BGMC | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 7                         | CMMC | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 8                         | GGDC | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 9                         | JKC  | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 10                        | KMMM | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 11                        | KM   | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 12                        | MM   | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 13                        | NSAM | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 14                        | NC   | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 15                        | PM   | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 16                        | RC   | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 17                        | RCC  | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 18                        | SC   | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| 19                        | SMMC | Y   | Y     | Y     | N   | N   | Y   | 04 | 02 | 66.66 | 33.33 |
| <b>Total<br/>(Max.19)</b> | Y    | 19  | 18    | 17    | 00  | 00  | 19  |    |    |       |       |
|                           | N    | 00  | 01    | 02    | 19  | 19  | 00  |    |    |       |       |
| <b>Percentage<br/>(%)</b> | Y    | 100 | 94.73 | 89.47 | 0   | 0   | 100 |    |    |       |       |
|                           | N    | 0   | 5.26  | 10.52 | 100 | 100 | 0   |    |    |       |       |

Table 5 denotes the scene of each website under study according to navigation system. It is viewed from this table that global navigation system is located on the websites

of all (i.e. 19) colleges. Local navigation system contained in the websites of all colleges except BM.

**Table 6: Searching system of general degree college websites (Y=Yes, N=No)**

|                 |                                 | Information architectural components |               |    |                |     |
|-----------------|---------------------------------|--------------------------------------|---------------|----|----------------|-----|
| Sl. No.         | General degree college websites | Searching system                     | Total (Max.1) |    | Percentage (%) |     |
|                 |                                 |                                      | Y             | N  | Y              | N   |
| 1               | ARMC                            | N                                    | 00            | 01 | 0              | 100 |
| 2               | AMC                             | N                                    | 00            | 01 | 0              | 100 |
| 3               | AC                              | N                                    | 00            | 01 | 0              | 100 |
| 4               | BM                              | N                                    | 00            | 01 | 0              | 100 |
| 5               | BBTMC                           | N                                    | 00            | 01 | 0              | 100 |
| 6               | BGMC                            | N                                    | 00            | 01 | 0              | 100 |
| 7               | CMMC                            | N                                    | 00            | 01 | 0              | 100 |
| 8               | GGDC                            | N                                    | 00            | 01 | 0              | 100 |
| 9               | JKC                             | N                                    | 00            | 01 | 0              | 100 |
| 10              | KMMM                            | N                                    | 00            | 01 | 0              | 100 |
| 11              | KM                              | Y                                    | 01            | 00 | 100            | 0   |
| 12              | MM                              | Y                                    | 01            | 00 | 100            | 0   |
| 13              | NSAM                            | N                                    | 00            | 01 | 0              | 100 |
| 14              | NC                              | N                                    | 00            | 01 | 0              | 100 |
| 15              | PM                              | Y                                    | 01            | 00 | 100            | 0   |
| 16              | RC                              | Y                                    | 01            | 00 | 100            | 0   |
| 17              | RCC                             | N                                    | 00            | 01 | 0              | 100 |
| 18              | SC                              | N                                    | 00            | 01 | 0              | 100 |
| 19              | SMMC                            | Y                                    | 01            | 00 | 100            | 0   |
| Total (Max. 19) | Y                               | 05                                   |               |    |                |     |
|                 | N                               | 14                                   |               |    |                |     |
| Percentage (%)  | Y                               | 26.31                                |               |    |                |     |
|                 | N                               | 73.68                                |               |    |                |     |



Table 6 clears out the presence of searching system in the websites of the chosen degree colleges under study. This table shows that only 5 (out of 19) college websites provide searching system for users.

**Table 7: Ranking of general degree college websites under different information architectural components**

| Sl No. | General degree college websites | Particulars                                      |                                       |                                |                                  |                                 |                       |      |
|--------|---------------------------------|--|---------------------------------------|--------------------------------|----------------------------------|---------------------------------|-----------------------|------|
|        |                                 | Information architectural components of websites |                                       |                                |                                  |                                 |                       |      |
|        |                                 | Organisation scheme (Max. score 8)               | Organisation structure (Max. score 4) | Labeling system (Max. score 5) | Navigation system (Max. score 6) | Searching system (Max. score 1) | Total (Max. score 24) | Rank |
| 1      | MM                              | 04   | 04                                    | 05                             | 04                               | 01                              | 18                    | 01   |
| 2      | PM                              | 05   | 04                                    | 04                             | 04                               | 01                              | 18                    | 01   |
| 3      | GGDC                            | 05   | 04                                    | 04                             | 04                               | 00                              | 17                    | 02   |
| 4      | RC                              | 05   | 03                                    | 04                             | 04                               | 01                              | 17                    | 02   |
| 5      | ARMC                            | 05   | 04                                    | 03                             | 04                               | 00                              | 16                    | 03   |
| 6      | KM                              | 04   | 03                                    | 04                             | 04                               | 01                              | 16                    | 03   |
| 7      | CMMC                            | 03   | 04                                    | 04                             | 04                               | 00                              | 15                    | 04   |
| 8      | JKC                             | 04   | 03                                    | 04                             | 04                               | 00                              | 15                    | 04   |
| 9      | KMMM                            | 04   | 04                                    | 03                             | 04                               | 00                              | 15                    | 04   |
| 10     | NSAM                            | 03   | 04                                    | 04                             | 04                               | 00                              | 15                    | 04   |
| 11     | NC                              | 04   | 03                                    | 04                             | 04                               | 00                              | 15                    | 04   |
| 12     | RCC                             | 03   | 04                                    | 04                             | 04                               | 00                              | 15                    | 04   |
| 13     | SC                              | 04   | 03                                    | 04                             | 04                               | 00                              | 15                    | 04   |
| 14     | AMC                             | 04   | 03                                    | 03                             | 04                               | 00                              | 14                    | 05   |
| 15     | BGMC                            | 04   | 03                                    | 03                             | 04                               | 00                              | 14                    | 05   |
| 16     | SMMC                            | 03   | 03                                    | 03                             | 04                               | 01                              | 14                    | 05   |
| 17     | BM                              | 03   | 03                                    | 03                             | 03                               | 00                              | 12                    | 06   |
| 18     | BBTMC                           | 03   | 03                                    | 03                             | 03                               | 00                              | 12                    | 06   |
| 19     | AC                              | 03   | 02                                    | 03                             | 03                               | 00                              | 11                    | 07   |



