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2010

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March 2010

Abstract

Website constructions in the world have progressed at a fast pace. However, compared to the pace of development, the issue of benchmarking of the contents of official websites has not yet received adequate attention. The paper argues that with the proliferation of official websites worldwide, data dissemination concepts as developed by the IMF need to be generalised towards information dissemination, with special reference to web-based dissemination. The paper, in this context, attempts to specify some common structural features in the contents of official websites that could act as potential benchmarks. It examines to what extent commonalities and differences prevail with respect to these benchmarks among the websites of a few leading international organizations, as well as a few official websites in the US and India. Analysis reveals that some degree of convergence has taken place among all official websites in (i) structuring the contents, and in (ii) providing a few basic facilities to the users. It is observed that none of the sites are fully compliant with respect to the criteria specified in the paper. Full compliance would, however, require limited effort and would mostly involve one-time uploading of specific materials. A few major limitations, however, appear to be more general. Observations suggest that in future more attention need to be focused on designing the headers and footers of web pages that can act as a general template for all official websites. More attention is also needed on providing information that would lead to more precise identification of web pages for user reference and documentation. The paper suggests some specific improvements in this regard, elaborating with examples. It also suggests a few other policy measures that could lead to more effective web-based information in official websites.

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1.   Introduction

The quality of policy in an economy is sharply dependent on the quality and the extent of information available to the policymaker. While the role of timely and accurate information in policymaking is well appreciated, the role of dissemination of information by policymakers in an economy is comparatively less understood. Theoretical evidence suggests that when economic agents do not have socially valuable private information, greater provision of public information always increases welfare. Dissemination of relevant information reflects transparency in the policymaking process in an economy and, in this way, enhances the credibility of policy. In a globalised economy where financial markets often react sharply due to expectational factors, the need for building credibility through this process cannot be overemphasised. If dissemination is timely and exhaustive, it can reduce uncertainty, save time and, in this way, usher economic efficiency. Further, dissemination of data in desired format is necessary for effective policy research in an economy. Data in desired format being a necessary infrastructure in research, any improvement in this direction has the potential to improve research productivity in a country. The improvement in research productivity, in turn, could often be the first step in improving overall productivity in an economy. With proper sharing of information, the economy can, like an individual organization, act like a 'digital nervous system' as perceived by Gates and Hemmingway (1999) and reduce the chances of emergence or persistence of shocks.

Given the importance of dissemination of information, the International Monetary Fund (IMF) has specified clear standards for data dissemination (IMF, 1996). The two standards specified by the IMF, viz., general data dissemination system (GDDS) and special data dissemination standard (SDDS) provide benchmarks against which the quality and the extent of data dissemination in a country are assessed.[1] IMF's major focus is, however, on the statistical aspect and not on information dissemination in general. Besides primary data, policymaking organizations have to disseminate many other pieces of information of different types. Some of these items like guidelines, notifications or changes in operational procedures also need to be communicated to other economic agents and their effective dissemination also deserve serious attention.

Information dissemination in an economy could take place on several platforms, e.g., print media, electronic media like radio or television and the World Wide Web. Recently websites of organizations have become one of the most important vehicles for information dissemination. This is because the web is a highly cost effective medium of dissemination from the point of view of an organization. From the users perspective also, access to the information in the web is quick and simultaneous. Especially, when quick interaction with the information provider is necessary, web is one of the best media. However, though the technological aspects on building good websites have been discussed extensively, the literature on "contents" of "official" websites is not as exhaustive.[2] Earlier studies like Goffe and Parks (1997) that discussed the quality of information infrastructure in economics, did not deal with this issue directly. Among central banks, websites started receiving increasing attention during the late 1990s. In an earlier study, Courtis (1998) castigated the general quality of information dissemination in central bank websites. Hanke and Morgenson (2001) called for increased uniformity in the structure and layout of central bank websites. Several aspects of central bank websites were also reviewed by Laurmaa (2001) and Eades (2002). However, though the general quality and the extent of information in the official websites has improved substantially during the last decade worldwide, no clear benchmark or guideline on the contents has so far been made available by any of

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[1] The Dissemination Standards Bulletin Board (DSBB) at the IMF website (http://dsbb.imf.org) provides discussions on GDDS and SDDS in detail.

[2] In this paper, "official" organizations imply those organizations that are primary sources of macroeconomic, socioeconomic and financial data across countries or within a specific country.

the international agencies to assess their effectiveness.[3] Given the importance of websites as vehicles for information dissemination, it is, however, necessary to prepare such benchmarks for evaluating these sites and examine the possibilities for further improvements.

The purpose of this paper is threefold. First, it attempts to specify a few benchmarks for evaluating the contents of official websites. While these benchmarks are by no means exhaustive, it is hoped that the specification provided in the paper would provoke a debate, which, given the current context of developments of websites worldwide, is necessary. At the outset, it is mentioned that the focus of our attention is solely on the "contents" of the websites and their structuring, not on whether the site optimises its resources in terms of hardware or software tools.[4] Thus, for example, we do not evaluate whether the speed of downloading from these sites is slow or fast, or whether the visual organizations of items in the various web pages in a site are internally consistent or aesthetically appealing. Major purpose is to analyse whether the structural features and the facilities provided to the users are adequate in the website or could be improved upon. Within this domain also, the scope of our study is modest. We only examine whether a useful structural feature is present in the 'contents' and does not examine whether the feature itself is exhaustive. For example, we do not attempt to discuss whether an organization has displayed all its forms in the "forms" part of its website. As long as the feature indicating "forms" are displayed in the site, and some forms are put into it, it is considered as compliant with respect to the feature. Though in reality it might not be, it is hoped that if the site offers the structural feature in its design of the contents, gradual but continuous uploading of the remaining items within this group would make the site more and more exhaustive.

The second purpose of the paper is to apply these criteria to examine the general quality of web-based information dissemination in the United States of America (US), India and a few leading international organizations. The US is one of the vanguards in e-governance and Internet technology. Its pioneering role in using and propagating web-based technology is well known and well appreciated. In contrast, India, though being a developing country, is widely perceived as an emerging software power. Consistent with international trends, websites have recently emerged as major vehicles for information dissemination in India. Almost all major official organizations in India now have their own websites which are being continuously updated and improved upon. However, probably due to the lack of availability of clear international guidelines, the issue of devising standards of evaluation for these sites has so far not received systematic attention. The paper examines to what extent a few select official websites in both the USA and India meet some of the discussed criteria and whether they could be improved upon. Websites of a few leading international official organizations that could be considered as "standards" are also covered.

The third and the final purpose of the paper is more specific and is related to web-based data dissemination, with special reference to India. Earlier Podehl (1999) recognised that dissemination of official statistics via the internet would require new strategies. Given the fast pace of changes, Relander et al (1999) suggested that continuous market surveys should be included in the annual programmes of the statistical agencies. They also concluded that effective data dissemination in the internet would require networking of experts in different fields. Consistent with these recommendations, currently six major organizations in the world, viz., the BIS, ECB, EUROSTAT, IMF, OECD and the UN have joined together to focus on business practices in the field of statistical information that would allow more efficient process for exchange and sharing of data and metadata. Considerable progress on this project entitled "Statistical Data and Metadata Exchange" (SDMX) [http://www.sdmx.org] has already been achieved. However, web-based dissemination practices of several organizations suggest that adequate attention has not been given on the subject. As a result,

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[3] Sometimes, governmental guidelines on website preparation are available in the public domain. For example, the guideline of the Office of Information Technology of the Government of New South Wales, Australia, could be obtained from the website http://www.oit.nsw.gov.au.

