

DIGITAL TRANSPARENCY OF INFORMATION AND SERVICES ON MUNICIPAL GOVERNMENT WEB PORTALS IN CEARÁ

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Abstract: Transparency in the management of public resources, a key element of democracy, is of growing social relevance. As a result, a public demand for transparency, pressuring governments to provide universal access to public databases and systems, has contributed significantly to the dissemination of government web portals. Previous national and international research on digital transparency in public administration has mostly focused on capitals and large cities. To fill the gap in our knowledge of digital transparency in small municipalities, the present study evaluated the digital transparency of information and services made available on municipal government web portals throughout the state of Ceará, using a model of digital transparency analysis. To do so, we adopted a quantitative approach using indicators to quantify the collected information. Data was retrieved from 157 active municipal government web portals in Ceará, following a set of rules for web navigation and data retrieval. Our findings show that municipal government web portals in Ceará provide information and services which render the management of public resources more transparent, but disclosure is generally limited to mandatory items and to what is deemed desirable by municipal administrators.

Keywords: Municipal public management. Internet. Web portals. Digital transparency.

1 INTRODUCTION

Transparency in the management of public resources increases the social relevance of such resources and may be considered an essential element of democracy. Greater transparency is made possible by the rapid development of Information and Communication Technologies (ICTs) in the public sector, facilitating communication and interaction between government and society.

Political, social and economic changes over the last decades have led to greater transparency in public administration and the adoption of new management models. Accordingly, citizens have in general become more demanding and vigilant with regard to public administration.

Assuming society is the main beneficiary of the rational use of public resources, solutions to the main difficulties faced by today's authorities have become an object of much discussion, especially since citizens call for greater visibility and transparency in public administration.

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Public administrators must be held accountable to society for their actions and must respect laws and regulations. Ideally, citizens should participate in all political decisions involving the use of public resources, although many are still largely unconcerned about monitoring public spending.

The dissemination of government web portals is in part due to the growing demand for transparency in public administration as citizens are pressuring governments to make public systems and databases universally accessible. By allowing greater transparency and interaction between the government and society, web portals favor the exercise of democracy and citizenship.

Many Brazilian municipalities maintain official websites on which they make information on the public resource management available. The use of ICTs and the transparency of municipal public administration was evaluated for the state of Ceará by Teixeira (2004). The author concluded that, at the time of writing, few municipalities made use of ICTs: 86% had no web portal, and those that did offered few services and featured multiple broken links, compromising the usefulness of the internet for the prevention of corruption and improper use of public resources.

The purpose of the present study was to evaluate the availability of information and services on municipal government websites designed to render resource management more transparent. Over the past few years, much research has been conducted on the subject of e-government, especially with regard to the use of web portals as a way of improving the transparency of public resource management. Indeed, according to Gomes, Amorim and Almada (2015), Digital Transparency (DT) represents a new and promising line of study in the field of digital government advertising and transparency.

The problem of digital exclusion needs to be overcome to allow for full exercise of citizenship in the digital era (MOSSBERGER, 2010). Santana Júnior (2008) suggested promoting the exercise of citizenship by ensuring a greater proportion of the population has access to the internet. Amaral (2007, p. 40-41) described web portals as “relatively simple and accessible technological resources that allow the authorities of mid-sized and large municipalities to promote digital democracy”. Thus, using official websites, municipal governments can promote digital participation, strengthening their interaction with the local population.

The availability on web portals of information on the management of public resources may be expected to favor digital communication and increase the transparency of public policies, in addition to promoting popular participation and social control towards the exercise of citizenship.

Conceivably, the disclosure of information on public resource use on government web portals will help advance digital communications, make public policies more transparent, subsidize administrators and external and internal control agencies, and support the practice of popular participation and social control as instruments of the exercise of citizenship.

2 ICTS, POPULAR PARTICIPATION AND DIGITAL TRANSPARENCY IN PUBLIC ADMINISTRATION

Actions and decisions of public administrators can be advertised in many ways. Transparency represents the transition from a more bureaucratic administration to one of services and public participation, since the availability of unambiguous and timely information is one of the hallmarks of public transparency.

As pointed out by Siraque (2005), while popular involvement in public administration is very important, not all citizens participate in public debates due to time and space restrictions or insufficient political maturity. This limitation is partly compensated for by the use of electronic means of communication, including the internet, radio, television and telephone.

According to Ruediger (2002), e-government may be seen as an instrument of political empowerment of society, a promoter of good governance practices and a catalyst for profound changes in government structure, favoring the development, efficiency and transparency of public administration.

In view of the recent advances in ICT, e-government is likely to make services more efficient and to improve transparency to the extent required to monitor public actions and spending. In addition, e-government allows for a new form of interaction between citizens and authorities. Thus, the democratization of information provided by the disclosure of information on municipal spending tends to raise the level of popular satisfaction with public services (CARDOSO, 2004).