Table 7 highlights the list of rankings of all selected college websites (i.e.19) according to the score attained by the websites under different information architectural components. It has been observed that the highest rank is occupied by two college websites, MM and PM with a score of 18 out of the maximum score of 24.

### 8. Findings of the study

The major findings of the study are summarized below:

- The information and content of the selected college websites (i.e.19) are not grouped logically under the criterion organisation scheme;
- Alphabetical arrangement has been found in the website content of 7 degree colleges out of 19. All the 19 college websites contain chronological scheme for organising their web content in "Notice" or "What's New" section.
- The website content of 11 (out of 19) colleges contain task-specific scheme by providing the facility of submitting feedback form, suggestions, complaint, etc.
- The audience-specific scheme is resided on the websites of 17 colleges.
- The websites of 8 colleges (out of 19) contain iconographic labels for organising their content;
- Global navigation system is located on the websites of all (i.e. 19) colleges. Local navigation system contained in the websites of all colleges except BM;
- Only 5 (out of 19) college websites provide searching system for users;

- The highest rank is occupied by two college websites, MM and PM with a score of 18 out of the maximum score of 24 under different information architectural components. The website of AC has been placed at last position because it obtains the lowest score 11 out of 24.

### 9. Suggestions

Some suggestions for college websites are as follows:-

- a) Logical grouping: information or content should be grouped logically in the menu label or any navigation link. Broken links should be avoided.
- b) An alphabetical scheme should be there for arranging different contents.
- c) Content must be arranged according to the appropriate topic or subject. There should be options for submitting feedback and suggestions, and information should be categorised according to the requirements of different user groups: students, staff, parents, etc.
- d) Top-down structure is needed to maintain the hierarchy. The bottom-upstructure will be resided in staff/student, report directory for easy searching.
- e) Hyperlinks should be there for connecting a theme or object to another.
- f) Top navigation bar and the link of home page should appear on every page of a site. Local navigation system is needed to represent local and important content. In order to explore more on a topic contextual navigation must be there.



- g) Searching system with a common search space is necessary for keyword searching.

## 10. Conclusion

Every organisation or institution is required to pay attention to the World Wide Web as part of its public communication because it has developed into a significant medium for communicating and providing information (Burford, 2010). The process of information design and its ultimate result are both used to describe the term "web information architecture" (Morville & Rosenfeld, 2006). The present study has made an endeavour to observe, analyse and evaluate the existing information architecture of some selected degree college websites. For this purpose, several components of website information architecture have been utilised in this study by consulting related literature extensively. In the concluding line, the study recommends that such evaluations should be conducted frequently in order to keep the college website current with important and relevant information architectural components and meet the needs of its patrons. The study is expected to serve as an example for further research in the area of website evaluation.

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## **Appendix B**

### **Departmental websites of central government ministries of India: a webometric study**



# Departmental Websites of Central Government Ministries of India: a webometric study

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## Abstract

To measure the visibility, performance, and link quality of departmental websites under central government ministries of India, the study looked at the websites of India's ministries' departments. The required data have been collected by applying web-based survey and observation methods. Different webometric tools and approaches have then been used to analyse and tabulate the collected data. The current study has examined the domain structure, number of webpages, and link pages of the existing departmental websites under different ministries of India. It has further calculated the simple web impact factor (WIF), the self-link WIF, and the external link WIF and ranked the websites based on the score of different WIFs. A link network diagram is also prepared which shows the links among the selected central government departmental websites. The study reveals that 89.47% of websites use gov.in extension and only 10.53% of websites carry nic.in domain extension. The website of Department of Food & Public Distribution (DoFPD) got the highest position with 196 link pages, only one web page and 196 Simple WIF. This study will assist in making guidelines for website development and be helpful to further research in the field of webometric evaluation.

