A Content Analysis of Selected Government Web Sites: a Case Study of Nepal

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Abstract: This study evaluated the ministerial Web sites of Government of Nepal to project the overall impression of government Web sites in Nepal. It was found that of the twenty ministries only seventeen ministries (85 percent) had dedicated Web sites and provided information and, in some cases, downloadable digital forms that could be filled in and submitted offline. However, the study focused on the content of the sites crucial for citizen-government interaction. Since the Web content evaluation metrics are not completely exhaustive, this study based the Web analysis on four determinants - transparency, interactivity, accessibility, and usability - and evaluated all the ministerial Web sites. It was found that Web features that are critical in fostering government openness, government-government communication, and citizen participation and satisfaction are still infrequent or completely absent in the ministerial Web sites. The study suggests that the government needs to cultivate standards for its Web site design exploit the benefits offered by information and communication technologies to promote good governance through electronic government. The government should also continuously evolve the site design techniques to meet citizens' expectations.

Keywords: e-Government, digital government, Nepal, web site contents, web site analysis, ICT, developing country

1. Introduction

Governments around the world are embracing information and communications technologies (ICTs), especially the Internet and the World Wide Web, to reinvent their organisational routine processes and service dissemination channels. Both industrialised and developing nations are adapting and employing ICT services to erode the orthodoxy of administrative efficiency, public participation, political accountability, and policy effectiveness. A recent study of the United Nations (UN) corroborates that about 94 percent of the UN Member States are online (UN, 2005) and offer an array of services to the citizens. Like the central governments, local governments have also equally adopted ICTs to transform the age-old mechanisms of government-government interaction (Ho, 2002; Moon, 2002). Electronic government (e-Government) or digital government (Elmagarmid and McIver, 2001) is the use of ICT to promote and support citizen, business entity, and government agency participation for civic engagement and democratic responsiveness (Bhatnagar, 2004; Wyld, 2004; Norris, 2001; Netchaeva, 2002). Streamlining government online not only allows greater access to government information and discloses government service procedures but also reduces expenditure of both the government and citizens (Symonds, 2000; Al-Kibsi, et al., 2001). While assessing the e-Government initiatives in the American cities, Kaylor, Deshazo, and Van Eck (2001) identify twelve functional dimensions of e-Government services and functions such as payments, registration, permits, and licenses available to the user online. One common concern of the e-Government remains the breadth and depth of user segment. Elmagarmid and McIver (2001: 88) note that since "government transcends all sectors in a society unlike commercial service offerings, digital government services must be made accessible to all." The natural evolution of e-Government has been conjured in three- to six-stage models (Howard, 2001; Layne and Lee, 2001; UN, 2005; Deloitte Research, 2000). Even so, the formative assessments of all these models reflect a transformation from a nascent, static online presence to a fully integrated, interactive maturity.

A government's Web sites reinforce its commitment to thrive electronically and add new dimension to its extant physical means of delivery. Like all Web sites, government Web sites also need to be versatile but conscientious and should encapsulate the functional, structural, and aesthetic issues to purvey citizens' needs. Using content evaluation metrics, this study attempts to assess the ministerial Web sites of Government of Nepal and determine their suitability to promote citizen participation in the Web. His paper is structured in the following way. Section 2 provides a brief country profile. Section 3 identifies e-Government Web site evaluation metrics. Section 4 provides the framework of the research. Section 5 presents the outcomes of the study. Finally, Section 6 offers the concluding remarks.

2. Country profile

Rich in natural beauty, flora, and fauna, Nepal is globally known for the world's highest peak Mt. Everest, as the birthplace of Buddha, and adventure tourism. The country is landlocked and sandwiched between China and India, with an area of 147,181 sq. km. and an estimated population of 24 million. Administratively, Nepal

is divided into 14 zones and 75 districts. According to United Nations Development Program (UNDP, 2005), the GDP per capita is US$ 1,420, the adult literacy rate is 48.6, and the life expectancy at birth is 61.6. The composite index, Human Development Index (HDI) value, which measures the average achievements in these three basic dimensions, is 0.526. The distribution of ICT infrastructure in Nepal is asymmetric with a substantial number of users in the urban area. Out of four telecommunications operators, three provide fixed line telephones and two provide cellular access. There are 38 Internet Service Providers (ISPs) and most of them are in Kathmandu, the capital, and remaining are operating in other major cities and towns. The status of ICT distribution, which is based on the MIS Reports of Nepal Telecom and Nepal Telecommunications Authority published in April 2006 and the survey conducted by e-Government Task Force Team, is given in Table 1.