According to Sanford and Rose (2007), ICT-mediated public participation is a recent phenomenon. ICTs have become a means of public participation associated with the increasing digital inclusion of all sectors of society. As pointed out by Akutsu (2002), the use of ICTs allows more citizens to access information faster and at a lower cost, thereby mitigating social conflicts triggered by lack of transparency in public administration.

Aggio and Sampaio (2013) have shown that citizens dissatisfied with their representatives are less likely to show interest in the acquisition of political knowledge or participation in political activities. Some fields of study support the use of ICTs as a means of changing this scenario. The authors stressed that initiatives of popular participation, whether presential or digital, should not be seen as an end in themselves.

Maia (2002) believes institutions should invest in the civic sphere to make better use of participatory resources. However, the involvement of society is not ensured by the mere availability of a new communications environment, such as the internet, but needs to be encouraged and valued.

Zurra and Carvalho (2008) observed that the internet allows citizens to access important services from their home computer and that governments disclose information online as a form of rendering accounts.

Likewise, Marques (2008) believes the use of internet resources should be encouraged towards greater political participation, making it possible for citizens to access a whole new universe of information and offering institutional channels of participation. Nevertheless, these participatory processes may or may not be successful depending on factors associated with the social and political arrangement prior to the advent of ICTs, such as the willingness of institutions and officials to share with citizens incentives and capabilities to employ digital resources.

There appears to be a strong and direct association between the levels of transparency in public administration and ICT development. This is not surprising since the latter plays a crucial role in promoting transparency, social control and accountability of politicians and officials (TORRES, 2004).

DT implies the concept of e-government and the use of ICTs to create new channels of communication between public administrators and society. According to Marcelino and Santos (2012), projects related to the transparency of public databases and e-government help citizens understand public information while making the process more democratic and accessible.

As shown by Amorim (2012), the study of DT looks into how municipal governments use ICTs and their incremental effects within the democratic system. Examining the many ways governments can use the internet to become more transparent contributes to current knowledge of applied technology in the realm of public services and information.

3 STUDIES ON E-GOVERNMENT AND TRANSPARENCY IN PUBLIC ADMINISTRATION

Government web portals constitute an environment of interaction between citizens and public administrators, favoring dialogue and collective decision making. By fomenting greater transparency and interaction between the government and society, web portals help consolidate the exercise of democracy and citizenship.

Some international studies on DT are worthy of mention. For instance, Dolson and Young (2012) evaluated the quality of Canadian municipal web portals covering three aspects: e-content, e-participation and social media capacity. Based on a sample of 109 mid-sized municipalities, the authors found e-content to be good on the average, but the other two aspects displayed much greater variation, of which a large part was attributed to the structural or external factors explored in the study. Furthermore, web portal quality was positively associated with population size.

D'Agostino (et al., 2011) observed that websites in the public sector evolve rapidly, especially in terms of functionality and performance, going beyond the mere dissemination of information. Based on a sample of official web portals from the 20 largest cities in the US, the study analyzed two constructs related to ICT and the

public sector: e-government and e-governance. The former was given more attention than the latter, and the authors highlighted the most popular functions provided by the municipal web portals.

Baldersheim and Ogard (2008) evaluated innovative ideas for e-government on municipal web portals from four Nordic countries (Denmark, Finland, Norway and Sweden) in order to explain differences between municipalities based on the information and communication features of each web portal. In general, Danish municipalities had the most advanced ICTs, the most solid national policies, the most efficient strategies (a digital task force) to remove barriers against the adoption of e-government, and the strongest interaction between society and government.

Rodousakis and Santos (2008) identified factors influencing the adoption of e-government in Austria and Portugal, and compared the two countries' e-government strategies and policies. Their respective performance in international evaluations of e-government and e-inclusion was analyzed, considering their leading position as e-government countries in the EU with regard to completeness of on-line public services and sophistication. The authors suggested further research in order to identify the factors determining the development of efficient e-government policies.

Based on empirical findings from two national studies, Norris and Reddick (2013) evaluated the recent history of local e-government in the US, comparing it with predictions from older studies. According to the authors, contrary to predictions, the development of e-government has been mostly incremental, involving primarily on-line information and services, followed up by some form of transaction and limited interaction. The discrepancies observed between the predictions and the actual development may, among other things, be due to the incremental nature of US public administration, the lack of insight of the early researchers of the history of ICTs used by the government, and the influence of the school of technological determinism.

Pina, Torres and Royo (2010) evaluated the impact of e-government on accountability and transparency of local governments in the US. The study provided an overview of how local governments implement ICT initiatives to strengthen the interaction between government and society. Although the capacity of the internet for sharing information improved accountability and favored benchmarking actions, the actual results did not live up to the expectations as the evaluated e-government projects were still at an early stage of development. The authors concluded that ICTs did not have a significant impact on the accountability of local authorities in the US.

