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Maturity Assessment of Local E-government Websites in the Philippines

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Abstract

E-government is seen to have the potential to improve government services. Developing countries, for instance, are still in the process of adopting. In particular, the context in these countries posed challenges for the implementation and its potential use. In the Philippines, the national e-government initiatives continue to progress. However, there is a lack of empirical studies on the local e-governments level. Thus, in order to determine the country's current local e-government development, this paper examined the maturity level of websites in the municipal and city governments in the country and identified the issues associated with its e-government development. Using the United Nation (UN) e-government maturity model, 150 local government websites were assessed based on the model's online service component. Through a stratified sampling method, the population was divided into sub-groups based on income classifications of municipalities and type of cities. Interviews were also conducted to key informants from local offices to determine possible issues associated with e-government development. The results show that several of the local governments are still on a basic (emerging) stage. The highly urbanized cities, on the other hand, showed that most of their websites are already on stage two (enhanced), in which it can accommodate simple one-way communication services. Moreover, among the reasons behind the lag of e-Government progress are the lack of technological infrastructure and skills, organizational issues and lack of government regulations among others. This study can be used to develop a plan to improve e-government services as well as supporting evidence on the status of e-government websites in the Philippines.

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1. Introduction

E-government is described as "the use of information technologies that have the ability to transform relations with citizens, businesses, and other arms of government" [1]. It has a significant role in improving service delivery [2] and has the potential of greater efficiency, less corruption, revenue growth, increased transparency, more convenience and cost reductions of public sector operations in both developed and developing countries [3]. Since the emergence of Information and Communication Technologies (ICT), e-Government initiatives have flourished and governments revolutionized the way services are delivered to the public. ICTs have transformed the relationship between government and citizens [4, 5, 6, 7] and public sectors have recognized the potential of using ICT as a tool for improving quality and responsiveness of government services [8]. Thus, the advent of e-Government has put a significant change in delivering public services.

The importance of identifying the performance of e-government cannot be overemphasized [9]. Thus, conducting an assessment on the quality of websites is imperative as it helps identify issues that are critical to the e-government service quality and process improvements. One significant model for e-government maturity assessments is the United Nation [10], which are commonly used in several countries [11]. A recent study by Al-Hashmi et al. [12] was also conducted in Yemen's government ministries websites using the same model.

In developing countries, the establishment of e-government is yet on its early development and more of these countries have not been entirely successful. In fact, according to Dada [13], the majority of e-governments in developing countries fail. This may be partly due to individual country's complex nature, lack of resources, socio-cultural and other challenges that need to be addressed [14].

The Philippines is an East Asian democratic country with a population of about 106 million people [15] of whom 67 million (63%) are Internet users [16]. The beginning of its e-government development can be traced back in early 2000. Through the mandate of the Electronic Commerce Act or Republic Act 8792, the Philippine government required each department to have a presence on the web. This was to allow public access to information and that citizens may communicate with their duly elected politicians. Government initiatives have continued to be realized thru ICT tools such as the Internet. Furthermore, the Department of Information and Communications Technology (DICT) was also formed under the Republic Act No. 10844 for the utilization and development of ICT for national growth.

At present, the government is working on its EGMP plan (E-Government Master Plan) created by the DICT. The EGMP is a blueprint to integrate ICTs for the whole government including institutions, agencies, processes, resources, and policies. This plan describes the system of governance that should be reinforced to make its implementation possible and sustainable.

Philippines was ranked from 95th in 2014 [17] and substantially advanced to 71st spot out of 193 countries in 2016 [11] in the UN Survey for E-Government Development Index (EGDI). The EGDI is used to measure the readiness of national administration using the ICT tools for public services. With this, the Philippines is now faced with the challenge to sustain its impressive growth and to make it more inclusive. This places a demand for the government to provide an environment that ensures openness, efficiency in service delivery and spaces for greater competitiveness [18]. With the increased demand and expectations, the government must move from non-integrated path of ICT development to an e-Government development.