**Keywords:** Central government departmental websites, Google page rank, Webometrics, Webometric evaluation, Web Impact Factor,

## 1. Introduction

It is a prerequisite for every administrative entity to make a website with the occurrence of Internet and Information and Communication Technology (ICT). An administrative body can use the least amount of effort and time by having a website to reach the greatest number of people. Having a personal, functional website is therefore essential for the administration. Additionally, even though its sub-bodies may be located in topographically dispersed locations, a site enables an administrative body to assemble all of its data. Therefore, integrating ICT into

government organisations can result in the advancement of the executive branch. Governments of all countries make data accessible to citizens via a variety of channels to add a level of transparency, to emphasise responsibility, and bring their accomplishments to the attention of the general populace. Natives make decisions about the degree of certainty and success of governments using this information (Chand & Ramesha, 2017).

The words "web" and "metrics" are the roots of the term "webometrics". The web is described in the dictionary of science as a hypermedia system that enables users to see



and obtain information from documents that contain links. Metrics are systems of measurement, specifically evaluations of the validity and usefulness of digital resources. The analysis of web-related topics in a quantitative manner is called webometrics. It focuses on measuring various characteristics of the web, including websites, web pages, individual web page components, phrases inside web pages, etc. (Verma & Brahma, 2017).

## 2. Review of literature

Experiments were conducted evaluating e-government websites' effectiveness, efficiency, and user satisfaction through usability testing and a new assessment framework (Darem, 2013). Six parameters were proposed for analysing Indian government websites, finding adherence to identifier guidelines but low scores in services and participation (Chand & Ramesha, 2017; Brooks & Persaud, 2015). The importance of service emphasised quality in e-government, highlighting its impact on citizen engagement and public administration (Bhattacharya, 2014). Past literature has extensively examined the usability and interaction of academic and government websites, particularly focusing on e-government services' performance. This study aims to analyse Indian central government ministry websites using webometric tools.

## 3. Objectives of the study

The main research objectives are:

- i. to figure out the number of web pages, simple link pages, self-link pages, and external link pages on the websites of central government ministries' departments in India
- ii. to examine the effectiveness of links on Indian government

departmental websites

- iii. to locate and classify the domain names of India's central government departments' websites
- iv. to find out the websites' online Impact Factors
- v. to rank the concerned websites under study according to different Web Impact Factors.

## 4. Scope of the study

As per the information presented by the integrated government online directory of India (<https://igod.gov.in/>), there are 52 central government ministries, of which 19 ministries have their department/ departments. These ministries' departments are 52 in total number and they are accountable for performing different activities under their parent ministries. The departmental websites with separate domain names have been included in this study; that's why the study covers only 38 departmental websites.

## 5. Methodology

The required data have been collected by applying web-based survey and observation techniques, from the selected departmental websites. In the next stage, different webometric tools and approaches have been used to analyse and tabulate the collected data. The total number of pages from each website was counted using the Google search engine; the chosen search term was, site : url of the website for instance, site: <https://dare.gov.in/>

Website Link Analyzer (<https://smallseotools.com/website-link-analyzer-tool/>) has been used to extract simple links, self or internal links and external links from every department's website under study.



## 6. Web Impact Factor (WIF)

The Web Impact Factor is a tool for evaluating the value of websites based on the links that point to them. The number of webpages and links to a website are necessary for calculating WIF. The concerned study uses three different kinds of WIFs, which are described below:

Simple-WIF = No of Linked Pages/ No

of webpages - reported by the search engine Google

External Link-WIF = No of External Linked Pages/ No of webpages - reported by the search engine Google

Self Link-WIF = No of Self-Linked Pages/ No of webpages - reported by the search engine Google

(Hadagali, Bulla & Shettar, 2021).

**Table 1: List of ministries' departments with their website addresses**

| Sl. No. | Central government ministries' departments                        | Website address   |
|---------|---|---|
| 1       | Department of Administrative Reforms & Public Grievances (DoARPG) | <a href="https://darpg.gov.in/en">https://darpg.gov.in/en</a>                                       |
| 2       | Department of Agriculture & Farmers Welfare (DoAFW)               | <a href="https://agricoop.nic.in/en">https://agricoop.nic.in/en</a>                                 |
| 3       | Department of Agricultural Research and Education (DoARE)         | <a href="https://dare.gov.in/">https://dare.gov.in/</a>   |
| 4       | Department of Animal Husbandry and Dairying (DoAHD)               | <a href="https://dahd.nic.in/">https://dahd.nic.in/</a>   |
| 5       | Department of Biotechnology (DoB)                                 | <a href="https://dbtindia.gov.in/">https://dbtindia.gov.in/</a>                                     |
| 6       | Department of Chemicals and Petrochemicals (DoCPC)                | <a href="https://chemicals.gov.in/">https://chemicals.gov.in/</a>                                   |
| 7       | Department of Commerce (DoC)                                      | <a href="https://commerce.gov.in/">https://commerce.gov.in/</a>                                     |
| 8       | Department of Consumer Affairs (DoCA)                             | <a href="https://consumeraffairs.nic.in/">https://consumeraffairs.nic.in/</a>                       |
| 9       | Department of Defence Production (DoDP)                           | <a href="https://www.ddpmod.gov.in/">https://www.ddpmod.gov.in/</a>                                 |
| 10      | Department of Drinking Water and Sanitation (DoDWS)               | <a href="https://jalshakti-ddws.gov.in/en">https://jalshakti-ddws.gov.in/en</a>                     |
| 11      | Department of Economic Affairs (DoEA)                             | <a href="https://dea.gov.in/">https://dea.gov.in/</a>   |
| 12      | Department of Empowerment of Persons with Disabilities (DoEPD)    | <a href="https://disabilityaffairs.gov.in//content/">https://disabilityaffairs.gov.in//content/</a> |
| 13      | Department of Expenditure (DoE)                                   | <a href="https://doe.gov.in/">https://doe.gov.in/</a>   |
| 14      | Department of Ex-servicemen Welfare (DoEW)                        | <a href="https://www.desw.gov.in/">https://www.desw.gov.in/</a>                                     |
| 15      | Department of Fertilizers (DoFz)                                  | <a href="https://www.fert.nic.in/">https://www.fert.nic.in/</a>                                     |
| 16      | Department of Financial Services (DoFS)                           | <a href="https://financialservices.gov.in/">https://financialservices.gov.in/</a>                   |
| 17      | Department of Fisheries (DoF)                                     | <a href="https://dof.gov.in/">https://dof.gov.in/</a>   |



