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E-Governance Responsiveness in Primary Local Levels of Developing Countries: Study of South Asian Countries' 1st Level Administrative Units

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Abstract: ***E-governance is an essential tool for ensuring good governance and progress. A robust web presence of the institutions is a cornerstone of e-governance responsiveness. UN EGDI's Biannual survey tries to ascertain the progress of the countries based on samples from each country. It does not present the detail view of the online governments at all level. To present the scenario clearly, this paper tries to survey the primary local governments (1st level administrative units) of all the countries in South Asia. We have surveyed the websites of the first-level administrative units of all eight South Asian countries. Preliminary study reveals the overall performance including the deficiencies in the online presence of e-services offered by these websites. The results of our evaluation will facilitate the government in identifying and addressing specific deficiencies within their local governance, thereby contributing to enhance overall effectiveness.***

Keywords: South Asia, e-governance, e-government, local government, 1st level administrative units, primary local government, web presence.

1. Introduction

Use of Information technology along with internet has taken us a long way till now. We can dream of going far more way, achieve bigger things with the help of information technology and internet. Getting things done within short time sitting at anywhere is possible for internet and information technology. Development of a country depends largely on internet and information technology. Countries scoring high on e-government development index and public sector openness are top on the economic performance and competitive scoreboards-this strong link indicates that better e-government is a must competitive in global economy [18]. Worldwide all the countries governments are trying to provide better services with great innovations of technology. But not all are succeeding according to their plan. Many reasons are involved for the failure. Different country belongs to different economic class, has different GDP, different types of opportunities, different quality of trained IT experts. Some countries have realized the power of technology, some have not realized yet, some are using the great applications of technology, some are still unable to use those applications. We want the whole world to progress and move forward quickly. To improve the condition of the whole world, we need to focus on each individual country and help them to move forward.

India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Maldives and Afghanistan- are the 8 countries in south Asia. All these countries are developing countries [67]. Among these 8 countries, 3 countries (Afghanistan, Nepal, and Bangladesh) have been listed as least developed countries according to the United Nations report of 2023 [54]. To measure the condition of a countries' e-government implementation level, United Nation uses EGDI (e-government development Index) for its' 193 member states. India, Bangladesh, Nepal, Bhutan, Sri Lanka and Maldives belong to high EGDI class, Pakistan, and Afghanistan belong to middle EGDI class according to UN E-government Survey 2022 [70]. Each of these 8 countries has different type of hierarchy in their local government system.

There is a total of 131 1st level administrative divisions in different countries of south Asia. None of the South Asian countries has reached to a very high EGDI level yet. The countries are trying improve their e-government performance. Different countries have different types of challenges in their way to implementing e-government system. For example, lack of human and financial resources, limitations of national ICT infrastructure are the main challenges in e- government development of Maldives [32]. Pakistan has recognized the importance of e- government as enabler for achieving good governance since e-government increases the ability of business and government to get public services in cost efficient and effective manner [18]. So, e- government has been included as a priority area by the Federal Ministry of IT Government of Pakistan. But Pakistan has faced many challenges in implementing e-government like- lack of proper institutional, regulatory, monitory and financial policy, lack of Government Information Infrastructure, low telecommunication infrastructure indicators, low human capital index, lack of online availability for basic citizen service etc. [18]. Though Bangladesh has achieved a good advancement in use of Information and Communication Technology, the ICT is mainly applied in cities and less in village [14]. Some of the issues hindering the implementation of e-governance in

