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An evaluation of citizen service web portals in Latin America

Web portals in
Latin America

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Abstract

Purpose – The purpose of this paper is to report on the level of government web portal resource development, impediments to progress in electronic government practices, and areas that require improvement in 19 Latin American countries.

Design/methodology/approach – A comparative study was carried out between March and May of 2012, based on a method combining heuristic usability analysis with an automatic web portal accessibility test.

Findings – The results suggest that Latin American government web portals do not fully meet international accessibility guidelines and that multidirectional communication and participation mechanisms lack diversity. Only functionalities related to usability presented positive scores, but with shortcomings in terms of security.

Originality/value – Extensive literature is available on the development of electronic government policies in Latin America. This study falls within that tradition but, in addition, offers a new perspective by examining the features of web portals, which ultimately aids the calibration of the results of policy implementation. The data obtained are useful for web developers, ICT policy designers and the entire community of actors involved in developing electronic government programs.

Keywords Latin America, Usability, Administrative processes in public organizations, Electronic government, Public administration, Web portals

Paper type Research paper

Resumen

Propósito – El artículo pretende describir el nivel de desarrollo de los recursos ofertados por los portales webs gubernamentales de 19 países latinoamericanos, desvelar la presencia de elementos obstaculizadores del desarrollo de las prácticas de gobierno electrónico y subrayar áreas de mejora.

Diseño/metodología/enfoque – Se realiza un estudio comparado, llevado a cabo entre los meses de marzo y mayo de 2012, basado en el empleo de un método que combina el análisis heurístico de usabilidad y la aplicación de un procedimiento automático de examen de la accesibilidad de los portales webs.

Hallazgos – Los resultados sugieren que los portales webs gubernamentales latinoamericanos adolecen de insuficiencias relativas al cumplimiento de la normativa internacional de accesibilidad y una escasa diversidad de dispositivos de comunicación/participación multidireccionales. Solo las funcionalidades relacionadas con la usabilidad, salvo la relativa a seguridad, presentan un balance positivo.

Originalidad/valor – Existe una abundante literatura latinoamericana sobre el desarrollo de políticas de gobierno electrónico. Este trabajo se enmarca en esa tradición, pero ofrece un ángulo nuevo al centrarse en el examen de las prestaciones que ofrecen los portales webs, lo que puede contribuir ulteriormente a calibrar los resultados de la implementación de tales políticas. Los datos obtenidos resultan de utilidad para desarrolladores web, diseñadores de políticas de difusión de TIC y, en general, la comunidad de actores relacionados con el desarrollo de programas de gobierno electrónico.

Palabras claves Administración Pública, Procesos Administrativos en Organizaciones Públicas, Latinoamérica, gobierno electrónico, portales webs, usabilidad



Introduction

The spread of electronic government has opened new pathways for contact between citizens and public administrations, favoring the responsiveness of the latter in providing and improving services to the former (West, 2004). On the whole, this has increased public policy performance (Garson, 2004; Gil-García and Helbig, 2006).

Citizens have benefitted from the application of information and communication technologies (ICT) to governments (Heeks, 2003; Bekkers and Homburg, 2007) as these provide more immediate and permanent access to information regarding public policies and programs. Citizen access to increasingly diverse services has been simplified by eliminating the requirement of physical presence in government offices. It has also increased citizen capacity for participating in public management and even influenced political action through direct contributions to consultation and debate processes (Schedler and Summermatter, 2007; Karlsson *et al.*, 2012).

From the perspective of internet usage as a way of improving the relationship between governments and citizens, and in order to increase knowledge regarding the evolution of e-government in Latin American countries, this study examines the citizen service web portals of nineteen national governments in Latin America, analyzing the level of development and the communication mechanisms available to the public. This is particularly significant as open government policies emerge, seeking to empower citizen participation in public affairs (Hoffman *et al.*, 2013; Mariñez and Valenzuela, 2013). Heuristic testing spotlights features related to usability and communication/participation while also revealing deficiencies that should be addressed.

Subsequent to the introduction, this study provides a contextualization of the development of electronic government in Latin America, commenting on the most recent indicators. The main concepts will then be clarified and the research method described. The principal findings will be presented and discussed and will be followed by the conclusions.

The context of electronic government in Latin America

The reality of low internet usage among Latin Americans reflects insufficient infrastructures and the fact that seven LA countries[1] rank below the global average in the United Nations general index of electronic government development (UNDESA, 2012). According to this source, eight countries[2] are below the global average for consolidation of consultation devices intended for citizen participation and deliberation in policy-making or legislative production processes (Table I).

In spite of comparative deficiencies between countries, heterogeneous implementation (Tesoro, 2005) and the steps yet to be taken towards high levels of online interaction between governments and citizens, great advances occurred in some dimensions of electronic government program development between 2003 and 2013 (Curtin and Walker, 2007; Naser and Concha, 2012).