| Sl. No. | Central government ministries' departments                      | Website address   |
|---------|---|---|
| 18      | Department of Food & Public Distribution (DoFPD)                | <a href="https://dfpd.gov.in/index.htm">https://dfpd.gov.in/index.htm</a>   |
| 19      | Department of Health Research (DoHR)                            | <a href="https://dhr.gov.in/">https://dhr.gov.in/</a>   |
| 20      | Department of Investment and Public Asset Management (DoIPAM)   | <a href="https://dipam.gov.in/">https://dipam.gov.in/</a>   |
| 21      | Department of Justice (DoJ)                                     | <a href="https://doj.gov.in/">https://doj.gov.in/</a>   |
| 22      | Department of Land Resources (DoLR)                             | <a href="https://dolr.gov.in/">https://dolr.gov.in/</a>   |
| 23      | Department of Legal Affairs (DoLA)                              | <a href="https://legalaffairs.gov.in/">https://legalaffairs.gov.in/</a>   |
| 24      | Department of Official Language (DoOL)                          | <a href="https://rajbhasha.gov.in/">https://rajbhasha.gov.in/</a>   |
| 25      | Department of Pension & Pensioners' Welfare (DoPPW)             | <a href="https://doppw.gov.in/en">https://doppw.gov.in/en</a>   |
| 26      | Department of Personnel & Training (DoPT)                       | <a href="https://dopt.gov.in/#">https://dopt.gov.in/#</a>   |
| 27      | Department of Pharmaceuticals (DoPh)                            | <a href="https://pharmaceuticals.gov.in/">https://pharmaceuticals.gov.in/</a>   |
| 28      | Department of Posts (DoP)                                       | <a href="https://www.indiapost.gov.in/vas/Pages/IndiaPostHome.aspx">https://www.indiapost.gov.in/vas/Pages/IndiaPostHome.aspx</a> |
| 29      | Department for Promotion of Industry and Internal Trade (DPIIT) | <a href="https://dpiit.gov.in/">https://dpiit.gov.in/</a>   |
| 30      | Department of Public Enterprises (DoPE)                         | <a href="https://dpe.gov.in/">https://dpe.gov.in/</a>   |
| 31      | Department of Revenue (DoR)                                     | <a href="https://dor.gov.in/">https://dor.gov.in/</a>   |
| 32      | Department of School Education & Literacy (DoSEL)               | <a href="https://dsel.education.gov.in/">https://dsel.education.gov.in/</a>   |
| 33      | Department of Science & Technology (DoST)                       | <a href="https://dst.gov.in/">https://dst.gov.in/</a>   |
| 34      | Department of Scientific and Industrial Research (DoSIR)        | <a href="http://www.dsir.gov.in/">http://www.dsir.gov.in/</a>   |

## 7. Analysis and interpretation of data

### 7.1 Distribution of departments' websites by domain

A domain name consists of the name of a website and the specific domain extension.

**Table 2: Websites using specific domain extensions**

| Domain names | Number of government departmental websites | Percentage (%) |
|--------------|--|----------------|
| gov.in       | 34   | 89.47          |
| nic.in       | 04   | 10.53          |

Table 2 depicts the distribution of domains among central government departmental websites of India. It exhibits that two types of domain name (i.e. gov.in and

nic.in) have been used by the concerned websites. 34 (89.47%) departmental websites use the domain gov.in whereas only 4 (10.53%) websites follow nic.in extension.

**7.2 Simple WIF of departmental websites**

Table 3 displays the Simple Web Impact Factor. It displays the link pages for departmental websites together with their

rank distribution as per Simple WIF. The score of Simple WIF (B/A) of each website is taken by dividing the number of link pages (B) by total number of web pages (A) of a website.

