An Assessment of Municipal E-Governance Service Quality using Esteves Index

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Abstract

The notion of local e-Governance has become an important aspect for transparent and effective service delivery in a convenient and cost effective manner, especially in the state of affairs where administrative procedures are facilitated by Information Technology (IT) to significantly promote government-citizens interaction, and citizens desire to perform their responsibilities in a 24x7 mode without physically visiting government offices. This paper discusses the results from the assessment of e-governance websites of Urban Local Bodies (ULB's) in the state of Madhya Pradesh (M.P.) in India, in view of benchmarking the websites of ULB's to ensure the service quality. We present an ex-post predictive evaluation for the evaluation of local e-governance project using an index proposed by Esteves. The study reveals that Bhopal municipal corporation website can be used as a benchmark for the municipal e-governance initiatives in the state of M.P.

Keywords:- E-Governance, Local Governance, Urban Local Bodies (ULB), Websites Quality assessment, Benchmarking.

Introduction

In today's era of technology driven globalization, citizens are expecting more from government agencies in terms of transparency, accountability and more direct input on public issues that influence them. According to Borras (2004) “Many governments in developed and developing countries are now developing, implementing and improving their strategies to transform government services using information and communication technologies (ICT)”. This transformation of services is manifested in a substantial makeover in the mode of communication between government and its stakeholders and referred to as e-government or online government, digital government or e-governance.

Zhiyuan (2002) posits that similarly to the concept of electronic commerce, which allows better and more efficient communication between business partners electronically (B2B) and between businesses and their consumers (B2C), the concept of e-government enables more convenient, transparent and inexpensive interaction between government and citizens (G2C), government and businesses (G2B), and internally between different government departments (G2G).

Marche and McNiven (2003) figure out that "e-government is the provision of routine governmental information and transactions using ICT means and e-governance are the ICT-mediated relationship between citizens and government for communication, policy evaluation and expression of citizen will."

The notion of local e-Governance has become an important aspect for transparent and effective service delivery in a convenient and cost effective manner, especially in the state of affairs where

a) administrative procedures are facilitated by Information Technology (IT), and

b) citizens desire to perform their responsibilities in a 24x7 mode without physically visiting government offices.

Majority of the studies about e-government evolution have been tailored to the national level, with little information focused on local e-government (Capgemini, 2006). The reasons for this are:

i) In most of the developing countries adoption and implementation of local e-government initiatives affected because of conflicting goals and priorities of government agencies at different levels;

ii) Lack of adequate resources to invest in e-governance initiatives;

iii) Generally local government lack independent decision making powers as they rely on support from central or higher levels of government for the implementation of various initiatives;

iv) Lack of support staff in the field of information systems at the local level as they have intense competition with the private sector for qualified IT professionals;

v) Government employees resistance and fear of change as they are not supposed to expose to new emerging technologies very frequently;

vi) Staff turn-over and restructuring that lead to loss of skilled and experienced staff in Local governments (Ndou, 2005);

vii) most of the developing countries still facing problem of either limited ICT infrastructure or not enough regular power supply especially in the rural areas;

viii) The problem of digital divide.

Tiwari and Khare (2014) assert that, in Indian context, the local government i.e. Panchayats in rural areas and Urban Local Bodies (ULB's) viz. Nagar Palika or the Nagar Nigams (Municipal corporations) in urban areas is the third tier of government which works under the state and central governments. These ULB's in the State of Madhaya Pradesh (M.P.) are presently governed by The Madhya Pradesh Municipalities Act, 1961 which repealed the Central Provinces and Berar Municipalities Act, 1922 (II of 1922), the Madhya Pradesh Municipalities Act. 1954 (I of 1954), the Vindhya Pradesh Municipalities Act. 1946, and the Bhopal State Municipalities Act. 1955 (III of 1956).

In the Indian urban local governance, municipal corporations are directly responsible for many tax payments, infrastructure development and maintenance of street light, water, sanitation, roads, local transport and school level education.

In this present assessment of municipal e-governance websites of M.P. we present an ex-post predictive evaluation for the assessment of local e-Governance project to ensure the service quality using Esteves model for the municipal websites.

The remainder of this paper is organized as follows: Section 2 lays the foundation of the main motivation of this work, i.e. review of related literature. Section 3 puts forth the web assessment methodology and municipal e-Government services model formulated by Esteves (2005). Section 4 illustrates the evaluation concept of the instrument. Principal research findings are discussed in section 5, on the issues like - comparison between sites, identifies the sites which are good and act as benchmark for other municipal websites and also identifies areas of the sites that need enhancement. Finally, in section 6 the paper comes to an end with the conclusions based on the findings of the research.