Bangladesh are- political instability, insufficient human resource, inability to supply timely and cost-effective fund for digitalization and its maintenance, difficulties in uniform IT policy etc. [14]. Nepal belongs to a lower rung in the global scenario of ICT but it made some remarkable developments in the past [30]. For example, in Nepal, telecommunication activities have been improved remarkably, production of ICT professionals/human resources have been expanded in academic institutions [30]. Government of Nepal pledged to create new prosperous Nepal and looking for fast social and economic movements [30]. Among various plans and initiatives to materialize the dreams of the countries, proper implementation and developments of ICT have been looked upon with great hope [30]. There are lots of opportunities for e-government promotion nationally in Nepal but the road to e-government is not easy because Nepal needs overcome various problems and challenges [30]. Some of the challenges in Nepal to achieve high class e-government are- low level of political commitment for changing the process, poor technology culture, modest human resource training in institutions etc. [30]. Bhutan, a late starter in the field of ICT has initiated various efforts to get the benefits of ICT [11]. Some of the development of e-applications in implementing e-government in Bhutan are security clearance system, health system, university admission system, agriculture information system, government internet solution etc. [11]. Though Bhutan made a good progress in telecommunication network coverage still achieving universal connectivity remains one of the greatest challenges, low digital literacy among the general people is a big challenge as well as computing capacity in local language is at the initial stage which hampers the development of e-government in local language [11]. There are several e- government initiatives, opportunities in Sri Lanka. Some of the prioritized e-services in Sri Lanka are e-monitoring, e-pension, electronic human resource management, e-foreign employment etc. [36]. Here, the e-government projects face a variety of challenges like- lack of adequate government support, lack of powerful telecommunication infrastructure, lack of coordination in different e-government initiatives, low ICT literacy rate etc. [36]. Afghanistan has the lowest rank in e-government implementation among the south Asian countries and this country is facing many key challenges in implementing e-government projects.

Availability of the websites of local governments is a very important issue in implementing good e-government at local level. The classification of local government varies across different countries. We have conducted a survey of the first level administrative unit websites of South Asian countries to assist them in identifying areas for improvement, thereby enhancing their capacity to achieve optimal levels of e-governance. Various researchers employ diverse methodologies to analyze the e-government status of different countries. Kriyar et al. [22] studied the web measure index and web usability to assess the e-government condition in Indonesia and Cambodia. Khan and Zaber [20] evaluated the 1st level administrative units' websites of India, Nepal, and Bhutan to understand these countries e-government condition at primary local level. In this study, we meticulously assessed the e-government services of the primary administrative unit websites across all eight South Asian countries.

Research Goals-

- To provide a comprehensive overview of the status of the 1st level administrative unit websites of the South Asian countries.
- To demonstrate a proficient system that will significantly help to assess the countries e-government system specially in web performances
- To highlight deficiencies with the aim of facilitating improvements to the websites

2. Literature Review

In this section, we've synthesized a range of significant insights pertaining to e-government and e-governance concepts, their respective importance, diverse e-government frameworks, countries experiencing gains from e-governance, methods for assessing e-government performance, the EGDI concept, factors attributing to e-government project failures, and common implementation hurdles. These themes have been extensively explored in academic literature, and we've distilled some of these key findings for presentation here.

E-government pertains to web-based services offered by various levels of government entities, including local agencies, states, and federal authorities. It utilizes information technology to deliver a wide range of government services, engage citizens, and facilitate governmental activities [29]. Conversely, e-governance involves the utilization of information and communication technologies across governmental levels, the public sector, and beyond, with the aim of enhancing the e-government framework. Fang [12] noted that e-governance encompasses more than just e-government, emphasizing that while e-government primarily focuses on disseminating information and providing services to the public, e-governance extends to encompass government-citizen participation and interaction.

Ndou [26] discussed the opportunities and challenges associated with e-government, emphasizing its potential to facilitate better decision-making, streamline service delivery processes, and enhance the quality-of-service provision while also reducing time and costs. The author also highlighted examples of countries that have experienced benefits from e-government initiatives. For instance, a system implemented in Beijing Park has notably improved the efficiency and responsiveness of governmental processes, enabling businesses to drastically reduce the time required for approval of applications from 2-3 months to just a few days. Additionally, the government portal in Colombia allows citizens to access government information, seek consultation, lodge complaints, or provide suggestions. In Bahia, Brazil, citizen service centers have been established in shopping malls and other public venues, offering over 500 services such as job applications, identity card issuance, and passport applications simultaneously, resulting in high levels of citizen satisfaction [26].

To effectively implement e-government programs, it is imperative to develop appropriate e-government models. These models are crafted through a series of steps,