In Australia, Teicher and Dow (2002) conducted a study of which the two main objectives were to describe the nature and extension of e-government at national, regional and local level and identify major obstacles to the implementation of e-government. Based on published data and interviews with public administrators, the authors concluded that the implementation of e-government in Australia was mostly restricted to a single level of information and that dissemination was uneven, especially in remote and rural

areas. In addition, the growing popularity of the web portals was paradoxical, with portals proliferating at each level of administration rather than offering a single point of entry. In other words, the study revealed that effective e-government is not yet a reality.

Moon (2002) evaluated approximately two thousand government web portals and concluded that the size of the municipality was significantly and positively associated with e-government development and implementation; thus, larger and more advanced governments tended to be more proactive and strategic e-government implementers. The authors also concluded that a lack of financial, human and technological resources was the main obstacle to the development of e-government in many municipalities. These findings were confirmed by Styles and Tennyson (2007, p. 64) who found that, in general, larger municipalities disclosed more information on public administration.

Moon and Norris (2005) studied the effect of managerial innovation on the adoption of municipal e-government and evaluated the correlation between e-government adoption and outcome. The authors also proposed an exploratory model. The first part of the model showed that the adoption of municipal e-government was determined by managerial innovativeness, governing capacity and institutional factors (e.g., size of municipality and type of government). The second part suggested that the results of e-government were associated with e-government adoption, governing capacity and institutional characteristics. The authors concluded that municipality size and managerial innovativeness were the main determinants of municipal e-government adoption, and that different levels of adoption of e-government may produce different results.

Brazilian researchers have also explored the topic of web portal-supported municipal e-government and transparency. Thus, Amorim and Gomes (2013) looked into how Brazilian state capital governments use ICTs on the internet to provide information and services, making public administration more visible and transparent. They also evaluated potential correlations between the level of DT and the socioeconomic indicators of each state capital. The municipal governments included in the study were found to adhere to DT practices through web portals in response to legislation rather than voluntarily. The authors concluded that DT implementation required significant improvement of disclosure policies, ombudsmanship, municipal workings and procedures, portals of transparency and financial/budgetary information disclosure. In fact, public administrators were generally unattentive to the possibility of using ICTs to promote democratic values and practices.

Soares and Vicente (2011) evaluated the level of transparency of the disclosure of public spending on institutional websites of Brazilian state capitals. Using an indicator, they identified factors favoring or opposing transparency in matters of public spending. The Northern region of the country displayed the poorest results.

Zurra and Carvalho (2008) measured the level of DT of all 27 Brazilian state congresses using a method developed in Mexico and adapted for Brazil. Transparency was found to be low or insufficient on 74% of the evaluated web portals.

Likewise, Raupp and Pinho (2012) investigated the web portals serving the country's 27 state congresses in order to evaluate accountability on web portals following the passing of the Access to Information Act (in Portuguese, LAI). The authors showed that the law favored on-line interaction between citizens and the government, and expanded accountability as defined in the law of fiscal accountability and the law of transparency, but found that 21 of the 27 web portals disclosed little or no information on spending by state congressmen.

Cruz and coworkers (2012) determined the level of transparency of disclosure of government information on the web portals of 96 of Brazil's 100 most populous municipalities and identified socioeconomic aspects and indicators potentially impacting the observed levels of transparency. The empirical results revealed low levels of transparency, considered incompatible with the level of local economic development. In addition, in general, an association was found between municipal socioeconomic status and level of transparency of on-line disclosure of government information.

4 METHODOLOGY

Studies involving the public sector have made a substantial contribution to the development of models, scenarios, experiences, and lines of research. To satisfy the objectives of the study we adopted the methodology described below.

According to Collins and Porras (2007), all social science studies are subject to limitations and difficulties due to the dynamic nature and constant changes of their object of study. In this study, we adopted the taxonomy proposed by Mattar (2014). The study was quantitative with regard to the nature of the variables, using indicators to quantify information collected from active municipal web portals in Ceará according to a set of rules for web navigation and data retrieval.

The study population was defined through a search of the web portals of all municipalities in Ceará, considered the primary source of data for the study. Municipal government web portals were chosen as the object of our study because: i) municipal government is the level of public administration closest to society; ii) a general interest exists in the technological evolution of municipal web portals with regard to public services and information; and iii) web portals are a feasible way to improve transparency in the disclosure of information on public spending, covering not just the state capital (Fortaleza), but the greater metropolitan region and the state of Ceará as a whole.

The State of Ceará comprises 184 municipalities, but only 157 active web portals were included in our sample. The remaining 27 municipalities were excluded either because they had no website or because their website was inactive, undergoing construction/maintenance or formatted as a blog.

Information was collected systematically from the web portals between September and December 2014, following a set of rules for web navigation and data retrieval. In accordance with the model of DT adopted in the study (AMORIM, 2012), all links and pages were examined along with the content and information required for web portal analysis. Using a standard navigation procedure, items satisfying a set of criteria for general, technical and specific aspects were identified and extracted from each portal.