[4] I do not ignore this feature because it is unimportant. A thorough discussion is ignored here because an assessment of it cannot be done by observing the websites alone. In fact, such a task will not be possible without active cooperation from the respective webmasters.

despite the availability of data, many official websites adopt a poor design that acts as an impediment in downloading data in a clear database format. In the light of this development as well as in the light of the standard of web-based dissemination of a few leading agencies, I offer some specific suggestions for further improvements in the design of data dissemination. It is argued that implementations of the suggestions would require only a limited amount of concerted effort from the official bodies, but could have tremendous implications on research productivity.

The plan of the paper is as follows: Section 2 provides a brief review of the general structure of official websites and attempts to specify a few criteria as benchmarks. With the specification of these benchmarks, Section 3 evaluates to what extent these criteria are satisfied by some of the leading official websites. Section 4 offers a few suggestions for further improvements in web-based data dissemination. Finally, Section 5 concludes the paper with some additional policy recommendations.

2.   Information dissemination through web pages: characteristic features of a good website

In the literature, construction of websites has been discussed extensively. The web itself contains several such resources. For example, the website http://www.webstyleguide.com offers good guidance on construction of websites. It is difficult to characterise a 'good' website. Any rigorous characterisation is subjective and could be debated. The two basic criteria for evaluation are (i) the platform and (ii) the contents. The platform of the website is related to its technological aspects, the hardware and the software that together form the backbone of the website. From practical point of view, this aspect is important because if the speed of data dissemination suffers, the very purpose of constructing the website suffers. An "ideal" choice for this is generally made after doing a cost benefit analysis that involves an assessment of the potential number of visitors of the site. A major part of the literature on construction of websites is developed by information technologists. Hence majority of the books, papers and other documents on construction of websites, therefore, focus on the technological angle.

The "contents" of a website, in contrast, may vary from subject to subject. Therefore, preparing a general guideline for them is not an easy task. In the literature, this area, therefore, has so far a limited attention. The "ideal" contents of a website would depend upon the goal of an organization. For example, the way a business enterprise website needs to be structured could be different from that of an academic or a research organization. In this paper, however, I do not focus on the technological aspects, but restrict our attention on the "contents" only and that too for a few "official" websites. Though the details may vary, many areas of contents and their structuring have common elements. Below I discuss a few such common elements or features. These elements or features are neither exhaustive, nor should they be considered desirable for all "official" website. Still, it is argued that they would at least provide an initial benchmark for judging the effectiveness of information dissemination in a site.

These features are logically grouped into seven major areas: (i) description of the organization and its leaders, (ii) one-way information on its inputs and outputs, (iii) information relating to communication with the organization, (iv) two-way communications with inputs from the users, (v) facilities provided for easy browsing within the site or to the relating sites, (vi) facilities in the site that help users in their own documentation or understanding and (vii) other facilities. On each of these broad areas, further classifications have been made. Whenever possible, the need has been further elucidated with items and comments.

1.   **Effective Description of the Organization**

A.   A detailed history of the organization

·   The genesis and evolution of the organization

·   A chronology or timeline of major events

·　　　History of the website and its evolution (For example, on which date was it made available for viewing to the general public? What were the significant milestones?)

B.　　　The legislative framework under which the organization operates

·　　　The laws of the land under which the organization operates

·　　　Agreements, pacts etc. with other organizations in relation to its regular activities

C.　　　The geographical boundary within which the organization operates

D.　　　Identifying features of the organization

·　　　Emblem or logo of the organization

·　　　Motto, mission or vision statement of the organization

·　　　Constitution of the organization

·　　　Other identifying features (flags, anthems, songs etc.)

E.　　　Detailed description of current activities of the organization

Comment: It is difficult to classify this item further because further decomposition into items would depend upon the nature of the official organization. However, as current activities of many large official bodies are manifold, further classification is urgently needed. It is perhaps possible to classify activities of 'similar' organizations within this category. For example, governments, central banks or stock exchanges may have their own classifications on current activities.

F.　　　The general hierarchical structure of the organization

Comment: The hierarchical structure could be revealed through an organization chart, where each branch would act as hyperlinks to relevant pages. If the organization is small, a chart may not be necessary. Descriptive texts with proper hyperlinks would arguably be adequate.

G.　　　Description of the different departments within the organization and their functions

Comment: Generally the departmental structure in an organization would be similar to the hierarchical structure, though they may not be exactly same. The departmental structure could be also revealed through a hyperlinked chart in a similar manner.

H.　　　Leaders of the organization

Comment: The site should ideally maintain names, photos and short CVs of all the current and past top officials. If details are not available, at least the names of heads of the organization and their tenure should be displayed and linked with the history pages.

2.　　One-Way Information Dissemination Relating to Its Regular Work

A.　　　All procedures, guidelines and notifications (including tender notifications)

B.　　　All publications: regular as well as ad hoc

Comment: If there are too many publications, the site should provide features so that the publications can be sorted or searched across type, author, date or frequency.

C.　　　All public speeches by the top management of the organization:

Comment: If there are too many speeches, the site should provide features so that the speeches can be sorted or searched across speakers or dates.

D.　　　Data and statistics

Comment: To the extent possible, site should allow interactive queries based on data at the site. Data disseminated in the public domain should also be made available in a database format. In Section 4, I shall discuss this aspect in more detail.

E.　　　A moving news bar

Comment: This feature may not be needed in every website. However, if users browse the sites several times a day for updates, such a bar could be useful.

F.   Important declarations, announcements or policy changes, especially on any changes in 2A.

G.   Recent changes or additions to the site

H.   All forms used for official purpose

I.   Coming events in the organization

·   Conferences / meetings / seminars / lectures / speeches

·   Publication of reports or press releases

Comment: Items in this category should be disseminated with date, time and place and with clear guidance on participation / access.

General Comment on 2: For many of the items covered in this category, it is not clear what the minimum standard for coverage in terms of number of years would be. For example, it is not clear whether the archive for publications and speeches would cover the last five years or the last ten years. Similarly, it is not clear to what would be the minimum standard for disseminating the coming events. It would be useful to devise a minimum standard as a guideline

3.   Facilities for Easier Communication with the Organization

A.   The list of holidays

Comment: Ideally, the site should maintain a list of holidays for the current as well as a few past and future years. If the organization follows any specific rule regarding holidays, that need to be explained. If different offices of the organization are in different regions or nations and follow different holidays, separate holiday lists across offices should be maintained at the site.

B.   The working hours of the organization

Comment: Ideally, the site should mention the working hour of the organization clearly, especially the time of its dealings with visitors and/or the general public. If different offices of the organization are in different regions or nations and follow different working hours, it should be clearly mentioned at the site.

C.   Addresses for communication to all its offices/departments

Comment: For each department, address for communication should cover at least the postal and e-mail addresses and telephone and fax numbers. Whenever relevant, websites of each department or office should also be mentioned.

D.   Guidance for Visitors

Comment: For each office of the organization, guidance on how to reach these offices from the airport, main or the nearest railway station and a few other important points of the city. Ideally maps of the city and the locality should be made available at the website, clearly indicating the position of the office in the map. This is especially useful for foreign or out of station users to organise their travel plan.

E.   Maintenance of a dedicated electronic helpdesk for receiving queries

Comment: Depending upon the size of the organization, the helpdesks may be centralized or decentralized.