facilitating the achievement of program objectives through systematic analysis at each stage. Numerous authors have put forth diverse e-government models, each varying in the number of stages proposed. Many have scrutinized existing e-government models before proposing their own iterations. Within the realm of e-government models, we outline here some notable examples for consideration. Baum and Di Maio [5] and Layne and Lee [23] proposed two different models for e-government implementation. Baum and Di Maio [5] envisioned the evolution of e-government from mere web presence to enhanced interactivity. Their model delineates four progressive stages. In the initial stage, "web presence," websites offer basic information to the public. Advancing to the "interaction" stage, users gain the ability to engage with agencies, such as downloading forms, completing them online, and submitting forms electronically, along with other interactive features like online registrations. The subsequent stage, labeled "transaction," enables customers and users to conduct entire transactions online. Lastly, the "transformation" stage involves integrating internal and external applications to facilitate seamless communication among governmental offices and non-governmental institutions, fostering comprehensive digital transformation. Layne and Lee [23] introduced a four-phase e-government maturity model, initially developed to oversee electronic government initiatives in the United States. Their model comprises four distinct stages: "catalog," "transaction," "vertical integration," and "horizontal integration". In the "catalog" phase, government websites are introduced to the public, enabling one-way communication from the government to the populace. Progressing to the "transaction" phase, citizens gain the ability to electronically interact with the government. The "vertical integration" stage incorporates higher-level systems with similar functionalities. Finally, the "horizontal integration" phase amalgamates various government portal systems, creating a unified platform that serves as a one-stop service hub for citizens.

UNs (United Nations and American Society for Public Administration) proposed an e- government model that consists of 5 stages [24]. The five stages of this model are- emerging presence, enhanced presence, interactive presence, transactional presence and seamless or fully integrated presence. In stage-1, emerging presence, few basic, formal information are presented. In stage-2, stage of "enhanced presence", government websites provide dynamic and regularly updated information. In stage-3, stage of interactive presence, users and service providers are able to communicate with each other. Stage-4, transactional presence, allows users to make complete and secure transactions. Stage-5, "seamless or fully integrated presence", involves a single government website from where users can get easy access to all kind of gettable services.

Kriyar [22] used a four-stage model to assess the Cambodian and Indonesian local and national e-government. Four stages of their model are- web presence, interaction, transaction and participation. Stage 1, "emerging presence", presents the information and services about the website. Stage-2, "interaction", involves a two-way interaction between citizens and service providers. In stage-3, "transaction" citizens are able to make complete secure transaction. The fourth stage is participation. This stage allows citizens to participate in government activities, like online voting, online survey etc. The e-government models may vary in terminology, yet they share a fundamental similarity in envisioning the evolutionary trajectory of e-government, progressing from basic web presence to achieving a seamless, integrated government and transformative outcomes [8]. However, a common limitation of these models lies in their assumption of a linear and progressive development of e-government from one stage to the next [25], disregarding potential barriers to adoption [8]. Many e-government initiatives falter due to narrow definitions and inadequate comprehension of e-government concepts, processes, and functions Ndou [26].

E-government endeavors have garnered significant attention in both developed and developing nations, aiming to enhance the delivery of public services efficiently [35]. Despite the considerable potential of information technology in public administration, studies reveal a higher failure rate in the implementation of e-government initiatives in developing countries compared to their developed counterparts [9]. This disparity primarily stems from the adoption of imported concepts and designs derived from developed nations, which often diverge from the contextual realities of developing countries [15]. However, despite these challenges, developing countries persist in their pursuit of e-government adoption gradually improving their implementation strategies over time [62].

3. Local Government and the E-Government Status of South Asian Countries

3.1 Local Government

Local governments represent the tier of governance in closest proximity to the populace, catering to the specific needs of communities within designated regions, which may encompass provinces, municipalities, towns, districts, or villages. Local e-governance denotes the facilitation of information dissemination and service delivery to citizens at the grassroots level through electronic platforms. Principal categories of local government include counties, municipalities (encompassing cities and towns), special districts, and school districts. Counties stand as the most expansive entities within local governance structures, while municipalities comprise urban centers such as cities and villages. The categorization and classification of local government entities exhibit variability across nations. Divergent hierarchies and levels of local governance emerge as a result of factors such as national size, governmental directives, and other contextual influences within respective jurisdictions. For this research, we have chosen all the first level/primary local administrative unit websites of the South Asian Countries to evaluate their e-service performance. Among the 8 south Asian countries, 6 countries are primarily divided into provinces (1st level administrative divisions) and one (Bangladesh) is primarily divided in to divisions and another (Maldives) is primarily divided into cities and atolls. The countries administrative units have further divisions in the next levels.

3.2 E-Government Status of South Asian Countries

Table 1 presents the EGDI scores and EGDI ranks of the South Asian countries which may help to understand the current e-governance conditions of the countries as well as their progress in e- governance in last 12 years.