The adopted model of DT (AMORIM, 2012) groups data, services and transparency according to three dimensions: i) general information; ii) technical information and services; and iii) specific information and services. DT-related information and services in each dimension were organized according to categories of analysis from which sets of indicators were derived. Table 1 shows the three dimensions and their purpose, categories of analysis and respective indicators.

Table 1 - Dimensions, categories of analysis and indicators of the model (AMORIM, 2012)

Dimension/Purpose	Categories of analysis	Indicators
<p>1. General:</p> <p>Identify political, social and economic data of the municipality; verify URL and the existence of a portal of transparency; analyze quality of visibility.</p>	a) municipality	<ul style="list-style-type: none"> - actual number of candidates running for mayor - actual number of parties in the municipal congress - agreement between mayor's party and governor's party - mayor's party is left-wing - illiteracy (%) - digital inclusion (%) - urbanization rate (%) - municipal GDP per capita - revenues from transfers (%)
	b) internet	<ul style="list-style-type: none"> - URL of portal - existence of a portal of transparency - visibility of portal of transparency
<p>2. Technical:</p> <p>Verify organization and architecture of information, verify integration between design, content and services, verify capacity for transparent communication with other systems.</p>	c) usability	<ul style="list-style-type: none"> - search machines - site map - system recognition and orientation - interface
	d) accessibility	<ul style="list-style-type: none"> - other languages - access for users with disability - multiplicity of access - flexibility and efficiency of portal - source code and portal developer
	e) hyperlink	<ul style="list-style-type: none"> - link to supporting agencies - link to regulating bodies - link to http://transparencia.gov.br/ - link to civil society institutions

Dimension/Purpose	Categories of analysis	Indicators
<p>3. Specific:</p> <p>Evaluate how the government uses internet resources to provide information and services that help citizens understand municipal workings and procedures; describe menus of participation and government decisions; evaluate channels of interaction between government and society.</p>	f) contextual information	<ul style="list-style-type: none"> - list of government officials - dissemination of information - municipal councils - ombudsman
	g) institutional information	<ul style="list-style-type: none"> - history of the municipality - use of portal of transparency - municipal laws - municipal workings and procedures - means of participation - municipal programs and projects - comprehensive plan (PDDU)
	h) financial and budgetary information	<ul style="list-style-type: none"> - Budgetary Guidelines Law (LDO) and Annual Budgetary Law (LOA) - Law of Fiscal <i>Accountability</i> (LRF) - real-time disclosure of expenses and revenues - access to financial and budgetary information - LDO and LOA draft projects.
	i) administrative information	<ul style="list-style-type: none"> - news releases - official statements - pay rolls - public bidding - government decisions - access to administrative information - administrative actions - forums for participation - monitoring of policies
	j) communication with users	<ul style="list-style-type: none"> - forms of contact - participation in social networks - e-mail - public calendar/schedule - government work calendar/schedule - maintenance of dialogue
	k) responsiveness	<ul style="list-style-type: none"> - proactivity - online chat service - response of the authorities - prior debate - user evaluation of government services - FAQs - user support - monitoring of demands

Source: Amorim (2012), adapted by the author.

The use of indicators made it possible to quantify the results obtained for the dimensions and categories evaluated for each web portal. Each score assigned corresponded to a value. Depending on the nature of each indicator, two values (present / absent), three values (absent / acceptable / very good) or five values (absent / poor

/ acceptable / good / very good) were assigned. Table 2 shows the scores assigned to indicators with two, three and five possible values (AMORIM, 2012).

Table 2 - Scores assigned to indicators

Two values		Score
Present		4
Absent		0
Three values		Score
Very good		4
Acceptable		2
Absent		0
Five values		Score
Very good		4
Good		3
Acceptable		2
Poor		1
Absent		0

Source: Amorim (2012).

As explained by Amorim (2012), dimensions, categories and indicators were weighted in order to refine the model. Thus, the score assigned to each indicator was the result of the value and the weights related to the set of aspects of which it consisted. The score assigned each category of analysis ranged from 0 to 4, according to the equation below:

$$C = \frac{\sum (i_1, i_2, \dots, i_n)}{10}$$

Where:

C = score of category of analysis

i = score of indicator

10 = total weight

To determine the overall level of DT, the score of each dimension (general, technical and specific) was submitted to a final weighting (2, 2 and 6, respectively, adapted by the authors) according to the relevance of each dimension to DT. The indicators of the category “municipality” were excluded from the municipal index of digital transparency (IDT) because they were not obtained from the web portals and therefore no value could be assigned to them. Thus, overall digital transparency was determined using the equation below:

$$IDT = \frac{\sum (GD*2, TD*2, SD*6)}{10}$$

Where:

IDT = index of digital transparency

GD = general dimension

TD = technical dimension

SD = specific dimension

10 = sum of weights of dimensions

Considering the range (0-4 scores) of the adopted scale (AMORIM, 2012), five intervals were established to classify the web portals with regard to DT. For the purpose of analysis, the overall measure of DT for each portal was associated with the final score, according to the interval on the scale or the respective performance percentage (Table 3).