**Table 3: Simple WIF of departmental websites**

| Sl. No. | Name of Departmental Websites | Number of web Pages (A) | Number of Link pages (B) | Simple WIF (B/A) | Rank by Simple WIF |
|---------|-------------------------------|-------------------------|--------------------------|------------------|--------------------|
| 1       | DoFPD                         | 01                      | 196                      | 196              | 01                 |
| 2       | DoP                           | 02                      | 108                      | 54               | 02                 |
| 3       | DoPPW                         | 127                     | 99                       | 0.779            | 03                 |
| 4       | DoARPG                        | 428                     | 182                      | 0.425            | 04                 |
| 5       | DoIPAM                        | 557                     | 187                      | 0.335            | 05                 |
| 6       | DoDP                          | 708                     | 125                      | 0.176            | 06                 |
| 7       | DoJ                           | 1710                    | 263                      | 0.153            | 07                 |
| 8       | DoWRRDGR                      | 2140                    | 292                      | 0.136            | 08                 |
| 9       | DoC                           | 5400                    | 567                      | 0.105            | 09                 |
| 10      | DoF                           | 2130                    | 200                      | 0.093            | 10                 |
| 11      | DoSJE                         | 2020                    | 169                      | 0.083            | 11                 |
| 12      | DoSEL                         | 2390                    | 169                      | 0.070            | 12                 |
| 13      | DoSIR                         | 3250                    | 214                      | 0.065            | 13                 |
| 14      | DoFz                          | 2690                    | 172                      | 0.063            | 14                 |
| 15      | DoPT                          | 550                     | 352                      | 0.063            | 14                 |
| 16      | DoB                           | 4180                    | 235                      | 0.056            | 15                 |
| 17      | DoAFW                         | 3400                    | 188                      | 0.055            | 16                 |
| 18      | DoEW                          | 3200                    | 133                      | 0.041            | 17                 |
| 19      | DoCPC                         | 4350                    | 177                      | 0.040            | 18                 |
| 20      | DoR                           | 3680                    | 140                      | 0.038            | 19                 |
| 21      | DoE                           | 8080                    | 173                      | 0.021            | 20                 |
| 22      | DoPh                          | 6510                    | 130                      | 0.019            | 21                 |
| 23      | DoEA                          | 8910                    | 167                      | 0.018            | 22                 |
| 24      | DoFS                          | 7120                    | 133                      | 0.018            | 22                 |
| 25      | DoST                          | 9760                    | 179                      | 0.018            | 22                 |
| 26      | DoPE                          | 11600                   | 201                      | 0.017            | 23                 |
| 27      | DoAHD                         | 9810                    | 144                      | 0.014            | 24                 |
| 28      | DoDWS                         | 71                      | 01                       | 0.014            | 24                 |
| 29      | DoLR                          | 11300                   | 141                      | 0.012            | 25                 |
| 30      | DoCA                          | 63000                   | 690                      | 0.010            | 26                 |
| 31      | DoOL                          | 11200                   | 118                      | 0.010            | 26                 |
| 32      | DoLA                          | 14000                   | 125                      | 0.008            | 27                 |
| 33      | DPIIT                         | 24700                   | 209                      | 0.008            | 27                 |
| 34      | LD                            | 13200                   | 108                      | 0.008            | 27                 |
| 35      | DoT                           | 75100                   | 338                      | 0.004            | 28                 |
| 36      | DoHR                          | 1290                    | NF                       | --               | --                 |
| 37      | DoARE                         | 1150                    | NF                       | --               | --                 |
| 38      | DoEPD                         | NF                      | 236                      | --               | --                 |



Table 3 shows that the website of DoFPD got the highest position with 196 link pages, only one web page and 196 Simple WIF. Second rank has been occupied by DoP with 108 link pages, 2 web pages and 54 Simple WIF. The website of DoPPW secured 3rd rank with 99 link pages, 127 web pages and 0.779 Simple WIF. Fourth and fifth rank has been taken by the website of DoARPG and DoIPAM with 0.425 and 0.335 Simple WIF respectively. DoF has got 10th position with 0.093 Simple WIF. The websites of DoFz and DoPT have got 14th rank with a score of 0.063. 22nd position is occupied by the websites of three departments- DoEA, DoFS and DoST with 0.018 Simple WIF. The websites of DoAHD and DoDWS have been placed in 24th position with a score of 0.014.

Three websites, DoLA, DPIIT and LD have got 27th rank with a score of 0.008. The website of DoT is placed in the last position with 338 link pages, 75100 webpages and 0.004 Simple WIF.

### 7.3 External link WIF of departmental websites

Table 4 displays External Link WIF of departmental websites. Here, A and C stand for the websites' number of total web pages and total number of externally linked web pages, respectively. The score of External Link WIF ( $C/A$ ) for each website is derived by dividing the entire number of externally linked web pages (C) by the number of total web pages (A).