Table 1: Selected ICT statistics of Nepal

Parameters	Values
Total number of fixed line subscribers	458,426
Total number of mobile subscribers	633,003
Gross national telephone penetration/100	4.92
Telephone penetration/100 (Urban)	11.7
Telephone penetration/100 (Rural)	0.25
Number of Internet service subscribers	50,000
Number of Internet service users	250,000
Personal computer penetration/100	0.62

The major centric-centric e-Government initiatives taken by Government of Nepal include an information portal, government Web sites and a procurement portal. The government Web sites provides organisational information and, in some cases, downloadable digital forms and the procurement portal offers online public bidding opportunities. The UN has been extensively using e-Government Readiness Index, which is the average of Telecommunication Infrastructure Index, Human Capital Index, and Web Measure Index, to ascertain the status of e-Government of Member States. According to the UN (2005), the e-Government Readiness Index of Nepal ascended from 0.2807 in 2004 to 0.3021 in 2005 and Nepal climbed up in the Member State Ranking from 132 to 126. Professor West (2005) at Brown University, on the other hand, uses an assessment methodology based on features of government Web sites and ranks Nepal in 80th position amongst 198 nations.

3. Research context

A Web site is a virtual location of the associated organisation with a unique Uniform Resource Locator (URL) and is the information resource in the World Wide Web. It attempts to cater the need of all the intended users through a wide variety of contents such as text, image, audio, and video incorporated in connected Web pages of the site. Since a Web site is the virtual gateway of the organisation, substantial effort and resources are expended on it to increase engagement and outreach. Users' participation in the Web is dictated by their cognition, skill, literacy, and disabling features, just to name a few, (Shneiderman, 2000a; Zahedi, Pelt, and Song, 2001) and only satisfied users are likely to revisit the site and recommend it to others (Zhang and von Dran, 2000}. So, despite organisational commitments to motivate and engage users to its Web site, as with any information systems, if a Web site is not "capable of being used advantageously" and with "ease" (Davis, 2001:320), users tend to remain indifferent towards it and, as a consequence, its stickiness may decline (Sterne, 2002). The rapid momentum of e-Government further resulted in accommodation of distinctive metrics to evaluate e-Government initiatives. The Web Measure Index and e-Participation are the UN's quantitative and qualitative indices, respectively, to assess the e-Government status worldwide (UN, 2005). Notably, e-Participation framework focuses on the content-specific measures that include availability of information, interactive tools such as emails and chat rooms, audios and videos of public meetings, and feedback mechanism on decision making in government Web sites. Since 2001, West (2005) has been constantly assessing and rating the global e-Government initiatives. Based on the information availability, service delivery, and public access features in the government Web sites, the global e-Government initiatives of 198 nations are ranked. The Cyberspace Policy Research Group (CyPRG) at University of Arisona and George Mason University has been another forerunner in e-Government assessment. The Web site Attribute Evaluation System (WAES) is being extensively used to analyse the openness of e-Government. According to La Porte, et al. (2000) of CyPRG the WAES-based evaluation substantiates the extent of paradigm shift from traditional to ICT-inspired governance. These studies reveal that the real test for a government agency is to create meaningful Web sites that enables citizens to capture and filter relevant information for their individual purposes. The outcome of the government-government interaction in the Web should result in improved service delivery, open to all, with cost and time saving to both of them. This leads

to the belief that the perpetual relationship between citizens and government hinges on the Web site and its attributes. Therefore, this study adapts to and integrates various evaluation metrics to assess the ministerial Web sites of Government of Nepal.

4. Web site evaluation metrics

Since an e-Government transcends all citizens, the government Web sites needs to be usable, accurate, and effective in all aspects. The content analysis plays a crucial role in identifying the functional and structural condition of Web site. It determines government's initiatives to meet citizen demands in the Web. For the e-Government sites, the meaningful content measurement determinants can be categorised under four rubrics and they include transparency, interactivity, accessibility, and usability.