Table 1: EGDI Ranks and Scores of South Asian Countries in 2022, and in 2010- Presenting E-government Progress in 12 years [70][72]

Countries	EGDI RANK (2022)	EGDI RANK (2010)	EGDI SCORE (2022)	EGDI SCORE (2010)
India	105	119	0.5883	0.3567
Pakistan	150	146	0.4238	0.2755
Bangladesh	111	134	0.5630	0.3028
Nepal	125	153	0.5117	0.2568
Bhutan	115	152	0.5521	0.2598
Sri Lanka	95	111	0.6285	0.3995
Maldives	104	92	0.5885	0.4392
Afghanistan	184	168	0.2710	0.2098

From Table 1, we see that Sri Lanka stands out as the paramount exemplar of e-governance advancement among the eight South Asian nations in 2022. Conversely, a decade prior, in 2010, Maldives held the mantle as the most proficient country in e-governance within the region. Meanwhile, Afghanistan consistently occupies the bottom rung in EGDI rankings across both 2010 and 2022 among these eight nations. Notably, there is a collective trend of improvement in e-governance performance across all South Asian countries, evidenced by the commendable increase in EGDI scores over the past twelve years.

4. Methodology

For our evaluation, we have used a 4-stage model that contains the first 4 stages of United Nations e-government model [24]. The four stages of this model are- emerging presence, enhanced presence, interactive presence and transactional presence. Stage-1, emerging presence presents very basic information about the websites. Stage-2, enhanced presence contains some advanced features, dynamic and specialized information. Stage-3, interactive presence provides an effective way of communication between the users/ citizens and service providers. In stage-4, in transactional presence, complete and secured transactions are ensured. For example, providing birth certificates, passports, licenses, various permits, renewing visa, money transactions etc. We have not used only the stage-5 of United Nations E-government model [24], which is known as “seamless and fully integrated presence”, because this stage is too advanced for the south Asian countries.

We have a total of 23 parameters in these 4 stages. The parameters have been chosen based on their relevancy with the selected websites. The parameters have been chosen from the survey questionnaire of LOSI [68] and from the parameters of Kriyars’ 4-stage model [22]. We have analyzed the parameters/components from these two sources and have chosen the basic and important parameters to conduct our evaluation. The parameters of each stage are described in Table 2.

Table 2: Website Maturity Assessment Criteria

Maturity Stage	Criteria/Parameters/ Components	Description
Stage-1: Emerging Presence	Accessibility	Some websites have their available domains but are not accessible, so accessibility is an important issue. Websites have to be accessible.
	About us feature	This feature describes about the particular website.
	Contact us feature	This feature provides some contact information like email address, phone number, location etc.
	Language	The webpage should available with at least 2 suitable languages- one is English language and another is the local language. Availability of 2 languages helps to provide information and services for diverse people.
	Evidence of updates	From the evidence of updates, the users become sure of the service validity.
	General news and activities	If general news and activities are present in the websites, users get to know about details of the functions of the websites.
	Fast loading time	Loading time is an important factor as people run with time, they require fast services. If a website loads completely within 5 seconds [68], we consider its loading time standard for functioning.
	Presence on the first page of search engine	Presence of the website link at the first page of search engine helps people to easily access the websites to get the correct services.
Stage-2: Enhanced Presence	Compatibility with different web browsers	Different people prefer different web browsers and so the websites need to be compatible with different web browsers.
	Sitemap	Sitemap provides information about the webpages and other files of the website and their linking structure. Through sitemap, people are able to get information about the website structure at a glance.
	Search Feature	Search feature helps the users to find required things quickly in their need.
	Information about the services of the 1st level administrative units	If the information about the services of the administrative units is present, people quickly get to know about the services from the websites.
	Accessibility though mobile devices	People move with cell phones and need to access the services at anytime from anywhere. If they are able to access the websites through mobile devices, they can get instant services from anywhere.
	Regular update	Websites need to be regularly updated so that the users can get updated valid information

		and services.
	Layout and Design	If a website is fit in various devices without being disrupted, we can say the coding(programming) of the websites layout and design is ok.
	Content	If website design, color, text, other visible factors are user friendly and attractive- we can say that the content is good.
	Availability of links of important official pages	A website may not provide all the required information needed by the user and so the presence of important official page links is required.
	Effective navigation	Cluster free and fast navigation [33] helps to use the websites easily and quickly.
Stage-3: Interactive Presence	Forms/ Online Applications/ Online Registration	For various necessary tasks, people need to fill up the forms. If online forms are available, people can easily fill up the information from home or anywhere.
	Email interaction	Email is one of the most effective ways of communication. through email interaction, various important messages can be exchanged in effective way.
	Writing Comments/ Feedback	System of writing comments or feedback helps the users to inform their valuable opinions and suggestions to the authorities. And from the experiences of the users and their suggestions, the authority can update their system in efficient way.
Stage-4: Transactional Presence	Transaction of Payments	Through online transaction, people can pay from any place and they don't need to carry cash or hardcopy of the money receipt all the time.
	License and other permits	System of providing online licenses is an important service which reduce the hassles of the users. They can do lots of required tasks of the license processing system through online which can save huge time.