Moreover, several government websites of different departments were already developed with a total number of thirty-six, as listed on the Philippine Official Gazette website [19]. However, there is a lack of empirical studies on the local e-government level. In fact, the latest studies to assess local city websites was conducted on 2005 [20], in which the results have indicated a clear absence of significant information and resources on the web that could augment the quality and speed of service delivery. Having said that, the need to identify the current status may be necessary. Given the mandate of the Philippine Executive Order No. 02 s.2016 that states, "citizens have constitutional right to information and the state policies for full public disclosure and transparency in the public service", government units are inclined to comply with this order.

Thus, this paper examines the current status of the city and municipality e-government websites in the Philippines to assess the level of its maturity and to identify the issues associated with its e-government development.

2. Literature review

E-government includes the use of other ICTs in addition to the internet, such as database, networking, discussion support, multimedia, automation, tracking and tracing and personal identification technologies [21]. The many anticipated benefits of implementing e-Government have led governments to invest heavily in technologies and systems [22]. It offers services to those within its authority to transact electronically with the government [23]. These services differ according to users' needs, and it has caused a rise in the development of different types of e-Government.

In order to assess service delivery of e-governments, its maturity should be identified and analyzed based on the degree to which the properties of the information technology have been utilized to enable service delivery electronically [24]. This may be accomplished through the use of appropriate e-government maturity model. A maturity model is "a method for judging the maturity of the processes of an organization and for identifying the key practices that are required to increase the maturity of these processes" [25]. This serves as a guide to gain control of the processes for developing and maintaining e-government services particularly those directly accessible to citizens through websites.

There are several maturity models of e-government such as Layne and Lee [26], Hiller and Billanger [27], United Nation [10] and World Bank [28]. According to a comparison study conducted by [29], the UN model features customer centricity and e-participation, giving emphasis on citizens' needs which may lead to a transparent and effective e-government. Thus, in this paper, the United Nation [10] Four-Stage Model was chosen. Each stage of e-government development has its own level of technology features and sophistication. The first stage is the emerging services in which the government website contains basic government information, public policies, governance or regulations, and links to other government branches. Here, citizens can obtain updated information on the national government.

The second stage is the enhanced services in which a government website contains one-way or simple two-way communication media for the citizens, such as downloading forms and applications. It has multi-lingual capability and audio/video features among others.

The third stage is the transactional services in which a government website provides two-way communication capability for citizens such as applying for certificates, permits, and licenses; and downloading and uploading forms. In this stage, the website can also cater financial transactions for payments or fees.

The fourth stage is the connected services in which the government is proactive in engaging citizens, thus providing interactive web tools on websites. Information, data, and knowledge are transferred from government agencies through integrated applications. In this stage, citizens are empowered and are provided an environment to be more involved in government activities and decision making.

3. Methodology

To assess the e-government sites and the status of its implementation, we applied a two-step approach. First, a guided assessment of local government websites was adopted. A total of 150 Philippine city and municipality websites were proposed for evaluation based on the United Nation (UN) e-government maturity model [10] as indicated in the previous section. An updated list of all regions, cities, and municipalities in the Philippines was retrieved from the Department of Interior and Local Government (DILG) with a total number of 135 cities and 1,493 municipalities overall. From the sample population of 150, seventy-five percent (113) were taken from municipalities, and twenty-five percent (37) were taken from cities.

The sample websites were determined through a stratified sampling method. The population was subdivided into groups, called strata, in which each stratum represented each city or municipality classification. Afterward, the samples were then drawn from different regions in each stratum to derive the most probable results.

To identify the URL of each sample, Google was used for searching and only those websites that contain a domain of ".gov.ph" were considered for the assessments. Each website was assessed separately according to specified criteria as seen in Table 1, adapted from Al-Hashmi et al. [12].

A website belonged to a specific stage if its features met all the given criteria, except for Stage 1 – in which a mere online presence (available URL) is considered as an emerging stage. The results were then fed to a spreadsheet. The data were then analyzed using descriptive statistical methods.

Second, semi-structured interviews were conducted with six key informants from different cities and municipality government units. The interviewees were IT personnel and project managers associated in the ICT department in their respective offices. The goals were to fully understand the reason behind the slow pace of e-government development. An interview guide was used, but additional questions were probed during the actual interview sessions to explore new paths on the topics. The questions were mainly focused on the issues of successfully implementing e-Government in terms of technology, organization, data, and environment.