F.   Whether the site allows individual departments or employees to host their web pages within the site

G.   Whether all employees in the organization have structured e-mail addresses

Comment: Maintenance of e-mail address book in public domain could make a site susceptible to spam attacks. However, though the detailed list is not revealed, it is desirable to mention any rule in forming e-mail addresses of individual departments or employees in the organization. This facilitates easier communication if only the full name of the employee is available to one and not the address.

H.   Career opportunities at the organization:

·   Whether vacancy notices are displayed in the website

·   Any facility for receiving online application

·   If entry is through open examination, whether the examination results are declared in the web

Comment: Pages within this category need to be linked with the general hierarchical structure of the organization (1F).

I.   Frequently Asked Questions (FAQ)

Comment: A dedicated helpdesk can analyse the questions that are commonly asked, classify them according to topics and provide answers for them at the site. Maintenance of a good and exhaustive FAQ often saves time of both the users and the staff of the organization.

4.   Two-Way Information Dissemination: Interaction with the Users

A.   Creation of dedicated user groups through registration at the site

Comment: This facility often allows users to customise parts of the site that they regularly visit. Changes in these parts are flashed to the users immediately

B.   A regular e-newsletter that informs the users all new developments through e-mail

C.   Whether electronic submissions of forms etc. are carried out at the site

D.   Maintenance of guest-book, feedback and suggestion forms

E.   Recording of number of visitors to the website

F.   Whether the site allows interactive queries on its data

5.   Facilities Provided for Easy Browsing within the Site or to Related Sites

A.   A site map that lists all the web pages that are maintained at the site

B.   A site index listing glossary of terms on which information is available

C.   Adequacy of links provided in the home page.

Comment: Each page should ideally contain a link to the home page, the main menu, the site map and the index.

D.   Good search facilities within the site

·   Whether the search box appears at the home page itself; if so, whether it also contains a link for advanced search with proper explanation.

·   Whether the site allows restricted search on specific aspects or folders

·   Whether the site allows Boolean search

·   Whether good help for search is available

·   Whether search box or link for search is available at every page

E.   Good navigational facilities through appropriate hyperlinks in different web pages

Comment: To visit any page from any other one at the site, it should not take more than a few links. Use of pop up items or boxes that provide definitions of technical terms or brief information on other items without uploading separate web pages should be encouraged.

F.   Whether the site distinguishes between hyperlinks within the page, within the site or external site

Comment: A color convention may be necessary for this aspect. Links to other sites are often not in control of the site manager. A separate convention would help in internal documentation. If such conventions are well accepted, it will also effectively convey to the users that they are leaving the site.

G.   Hyperlinks to related websites

·   All organizations that are its member or shareholder

·   All organizations with which it exchanges (i.e., sends or receives or both) data or other information

·   Organizations that provide comparable or complementary information

·   All organizations with which it is in regular communication

Comment: The above three categories need not be mutually exclusive. If a separate page on related website is maintained, the page should inform the users that the links given pertain to external websites and despite best efforts may undergo change. Ideally, page should also include a link to a feedback form for users enabling them to inform the webmaster about the change.

H.   Statements on facilities needed for best viewing

·   The screen resolution with which the site could be best viewed

·   The browsers with which the site could be best viewed

6.   Facilities that Helps Users in Their Own Understanding or Documentation

A.   A date stamp in every web page, indicating when it was last modified

Comment: Date stamps could be of two types: when the page was first loaded in the site and when the last changes were made. It may also contain the name and the e-mail address of the person who made the last change. The date stamp could easily identify whether information provided in it are up to date with respect to procedures or rules, especially when the dates of changes in the procedures or rules are well known. If a time stamp is there in the page, arguably it should also contain the standard GMT as an additional reference.

B.   The digital identification number (DIN) for each web page or document at the site

Comment: Currently, the DIN is generally not indicated for every page. However, a few simple conventions could be helpful. Each page may have a page number as well as a version/edition number. If such numbers are maintained and displayed, it becomes easier for users to quote from the web effectively.

C.   Mentioning the URL corresponding to the page inside the page.

Comment: In general, popular browsers insert the URL in a printout of the page. However, if sites provide additional facility to print the page in some other format, then this feature is desirable for documentation of the URL from where the printouts had been taken.

7.   Other Features

A.   Whether the site provides other free resources

·   Educational or training materials

·   Software

·   Fonts

B.   Whether the sites offers separate text versions of some of its pages for easier downloading

C.   Whether the site offers facilities for visually handicapped people

D.   Whether versions of the websites are also available in languages other than English

E.   Disclaimer

F.   Acknowledgement

G.   Information on copyright or responsibility for each web page in the site

H.   Privacy policy

The classifications and further sub-classifications above are henceforth referred by the corresponding numbers. For example, 1A refers to "A detailed history of the organization".

3. A comparison of information dissemination by select official websites

To review the structural features of information dissemination by all official websites, even in a single country, would be an impossible task. The paper focuses its attention on a few select sites. It is hoped that some of the observations on these sites would apply to other sites as well. Among leading supra-national organizations, I cover: (i) the International Monetary Fund (http://www.imf.org), (ii) the World Bank (http://www.worldbank.org) and (iii) the Bank for International Settlements (http://www.bis.org). Disseminations of these sites are expected to set a benchmark for official websites worldwide. So far as websites in the US are concerned, I examine the gateway site of the US Federal Government (http://www.firstgov.gov, FG for short), the US Federal Reserves (http://www.federalreserve.gov, Fed for short), the New York Stock Exchange (http://www.nyse.com, NYSE for short) and the US Securites and Exchange Commission (http://www.sec.gov, SEC for short). So far as websites in India are concerned, I focus on the parallel organizations. Thus, the Indian sites examined are the gateway site of the Government of India (http://www.nic.in, GOI for short), Reserve Bank of India (http://www.rbi.org.in, RBI for short), National Stock Exchange (http://www.nseindia.com, NSE for short) and Securities and Exchange Board of India (http://www.sebi.gov.in, SEBI for short).

At the outset, I highlight a major limitation in this study. Many of these sites, especially the Indian ones, are nascent and are still evolving. As these sites are dynamic and their contents may change every day, it is not always possible to present a completely correct picture even with best efforts. Thus, it is entirely possible that some of the 'limitations' in these sites discussed here have already been taken care of. It is also possible that some of the limitations identified in this paper have already been assessed and further improvements are in different stages of implementation. Appendix A presents whether and to what extent the criteria specified in Section 2 are met by the above websites.
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From Appendix A, it is clear that there is considerable degree of variation in the contents of official websites. However, there are elements of convergence as well. A few technical features like advanced site search facilities, site map and adequate links have been implemented by almost all sites and they have become implicit "standard" features. However, a common weakness appears to be the lack of a standard in the header and the footer design in web pages. If a standard of contents for them is set, many apparent problems that users face will also disappear. There is also need to improve structured historical contents and display working hours and explanatory maps for directions. Further, it is observed that websites sometimes use different terminologies for similar pages or things. For example, the page that maintains the chronology of events may be entitled as "Chronology" or "Timeline". Thus exhaustive glossaries at official websites that would accommodate the different terminologies and link the user to the relevant page would be useful and could be a starting point for a search for specific materials.

It is also observed that vis-à-vis to the leading international websites, it is observed that Indian websites are generally well organised and sometimes contain features that are not available even in the websites of leading organizations in the world. However, in general, Indian official websites suffer from a few major limitations. Some of the limitations that appear to be common are (i) lack of availability of the historical developments, (ii) lack of availability of clear guidance and maps on how to reach the different ofiices etc. and (iii) not providing data in desirable formats.