5. Data

We have selected the first-level administrative units to evaluate primary local e-governance in South Asian countries. Ministries are the part of national/central government. We have found that all the 8 South Asian countries have their ministry websites with various necessary information and services. But not all of these countries have their local government websites, some countries have all the 1st level administrative unit websites, some don't have all the websites, some have few of the 1st level administrative unit websites and some of the websites are inaccessible due to security issues, irregular update issues and for other issues.

India has a total of 36 entities (28 provinces and 6 union territories) as their 1st level administrative divisions [71]. The 28 states are- Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Telangana, Tripura, Uttar Pradesh, Uttarakhand, West Bengal. And the 8 union territories are- Andaman and Nicobar Islands, Chandigarh, Dadra and Nagar Haveli and Daman and Diu, Delhi, Jammu and Kashmir, Ladakh, Lakshadweep, Puducherry. Among these 36 entities, we have found the websites of 26 entities. We have not been able to access the official websites of Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Manipur, Mizoram, Odisha, Telangana, Andaman and Nicobar Islands.

Among the 7 1st level administrative units of Pakistan, we have evaluated 6 units- websites of Islamabad capital territory are inaccessible. The four provinces of Pakistan are- Balochistan, Punjab, Sindh, Khyber Pakhtunkhwa, federally-administered unit is- Islamabad Capital Territory, 2 autonomous territories are- Gilgit- Baltistan and Azad Jammu and Kashmir [44].

Bangladesh has 8 divisions as their primary/1st level administrative units. 8 divisions in Bangladesh are- Dhaka, Chattogram, Barisal, Sylhet, Khulna, Rajshahi, Mymensingh and Rangpur [48]. All the official websites of these 8 divisions are accessible.

Provinces are the 1st level administrative units in Nepal and Bhutan. The 7 provinces of Nepal are: Koshi Province, Madhesh Province, Bagmati Province, Gandaki Province, Lumbini Province, Karnali Province, Sudurpashchim Province [59]. Among the 7 provinces of Nepal, we have found the official websites of 5 provinces- we have not found the official websites of Bagmati Province and Lumbini Province.

The provinces of Bhutan are- Trongsa, Paro, Punakha, Wangdue Phodrang, Daga, Bumthang, Thimphu, Kurtoed (also Kurtoi, Kuru-tod), and Kurmaed (or Kurme, Kuru-mad). Kurtoed and Kurmaed- these 2 provinces are combined into one local administration, so the traditional number of governors are eight [58] though the total number of provinces in Bhutan is 9. Among the available 8 administrative units of Bhutan, we have found the official websites of 7 administrative units- we have not found the official website of Kurtoed and Kurmaed administrative units.

Sri Lanka has 9 provinces as its 1st level administrative units. The provinces are- Central Province, Eastern Province, Northern Province, Southern Province, Western Province, North Western Province, North Central Province, Uva Province and Sabaragamuwa Province [60]. All the 9 provinces have their own official websites but due to security issue, we could not access the official website of Southern province. Rest of the websites have been accessed.

Maldives has 4 cities and 17 atolls- a total of 21 administrative units as their 1st level administrative divisions [43]. The 4 cities are- Malé City, Fuvahmulah City, Addu City, and Thiladhunmathi Dhekunuburi. The 17 atolls are- Thiladhunmathi Uthuruburi, Miladhunmadulu Uthuruburi, Miladhunmadulu Dhekunuburi, Maalhosmadulu Uthuruburi, Maalhosmadulu Dhekunuburi, Faadhippolhu, Malé Atholhu, Ari Atholhu Uthuruburi, Ari Atholhu Dhekunuburi, Felidhu Atholhu, Mulak Atholhu, Nilandhe Atholhu Uthuruburi, Nilandhe Atholhu Dhekunuburi, Kolhumadulu,

Haddhunmathi, Huvadhu Atholhu Uthuruburi and Huvadhu Atholhu Dhekunuburi [43]. None of the city and atolls of Maldives have their individual websites.