Table 3 - Classification and performance of digital transparency

Overall DT measure	Intervals on a scale from 0 to 4	Performance percentage
High level of transparency	3.2 to 4	100% to 80%
Good level of transparency	2.4 to <3.2	<80% to 60%
Moderate level of transparency	1.6 to <2.4	<60% to 40%
Low level of transparency	0.8 to <1.6	<40% to 20%
No transparency	<0.8	<20%

Source: Amorim (2012), adapted by the author.

The results were submitted to descriptive analysis and expressed as simple frequencies and percentages of each dimension and category of analysis in the DT model, in accordance with the criteria presented in the methodology. All data processing was performed with the software IBM SPSS Statistics v. 21 and Microsoft Excel 2012.

5 ANALYSIS OF RESULTS:GENERAL DIMENSION

With regard to the category “internet”, 157 (85.3%) of the 184 municipalities in Ceará had an active web portal during the study period. The municipal websites were identified using conventional search engines (e.g., Google, Yahoo, Ask, and Bing), but not all URLs were government domains (i.e., ending in.ce.gov.br). In other words, the extension of the URL was not standardized, potentially making it more difficult to locate certain municipal websites.

Our findings show that the number of active municipal web portals in Ceará increased six-fold over the 12-year period following a study by Teixeira (2004) in which only 26 portals (14%) were identified.

Likewise, 96.2% of active municipal websites featured a portal of transparency option, indicating a significant level of compliance with the Law on Transparency

(#131/09) which requires all government agencies to provide complete up-to-date disclosure of detailed financial and budgetary information in publicly accessible electronic media (i.e., the internet). Though not mandatory, municipal web administrators are advised to include a portal of transparency feature on the opening page of their web portals for easy visualization.

6 TECHNICAL DIMENSION

With regard to the category “usability”, 46.5% of the web portals had no search engine. Although 47.8% did provide a search engine, only 5.7% featured an advanced search option. Web administrators should give more attention to this feature as it greatly increases usability, especially when the user needs to access information and services not directly displayed on the opening page.

One fifth (n=31; 19.7%) of the municipal web portals included a site map to help users navigate the site. With regard to system recognition and orientation, 97.5% were classified as “good” or “very good”, indicating that most pages had appropriate title bars favoring memorization and navigation among sections. In addition, institutional contact information was provided.

The category “interface” was classified as “good” or “very good” in 95% of the web portals, indicating a user-friendly layout. Overall, the information was organized rationally, with proper typographic hierarchy between the elements (links, titles, and body of text).

The category “accessibility” yielded less flattering results. No municipal web portal provided translation of any content, and no portal displayed a symbol (seal or otherwise) on the opening page representing accessibility on the worldwide web. The access of users with disability was facilitated on 19 portals by offering the option of a larger font size.

Only three municipalities (Araripe, Camocim and Massapê) had portals with services adapted to and accessible from mobile devices (cell phones and tablets). However, no web portal provided any downloadable application designed for other digital platforms. On the other hand, almost all web portals (98.8%) were classified as “very good” with regard to flexibility and efficiency because the desired content could be located with few clicks, page markers could be saved for later access, and pages could be printed without loss of formatting.

Finally, in 57.3% of the portals, the source code and programming language (e.g., “asp” or “php”) could be visualized and/or the website developer was identified at the bottom of the page. However, many other portals were commercial off-the-shelf websites, making it possible to infer they had not been tailored to the needs of the municipality and its users. Not surprisingly, several municipal web portals had similar design and limitations with regard to the information and services provided.

Most of the web portals (77.1%) featured hyperlinks to municipal departments. Some of these provided information about the official in charge of each municipal department, their duties and powers, associated news and work hours (in other words, the links were not restricted to telephone numbers). In addition, 109 portals (69.4%) featured hyperlinks to controlling agencies, especially the Court of Auditors of the Municipalities of the State of Ceará (in Portuguese, TCM/CE) which is responsible for inspecting and overseeing public spending.

Only 14% of the municipal websites in the sample featured a link to the portal of transparency of the federal government which allows users to monitor federal funds received and funds released by the municipality through federal covenants. Finally, only 14 web portals (8.9%) provided links to civil society institutions (such as associations and trade unions).

7 SPECIFIC DIMENSION

As for the category “contextual information”, in most municipalities the mayor and the heads of municipal departments appointed by the mayor were the officials in charge of municipal administrative acts. Most web portals (58%) provided the names or contact info, or listed the responsibilities of these authorities, but only 22.3% included all this information. In 19.7% of the portals, no tab or link to municipal authorities (names, contact info and responsibilities) was provided. The absence of a means of direct access to representatives and administrators may be interpreted as a lack of interest in interacting with the population.

Only two municipalities (Aquiraz and Maracanaú) posted information on the usage of the web portal, for example the number of visits, the source of the posted information or news, and the time of posting. The latter is a critical aspect since the lack of time stamping and updates may lead users to assume long-expired municipal programs and policies are still in effect.