Removal of some of these limitations would require only a one-time uploading of some more documents at the site. They do not need regular maintenance and in that sense are not constrained by the lack of additional manpower resources. Some features, like maintenance of a calendar or a list of holidays etc. will, however, need minimal maintenance. However, some other limitations like lack of availability of time series or panel databases in clear database format are more serious. This needs

some changes in the way specific pages in these sites are designed and therefore, needs a separate and a more detailed discussion.

4.   Web-based data dissemination: a critical appraisal

"Raw" data are necessary infrastructures for research as well as for policy. Often, governments and other official organizations spend huge amount of resources on data collection. The data collected by these organizations are analysed by in-house professionals, sometimes in consultation with outside experts. However, if the data that are not so sensitive are made available to the general public in desired format with proper documentation, the number of potential 'research employees' of the organization increases vastly. The academic community and the media can then generate their own queries and reports. These queries and reports often help clarifying certain features of the data.

The views that emerge from the outside analyses sometimes may not match the official version. However, potentially these studies could discover early warning signals on specific aspects of policy that could be missed in an in-house analysis. Even if an in-house analysis discovers this, chances that the feedback would go to the top management of the organization in a filtered version – beating the urgency of policy action – cannot be ignored in any official organization. Thus, from the organization's point of view dissemination of data in useful format could be helpful in the long run. It may be noted that since the data are publicly available, the results based on outside analysis could be easily verified by the organization if needed. This is a necessary condition for progress in any scientific discipline. Further, availability of data in a database format often enables cross-validations of two similar data sets with respect to some common fields. Similarly, as merging of two different data sets also become easier, new bigger databases could be created with relative ease.

Earlier, Podehl (1999) recognised that dissemination of official statistics via the Internet would require new strategies. Data dissemination is an area where there exists considerable heterogeneity across countries (Allum and Agça, 2001). So far as websites are concerned, heterogeneities are more conspicuous. For example, till 1998, only 80 of the world's central banks had websites (Courtis, 1998) and even in 2001, 51 central banks did not have websites (Hanke and Morgenstern, 2001). Even countries that were supposedly good in data dissemination, the issue of web-based data dissemination rarely attracted attention.[5] Given the importance of data and metadata dissemination and data exchanges among organizations, six leading organizations, viz., the BIS, ECB, EUROSTAT, IMF, OECD and the UN are currently working on a project entitled "Statistical Data and Metadata Exchange" (SDMX). The areas on which work are currently going on are: (i) case studies on emerging e-standards for data exchange, (ii) maintaining and advancing existing standards for time series data exchange, (iii) creating a common vocabulary for statistical metadata and (iv) developing a framework for metadata repositories.[6] In the light of this development, it is important to examine the general format of data dissemination in websites. To do that, it is necessary to explain what is meant by "raw" data and to what extent the supply of "raw" data and to what extent the supply of "raw" data   – when they are actually available with organizations and not sensitive in nature – could be improved through websites. To carry out serious research, one needs data in a clear database format. Data presented or made available in this format are "raw" data. Availability of "raw" data enables one to generate innovative queries that form the base of serious research. It also enables researchers to apply more sophisticated technical tools like ANOVA or regression with relative ease.

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[5] For example, RBI (2001) restricts its attention on SDDS compliance, with only a limited discussion on web-based data dissemination.

[6] Information on these aspects are available in http://www.sdmx.org/General/AboutSDMX.htm. Details are also available in EUROSTAT (2002).

One strange common feature in many official websites is the conspicuous lack of availability of time series and panel data in a clear database format. Most of the data that are disseminated online are not in a clear database format; they are queries or reports generated from a database. These online queries or reports offer only a little amount of customisation or manoeuvrability. Thus to get answers for innovative queries, researchers have to prepare databases out of these queries or reports once again. Given that in many cases such data are already available with the concerned organizations in a clear database format, this is a serious wastage of economic resources.

In most of these cases, the latest data are not secrets. It is also not the case that data in the long past are not available. In fact, most of the sites offer a visual inspection of fairly current data based on online queries. They also allow visual inspection of data in the long past. However, each query reveals only a limited number of observations. Therefore, if users want to create a long time series in a database format he needs to work hard. First, he has to generate the data part by part through several similar online queries, for each query has to save the data in his own disk or take print-outs of these pages and then has to enter the data manually in his own computer to save the data in a database format before analysis. The data may be made available by these agencies on request. However, such procedures are economically inefficient because it increases the workload of both the user and the staff of the organization.

In what follows, I provide three contrasting examples of web-based data dissemination. The first two examples, from Indian websites, highlight the problem. The malaise reported here is, however, neither restricted to these two Indian sites, nor are they specific only to India. The third example from the US, in contrast, provides a possible benchmark for web-based data dissemination.

Example 1: SEBI and the trends in Foreign Institutional Investment (FII) data

As an example, consider the data on FII trends as disseminated by SEBI in its website. Clicking on the "FII Trends" link at the home page of SEBI website brings an online data entry screen as in Figure 1.

Figure 1: The Online Data Entry Form for a Query on FII Trends at the SEBI Website

_____

Home >Investor Assistance > Foreign Institution Investment Trends>

Date: dd/mm/yyy 🗓   ⬬ Go

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Figure 1 shows that there is a data-entry box for date. By the right side of the box, there exists a calendar icon and a command button entitled "Go". Clicking at the calendar icon makes available a calendar on which the user can choose a particular date by clicking on that date. Clicking on the date makes the calendar disappear. The old screen reappears with the date chosen by the user in the box in Figure 1. Clicking on the command button "Go" then generates a table.

As an example, the result of the query corresponding to June 1, 2001 (Friday) is displayed in Figure 2. Thus Figure 2, demonstrates that daily data corresponding to at least past two years are maintained at the site. As Figure 2 reveals, the table is detailed and contains information on several variables like FII gross purchase and sale of both debt and equity and the net investment figures in both Indian Rupee and US Dollar terms.

While making available such online queries in websites is commendable, the query itself has limited manoeuvrability. For example, suppose one wants to examine to what extent daily FII flows affect the

movements in NIFTY and whether the relationship has changed from that during 2001. Obviously, daily data on FII flows will be an important ingredient in this study. To make the study rigorous, one needs to download daily data on FII flows for all dates from 2001 onwards. Any omission of dates or concentration on a few specific dates would be superficial. Unfortunately, the SEBI website does not offer any easy way to download the entire data in an efficient database format.

What is lamentable is that with a little bit of additional effort it is possible to make the entire time series data on FII trends available at the website to the user in a clear database format, along with all necessary documentation. Note that a generation of such queries would not have been feasible unless the entire data were available in a database format. Thus, it is likely that the data on FII trends has been stored in the following format as depicted in Figure 3. The first column in the Table in Figure 3 is the one pertaining to date, which is likely to be the primary key in the database. Date 1 and Date n reflects the first and the last date between which information is available.