Review of Literature

Local government is where the majority of interaction between government and civil society occurs (Flak et al., 2005).

Nabafu and Maiga (2012) points out that each country has a kind of local government which differs from those of other countries, although local e-Governments share some of their requirements like interoperability and security with e-Governments at relatively higher and national levels, they have specific characteristic requirements unique to their context.

There is a lacuna in the information regarding e-government implementation at the local level since most of the current e-government published research and designed models have focused on national and state-level e-government practices (Tassabehji et al., 2007) Recent surveys in Europe show that 50% to 80% of the interaction between citizens and government occurs at the local levels (Moraru, 2010).

Citizens visit a website more frequently, if they encounter a positive online experience and feel that their perceived benefits are fulfilled in terms of basic and value added services. But, if the citizen feels disappointed with his online experience, he/she may prefer to physically visit the

government authorities/offices/agencies (Cunliffe, 2000). Klievink and Janssen (2009) figure out the significant issue concerning websites and service integration. There is a difference if (i) the website is providing single access point to citizen as an interface gateway or (ii) if there is an integration of services from different public agencies.

Numerous performance assessment indices have been proposed at international, regional and national levels to determine the level of development e.g. The United Nations e-government development index (EGDI) and EU e-Government Benchmark (EUeGovBe) for countries (UNDPEPA, 2002), Rutgers-SKKU E-Governance Performance Index for municipalities/cities (Holzer and Kim, 2007) and Municipality e-Government Assessment Project (MeGAP), (www.portal.unesco.org) and Estves Municipal e-Government services model (2005).

Research has also been conducted on various issues associated with municipal e-Governance. Wirtz and Nitzsche (2013) examine the breadth and depth of local e-Government services based on the comparative study of the world's leading cities of New York, Singapore and Hong Kong. Sandoval-Almazán and Colin (2011) analyzed 518 municipal e-Government websites of Mexico and found that (a) 89.27% websites did not provide any security mechanism, as they do not offer on-line payments; (b) 78.81% websites display poor web design, IT government openness and hence are below average on the technology front. Further, at least 57.33% of the municipalities have the opportunity for delivering services what citizens really need.

Delitheou and Maraki (2010) examine citizens' behavior towards municipal e-services in Greece and reported from research finding that "actions should be taken to encourage citizens to make use of electronic services in municipalities-communities".

Moon and Norris (2005) argue that large city authorities are more prone to take on e-government activities, compared to smaller sized cities, since due to public demand, authorities explore new ways of providing services and disclosing information to common men. Devuyst and Hens (2000) examine how Flemish and Canadian municipalities measure and manage sustainable development initiatives.

Very few studies of municipal websites are reported in India. Tiwari and Khare (2014) discuss the Mission Mode Project (MMP) initiative of e-Governance for Urban Local Bodies in Uttar Pradesh. Krishnan (2013) discusses some of the outcomes of ICT based services through the Panchayati Raj Institutions in the state of Kerala.

Katare et al. (2016) conjecture that "In order to stimulate more participation by citizens in the e-governance, there is still need to provide more online transactions, collect information with improved levels of security/privacy, provide online availability of documents on request and include interactive grievance redressal mechanism, FAQ's and 24×7 supports".

Website Assessment Methdology

In the current era, websites are the main connecting channels between the citizens and government, but simply by introducing a website as the new window of service delivery the fundamentals of government service delivery are not altered (Pardo, 2000). Howard, (2001) speculate "e-government initiatives clearly extend beyond the textual listing of information to a more "intentions-based" design so that citizens can more effectively utilize web portals".

Modification improvement may enhance and strengthen every website. For this post-presence an objective evaluations of websites is required. This end, we attempt to assess the present status of municipal e-governance services that are offered in cities of M.P. in India, this self financed research was carried out between February 2015 and August 2015. In M.P., there are 16 cities which have Municipal Corporations, out of which only 50% i.e. 8 cities have their own websites. Of the 8 municipal websites, the site of the city of Khandwa was ignored from our research sample due to the fact that the website is not currently active as the web page is at times under construction, or under maintenance. Finally the websites of seven cities which have an active website were included in this study.

Assessment of these seven websites were done using Esteves (2005) municipal e-government services model.