Table 1. Website Maturity Assessment Criteria.

Maturity Stage	Criteria	Description
Emerging Information Services	Information about the office	Website contains basic information about the office (e.g. office location, public policy, laws, regulations, types of government services etc.)
	Search facility	Website allows a user to search contents
	Link to other office/organizations	Website contains links to other office/organization websites or social media pages
	Updating	Website has been updated regularly
	Contact Us	Website has 'Contact Us' option
Enhanced Information Services	Downloadable form	Website allows a user to download relevant forms
	Audio/Video Capability	Website can play audio or videos
	Multilingual	Website allows a user to choose different languages
	Feedback	Website allows a user to send feedbacks to office
	Registration	Website allows a user to register or sign up
Transactional Information Services	Uploading forms	Website allows a user to upload forms
	Financial transactions	Website allows sending payments and fees online
	Applying for certificates or licenses	Website allows application for certificates/licenses
	E-voting	Website allows a user to vote online
Connected Information Services	Web comment form	Website contains user comment forms
	Online consultations	Website allows a user to consult online
	Citizens views & democratic participation in decision making	Website engage citizens through citizens' views sections/forums and other methods of allowing them to participate in decision making

4. Results and Discussion

Out of 150 sample websites, 49 have no websites or are inaccessible. The remaining 101 websites were carefully analyzed separately. Each website was assessed based on a simplified set of criteria by Al-Hashmi et al. [12] using the United Nation as the baseline model. Each stage has three to five features and was scored separately.

A website is assessed as a Stage 1 website if it satisfies at least one of the features for the emerging stage. In this paper, an online presence with basic government information posted is considered as an emerging stage. If a website satisfies all the criteria in a given stage, it is then evaluated as the next advance stage. For instance, if a website satisfies all the Stage 2 criteria, it is considered as a Stage 3 website.

The results of assessments per strata are summarized in Table 2 and illustrated through charts in Fig. 1a.

Table 2. Local e-Government Website Maturity Assessment Result.

Government Class	Stage 1 (Emerging)		Stage 2 (Enhanced)		No registered website		Total
Municipality		%		%		%	
First class	11	40.74	7	25.93	9	33.33	**27**
Second class	5	35.71	4	28.57	5	35.71	**14**
Third Class	11	55.00	3	15.00	6	30.00	**20**
Fourth Class	16	53.33	4	13.33	10	33.33	**30**
Fifth Class	11	55.00	2	10.00	7	35.00	**20**
Sixth Class	0	0.00	0	0.00	1	100.00	**1**
City							
Highly Urbanized	2	22.22	6	66.67	1	11.11	**9**
Independent Component	1	100.00	0	0.00	0	0.00	**1**
Component	11	39.29	7	25.00	10	35.71	**28**
Total Sample Websites:							**150**

The municipalities were classified into six, of which the first class is the most developed municipality and the 6th class the least; and cities were also grouped into three categories - highly urbanized cities, independent component cities, and component cities respectively.

The result of the website assessment for first to fifth class municipalities have shown a greater number of websites belonging to Stage 1 than in Stage 2. There are few Stage 2 websites from first to fifth class, but no Stage 3 and Stage 4 websites. For the sixth class, the one representative sample have no independent government website. As well as the other thirty-eight (38) websites in different classes.

Based on these results, it can be presumed that the lower the income classification of a municipality, the lower the prioritization on e-government website development. Conversely, high-income classification of municipalities tend to prioritize their e-government development as most of the websites are on enhanced {Stage 2} maturity.