Figure 2: The Result of a Typical Query on the Database on FII Trends at the SEBI Website

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Daily Trends in FII Investments in June 2001

Reporting Date*	Debt/ Equity	Gross Purchases Rs. Cr.	Gross Sales Rs. Cr.	Net Investment Rs. Cr.	Net Investment US $ m at monthly exchange rate
01-Jun _Equity_		173.7	250.7	(77.0)	(16.5)
	Debt	193.4	5.6	187.8	40.1
Total	_Equity_	173.7	250.7	(77.0)	(16.5)
	Debt	193.4	5.6	187.8	40.1
Grand Total for June		**367.1**	**256.3**	**110.8**	**23.7**
Grand Total for 2001		_31,588.5_	_20,920.2_	_10,668.3_	_2,286.7_
Grand Total till 01/06		**213,627.1**	**160,979.9**	**52,647.3**	**13,988.7**

No. of registered FIIs : 513 (as on 01.6.2001)

Note: (*)

The above report is compiled on the basis of reports submitted to SEBI by custodians on June 01, 2001 and constitutes trades conducted by FIIs on and upto the previous trading day i.e. May 31, 2001.

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Here A_1, A_2, ..., A_m are different variables in the database. Some of these variables could be FII Gross Purchase on Equity, FII Gross Sale on Equity, FII Gross Purchase on Debt, FII Gross Sale on Debt and the Exchange Rate, may not be necessarily in that order. Note that if daily information on all these five variables is maintained in a structure as in Figure 3, it is possible to generate a query or a report in the form of Figure 2 with some additional programming efforts. It is not necessary that the maintenance should be necessarily as in Figure 3. Existence of some other format is possible.

Figure 3: A Possible Internal Structure of the FII Database

Date	A_1	...	...	A_m
Date 1				
...	...	...	...	...
Date n	...	...	...	...

A possible way to make the entire data on FII trends available in one stroke is to provide an additional hyperlink in Figure 1 titled "Download the Entire FII Trends Database". Figure 4 reveals a possible design for such a form. In this design, clicking on the hyperlink would bring a menu to the screen of the user for saving the entire database file in the disk of the user. Typically, such database file shall have two tables. The first table will be the table as in Figure 3. The second table will be a data dictionary that would describe the various fields in the table in Figure 3, as depicted in Figure 5. Once again, alternative structures are also possible.

Figure 4: The Proposed Data Entry Form for FII Trends at the SEBI Website
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Home >Investor Assistance > Foreign Institution Investment Trends>

Date: | dd/mm/yyy | 🔳   (Go)

Download the Entire FII Trends Database
_____

Incorporation of such additional features does not take much additional effort and with the current state of technology is a feasible task.

Figure 5: A Possible Structure of the Data Dictionary

Variable	Definition	Source	Availability	Comments
A_1				
...	...	...	...	...
A_m				

Example 2: Government of India and the Wholesale Price Indices (WPI) database

Data on WPI could be readily downloaded from the Government of India website http://eaindustry.nic.in. The screen for downloading the data is as depicted in Figure 6.

Figure 6: The Online Form for Downloading WPI Data
_____

Wholesale Price Index (WPI) Data (1993-94=100)
Choose the desired year and group / commodity

Type   ⦿ Weekly   ○ Monthly   ○ Yearly

Year | 2003 ▼ |

Name of Group | All | [Search data]   [Reset]
/ Commodity
_____

The list-box pertaining to "Year" and the text-box "Name of Group / Commodity" do not allow multiple selection. It is obvious from the figure that one can only download WPI data for one commodity, for one year and for one frequency at one stroke. Since there are more than 500 detailed commodity items and groups for about 9 years, downloading the entire data in this manner would require about 4500 separate efforts for each frequency, not to speak of reorganising them once again in a database format. Thus if, for example, one wants to examine which commodity or commodity groups experienced abnormal price movements during the week preceding the presentation of budget of the central government in the Parliament between 1994 to 2003, there is no easy way to generate the results from the disseminated information.

A possible way to make the form user-friendlier would be to allow multiple selections in the list-box corresponding to year. Users would be able to select continuous years in such list box by pressing the <SHIFT> button and clicking on the years through mouse-click. If years desired are not consecutive, then the <CTRL> button in the keyboard should be pressed and the years are to be selected through mouse-click. In Example 3, I shall cover an example from the US that allows this facility. At the same time, the box corresponding to "Name of Group/Commodity" should show a list-box which will again allow multiple selection. In this way, users would be able to download data for multiple years for multiple commodities in one stroke. A possible structure of the data table would be as in Figure 7 and documentation of the series could be identical to the table in Figure 5.

Figure 7: A Possible Structure of the WPI Database

Period	A_1	...	...	A_m
Period 1				
...	...	...	...	...
Period n	...	...	...	...

Example 3: Gross State Product data from the Bureau of Economic Analysis in the USA

Pages in the Bureau of Economic Analysis (BEA) of the USA could perhaps act as a benchmark for time series or panel data dissemination through websites. One can arrive at this site through appropriate links provided in the USA Federal Government homepage. The page being considered in this paper is http://www.bea.gov/bea/regional/gsp/. Figure 8 reveals the structure of the online data downloading form in that page.

It may be noted that each list box in Figure 8 is a multiple selection list box. One selects contiguous observations by clicking on selections while holding the <SHIFT> key and scattered observations while holding the <CTRL> key. Also, the options for format are clearly indicated in Step 5. The first choice in a HTML format is for screen-based viewing. The second option is more useful for downloading the entire data in a disk for further rigorous analysis.

The web page provides detailed information and guidance on data downloading. It informs the user that "The more data you select, the longer it will take to retrieve and display the results". It actively discourages on-screen viewing of the entire data. The compressed ZIP or self-extracting EXE files are maintained at the site for that purpose. The page provides facilities to download these files. It also offers detailed guidance on these files, the downloading procedure and the minimum hardware and software configurations that would be required for this purpose. In case of problems in downloading, users are requested to contact a specific e-mail address mentioned in the page. So far as documentation of data is concerned, the page provides a Windows Help File that contains information about GSP estimates.
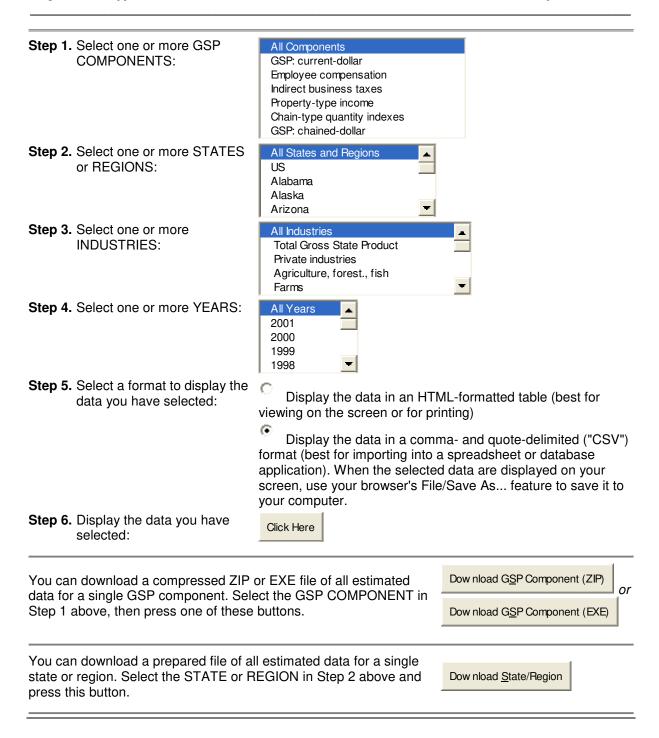
Figure 8: A Typical Data Dissemination Form in the US Bureau of Economic Analysis Website

Step 1. Select one or more GSP COMPONENTS:

All Components
GSP: current-dollar
Employee compensation
Indirect business taxes
Property-type income
Chain-type quantity indexes
GSP: chained-dollar

Step 2. Select one or more STATES or REGIONS:

All States and Regions ▲
US
Alabama
Alaska
Arizona ▼

Step 3. Select one or more INDUSTRIES:

All Industries ▲
Total Gross State Product
Private industries
Agriculture, forest., fish
Farms ▼

Step 4. Select one or more YEARS:

All Years ▲
2001
2000
1999
1998 ▼

Step 5. Select a format to display the data you have selected:

○ Display the data in an HTML-formatted table (best for viewing on the screen or for printing)

◉ Display the data in a comma- and quote-delimited ("CSV") format (best for importing into a spreadsheet or database application). When the selected data are displayed on your screen, use your browser's File/Save As... feature to save it to your computer.