**Table 4: External link WIF of departmental websites**

| Sl. No. | Name of Departmental Websites | Number of Web pages (A) | Number of External Linked Web pages (C) | External Link WIF (C/A) | Rank by External link WIF |
|---------|-------------------------------|-------------------------|---|-------------------------|---------------------------|
| 1       | DoFPD                         | 01                      | 33                                      | 33                      | 01                        |
| 2       | DoP                           | 02                      | 13                                      | 6.5                     | 02                        |
| 3       | DoPPW                         | 127                     | 52                                      | 0.409                   | 03                        |
| 4       | DoARPG                        | 428                     | 44                                      | 0.102                   | 04                        |
| 5       | DoJ                           | 1710                    | 121                                     | 0.070                   | 05                        |
| 6       | DoDP                          | 708                     | 31                                      | 0.043                   | 06                        |
| 7       | DoSJE                         | 2020                    | 57                                      | 0.028                   | 07                        |
| 8       | DoPT                          | 5550                    | 145                                     | 0.026                   | 08                        |
| 9       | DoF                           | 2130                    | 51                                      | 0.023                   | 09                        |
| 10      | DoWRRDGR                      | 2140                    | 49                                      | 0.022                   | 10                        |
| 11      | DoSEL                         | 2390                    | 48                                      | 0.020                   | 11                        |
| 12      | DoAFW                         | 3400                    | 55                                      | 0.016                   | 12                        |
| 13      | DoB                           | 4180                    | 53                                      | 0.012                   | 13                        |
| 14      | DoC                           | 5400                    | 68                                      | 0.012                   | 13                        |
| 15      | DoEW                          | 3200                    | 38                                      | 0.011                   | 14                        |
| 16      | DoR                           | 3680                    | 43                                      | 0.011                   | 14                        |
| 17      | DoSIR                         | 3250                    | 31                                      | 0.009                   | 15                        |
| 18      | DoCPC                         | 4350                    | 38                                      | 0.008                   | 16                        |
| 19      | DoCA                          | 63000                   | 497                                     | 0.007                   | 17                        |
| 20      | DoEA                          | 8910                    | 45                                      | 0.005                   | 18                        |
| 21      | DoFS                          | 7120                    | 41                                      | 0.005                   | 18                        |
| 22      | DoIPAM                        | 557                     | 03                                      | 0.005                   | 18                        |
| 23      | DoAHD                         | 9810                    | 43                                      | 0.004                   | 19                        |
| 24      | DoPE                          | 11600                   | 57                                      | 0.004                   | 19                        |



| Sl. No. | Name of Departmental Websites | Number of Web pages (A) | Number of External Linked Web pages (C) | External Link WIF (C/A) | Rank by External link WIF |
|---------|-------------------------------|-------------------------|---|-------------------------|---------------------------|
| 25      | DoPh                          | 6510                    | 30                                      | 0.004                   | 19                        |
| 26      | DoE                           | 8080                    | 27                                      | 0.003                   | 20                        |
| 27      | DoLR                          | 11300                   | 39                                      | 0.003                   | 20                        |
| 28      | DoST                          | 9760                    | 39                                      | 0.003                   | 20                        |
| 29      | DoFz                          | 2690                    | 07                                      | 0.002                   | 21                        |
| 30      | DoLA                          | 14000                   | 39                                      | 0.002                   | 21                        |
| 31      | DoOL                          | 11200                   | 31                                      | 0.002                   | 21                        |
| 32      | DPIIT                         | 24700                   | 51                                      | 0.002                   | 21                        |
| 33      | LD                            | 13200                   | 27                                      | 0.002                   | 21                        |
| 34      | DoT                           | 75100                   | 101                                     | 0.001                   | 22                        |
| 35      | DoHR                          | 1290                    | NF                                      | --                      | --                        |
| 36      | DoARE                         | 1150                    | NF                                      | --                      | --                        |
| 37      | DoDWS                         | 71                      | NF                                      | --                      | --                        |
| 38      | DoEPD                         | NF                      | 42                                      | --                      | --                        |

The External link WIFs of all central government departmental websites in this study have been depicted in table 4. The websites are ranked based on their scores. The website of DoFPD has taken the first rank with 1 web page, 33 external linked web pages and 33 External link WIF. Second rank is taken by the website of DoP with 2 web pages, 13 external linked web pages and 6.5 External link WIF. Third and fourth positions have been occupied by the websites of DoPPW and DoARPG with 0.409 and 0.102 External link WIFs respectively. The websites of two departments, DoB and DoC got 13th position with 0.012 External link WIF. The websites of DoEA, DoFS and DoIPAM occupy 18th rank with 0.005 External link WIF. Twenty first position is occupied by the websites of five departments - DoFz, DoLA, DoOL, DPIIT

and LD with 0.002 External link WIF. The website of DoT has been placed in last rank i.e. 22nd with 75100 web pages, 101 external linked web pages and 0.001 External link WIF.

#### 7.4 Selflink WIF of departmental websites

Table 5 exhibits the individual score and rank (based on Self Link WIF) of each departmental website under study. In this table, A denotes a total number of web pages, and D denotes a total number of self-linked web pages inside the websites. The score of Self link WIF of each website is retrieved by dividing the number of self-linked web pages (D) by a number of web pages (A). Websites are rated as per the scores of Self link WIFs.