More than half the web portals (55.4%) provided no detailed information on municipal councils in the areas of health, education, transparency, school meals, FUNDEB (a fund for the maintenance and development of elementary education and teacher support), welfare, children and adolescents, among others. Since these councils are usually headed by local political leaders, the absence of this information represents a missed opportunity to promote popular participation in important activities, debates and decisions in the municipality.

While 44% of the portals mentioned the existence of municipal councils or described related events, especially in the news section, no web portal provided information on the creation or existence of a municipal council on transparency, suggesting much work remains to be done in this respect. In addition, 102 portals made no mention of ombudsman services through which citizens’ demands can be

communicated to responsive authorities, strengthening democracy. A small number of portals (n=24; 15.3%) featured a “reactive” ombudsman service registering citizens’ demands collectively or describing the service in the news section.

In the category “institutional information”, almost 90% of the web portals included information on the history of the municipality, helping citizens learn about and preserve community origins and heritage. Many websites (61.1%) provided instructions (tutorials and FAQs) on how to use the portal of transparency, but in this regard the most useful feature was a program (supplied by an IT systems developer) called Gestão de Dados e Informação Pública (GDIP – “public information and data management”). This program was used by most of the municipalities in our sample.

Nearly half the websites (48.4%) provided no information on laws, executive orders, decrees and regulations, either because no such feature was included or because the service was unavailable. Most websites (86%) did not explain the workings and procedures of the municipality (such as by providing documents or other forms of access to the analysis of bills, decrees, budgets or projects proposed by citizens).

Furthermore, 67 web portals (42.7%) provided no information on how to participate in municipal hearings, whereas information on such procedures was found scattered in the news sections of 85 portals (54.1%). Information on municipal programs and projects was found sporadically in the news sections of 88.5% of the web portals, indicating lack of compliance with the Access to Information Act (LAI). No mention of the Comprehensive Plan (Plano Diretor de Desenvolvimento Urbano - PDDU) was found on 93.6% of the sites.

With regard to financial and budgetary information, half the web portals (50.3%) provided information on the Budgetary Guidelines Law (Lei de Diretrizes Orçamentárias – LDO) and the Annual Budgetary Law (Lei Orçamentária Anual – LOA), especially through GDIP, which also allowed access to documents such as the Pluriannual Plan (Plano Plurianual – PPA), the Summary of Budgetary Execution (Relatório Resumido da Execução Orçamentária – RREO) and the Fiscal Management Report (Relatório de Gestão Fiscal – RGF).

Expenses and revenues were not disclosed in real time on 68.8% of the municipal web portals, in defiance of the Law on Transparency. Such omission on part of public administrators is liable to inspection and subsequent levying of fines by auditing agencies. Most municipalities (66.9%) made their financial and budgetary information available for viewing but not for downloading. In addition, 156 municipalities did not post the LDO and LOA project drafts on their portals.

In the category “administrative information”, 66.2% of the web portals carried no news about implemented government decisions, and 74.5% displayed no statements by municipal authorities. In the remainder, such statements were posted mainly in the news section. General information on the payrolls of directly and indirectly employed servants and service providers of the municipality was absent from 156 portals.

Information on public bidding was not found on 15.3% of the websites and was outdated on 6.4%. The enforcement of regulations in this regard appears to have led many municipal administrators to update public bidding information on their portals (assisted by a public bidding portal maintained by the TCM/CE) on pains of being fined. No disclosure of government decisions, prior debates and related technical reports was observed on 154 portals (98.1%).

The vast majority of portals (92.4%) provided no access to administrative information, whereas 5.1% supplied some administrative information for viewing but not for downloading. On 156 websites, no documents were located describing the administrative workings of the municipality, and 89.2% provided no information on opportunities for citizens to participate in their jurisdictions. Moreover, 88.6% of the portals offered no way for users to monitor public policies, such as reports and rendering of accounts.

Almost all portals (96.2%) offered a form of contact with the user (telephone number, toll-free number, e-mail address, social network address, or a link to an ombudsman). Two thirds (67.5%) provided links to networks like Facebook or Twitter on the main page. A generic e-mail address was provided in 69.4%, with no distinction of the nature of the contact (e.g., criticism, request, suggestion, compliment or complaint). The vast majority of municipalities (94.9%) did not post calendars with public hearings, conferences and consultations. Likewise, 95.6% did not publish the work schedule of the government. Finally, 73.3% of the municipalities offered no means of maintaining a dialogue with the users, such as newsletters, updates and provision of specific information requested by the users.