Step 6. Display the data you have selected:

[Click Here]

You can download a compressed ZIP or EXE file of all estimated data for a single GSP component. Select the GSP COMPONENT in Step 1 above, then press one of these buttons.

[Dow nload GSP Component (ZIP)] *or*

[Dow nload GSP Component (EXE)]

You can download a prepared file of all estimated data for a single state or region. Select the STATE or REGION in Step 2 above and press this button.

[Dow nload State/Region]

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5.   Conclusion

Website constructions in the world have progressed at a tremendous pace. However, compared to the pace of development, the issue of benchmarking of official websites has not yet received adequate attention. The paper attempted to specify some structural features of contents of websites that could act as potential benchmarks. It also examined to what extent commonalities and differences prevail among some leading national and international official websites. Analysis revealed that some degree

of convergence had already taken place in structuring the contents and also in providing a few basic facilities to the users. Further examination revealed that only a little additional effort would be needed to improve the convergence further. A few limitations, however, appeared to be more general. For example, there is a need for a more general design of headers and footers of web pages, a design that could act as a general template for a broad range of official websites. More attention would also be needed in providing information that would lead to more precise identification and citing of web pages for user reference and documentation. Also where statistical information is already available and not sensitive in nature, there is a crying need to disseminate the data in a way that would facilitate downloading in a clear database format.

In view of the speed of increase of the number of websites, there is an urgent need for formal rating or evaluation agencies for websites. Internationally, a few corporate houses like Bowen Craggs & Co (http://www.bowencraggs.com) provides specialist research and consultancy services to maximise the effectiveness of websites of organizations. The operational frameworks of these agencies are somewhat similar to credit rating agencies. On request, they review the website and offer suggestions for further improvements that also include the contents and their structuring. If more rating or evaluating agencies develop, the different websites would in all probability proudly display a good rating in their web pages, and try to improve their products if rating is not good. Measurement of the effectiveness of website as a vehicle for information dissemination is difficult and would always carry judgmental elements. It is expected that with the evolution of such agencies, the need for uniform conventions and structuring in websites would emerge and this, in turn, would facilitate easier searching within a site. The details of contents would perhaps vary within a broad framework. Detailed publicly available guidelines from reputed international organizations would probably facilitate the emergence of benchmarks. An exciting possibility here would be to generalise the data dissemination concepts as developed by the IMF to information dissemination, with special reference to web-based dissemination.

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Appendix A: A Comparison of the Contents of Select Official Websites

1. Effective Description of the Organization	
Item	**Comment**
1A *A detailed history of the organization*	Among international organizations, IMF and WB sites provide exhaustive historical information at the site, with detailed chronology of events. The BIS website, in contrast, is somewhat less detailed with respect to this criterion. Glimpses of its history could be obtained from a "Profile" link maintained at its home page, but with no clear chronology of events. For a National Government website, providing a complete history of the country at the site is a daunting task. The FG website provides a link titled "History, Arts and Culture" at its homepage. The link leads to many more links on American history, including some external museum or library websites. As in the US, the official GOI site does not maintain detailed historical information at the site. However, its homepage contains a link entitled "India Heritage". Clicking on the link takes one to other heritage sites. Historical information relating to the Fed and the SEC also remain somewhat scattered. NYSE, on the other hand keeps detailed historical information. It is available as a part of "About the NYSE" link in the homepage. The link "Historical Perspective" in it contains four tabs, including a clear timeline. The sample websites in India reveal somewhat mixed picture. Among other organizations in India, no historical content is maintained at the SEBI site. RBI website is also limited in historical content. Currency museum website maintained by the RBI is, however, a very good development in this direction. History of NSE, in contrast, is discussed in brief in its website through a "Us" link at the homepage. The NSE site also offers a link titled "Milestones" which depicts important events in its history chronologically. *Interestingly, no sites covered in the study records the history of the development of the website and its evolution in their websites! Some of the old pages of these sites may, however, be obtained from the site http://www.archive.org.*
1B *The legislative framework under which the organization operates*	The international organizations generally reveal the legal framework within which they operate. For example the "About BIS" link contains a link titled "Legal Information" which, in turn, reveals the statutes of the BIS and some of the international agreements and protocols under which it operates in detail. Even if the laws or the pacts are not completely made available at the site, links for them are generally specified at the site. The FG website keeps a link titled "Public Safety and Law" in its homepage. Clicking it leads one to a page with many more links. Among these, the link "Laws and Regulations Reference" provides links to all the US laws, including the constitution. Other US sites generally provide the legal framework under which they operate in detail, though it appears to be not very well structured in the case of NYSE compared to other USA organizations. The GOI website displays links to the Indian constitution and those corresponding to the National Flag, Anthem, Emblem, Song, Calendar, Animal, Bird, Flower and Languages in the homepage. Among other Indian websites, legal framework is available in the SEBI homepage. Hyperlinks to the acts are also provided. The NSE website mentions that it works Securities Contracts (Regulation) Act, 1956. However, neither the act nor a hyperlink to the act is available. Interestingly, the act is provided in the SEBI website. So only a hyperlink to that site would have been adequate. RBI website clearly mentions the legal framework under which it operates and lists the acts. However, links to the acts are not provided.
1C *The geographical boundary within which the organization operates*	The supra-national organizations reveal the list of the member countries at their website. The FG website, however, does not provide a clear link to State governments. Link to a map of India on the homepage of GOI is also needed. The link would ideally bring to a site where different aspects like political map, natural map, resources map or tourist spots would be visible. Among other organizations, the Fed site clearly reveals the Federal Districts in a map of the US. Clicking on the relevant district ushers the website of the corresponding Federal Reserve Bank. The NYSE and the SEC sites do not provide such information, probably because the geographical boundary is not that important an aspect. However, they do not show their different offices in a map also. For other organizations in India, providing a geographical boundary of their operations is somewhat irrelevant. However, RBI website indicates all regional offices in a map of India. Clicking on the links lead one to the pages pertaining to that regional office. While this is a desirable feature, the map of India on which the sites are indicated does not specify the regional boundaries for the operation of these offices clearly.