Esetves Framework

We apply the municipal e-Government Services Model formulated by Esteves (2005) shown in table 1. This model is based on five phases - viz. presence, urban information, interaction, transaction and e-democracy. Transition from one phase to other represents an increase in the ability to provide information and services on one hand and improvement in the communication between municipalities and citizen on other. This model further elaborates 16 e-Services: applications (document downloads), council/municipal newsletter, browser/search engine, web map, street map, public transportation, email, telephone listings, mobile services, online transactions, follow up services (monitoring), digital certificate, citizen folder, online payments, site personalization and citizen participation.

Table 1. Classification of e-Services in municipal e-Government service framework

S.No.	Phase	e-Service	Description
1	**Presence**	Applications (Document Downloads) Council/Municipal Newsletter Browser/Search Engine Web Map	Publish online information to the citizens. Information ranging from general to specific like proceedings, plans, act or law, notice, advertisement and so on. Provision of basic search tool for easy exploration of the available information inside and outside website. Web map for easy navigation. Facility of downloading of important documents.
2	**Urban Information**	Street Map Transportation	Provides information on city street maps and urban Transportation routes and availability can be static or dynamic with proper search facility. Facility may be provided by the usage of Geographic Information Systems (GIS).
3	**Interaction**	Email Telephone Listings	Provision of communicating with the council members/staff/ authorized person via phone or email to send or request information, complaint and feedback.
4	**Transaction**	Mobile Online Transactions Follow Up (Monitoring) Digital Certificate Citizen Portfolio Online Payments Personalization	Citizens are able to perform a set of services online like online transaction via various channels, updation and modification of personnel data, application pr ocessing, approval/ authentication, bidirectional communication, m-governance so on. Citizen can have online status tracking of their proceeding (even if it were not initiated online). Is possible to obtain online certificates (i.e. death and birth, trade license, building permission certificate).
5	**e-Democracy**	Citizen Participation	Facilitate the discussion forums, blogs, chats, online communities and online surveys to solve city problems.

EVALUATION CONCEPT

To evaluate each one of the seven municipal websites, two independent evaluators were chosen and provided with the following details and documents - i) names and address of the municipal websites under consideration, ii) detailed Esteves model and iii) scoring criteria suggested by the researchers (shown in table 2). They were requested to use the evaluation criteria to arrive at their individual score for each website.

Following the philosophy of Esteves evaluation, researchers calculated indicator e-value for each one of the seven websites using the weights given to each phase: 0.25 to Presence; 0.5 to Urban Information; 0.75 to Interaction; 1 to Transaction and 1.25 to e-Democracy.

Table 2: Scoring systems of e-services

Criterion	Scores				
	(2.0)	(1.0)	(-1.0)	(-2.0)	(0)
Presence Urban Information Interaction Transaction e-Democracy	Very easy, right away, no help needed, very useful	Easy/normal, no help needed, useful	Difficult, can use, but need help, not useful	Very Difficult, need much help, not at all useful	Can not find/not applicable/ do not know how to use or does not work

Analysis and Findings

The indicator e-value obtained from sum of scores of individual e-services of a particular phase was multiplied by its assigned weight. The average of the e-values assigned by the two experts was then used to rank the websites under consideration. Table 3 presents the phase wise scores of municipal websites of the selected cities in decreasing order of their e-value and rank based on the e-values.

Table 3: E-values of Municipal Websites of Selected Cities

Cities	Presence	Urban Information	Interaction	Transaction	e-Democracy	e-Value	Rank
Bhopal	1.25	2	1	8	1.25	13.5	1
Jabalpur	0.75	0.5	0	6	0	7.25	2
Gwalior	1.25	0.5	1	3	1.25	7	3
Indore	0.75	0	0.5	4	1.25	6.5	4
Ujjain	-0.25	0.5	0.5	1	0	1.75	5
Ratlam	0	0.5	1	0	0	1.525	6
Singrauli	-0.25	0.5	1	0	0	1.25	7

From table 3, it is observed that 86% websites are below average on the urban information category, as they are lacking in proper information on both e-services viz. street map and transportation, 57% websites are below average both in transaction and e-democracy categories, as they did not offer on-line transactions, portfolio creation and interactive processes. Further, 43% websites are below average on the presence and interaction categories as they are lacking in proper information - either content wise or quality wise, as well as in communicational content.