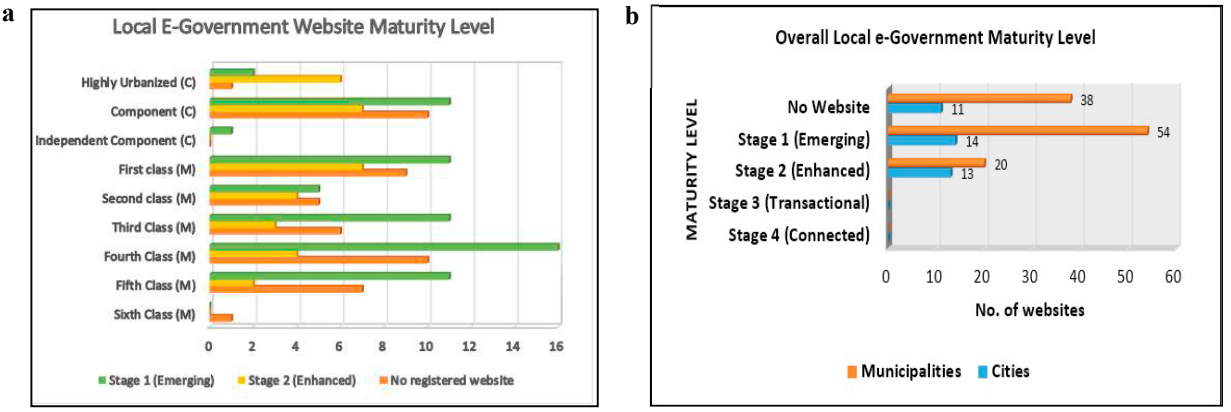

Fig. 1. (a) Assessment by classification; (b) Assessment by maturity level.

Moreover, the assessment outcomes for the cities showed varied results per class. Several component cities belong to Stage 1, with eleven websites; and the remaining seven websites belonged to Stage 2. The independent component city, with one representative sample, also was assessed as a Stage 1 website. The highly urbanized cities, however, mostly belonged to Stage 2 with four websites assessed; and another two websites belonged to Stage 1. Moreover, there are eleven city samples that have no government website yet.

Shown in Fig. 1b is the summary of the overall results. Out of the 112 municipality websites, 54 belonged to Stage 1 (Emerging) level, and the remaining 20 are already on Stage 2 (Enhanced) level, but 38 samples have no website. For the city assessments, 13 sample websites (6 HUC and 7 CC) belonged to Stage 2; 14 samples (2 HUC, 1 IC and 11 CC) to Stage 1; and 11 samples have no registered government website, with a total of 38 city websites. The results also revealed that there are no websites that have reached Stage 3 (Transactional) or Stage 4 (Connected) maturity level.

The findings have shown different implications on the current status of local e-government in the Philippines. Several of the municipalities are still on its first stage in utilizing online e-government services and some even have no website to start with. It appears that the standard of e-government website in the Philippines is the Stage 2 level because even the highly classified cities fall under this stage. In fact, almost all the highly urbanized cities samples can almost be considered as Stage 2, since the only criterion these websites have not met, is the search functionality. Searching is an important feature for users to easily and directly look for services or information. But this may be argued as part of website technical standard rather than government service.

There are also website features in the criteria that were not seen on any sample websites; such as in (a) Stage 3 - the ability to upload a form or any media type, to vote online; and in (b) Stage 4 - to allow online consultation or democratic participation.

On the contrary, among all the highly urbanized cities and other samples, only one website contains a multi-lingual capability in which it allows visitors to change the language to five different languages, aside from English. All assessed cities were also found to have basic information posted, but not all municipalities have one.

Furthermore, none of the 150 samples reached the Stage 3 (Transactional) or Stage 4 (Connected) level. But there are certain samples for each classification that have at least one checked criterion for higher stages 3 and 4. First, is the municipality of Gerona (Tarlac) where only their website has the capability to let citizens apply for a new business permit online. This is considered as a transactional service as described in the UN model, although the website was only evaluated as Stage 2. Second, is the Santa Magdalena municipality in Sorsogon. Though its website is still in Stage 2, one of its features is a forum, which allows users to post their views or can talk about their concerns. This falls under the criteria of Stage 4 (Connected) maturity level, wherein citizens are engaged in present issues or can participate in government decision making. Third, the highly urbanized city of Cagayan de Oro was found to have the capability to transact and pay through its official websites such as business permit application or renewal, senior citizen ID application and the like. Using a third-party payment method, they are able to cater to complete financial transactional services online. Although this website was not able to pass all criteria for Stage 3, transacting online is seen to be the main feature of this stage, and therefore is considered an advance e-government website among others. Lastly, there are 8 municipalities out of 150 samples who have a web comment form in their websites, which is also a criterion for Stage 4. But these were either assessed as Stage 1 or Stage 2 level website.