1D *Identifying features of the organization*	All supra-national organizations covered in this paper display their logo at the homepage. FG website, however, does not include easy links to national emblems or other related aspects in its homepage. Information on these aspects are scattered in the site. The link "History, Arts and Culture" in the homepage, in turn, links to pages on American national flag. However, information relating to its emblem or national birds, animals etc. is not prominently placed in the site. No obvious direct link to the national anthem is also found. Advanced search at the site for the exact phrase "National Anthem" generates a link "United States of America National Anthem" ranked fourth among all the links generated. That link brings one to the website for the White House (http://www.whitehouse.gov), where it could be located. Link to the national emblem of India etc. is, however, prominently placed in the homepage of GOI. All other non-governmental organizations, both in the US and in India, display their logos prominently at the homepage. Mission or vision statements, in contrast, require searching. For example, in the US, the NYSE and the SEC site provide it but not in a clear structured manner. In India, the vision statement of SEBI is prominently displayed at the top of its home page. Information on mission, logo, promoters and corporate structure is clearly stated in the NSE website. The logo also appears in its home page. For RBI, though the logo is displayed at the homepage, other aspects are not very clear.
1E *Detailed description of current activities of the organization*	All websites covered in this study mention their current activities in great detail. Sometimes, brief descriptions are also available in a short "Profile" of the organization maintained at the website. However, the descriptions could be somewhat unstructured and searching for specific aspects might take time. The activities of the US Government or the Government of India are intricately related to the structures of its different ministries and departments. Links to them are available through directories or menus maintained at the homepage. Among other organizations in India, the SEBI website does not mention its current activities or domain of activities directly. Similarly, the RBI website maintains its profile at the site from which aspects of its current activities need to be gleaned. Detailed description of the activities of the NSE is also available, but is somewhat scattered around the site.
1F *The general hierarchical structure of the organization*	The sites generally do not reveal a clear tree-type presentation of the hierarchy. The SEC website shows this through a link. In India, hierarchical structure for SEBI is available, but is not prominently displayed under the head of structure of the organization. It appears as a part of "Contact Us". Displays only the portfolios of its Executive Directors. Would be beneficial if it is more prominently displayed. Hierarchical structure of NSE is not easily available. "Our Group" part informs about the different companies within the same group. Description of the hierarchical structure of RBI is, however, available at its website.
1G *Description of the different departments within the organization and their functions*	Departmental structure in GOI is clearly mentioned. The GOI directory is extremely useful. Departmental structure of SEBI is not prominently revealed but is available as a part of "Contact Us". NSE website does not reveal clearly the descriptions of different departments or divisions within the NSE and their functions. Description of different departments within RBI and their functions has been explained in the website.
1H *Leaders of the organization*	Supra-national organizations generally maintain exhaustive information on their current and past heads at their websites. In almost all cases, a short CV of the current head and current top officials are available with their photographs. Such CVs and photos are also available for a few recent past heads. Even if such CVs and photos are not maintained for heads or top officials in the long past, international sites generally provide the timeline of their tenure. In India, the RBI website displays a short CV of the current governor. Photos of past governors are available at the site. However, the CVs of the past governors are not there. Short CVs and photos of current and past leaders of SEBI or NSE are also not available at their websites.
2. One-Way Information Dissemination Regarding Inputs and Outputs
Item	**Comment**
2A *All procedures, guidelines and notifications*	Procedures, guidelines etc. are available and documented in all national and international sites.
2B *All publications*	All websites put their recent publications in the web.
2C *All public*	Supra-national agencies record the speeches of their top management at the website meticulously. The US institutions like the Fed, NYSE and SEC are also meticulous on this

speeches by the top management of the organization	aspect. Archives of public speeches of ministers are either not available or difficult to locate in India. No archive for the public speeches of the top management is available at the SEBI or the NSE website. RBI, however, keeps a well-maintained separate archive for these speeches in its website.
2D *Data and statistics*	Data disseminated by supra-national organizations at their websites are exhaustive. More importantly, they are often in formats that could be readily translated to a database format. Though websites in India make available vast quantities of data, lack of adequate attention on this aspect often defeats the very purpose of data dissemination. Statistics sections in both SEBI and NSE allow interactive queries. However, downloading long time series data from these sites could be a major problem. NSE allows downloading high frequency time series data for different indices in one stroke, but does not extend the same facility for other series. The Handbook of Statistics of RBI provides time series data that could be close to a database format. A good development in the RBI website has been the reference rate archive through a link in the homepage.
2E *A moving news bar*	As discussed in Section 2 of this paper, this feature is not necessary for all sites. However, sites devoted to financial sector sometimes use this to flash latest developments. In the US, the NYSE website uses this feature. In India, both the SEBI and the NSE websites highlight new developments through a moving news bar.
2F *Important declarations, announcements or policy changes*	All sites, national or international, seem to be compliant with this feature. This feature almost invariably finds a prominent place in the homepage.
2G *Recent changes or additions to the site*	Most sites, national or international, mention the recent additions to the site in a prominent place in the homepage.
2H *All forms used for official purpose*	Most sites make available copies of different forms in their web pages. In the international organizations as well as in the US, electronic submission is also encouraged. In India, this practice is comparatively less developed.
2I *Coming events in the organization*	This feature is sometimes not separately placed in the sites and is covered in places reserved for the feature 2F.

3. Facilities for Easier Communication with the Organization

Item	Comment
3A *List of holidays*	Among international organizations, the IMF displays the information for its headquarters. The WB and the BIS do not provide this information in their sites. In the US, the Fed and the NYSE mention this in their sites. In India, GOI website displays a calendar in its homepage, indicating the general and the restricted holidays. No calendar or a list of holidays is displayed at the sites of SEBI and the NSE. RBI, however, maintains a list of holidays at its site. As RBI Offices are distributed across India, holidays for regional offices could be different. The site displays holidays across offices in the current month. Facilities to search for holidays during the past three years had also been made available.
3B *Working hours*	This appears to be a neglected aspect in information dissemination. Among all the sites covered in this study, the IMF and the NYSE sites mention this.
3C *Address for communication to all offices or departments of the organization*	Addresses for communications are revealed in detail by all the sites. Generally, sites make available postal address, telephone, fax and e-mail addresses for main as well as all local or regional offices.
3D *Guidance to visitors*	International websites generally maintain a page where clear guidance is provided to reach the headquarters through texts and maps. However, in many cases such information is provided only for the headquarters and not for regional or local offices. For the US sites also, the availability of maps and directions is generally restricted to the head office. In India, this seems to be a very weak aspect. No maps that pinpoint locations of the offices of the organization at the city are kept at any of the sites. Appropriate guidance through texts on how to reach these offices is also not available.
3E *Maintenance of a dedicated electronic*	Dedicated helpdesks are maintained by all websites. In most cases, the helpdesks are decentralised. For example, different departments or offices have different dedicated helpdesks. The details of implementation of this feature vary. While some rely solely on e-mails, some provide specific forms depending upon the query.

helpdesk for receiving queries	
3F *Whether the site allows individual departments or employees to host their web pages*	This feature is not available in official sites. For very large organizations, decentralisation is generally at most with respect to the departments or regional offices.
3G *Whether all employees in the organization have structured e-mail addresses*	Generally, sites do not reveal information on this aspect. The structure of e-mail address of BIS employees is: firstname.lastname@bis.org, and that of WB employees is : first letter of the first name, immediately followed by the family name, followed by @worldbank.org. Interestingly, BIS website mentions this in a "Contact Us" page that can be accessed through "About US" link in the homepage, while WB mentions this in the FAQ pages.
3H *Career opportunities at the organization*	All supra-national and US organizations provide clear information on career opportunities. In many of them, the facility of applying online for jobs have been provided. In contrast, the nature of information on this aspect appears to be somewhat different in India. In India, most of the recruitments in Government or official organizations take place through competitive examinations. Thus, announcements or decisions relating to recruitment are displayed at the RBI website. However, career opportunities are not covered in detail. Among other sites, career opportunities at the organization are not mentioned at the SEBI website. The NSE website, however, provides clear guidance in a page entitled "Career with us" that could be accessed from the homepage through the "Us" link. The page contains links entitled "Positions Vacant", "Apply Online" and "Contact Us".
3I *Frequently asked questions (FAQ)*	FAQs are available and decomposed across topics in all websites.