It is observed that Bhopal ranks highest as per e-value. Ujjain, Ratlam and Singrauli need radical improvement for most of the categories as their scores are either negative or very low.

In order to test the relationship between various phases, correlation analysis was undertaken, results of which are displayed in table 4 below:

Table 4: Results of relationship between various phases of Esteves model

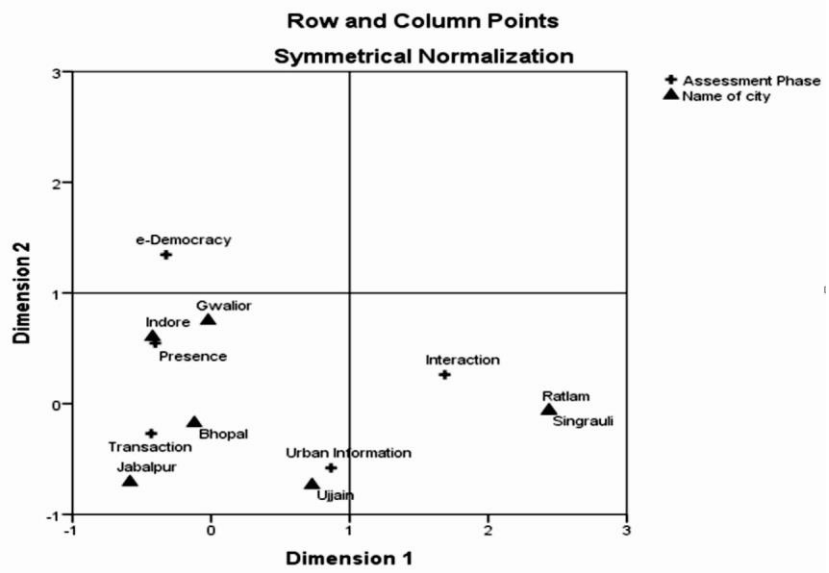
Phases	Presence	Urban Information	Interaction	Transaction	e-Democracy
Presence	1				
Urban Information	0.40	1			
Interaction	0.00	0.36	1		
Transaction	0.82	0.59	-0.30	1	
e-Democracy	0.82	0.28	0.28	0.56	1

It is evident from the table that Presence showed a high degree of positive correlation with Transaction and e-Democracy. It is true in general, that website observed more actual user traffic not occasional visitors if the website provides (i) quality information i.e., timely and reliable information, (ii) with facility of online interaction of users with authorities through discussion forum, blogs, chat and opinion polls or even by mail/telephone etc. and (iii) secure and safe transaction via various channels viz. internet banking, debit card and credit card.

It is quite obvious that if presence over web is poor, then the citizen is definitely deprived of the direct interaction and transaction with the government agencies. However, strangely it is observed from the table that Interaction showed either no correlation or negative correlation with Presence and Transaction phases. This can surely be an area of concern for the authorities and they must concentrate on these to introduce radical improvement.

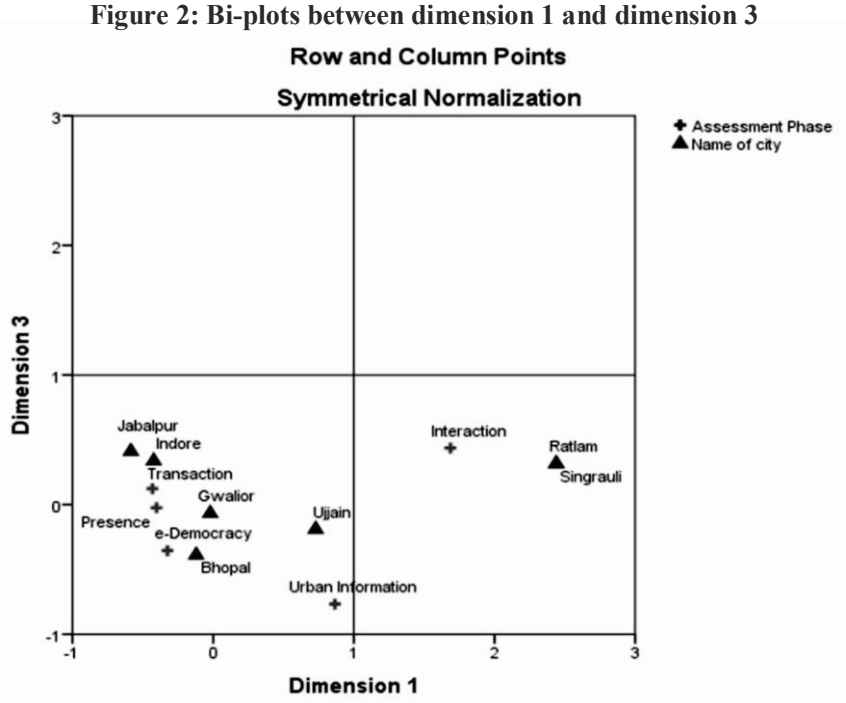
Next, correspondence analysis was conducted using SPSS (PASW 22.0). Correspondence analysis could be used to graphically display the relationship between the variables in a low-dimensional space, while simultaneously describing the relationships between the categories for each variable. Bi-plots of correspondence analysis are shown in Figure 1 and Figure 2.