4.1 Transparency

Transparency is the opening up of internal systems and processes to external audiences (Phillips, 2001). However, organisational attitude and energy directly affect the breadth and depth of openness. Though domain section of a URL determines the organisation type, La Porte, et al. (2000) note that the ownership reflects agency's involvement with the users; for instance, a research scientist trusts the article in a research journal more than news in a tabloid. Ownership also reflects commitment in investment. Since the Web applications are filled with risk and uncertainty related to information collection, storage, and use, many of them fail to address privacy issues. Cookie stores personal information such as user name and user preferences to recognise a user in subsequent visits and a log file contains access information of user activities. Collecting, sharing, and using this personal information influence the legitimacy of the site which subsequently predicate user's confidence and the "hygiene" of the site (Zhang and von Dran, 2000: 1259). Establishment date in the Web site reveals the evolution of Web activities and can assist in reviewing the historical development of government's online presence. According to Kim, et al., (1999: 648), the "currency of information" measures the frequency of update, freshness, and maintenance of the site. A regularly updated and fresh site shows the seriousness of an organisation to disseminate timely information and users, in general, are willing to trust it. In totality, transparency measures the accountability, legitimacy, and trust of the Web site and characterises a government's Web culture.

4.2 Interactivity

Interactivity engenders two-way government-government communication. Though conventional mail is still a dominant mechanism of communication, a public Web site should also provide other contact information of the organisation and the personnel associated with it (Misic and Johnson, 1999). Convincingly, the diffusion of ICT services such as telephone, fax, and email can foster greater interaction during and beyond the working hours. Coexistence and convergence of other forms of existing Web media such as feedback feature, discussion forum, chat room, and interactive bulletin board can target a larger audience (Phillips, 2001; UN, 2005), enable the government to promote public participation in policy-making (Moon, 2002), and allow greater community mobilisation (Norris, 2001).

4.3 Accessibility

Accessibility is the attribute of being easy to meet or deal with the Web site. Shneiderman (2000a) and Zahedi, Pelt, and Song (2001) argue that Web sites should be accessible to all regardless of expertise, personality, literacy, ethnicity, and disability, and so forth. Existence of functional features such as a multilingual option, Frequently Asked Questions (FAQs), text-only option, and disability features in the site meet the requirement of various user segments. A multilingual site offers textual content in different languages and permits a user to choose content on needs basis. FAQs educate users by offering answers to the repeatedly asked questions and reduce the support requirements by assuring consistent responses. A text-only site is offers alternative format requiring less time to load compared to a site with high image density. Text-only browsers such as Lynx, small devices such as PDA and Palm, low connection and transmission rate, and disability features necessitates text-only version of a Web site (Shneiderman, 2000b). Web sites should be accessible to all the people irrespective of their physical abilities. So, when it comes to providing Web services to people with cognitive, visual, physical, neurological, speech, auditory disorders and changes resulting from aging, Nielson (2000) notes that site content is more important than its appearance. World Wide Web Consortium/Web Accessibility Initiative (W3C/WAI) provides Web design guidelines and techniques to capture the needs of disabled users in a site and the Disability Discrimination Act (DDA) enacted in different countries ensures that the service providers take necessary steps to include disability features in the Web site.

4.4 Usability

Usability determines the structure of navigational ease and search engine effectiveness. Navigability is concerned with knowing the spatial orientation in the hyperspace (Shubin and Meehan, 1997). The hypertext-based navigation used in the Web browsing allows a user to transit from one page to another in a non-linear fashion (Conklin, 1987). As a result, a user in the hyperspace is likely to be disoriented if the Web site lacks a user-friendly and comprehensive navigation scheme. Users are directed to a Web page from a global search tools such as Google, AltaVista, and InfoSeek, from an existing link within a known site, or can right away open a Web page if the site address is known. However, to comprehend the mental mode of site author and to prevent disorientation, site map plays an important role. Site map is a directory of the content areas and reveals the logical and structural order of a Web site (Nielson, 2000; Newman and Landay, 2000). Addition and deletion of links are common in the evolution of a Web site and the site map should be updated. Direct links/buttons such as HOME, BACK, and TOP allow quick and efficient transition. Breadcrumb navigation instils the location relative to the site structure while browsing (Nielson, 2000). External audiences are often limited in their area of interest and have specific interest. A search facility can efficiently respond to the query, allow fast information retrieval, and reduce a user's navigation time.

5. Findings and implications

The ministerial Web site survey commenced on April 26, 2006 and lasted two weeks. The government information portal http://www.hmgnepal.gov.np/ had visible links to all the ministerial Web sites. The initial findings were as follows:

- Ministry of Law, Justice, and Parliamentary Affairs had generic, government information in the Web site.
- Ministry of Defence did not have a dedicated Web presence. Its link opened Nepal Army's Web site http://www.rna.mil.np/.
- Ministry of Land Reform and Management's Web site was under construction.