4. Two-Way Information Dissemination: Interaction with the Users	
Item	**Comment**
4A *Creation of dedicated user groups through registration at the site*	The use of dedicated user groups appears to be somewhat limited in the US. Among the international organizations, IMF, WB and BIS accept registered users. In India, RBI, NSE and SEBI – all offers dedicated user groups.
4B *A regular e-newsletter that informs the users all new developments through e-mail.*	Registered users at the IMF, WB and BIS receive continuous feedbacks. In India, this practice is followed by RBI, NSE and SEBI.
4C *Whether electronic submissions of forms etc. are carried out at the site*	Electronic submissions of feedback forms are generally available in most sites. In India, RBI, SEBI, NSE websites offer such services. NSE also receives online applications for jobs.
4D *Maintenance of guest books, feedback and suggestion forms*	SEBI and NSE both keep feedback forms. In the Feedback form, SEBI website reminds users whether he/she has seen the FAQs on different topics.
4E *Whether the site records the number of visitors*	No record displayed indicating the number of visitors to its homepage or different pages in almost all the sites.
4F *Whether the site allows interactive queries*	Most of the sites allow interactive queries on their on-line databases. In India, SEBI, NSE and RBI allow interactive queries in their respective data sections.

5. Facilities Provided for Easy Browsing within the Sites or to Related Sites	
Item	**Comment**

5A *A site map that lists all the web pages that are maintained at the site*	Websites of all international and US organizations provide clear site maps. However, site maps are not provided by the websites of the GOI. In case of GOI, however, it can be argued that the GOI directory provided at the homepage works out as a close approximation of a site map. Clear Site Maps are available in the home pages of SEBI, NSE and RBI websites.
5B *A site index listing glossary of terms on which information is available at the site*	Site Index listing glossary of terms has not been prepared by many sites. The IMF and the WB have prominently placed it in its homepage. The BIS, however, has not implemented this feature yet. Among the Governments, the FG website has a prominent glossary at the homepage. Such a feature, however, is not present in the GOI website. Among other US organizations, NYSE provides such an index by the name of "Glossary" while Federal Reserve does the same under the name "Subject Index". No Indian non-governmental official organizations so far provide a site index.
5C *Adequacy of links provided in the home page*	In general, many links are provided in the home page by all sites though in few cases, as discussed in rows corresponding to 1A and 1D of this table, they may not be adequate. In all sites, all web pages covered in this paper are found to contain a link to the home page.
5D *Good search facilities within the site*	The search facility is provided in all sites covered in the study. In all the international organizations and the US sites, search facility could be customised. Some variations in detail are observed. Generally customisable or advanced search features with help become available in the page that is generated through an initial search. Sometimes, a hyperlink titled "Advanced Search" or "Tips for Search" is provided below the toolbar in the homepage. Advanced or customisable search facilities with help are also available in Indian sites like the SEBI, NSE and RBI sites.
5E *Good navigational facilities*	Good navigational facilities are provided in all sites. However, uses of pop up boxes, menus or images are limited.
5F *Colour conventions for different types of hyperlinks*	The sites do not maintain separate colour conventions for hyperlinks of different types.
5G *Hyperlinks to related websites*	Among international organizations, this aspect seems to be very well developed. For example, the BIS website provide links to almost all major central banks and is often a starting point for cross-country studies on central banking. However, there appears to be some duplication in this area as Fed has also attempted a similar task. Its list is less exhaustive but is more detailed in specific aspects. The FG website also covers other organizations in detail. The GOI website also provides detailed links to all different governmental and public sector organizations. The GOI directory provided in the site at the homepage could be used for this purpose. Besides different ministries, it also lists several other central and state organizations. Recently, GOI has attempted to build direct links to district administrations in India. Hyperlinks to related websites are not available in SEBI and the NSE. RBI website, however, displays many related links, both to international and domestic banking and financial organizations.
5H *Statements on facilities needed for best viewing*	The international organizations as well as those in the US covered in this study do not mention this aspect in the different web pages In India, information on this aspect is not always present. Only SEBI and the NSE websites mention this.

6. Facilities that Help Users in Their Own Understanding or Documentation	
Item	**Comment**
6A *Whether the site maintains a date and a time stamp in every web page, indicating when it was last modified*	The use of date stamps in international as well as in the US websites is not exhaustive. The IMF, the WB and the BIS do not provide them for all pages. In the US, the Fed and the SEC meticulously mention this in all pages. However, NYSE does not follow this. Date stamps are, in general, not provided by the Indian organizations. The pages containing notifications or letters written to other organizations generally carry a date. *However, that date may not be same as the date of uploading or last change of the page.* Among Indian sites, only the NSE website provides a date and a time stamp in its home page, but not in other pages.
6B *Whether the site provides digital identification*	No digital identification numbers for pages or important documents are provided by any of the websites. No site indicates a version number of a page. No unique number for reference is mentioned.

number for each web page or document at the site	
6C *Whether the site mentions the URL corresponding to the page inside the page*	The sites, in general, do not mention the URL inside the pages that could be printed in a "good" format. Only the SEC site was found to mention this meticulously.

7. Other Features	
Item	**Comment**
7A *Whether the site provides other free resources*	The IMF and the WB provide free educational or training material at their websites. In the US, the FED, the SEC and the NYSE each provide material for economic as well as financial education. In India, the NSE site contains a dedicated investor's centre. The SEBI website also prominently displays "Investor Guidance" in its homepage. The FAQs maintained at the sites also meet certain requirements for this purpose. RBI, however, does not provide any such material.
7B *Whether the site offers separate text versions of some of its pages for easier downloading*	Given the current hardware support, this aspect is not as relevant currently as it was earlier. A few websites provide this facility for select pages.
7C *Whether the site offers facilities for visually handicapped people*	Among all the sites covered in this study, only the Fed website commits itself to provide this facility.
7D *Whether versions of the websites are also available in languages other than English*	Among international organizations, the IMF and the WB provide web pages in several languages. The BIS website is, however, available only in English. Some printed documents in the BIS are, however, available in several languages. Users can obtain them from the BIS on request. The FG website provides links to pages in Spanish. The homepage also leads to a page through an "Other Languages" link that contains links to Federal resources in several languages. The SEC website also keeps some materials in Spanish. In India, the GOI website does not offer any link to Hindi versions of the site directly. However, several departmental sites are also available in Hindi version. Hindi versions are also available in the SEBI and the RBI site.
7E *Disclaimer*	Generally mentioned by all websites. However, there is considerable variation in the way it is presented. For example, NSE web page pertaining to it also highlights the "Privacy Policy".
7F *Acknowledgement*	The websites of the international organizations as well as those in the US do not mention this aspect. Links to acknowledgement are displayed at the home pages of SEBI and RBI. NSE website does not provide this information.
7G *Information on copyright or responsibility for each web page in the website*	Copyright information is displayed at the home pages of NSE and SEBI. RBI homepage does not mention that clearly.
7H *Privacy policy*	Not mentioned explicitly by all websites. Even those that mention, variations in coverage and style of presentation are observed.

Note: The reference date of preparation of this table is December 31, 2004. Any subsequent change in the websites would not be reflected in the above discussions.