Afghanistan has a total of 34 provinces. These are- Badakhshan, Badghis, Baghlan, Balkh, Bamyan, Daykundi, Farah, Faryab, Ghazni, Ghor, Helmand, Herat, Jowzjan, Kabul, Kandahar, Kapisa, Khost, Kunar, Kunduz, Laghman, Logar, Nangarhar, Nimruz, Nuristan, Paktia, Paktika, Panjshir, Parwan, Samangan, Sar-e Pol, Takhar, Uruzgan, Maidan, Wardak and Zabul [57]. None of the provinces of Afghanistan has any official website yet.

6. Findings

We started reviewing the selected websites from July 2021 but for the final evaluation, the websites have been reviewed from the 1st week of September 2023 to the 1st week of January 2024. From the multiple reviews, we have noticed some changes of the websites over time and we have chosen the data from the last review to evaluate the e-government implementations through the websites.

Table 3: Number of Accessible Official Websites of 1st Level Administrative Units in South Asian Countries

Country	Number of 1st level Administrative Units	Number of Accessible Websites
India	36	26
Pakistan	7	6
Bangladesh	8	8
Nepal	7	5
Bhutan	8	7
Sri Lanka	9	8
Maldives	21	0
Afghanistan	34	0

We have used excel documents for each stage evaluation of each country. For every individual stage evaluation of a country, a single excel document has been used [69]. In the excel document, one side (headline row) contains the parameters and another side (headline column/ leftmost column) contains the administrative unit names [69]. Binary digit 1 and 0 have been used for indicating the presence and absence of a particular feature respectively [69]. Table 4 presents all the 4 stages of our research model, all the features of each stage, percentage of presence of each feature in the 1st level administrative unit websites of south Asian countries.

Tabe 4: Percentage of Presence of Each Component in 1st Level Administrative Unit Websites (%) of South Asian Countries

(Among the 8 South Asian countries, we have not been able to evaluate Maldives and Afghanistan's 1st level administrative unit websites since we have not found the websites. So, the web evaluation of the 1st level administrative units of the six South Asian countries have been presented here.)

Maturity Stage	Components/ Parameters	India	Pakistan	Bangladesh	Nepal	Bhutan	Sri Lanka
		36 Entities	7 Provinces	8 Divisions	7 Provinces	8 Entities	9 Provinces
Stage-1: Emerging Presence	Accessibility	75	85	100	71	87	88
	About Us Feature	72	71	100	14	87	66
	"Contact Us" Feature	72	71	100	14	87	55
	Language	25	0	0	0	0	66
	Evidence of Update	52	0	100	0	75	0
	General News and Activities	75	85	100	28	87	66
	Fast Loading Time	75	85	100	71	87	66
	Presence on the first page of search engine	72	85	100	71	87	66
Stage-2: Enhanced Presence	Compatibility with different web browsers	75	85	100	71	87	88
	Sitemap	36	28	0	0	87	11
	Search Feature	58	42	100	14	87	11
	Information about the services of the 1st level administrative units	72	57	100	14	87	66
	Accessibility though mobile devices	75	85	100	71	87	88
	Regular update	44	0	25	0	75	0
	Layout and Design	72	85	100	42	87	66
	Content	72	71	0	71	87	44
	Availability of links of important official pages	75	85	100	71	87	66
	Effective navigation	75	85	100	58	87	66
Stage-3: Interactive Presence	Forms/ onlineapplication/ onlineregistration	61	28	100	0	87	33
	Email interactions	58	71	62	14	50	66
	Writing comments/feedback	44	28	87	0	87	22
Stage-4: Transactional Presence	Transaction ofpayment	50	14	0	0	75	22
	License and otherpermits	44	28	25	0	87	22

Among the 36 first level administrative units of India, 26 websites are accessible. The available websites have lots of options. The available websites contain each department information and website links in their webpages. They provide information about other departments like home affairs, health sectors, education, result publications etc. their web content and design are attractive. They have various ways of effective one way and two-way online communication systems. Various online services like transaction of payment, license providing procedure etc. are

available in most of their websites. Different websites have different designs. All the websites are available in English language, many of the websites have the option to translate the web pages into their local languages. Overall features are smart and impressive. The available websites cover almost all the important information. Their performance is good in all the 4 stages.