**Table 5: Self link WIF of departmental websites**

| Sl. No. | Name of Departmental Websites | Number of Web pages (A) | Number of Self linked web pages (D) | Self-link WIF (D/A) | Rank by Self Link WIF |
|---------|-------------------------------|-------------------------|-------------------------------------|---------------------|-----------------------|
| 1       | DoFPD                         | 01                      | 163                                 | 163                 | 01                    |
| 2       | DoP                           | 02                      | 95                                  | 47.5                | 02                    |
| 3       | DoPPW                         | 127                     | 47                                  | 0.370               | 03                    |
| 4       | DoIPAM                        | 557                     | 184                                 | 0.330               | 04                    |
| 5       | DoARPG                        | 428                     | 138                                 | 0.322               | 05                    |
| 6       | DoDP                          | 708                     | 94                                  | 0.132               | 06                    |
| 7       | DoWRRDGR                      | 2140                    | 243                                 | 0.113               | 07                    |
| 8       | DoC                           | 5400                    | 499                                 | 0.092               | 08                    |
| 9       | DoJ                           | 1710                    | 142                                 | 0.083               | 09                    |
| 10      | DoF                           | 2130                    | 149                                 | 0.069               | 10                    |
| 11      | DoFz                          | 2690                    | 165                                 | 0.061               | 11                    |
| 12      | DoSIR                         | 3250                    | 183                                 | 0.056               | 12                    |
| 13      | DoSJE                         | 2020                    | 112                                 | 0.055               | 13                    |
| 14      | DoSEL                         | 2390                    | 121                                 | 0.050               | 14                    |
| 15      | DoB                           | 4180                    | 182                                 | 0.043               | 15                    |
| 16      | DoAFW                         | 3400                    | 133                                 | 0.039               | 16                    |
| 17      | DoPT                          | 5550                    | 207                                 | 0.037               | 17                    |
| 18      | DoCPC                         | 4350                    | 139                                 | 0.031               | 18                    |
| 19      | DoEW                          | 3200                    | 95                                  | 0.029               | 19                    |
| 20      | DoR                           | 3680                    | 97                                  | 0.026               | 20                    |
| 21      | DoE                           | 8080                    | 146                                 | 0.018               | 21                    |
| 22      | DoPh                          | 6510                    | 100                                 | 0.015               | 22                    |
| 23      | DoDWS                         | 71                      | 01                                  | 0.014               | 23                    |
| 24      | DoST                          | 9760                    | 140                                 | 0.014               | 23                    |
| 25      | DoEA                          | 8910                    | 122                                 | 0.013               | 24                    |
| 26      | DoFS                          | 7120                    | 92                                  | 0.012               | 25                    |
| 27      | DoPE                          | 11600                   | 144                                 | 0.012               | 25                    |
| 28      | DoAHD                         | 9810                    | 101                                 | 0.010               | 26                    |
| 29      | DoLR                          | 11300                   | 102                                 | 0.009               | 27                    |
| 30      | DoOL                          | 11200                   | 87                                  | 0.007               | 28                    |
| 31      | DoLA                          | 14000                   | 86                                  | 0.006               | 29                    |
| 32      | DPIIT                         | 24700                   | 158                                 | 0.006               | 29                    |
| 33      | LD                            | 13200                   | 81                                  | 0.006               | 29                    |
| 34      | DoCA                          | 63000                   | 193                                 | 0.003               | 30                    |
| 35      | DoT                           | 75100                   | 237                                 | 0.003               | 30                    |
| 36      | DoHR                          | 1290                    | NF                                  | --                  | --                    |
| 37      | DoARE                         | 1150                    | NF                                  | --                  | --                    |
| 38      | DoEPD                         | NF                      | 194                                 | --                  | --                    |

Table 5 exhibits the Self link WIFs of the departmental websites with their ranks. It is showing that the website of DoFPD occupies the first rank with 1 web page, 163 Self linked web pages and 163 Self link WIF. DoP and DoPPW have been placed in second and third position with 47.5 and 0.370 Self link WIFs respectively. The fifth rank is taken by

DoARPG with 428 web pages, 138 Self linked web pages and 0.322 Self link WIF. The website of DoF gets tenth rank with 2130 web pages, 149 Self linked web pages and 0.069 Self link WIF. Twenty third position is occupied by the websites of DoDWS and DoST with 0.014 Self link WIF. The websites of DoLA, DPIIT and LD got 29th rank with



0.006 Self link WIF. The lowest rank is taken by the websites of DoCA and DoT with 0.003 Selflink WIF.

### 7.5 Google's page rank and domain authority

Google uses the Page Rank algorithm to rank the webpages of various websites in their search engine results. Through the use of this method, website page importance can be

determined.

A site's performance in search engine results can be determined by its domain authority, a factor in search engine rankings. It provides a general summary of anticipated search engine performance and was developed by the software development company Moz. It assigns websites a score between 1 and 100, with the higher number indicating a better result.