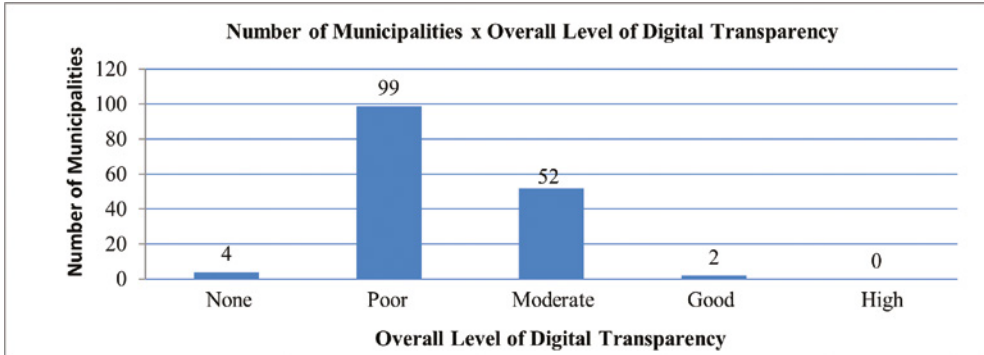
In the category “responsiveness”, 94.3% of the municipalities were not considered proactive (i.e., anticipating users’ needs). The remainder provided limited information in this regard, such as a list of the portal’s most visited links, or recommendations (“users who viewed x also viewed y”). Only 3 municipalities (Cascavel, Mauriti and Reriutaba) offered some form of on-line exchange (“emergency service”, “call the mayor’s office” or chats) with the user.

Despite the interest and repercussion it might generate among residents, no response from the authorities was posted on any of the websites in our sample, indicating a lack of commitment in this respect. In addition, nearly all the portals (93.6%) lacked a mechanism of prior debate on specific issues related to health, education, safety, welfare, construction works etc.

Finally, 93% of the web portals provided no instruments with which to evaluate the quality and quantity of government services, and no web portal included a FAQ feature. Almost all portals (97.4%) lacked user support on their websites, and on 94.9% no device for the monitoring of citizens’ demands was found. This category of analysis (responsiveness) displayed the poorest performance of all, indicating how far the sampled municipalities are from achieving a reasonable level of DT.

Figure 1 shows the overall DT in our sample of 157 web portals, expressed on a 5-point scale (high, good, moderate, poor and none).

Figure 1 - Overall digital transparency in a sample of 157 active web portals from Ceará, Brazil. September-December 2014



Source: Data collected for the present study.

Based on the collected data, four municipalities (Brejo Santo, Itapajé, Madalena and Mucambo) were considered to have DT equivalent to zero, especially as a result of their poor performance in the general and specific dimensions. In the general dimension, the evaluation was compromised by the low scores obtained in the category “internet” (mainly associated with the lack of a portal of transparency). Two other municipalities (Coreaú and Várzea Alegre) displayed similar results in this category, but fared better in other dimensions (technical and specific), justifying their classification on the DT scale as “poor”, rather than “none”.

The existence of a portal of transparency is an important criterion in the evaluation of DT on municipal websites, in addition to being mandatory according to the Law on Transparency (Law #131/09). All but six municipalities (Brejo Santo, Coreaú, Itapajé, Madalena, Mucambo and Várzea Alegre) ($n=151$; 96.18%) complied with the law, favoring the development of DT. As a result, performance in the general dimension was generally better than performance in the technical and specific dimensions.

No web portal was classified as having a “high” level of DT, mainly due to deficiencies in their technical and specific dimensions. The highest score in the technical dimension (2.37) was that of Fortaleza (the state capital), while nearby Aquiraz obtained the highest score in the specific dimension (2.08). In fact, Fortaleza and Aquiraz had the only web portals classified with a “good” level of DT. This result was mostly due to the high scores obtained in the general dimension (4.00 and 3.60, respectively).

Our overall results for the technical and specific dimensions indicate that local governments need to invest more in infrastructure and digital technology to attain higher levels of DT. Namely, they need to improve performance with regard to organization, data architecture, communication with other data systems, information/services related to the workings and procedures of the municipality, laws, forms, and

channels of participation in public administration, ongoing and completed programs and projects, monitoring of budgetary/financial/administrative execution, maintenance of dialogue, and attention to citizens' demands.

Our results are compatible with those of Amorim and Gomes (2013) with regard to the compliance of municipalities with the Law on Digital Transparency through websites in response to enforcement rather than willingness, and with regard to the urgent need for improvement in information diffusion policies, ombudsman services, workings and procedures of the municipality, portal of transparency, disclosure of budgetary/financial reports and promotion of democratic values and practices.

The significant association observed between municipality size and e-government development is supported by Moon (2002), Styles and Tennyson (2007) and Cruz (et al., 2012). The same was true for the association between socioeconomic status and level of DT with regard to the on-line availability of government information and services.

8 CONSIDERATIONS

In this study we evaluated the digital transparency of web portals maintained by municipalities in Ceará, a state in Northeastern Brazil. Transparency, an inalienable component of democracy, is increasingly required of public administrators, not only by auditing agencies but also by citizens, who wish greater social control.

Effective social control favors initiatives towards DT. However, despite the availability of a set of technological tools for participation, encouraging the population to monitor public administration and demand greater transparency is no simple task, considering the long-standing erosion of public trust in politics and government.