During the interview among key informant interviews, the issues associated with the website development and compliance with government mandates were discussed. It can be grouped into four major themes as shown in Table 3.

Table 3. Summary of issues associated with e-government website implementation in local government units.

Themes	Issues
Technology	Lack of technological infrastructures; Lack of ICT skills and expertise
Data	Lack of data availability; Lack of user-friendliness in website design; Lack of service quality; Lack of security, and thus, citizens' trust
Organization	Lack of top management support; Lack of management's interest in e-government; Lack of employees' training; Lack of manpower; Lack of e-government goals within the organization; Lack of cooperation between offices
Regulatory Compliance	Lack of government laws and regulations compliance monitoring; Lack of funding from government

The results of the interviews showed that the lag on e-government website development is due to a variety of issues. As such, issues vary depending on the classification and type of the local government units. For instance, low-income municipalities such as in 4th to 6th class, usually struggle on technological aspect. Thus, the need for technological

tools and skills are core requirements to a Stage 1 e-Government website. As seen on the maturity assessment results, several government units have no registered website yet. The lack of infrastructures such as network devices, servers and computers, bars e-government progress. In addition, the lack of ICT skills and expertise within the organization is also a minor factor in the implementation and maintenance of websites. Instead, some government offices hire a third-party web developer to do the job.

The staggering local e-government implementation despite the presence of laws associated with it can be understood from the context in which these local government units are situated. For instance, technological infrastructure is a requirement to support the e-government efforts, however, there are places that internet connection is unreliable.

Data, organization and regulatory compliance, on the other hand, are the common issues in higher type of cities (highly urbanized) and municipalities (1st – 3rd class). An enhanced (Stage 2) website requires data and service quality while a transactional (Stage 3) requires high data security for transactional processes. Top management support and other organizational factors are also considered as crucial parts in e-government development. Consequently, all stages are required for regulatory compliance under the law and promote citizen participation. Therefore, a connected (Stage 4) website can be accomplished through full compliance of e-Government laws.

5. Conclusion and implications

This study determined the current status of local e-government websites of Philippine cities and municipalities. The findings have revealed several implications. First, most of the local governments with websites were found to be in the early stage of e-government development. In fact, all available local e-government websites were only categorized as either Stage 1 or Stage 2. This implies the apparent need to strengthen the e-government initiatives and to take its development into one of the priorities. Second, several municipalities have no independent websites yet, instead, the basic information is usually placed on a separate section on the official provincial website. Considering the e-government regulations requiring online transactions and the provision of services, several municipalities and cities are still far beyond the realization of e-government goals. In general, the government should be able to provide the public with services online such as application, transactions and other forms of citizen engagement.

Drawing up from the data and results, this study has offered an additional contribution to local e-government development. We were able to provide a peek into the current setup of local e-governments in the Philippines by identifying its e-government maturity level and examining the issues associated with its development. Thus, through this study, the national government can draw e-government plans based on the assessments which can help in identifying the areas where they need to set improvements especially those that require more infrastructure support.

This study also has limitations. The collected data from the Philippines is just one of the many developing countries. The number of websites assessed was also limited to 150 city and municipality government websites. The assessments were conducted through the adapted set of criteria based on the services, and not how the services are delivered.

Moreover, the limitations of this study offer directions for future researchers. The following are the recommendations for further studies: (a) an increase in the number of web assessments may draw other conclusions, since there are more than one thousand websites available; (b) an assessment based on citizens perspective may further help the local governments to improve its e-government website and identify strengths and weaknesses; and finally, (c) an e-government process design framework for local e-government implementation. This framework should identify the processes that need prioritization within the organization, through understanding the processes that affect the e-government outcome. This should improve e-government services and thus, the citizen will ultimately benefit from the outcomes.

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