Since only seventeen of twenty ministries had dedicated Web sites, it was noted that 85 percent of the ministries of Government of Nepal was online. These seventeen ministries provided general, policy, and organisational information in the Web. Most of them provided links to the other related agencies, and some offered downloadable forms. However, this study targeted features of Web sites rather than the information content. So, based on the four determinants - transparency, interactivity, accessibility and usability - ministerial Web sites were evaluated.

5.1 Transparency

Ownership pledges authority, accuracy, and authenticity of information in the Web. Ownership information was obtained from the copyright message in the Home page. Eight sites (47 percent) were totally owned by the respective ministries and they were Ministry of Industry, Commerce, and Supply, Ministry of Home Affairs, Ministry of Water Resources, Ministry of Forest and Soil Conservation, Ministry of Education and Sports, Ministry of General Administration, Ministry of Information and Communication, and Ministry of Health and Population. The total ownership implicate that the ministries are serious about the Web content and have a dedicated team for Web development and maintenance. For example, Ministry of Education and Sports had clearly indicated the commitment of Research and EMIS Section to its Web site development and maintenance. Possibly, due to lack of an internal IT team, the other seven ministerial sites (41 percent) were designed and maintained by outside agencies and they included Ministry of Finance, Ministry of Agriculture and Cooperative, Ministry of Labour and Transport Management, Ministry of Physical Planning and Works, Ministry of Environment, Science, and Technology, Ministry of Culture, Tourism, and Civil Aviation, and Ministry of Local Development. Among them, two of the Web sites - Ministry of Agriculture and Cooperative and Ministry of Culture, Tourism, and Civil Aviation - were copyrighted by the designers themselves and raised the question of ownership of the information in the Web. Intuitively, the disclaimer in Ministry of Finance's site was self-contradictory to the authenticity and accuracy of dot-gov information. Ministry of Foreign Affairs and Ministry of Women, Children, and Social Welfare did not have any ownership information.

Lack of privacy statements in all ministerial Web sites implied that the government is less responsive to the citizen information privacy. The increasing concern of the Orwellian Big Brother and the deliberate threat to information misuse is likely to hinder the government-citizen relationship in the Web. Establishment date and currency status of the Web sites looked dismal. Six ministries (35 percent) had mentioned their establishment dates in the copyright information and they were Ministry of Finance, Ministry of Industry, Commerce, and Supply, Ministry of Home Affairs, Ministry of Education and Sports, Ministry of Information

and Communication, and Ministry of Local Development. These dates revealed that Ministry of Education and Sports was the first ministry to go online. Ministry of Education and Sports and Ministry of Health and Population were the only two ministries whose Web sites were updated within last six months. It was previously noted that both these ministries had total ownership of the site. None of the Web sites had mentioned the frequency of information update.

5.2 Interactivity

The synergistic convergence of postal mail, communication technologies, and Web-based services enhances government-government communication. Due to lack of sufficient ICT penetration in the country, postal mail, also called snail mail after the advent of email, is still very popular in Nepal. Except for the Ministry of Finance and Ministry of Water Resources, all other Web sites have provided the postal address of the organisation either in the home page or explicitly in the contact menu. All the government ministries have their phone numbers published in their Web sites. These telephone contacts ranged from minister as with Ministry of Industry, Commerce, and Supply to the department and individuals. Only four ministries (24 percent) did not provide their fax number and they were Ministry of Home Affairs, Ministry of Water Resources, Ministry of Forest and Soil Conservation, and Ministry of Women, Children, and Social Welfare. Fifteen (88 percent) ministerial Web sites provided emails that manifested varying degree of interactivity from Minister to Web Master. The Ministry of Industry, Commerce, and Supply provided the email contact of the minister, Ministry of Finance and Ministry of General Administration supplied personnel email address contacts, and Ministry of Foreign Affairs provided email contacts of individuals and diplomatic missions abroad. Organisational and divisional emails were common with ministries such as Ministry of Environment, Science, and Technology, Ministry of Health and Population, and Ministry of Physical Planning and Work. Web Master's email was available in the Web site of the Ministry of Women, Children, and Social Welfare and other sites that were designed by external agencies. Except Ministry of Health and Population, Ministry of Culture, Tourism, and Civil Aviation, Ministry of Information and Communication, Ministry of Forest and Soil Conservation, Ministry of Foreign Affairs, and Ministry of Women, Children, and Social Welfare, eleven (65 percent) of the ministries provided Web-based feedback facilities. Ministry of Health and Population had a guest book to collect citizen comments. Ministry of Labour and Transport Management was the only ministry that provided a discussion forum to the citizens. The range of contacts provided by the government seems to be promising. Nonetheless, the government should not limit itself to these avenues only. Apparently, instant messengers, chat rooms, discussion forums, and bulletin boards can add newer dimensions in government-government interactivity and will be beneficial in understanding citizens' voice.