The purpose of the study was to verify the availability of information and services on web portals favoring transparency in the management of public resources. Overall, the web portals in our sample provided information and services enhancing the transparency of public resource use, but much improvement is necessary, especially in view of the discrepancies between portals. Our findings show that municipal government web portals in Ceará provide information and services which render the management of public resources more transparent, but disclosure is generally limited to mandatory items and to what is deemed desirable by municipal administrators.

In the general dimension, at the time of sampling the portals of 27 of the 184 municipalities of Ceará were temporarily inactive, making data collection impossible. On the other hand, the 157 active websites with which the sample was composed were easy to locate with conventional search engines, despite the lack of standardization of domains and URLs. Most websites included a portal of transparency, although it seemed to be mostly in response to legislation, rather than an initiative of the administrators'. The visibility of the portals made it possible to identify and collect information related to the management of public resources.

In the technical dimension, usability was limited on most portals. In general, search capabilities and site maps needed improvement. As for accessibility, no translation was provided. Portals offered little or no functionality for users with disability. Very few portals had services accessible by mobile devices, and not all provided a link to the portal of transparency of the federal government or links to civil society institutions as a way of promoting DT.

In the specific dimension, in the category of contextual information, administrators are advised to give more attention to issues related to information diffusion, the structure and workings of municipal councils, and the creation of on-line ombudsman services. In the category of institutional information, more accurate and complete information should be provided regarding municipal laws, municipal workings and procedures, forms of participation in public hearings, government programs and projects, and comprehensive planning. Likewise, in the category of budgetary/financial information, websites should provide a history of publications related to LDO, LOA, LRF, expenses and revenues in real time, disclosure of budgetary/financial information and the LDO and LOA draft projects.

Likewise in the specific dimension, in the category of administrative information, a greater volume of news should be posted, along with more official statements, detailed information on payrolls, government decisions, disclosure of administrative data, channels of participation and monitoring of public policies. To improve communication, users should be encouraged to participate and submit their demands by e-mail, government work schedules and calendars should be posted regularly, and efforts should be made to maintain a dialogue between authorities and citizens. Finally, having obtained the lowest scores in the study, the category of responsiveness is in need of considerable improvement. Results were very poor with regard to proactivity, on-line chat services, response from authorities, prior debate, user evaluations of government services, FAQs, user support, and follow-up of users' demands.

Among the services found on the web portals were links to the Official Gazette of the Municipalities, class entities, the Press, electronic payment services, channels for the filing of complaints, the Citizens' Information Service (Serviço de Informação ao Cidadão – SIC), newsletters, on-line issuance of bills for the payment of property tax (Imposto Predial e Territorial Urbano – IPTU) e service provider tax (Imposto Sobre Serviços – ISS), urban sanitation services, pothole repair services, traineeships, public transportation, printing of certificates and bills of sale, emergency departments, bus stations, trade unions, registry offices, parishes, culture centers, tourist attractions, guides on restaurants, lodging and events, shopping and general services, inquiries into government programs and processes, in addition to virtual libraries, services for job seekers and notices of civil service exams.

Like all other all academic investigations, our study displayed a number of limitations: a) the study population was limited to active municipal web portals, thus a

number of municipalities (n=27; 14.67%) could not be included in the sample as they had no website, or the website was inactive or undergoing construction/maintenance or formatted as a blog; b) the study was cross-sectional and occasional, providing a snapshot of a given moment in time; c) the web portal managers/developers were generally unavailable for questions and suggestions, and only 15.3% of the sites identified the programming language and the developer; d) little or no cultural information was available to help understand the history of local DT promotion and implementation; and e) ICTs develop very quickly, and information and services offered on the web portals are subject to frequent changes.

However, our study is relevant from several points of view. Within a social perspective, an evaluation of municipal government web portals in Ceará can help consolidate the right to information underpinning participatory public administration and encourage civic communication. Within the governmental perspective, knowledge of the status of DT on municipal web portals can subsidize government investments and other efforts to make public administration more transparent. Our results are applicable to the actions of not only municipal authorities (the level of government closest to society), but to public administration in a much wider sense. Finally, within the managerial perspective, the study shows that much remains to be learned and done to improve public web portals and strengthen democracy.

Finally, our results allow us to make a number of recommendations which may directly benefit both public administration and society: a) more research should be conducted in the municipalities of other Brazilian states, encompassing greater geographical diversity, to detect differences and identify opportunities for improvement in DT; b) longitudinal studies on municipal web portals should be conducted to evaluate variations over time and learn more about the evolution of DT in Ceará, including new active portals; c) political/social/economic indicators and cultural variables with impact on DT should be identified and standardized, supported by the model used in this study; d) social networks in municipalities in Ceará should be analyzed further in view of their growing importance as means of communication and advertising of government action; e) the current two or three-point scales of non-parametric values used in the study should be expanded in order to explore new parameters and render the model more robust; and f) new indicators related to DT in line with the needs and interests of digital democracy should be introduced into the model.

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