The structure and design of the Pakistani websites are good. But the websites contain very few information. Among the 7 provinces, we have found websites of 6 provinces. At stage-1 (emerging presence) and stage-2 (enhanced presence), the entirety of their performance can be deemed fairly commendable. But all of the websites perform very few functions at stage-3 (interactive presence) and stage-4 (transactional presence).

All the 8 divisions of Bangladesh are accessible. All these division's websites have same structure and design. The performance of these 8 websites is deemed satisfactory at stage-1 (emerging presence) and stage-2 (enhanced presence). None of these websites contained any sitemap, their layout and design are satisfactory as the websites fit in every device and can adjust with their GUI options. However, the content of the websites is deemed insufficient, characterized by non-user-friendly configurations of options and menu bars. Nevertheless, their performance at stage-3 (Interactive presence) is moderately acceptable. All of the websites have operable forms, except the website of Sylhet Division, all of them have the "feedback" option. Except Chattogram, Barisal, and Mymensingh division, all the divisions have the system of email interaction. The performance of the websites is deemed unsatisfactory at stage-4 (transactional presence). Only Khulna and Rangpur division have the option to provide license, rest other divisions don't contain any system of transaction and license processing.

Among the 7 websites of the 1st level administrative units in Nepal, 5 websites are accessible. The Websites of Bagmati province and Lumbini province are not available. The available websites offer limited information, and their overall performance falls short at every stage. Website of Koshi province has few features at stage-1 (emerging presence) and stage-2 (enhanced presence). Websites of Madhesh province, Karnali province, and Sudurpashchim Province don't contain basic information. These 3 websites have some photos in their gallery section and links of the Nepal's ministry websites. The website of Gandaki province features a menu bar positioned at the top of their page; however, upon clicking, the options within the menu fail to function. The collective performance of these websites is subpar.

Structures, designs and features of the Bhutan websites are comprehensive, good and well arranged. Among the 8 1st level administrative units of Bhutan, we have found the websites of 7 units. All these 7 websites are good at presenting basic features. The websites encompass essential information and services. While all these websites are available in English, none are provided in Bhutan's local languages. However, the services offered are commendable across all stages Only few websites have few lacking, like-website of Punakha does not contain any evidence of updates, its' content is not good enough, website of Trongsa, Paro and Bumthang don't have any system for email interaction. Except the website of Trongsa, all the accessible websites have transaction of payment system and license providing procedure.

Among the 9 provinces in Sri Lanka, 8 websites are accessible. Among the 8 accessible websites, website of North Central Province and Sabaragamuwa province don't contain any information about the provinces, their websites exhibit a simplistic structure, consisting solely of a basic page featuring a headline. While the performance of the rest 6 websites is commendable during stage-1 (emerging presence) and stage-2 (enhanced presence), their efficacy declines notably during stage-3 (interactive presence) and stage-4 (transactional presence), where they demonstrate inadequate performance. Though Sri Lakas' performance is shown best among the south Asian countries, Sri Lanka's websites of 1st level administrative units lack valuable information. An advantageous feature worth highlighting is the provision of multilingual support across all these available websites, with content presented in three languages: English, Tamil, and Sinhala.

In Maldives, cities and atolls are the 1st level administrative units. None of the cities and atolls have official websites.

We searched for the official websites of all 34 provinces of Afghanistan but could not find any. Based on our query results, it appears that none of Afghanistan's provinces have individual websites.

Upon evaluation, it is evident that the performance of websites in most South Asian countries is satisfactory in stage-1(emerging presence) and stage-2 (enhanced presence). However, Nepal, Pakistan, and Sri Lanka exhibit deficiencies in terms of website features at stage-1 and stage-2. In light of the evaluation presented in Table 2, it might initially appear that the performance of India's first-level administrative units is subpar. However, upon closer examination, it becomes evident that the available websites of India and Bhutan exhibit the highest performance among South Asian countries. In light of the substantial number of administrative units in India, where ten websites are found to be inaccessible, the overall scores for each feature may appear diminished. However, it is noteworthy that the performance of accessible Indian websites stands out significantly among South Asian countries. Both the available websites representing India's first-level administrative units and those of Bhutan demonstrate a comprehensive inclusion of features across all four stages of website development—namely, emerging presence, enhanced presence, interactive presence, and transactional presence. Moreover, these websites surpass the essentials by offering an abundance of information and services. Conversely, the performance of Bangladesh websites is commendable primarily at stage-1 and stage-2.