5.3 Accessibility

Nepali is the major and official language of the country. Paradoxically, only four ministries (23 percent), offered contents in Nepali in addition to English. While Ministry of Labour and Transport Management and Ministry of Environment, Science, and Technology had explicit links to Nepali content, Ministry of Agriculture and Cooperative, and Ministry of Land Reform and Management had limited information in Nepali. On the other hand, the Web site of Ministry of Culture, Tourism, and Civil Aviation, is devoid of commonly encountered international languages. Therefore, the government needs to acknowledge the existence of plethora of languages and rethink its Web strategy to include multilingual communities. FAQs that answer the recurring questions related to the site and its content were missing in all ministerial Web sites. Since the majority of Nepalese are new to the Internet and Web technologies, absence of FAQs is likely to hinder less-experienced citizens in comprehending the applicability of government's online presence. Absence of text-only options in all sites implied that ministerial Web sites with preponderance of graphics, audio, and video are not suitable for citizens with low bandwidth connection, outdated terminal equipment, and small hand-held devices. These citizens are less likely to participate in the e-Government processes compared to the citizens with suitable technology. The study did not focused on the entire WAI guidelines but some basics such as text description of image or use of ALT text, transcript of audio, and keyboard support. None of the sites provided those features to allow citizens with disabilities to participate in e-Government initiatives. This suggests that the government needs to enact DDA to propel development of Web sites accessible to those with disabilities as well.

5.4 Usability

A site map that provides the bird's eye view of the entire site was available in the Web site of six ministries (35 percent) and they included Ministry of Industry, Supply, and Commerce, Ministry of Agriculture and Cooperative, Ministry of Home Affairs, Ministry of Land Reform and Management, Ministry of General Administration, and Ministry of Local Development. Quick links/Hot buttons such as HOME, BACK, and GO

TO TOP were available in all the sites in varying number. Except Ministry of Women, Children, and Social Welfare and Ministry of Information and Communication other Web sites also had direct links to relevant government sites. Breadcrumb navigation indicators provided the spatial orientation only in three (17 percent) ministerial sites and they were Ministry of Industry, Commerce, and Supply, Ministry of General Administration, and Ministry of Local Development. Search engines were found in five (29 percent) of the Web site which included Ministry of Industry, Commerce, and Supply, Ministry of Home Affairs, Ministry of Labour and Transport Management, Ministry of Education and Sports, and Ministry of Health and Population. Among these, search engine of Ministry of Health and Population was highly effective in responding to queries. These findings point to the fact that usability features, namely ability to navigate and search information, are not effective in government Web sites and can frustrate users.

6. Concluding remarks

There is a conjuncture between Web sites and their content to materialise e-Government vision and this study sought to assess that notion. Although the functional determinants used in the study may not have been completely exhaustive, they can at least serve in epitomising the overall impression of government Web sites in Nepal and, hence, the e-Government initiatives. The global information revolution might have exhorted the government to go online. Consequently, ministerial Web sites spawned in the last couple of years. Today, they provide information and some downloadable forms that could be filled and submitted offline. While Government of Nepal remains committed to promote civic engagement, make government accountable and transparent, and offer information and services to the entire citizen base, the Web features that are critical in fostering government openness, government-government communication, and citizen participation and satisfaction are still infrequent or completely absent in government Web sites. Lack of these features is likely to dissuade citizens from participating in the e-Government processes. The site designers should heed that electronic information dissemination channels are more than static notice boards - they are dynamic, ubiquitous, interactive, customisable, searchable, and networkable. These features allow all geographically dispersed citizens 24×7×365 services. Likewise, citizens can participate in policy-making, reach their constituents, and obtain information and services for daily activities from any location if the Web sites are favourable to their needs. In addition to that, both government and citizens can reduce the expenses arising from direct, physical government-government interaction. Therefore, the government needs to cultivate the standards of Web site design and exploit the benefits offered by ICTs to promote good governance through e-Government in the country. Meanwhile, the e-Government should continuously evolve through learning, investing, and developing guidelines and standards to promote successful centric-centric Web site design techniques to meet citizens' expectation. Finally, there is a need to extend this study to assess e-Government initiatives from government's perspective. A server-side analysis that includes features such as visibility assessment, hit counts, page-loading speed, and interface design will be beneficial in the technical arrangements of the e-Government Web sites.

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Note

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