Figure 1: Bi-plots between dimension 1 and dimension 2



Source: Created by Researcher in SPSS (PASW 22.0)

Figure 2: Bi-plots between dimension 1 and dimension 3



Source: Created by Researcher in SPSS (PASW 22.0)

Considering the bi-plots along with results of Table 2 and correspondence analysis, the following conclusions can be drawn (a) Correspondence analysis explains 44.1% of the variations, which are responsible for the quality of a municipal website, (b) The five factors under consideration have been reduced to 3 dimensions, where first dimension has loadings from "interaction", "urban information", the second dimension from "e-democracy", "interaction", while the third dimension has loading from "interaction" and "transaction".

We can further conclude from the detailed analysis of bi-plots and e-value rankings that -

1. In terms of the overall quality of municipal websites, Bhopal is the leader among the 7 municipal corporations. In particular, it can be taken as a benchmark for "urban information", "transaction" and "interaction". The website of Gwalior municipal corporation can be considered as a benchmark for the "presence" and "e-democarcy" characteristics.
2. Indore and Jabalpur are close to the "presence" and "transaction", while Gwalior and Bhopal score high on "presence", "interaction" and "e-democracy".
3. The e-governance website of the important city of Indore requires improvement on "urban information" and "interaction".
4. Ratlam, Singrauli and Ujjain receive either very low or negative scores for most of the categories and need radical improvement in all the categories.
5. When the e-value score matrix and correspondence analysis bi-plots are analyzed together, it is worthwhile to mention that major improvements are required for the "urban information", "interaction", "e-democracy" and "transaction" categories on most of the sites.

We next conduct an exploratory technique to reveal natural grouping i.e. cluster within data. The Hierarchical cluster analysis executed using SPSS (PASW 22.0) resulted into three clusters as shown in table 5.

Table 5: Cluster Group derived from Hierarchical Cluster Analysis - Dendrogram

S.No.	Cluster 3	Cluster 2	Cluster 1
1.	Bhopal	Jabalpur	Ujjain
2.	---	Gwalior	Singrauli
3.	---	Indore	Ratlam

Clusters thus obtained are coinciding with the ranking based on e-value as we recall that in table 3. Bhopal was the top ranking website while Jabalpur, Gwalior and Indore are medium performing group of websites.

Conclusions

In order to assess the user's perceived e-service quality of ULB's viz. the municipal websites; we have employed Municipal e-government services model developed and used by Esteves (2005). It used to assess the seven municipal websites of the state of M.P. in India.

Merely ranking would not serve the ultimate purpose of assessing the users' perceive service quality of a website. The analysis should be aimed at identifying the area of poor performance to make out and accomplish the possible levels of improvements in overall quality of the websites. This in particular, requires gathering users understanding of a particular website using appropriate model or framework.

The study identified the website of Bhopal municipal corporations as top ranked among all websites of the state of M.P., followed by Gwalior municipal corporations. Website of Indore municipal corporations show low website ranking though Indore is a densely populated city which is a major hub of commercial and educational activities and is more advanced in comparison to other cities.

The Bhopal municipal website shows outstanding features like - citizen and content categorization which comprises of city tourist information, transportation link, grievance redressal, online services, notice board, officers' directory, informative map, in depth service categorization, etc.

The municipal website of Gwalior also provides some appreciable online services with proper security channel, search option and public opinion poll. Jabalpur and Indore sites have been developed and maintained by a common service provider and hence displayed a similar approach towards service delivery.

The conclusions drawn from this research may be utilized by the local and state authorities to identify the best practices and utilize these towards further enhancement in service quality by attempting to improve the poorly designed components of their websites.

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