7. Discussion and Conclusion

In the contemporary era, the reliance on the internet and information technology has intensified, shaping various

aspects of daily life. Particularly, governments are increasingly recognizing the potential of e-government to enhance service delivery. E-government offers the advantage of transcending geographical constraints, thereby streamlining processes, saving considerable time and costs, and alleviating the burdensome tasks inherent in manual procedures. Numerous nations have embarked on initiatives to leverage e-government systems to provide a wide array of services efficiently. Nevertheless, these efforts persistently strive for refinement, leveraging advancements in information technology to optimize the utilization of e-government resources.

If we see some countries having very high EGDI level, we will see that they are far more advanced than the south Asian countries. United states of America and Canada, both have very high EGDI level. The website of Fairfax County website of USA [51] contains online registration process, online transactions, online discussion system, residence information, and many other services. Their local people can also pay online taxes but most of the south Asian countries do not provide this system. Here, people have to pay taxes manually. Official website of a Canadian province, Ontario [53] also contains many necessary services after providing the basic services. From their website [53], people are able to look for jobs, get information and services of- home and community, road and driving, business, travel and recreation, law and safety etc. These countries are trying to provide services as much as possible so that the citizens lives become easier and faster. Like Fairfax County website (USA) and Ontario province's website (Canada), all remaining official websites affiliated with the local governments of these two developed countries are operating efficiently. In addition, the content and layout of their websites exhibit enhanced attractiveness and user-friendliness within these countries.

Developing, underdeveloped, and least developed countries are increasingly endeavoring to enhance their services through the implementation of e-government systems, recognizing it as a highly efficient means of delivering services rapidly and conveniently. Within the South Asian region, countries are actively striving to enhance their service provision capabilities in accordance with their respective capacities.

We have used a four-stage model to evaluate the performances of the websites of all the 1st level administrative units of south Asian countries. None of the south Asian countries have achieved very high EGDI level because they lack many necessary services. none of these countries are successfully conducting online voting and other participatory activities. Our evaluation of the websites of the 1st level local administrative units of south Asia shows that different countries belong to different stage. India and Bhutan's performance are fairly good at all stages, Bangladesh shows good performance at stage-1 (emerging presence) and stage-2 (enhanced presence). Overall performance of the websites of Nepal is very unsatisfactory. The design of the Pakistani websites is aesthetically pleasing but they contain few information. Though Sri Lanka has the best EGDI among the south Asian countries, websites of Sri Lanka's 1st level administrative units don't contain enough information and services and their design also needs to be improved. Maldives and Afghanistan don't have the individual websites for the 1st level administrative units.

We recommend several enhancements and adjustments to websites and government systems in South Asian countries to ensure the successful implementation of e-government initiatives. Firstly, while Sri Lanka demonstrates notable advancements in information technology, particularly evident in its higher EGDI compared to other regional counterparts, there remains a gap in the design and performance of its 1st level administrative unit websites. It's imperative for these websites to offer concise descriptions or service links, even if certain services are provided by other governmental sectors. Furthermore, the performance of Nepal's 1st level administrative unit websites is considered unsatisfactory, necessitating the addition of more services across all four stages, a requirement also applicable to Pakistan. Bangladesh's divisional websites show satisfactory performances at emerging and enhanced presence but have to integrate interactive and transactional services. Conversely, Bhutan and India boast proficiency across all stages on their existing websites, though many lack essential features outlined in the e-government model. Therefore, it's essential to ensure the inclusion of these features. Additionally, engaging software testers to assess website accessibility and completeness is advisable to address any identified deficiencies effectively. Moreover, bilingual presentation, featuring English and local languages, should be standard across all websites to facilitate broader accessibility. Governments should also actively encourage the use of information technology and provide comprehensive training to ensure proficient utilization of online systems. Finally, benchmarking national and local websites against those of developed countries can provide valuable insights to drive progress and adaptation to modern digital standards.

If the requisite measures are implemented to establish and sustain local websites in addition to national ones, governmental services would significantly improve in terms of accessibility and efficiency. Such improvements would contribute to heightened citizen satisfaction with the services provided, while simultaneously alleviating burdens for both citizens and governmental bodies. Consequently, nations would make swift progress, swiftly resolving numerous issues and advancing their development agenda.

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