**Table 6: Domain authority, page authority and page rank of departmental websites**

| Sl. No. | Name of Departmental Websites | Domain Authority | Page Authority | Page Rank (out of 10) |
|---------|-------------------------------|------------------|----------------|-----------------------|
| 1       | DoAFW                         | 53               | 58             | 06                    |
| 2       | DoP                           | 59               | 58             | 06                    |
| 3       | DoST                          | 57               | 56             | 06                    |
| 4       | DoT                           | 58               | 54             | 06                    |
| 5       | DoAHD                         | 47               | 50             | 05                    |
| 6       | DoB                           | 47               | 47             | 05                    |
| 7       | DoC                           | 51               | 52             | 05                    |
| 8       | DoCA                          | 48               | 47             | 05                    |
| 9       | DoEA                          | 49               | 48             | 05                    |
| 10      | DoFS                          | 42               | 51             | 05                    |
| 11      | DoPT                          | 42               | 48             | 05                    |
| 12      | DoSEL                         | 60               | 42             | 05                    |
| 13      | LD                            | 51               | 48             | 05                    |
| 14      | DoARPG                        | 35               | 45             | 04                    |
| 15      | DoDP                          | 34               | 41             | 04                    |
| 16      | DoDWS                         | 38               | 43             | 04                    |
| 17      | DoE                           | 41               | 44             | 04                    |
| 18      | DoEPD                         | 42               | 43             | 04                    |
| 19      | DoEW                          | 38               | 41             | 04                    |
| 20      | DoF                           | 33               | 42             | 04                    |
| 21      | DoFPD                         | 44               | 41             | 04                    |
| 22      | DoFz                          | 34               | 44             | 04                    |
| 23      | DoHR                          | 35               | 42             | 04                    |
| 24      | DoIPAM                        | 37               | 40             | 04                    |
| 25      | DoJ                           | 41               | 45             | 04                    |
| 26      | DoLA                          | 36               | 42             | 04                    |
| 27      | DoLR                          | 32               | 39             | 04                    |
| 28      | DoOL                          | 33               | 45             | 04                    |
| 29      | DoPE                          | 37               | 43             | 04                    |



| Sl. No. | Name of Departmental Websites | Domain Authority | Page Authority | Page Rank (out of 10) |
|---------|-------------------------------|------------------|----------------|-----------------------|
| 30      | DoPh                          | 38               | 43             | 04                    |
| 31      | DoR                           | 40               | 47             | 04                    |
| 32      | DoSIR                         | 35               | 40             | 04                    |
| 33      | DoSJE                         | 32               | 39             | 04                    |
| 34      | DoWRRDGR                      | 36               | 41             | 04                    |
| 35      | DPIIT                         | 38               | 45             | 04                    |
| 36      | DoARE                         | 26               | 28             | 03                    |
| 37      | DoCPC                         | 22               | 28             | 03                    |
| 38      | DoPPW                         | 28               | 38             | 03                    |

Table 6 highlights the score of individual departmental websites under Domain Authority, Page Authority and Google's Page Rank. The highest score i.e. 60 according to Domain Authority has been occupied by the website of DoSEL. The websites of DoAFW and DoP secured the highest score 58 under Page Authority. According to Google's Page Rank, the top score i.e. 6 is taken by the websites of DoAFW, DoP, DoST and DoT.

### 7.6 Link mapping of websites

The popular website link analyser, smallseotools (<https://smallseotools.com/website-link-analyzer-tool/>) has been utilised to gather required data from the selected central government departmental websites of India. The task of web harvesting was

conducted from 11th - 13th July, 2023. Well-known graph visualisation software Graph Viz has been used in this study for making link network diagrams of the selected websites under study. Figure 1 represents the network diagram which shows links (mainly external links) among 24 departmental websites. This diagram exhibits that the website, DoPE (<https://dpe.gov.in>) is connected with a large number of departmental websites. It is linked with DoC, LD, DoIPAM, DoE, DoEA and DoPT. DoE (<https://doe.gov.in/>) is linked with four websites i.e. DoEA, DoFS, DoIPAM and DoR. Consequently, a joint initiative among central government departmental websites of India attracts users to search and retrieve more information according to their demand.





underscores the interconnectedness of certain websites, with the Department of Public Enterprises (DoPE) serving as a central hub, linked to multiple departmental websites, facilitating information exchange and collaboration within the government ecosystem. However, the findings also raise questions regarding the disparity in web presence and connectivity among different departments, suggesting areas for improvement in enhancing online visibility and interdepartmental collaboration.

## 9. Suggestions

- To make the concerned websites searchable via search engines, basic search engine optimisation (SEO) principles of big search engines should be adhered to;
- There shouldn't be any broken links on the departmental websites;
- To make it simpler for users to obtain the information supplied by departments, departmental websites with fewer webpages must improve the number of webpages indexed by search engines.
- So that search engines may quickly access and index the most recent content posted to the websites, the web design and links between the pages need to be corrected.

## 10. Conclusion

In this study, websites for ministries' departments in India have been evaluated and ranked according to their WIFs (Simple, External and Internal). The website of DoFPD has the highest impact factor based on three selected WIFs i.e. Simple, External and Internal. The chosen websites have been also listed depending on their ranks identified by

the tool Google Page Rank. The goal of this study is to provide accurate information on the websites of central government departments of India. It displays the visibility, effectiveness, and link quality of the concerned departmental websites. The results of this study will aid in the diagnosis of the issue and point us in the appropriate path for future study in the area of webometric evaluation.

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