Aided by several transnational initiatives, Latin American governments have invested resources in constructing web portals and offering public services online. The prominent *Carta Iberoamericana de Gobierno Electrónico* (CLAD, 2007) outlined pathways for achieving promising regional development in this area, emphasizing the need for essential cooperation to mitigate problems related to insufficient interoperability (Criado, 2009). Though intra-regional differences exist (Gascó, 2009), progress can be detected in the four areas that underpin electronic government policies: public administration

Country	Population (in mill.)	GDP per capita (in thousands of dollars)	Internet users in mill.)	Internet usage % population	Infrastructure index for e-Gov	Human capital index	e-Gov development Index	Global position
Argentina	41.76	18.31	28.00	67-36	0.4352	0.9038	0.6228	56
Bolivia	10.12	4.99	1.98	19-20	0.1786	0.8072	0.4658	106
Brazil	203.42	12.18	79.24	39-40	0.3568	0.8203	0.6167	59
Chile	16.88	17.97	10.00	59-45	0.4001	0.8788	0.6769	39
Colombia	44.72	10.74	25.00	55-36	0.2894	0.8391	0.6572	43
Costa Rica	4.57	12.42	2.00	43-36	0.3135	0.8089	0.5397	77
Cuba	11.08	9.90	1.70	15-15	0.0709	0.9684	0.4488	110
Ecuador	15.00	8.85	4.07	27-24	0.2482	0.7549	0.4869	102
El Salvador	6.07	7.74	1.25	20-15	0.2638	0.7169	0.5513	74
Guatemala	13.82	5.16	2.28	16-10	0.2247	0.6284	0.4390	112
Honduras	8.14	4.46	1.06	13-11	0.2173	0.7060	0.4341	117
Mexico	113.72	15.17	42.00	36-31	0.3104	0.8295	0.6240	55
Nicaragua	5.66	3.32	0.66	11-10	0.1194	0.6533	0.3621	130
Panama	3.46	15.08	1.50	43-42	0.4408	0.8151	0.5733	66
Paraguay	6.45	5.29	1.52	23-23	0.1968	0.7862	0.4802	104
Peru	29.24	10.58	9.97	34-34	0.2585	0.7942	0.5230	82
Dominican Rep.	9.95	9.65	4.12	41-40	0.2632	0.7398	0.5130	89
Uruguay	3.30	15.78	1.85	56-43	0.4442	0.9013	0.6315	50
Venezuela	27.63	13.07	10.97	39-35	0.3215	0.8705	0.5585	71

Notes: Infrastructure indices, human capital and e-Gov development levels above the global averages, and internet usage figures above 50 percent of the national population, are displayed in italics. Data for internet usage percentages show a range based on the source of the information: Internet World Stats (first value) and UNDESA (second value)

Sources: Central Intelligence Agency (2012), International Monetary Fund (2012), Internet World Stats (2012), UNDESA (2012)

Conceptual basis

Aligned with several key references from the academic community (UNDESA, 2010; OECD, 2005), we based our research on the concept of electronic government as “the intensive use of information and communication technology to generate good government conditions by providing efficient services and information transfer, as well as strengthening public policy processes by creating new means of participation for the actors involved” (Bouzas-Lorenzo and Mahou Lago, 2012).

In this context, the web portal can be defined as a single and integrated entry point that facilitates access for citizens and state employees to official resources and services in various governmental areas of responsibility. It is intended as a means of compiling information from various sources to create a single point of access to information, functions and services relevant to the work or personal interests of an individual (Granić *et al.*, 2011).

Key concepts

The key concepts used in this study are accessibility, usability, electronic services, information and communication.

Hassan and Martín (2003a) define accessibility as “the possibility that a product or service may be accessed and used by the largest possible number of persons independently of individual or context of use limitations.”

Usability can be understood as the ease of user interaction with the web portal in relation to several specific properties (ubiquity, design, efficiency, functionality and reliability). By studying these, we examine “how to design websites so that users can interact with them in the easiest, most comfortable and intuitive way possible” (Hassan, 2002).

In the sphere of electronic government, services are processes derived from government action and implemented by an entity through applications hosted in the respective web portals, in order to meet the needs of the actors concerned (Bouzas-Lorenzo and Mahou Lago, 2012). E-government services generally fall into three categories: government to government, government to citizens and government to companies (Wang and Liao, 2008). The present work focuses on services provided for citizens.

Information is understood as a set of open or restricted data that the public administration makes available to citizens through a web portal, for the various actions it is authorized to offer the public (Bouzas-Lorenzo and Mahou Lago, 2012).

Finally, communication is understood as a bi/multi-directional interaction with a web portal that facilitates active citizen participation in public policies through cooperative mechanisms (debate, complaint, consultation, suggestions) that enable the alignment of administrative actions with citizen expectations (Bouzas-Lorenzo and Mahou Lago, 2012).

The analysis of accessibility and technical mechanisms for providing information services and facilitating communication have traditionally been incorporated into usability analyses in order to define findings and better explain differences between the web portals examined (Tesoro *et al.*, 2002). Along these lines, we have given the usability dimension a very technical nature concerned with the fulfillment of a series of requirements regarding the visibility, identity, design, navigability and security of the portal analyzed.

Methodology

The methodology applied in this study is informed by works focusing on web portal quality and functionality undertaken since the late 1990s (Gant and Gant, 2002; Mich *et al.*, 2003; Hasan and Abuelrub, 2011), with special attention given to usability (Palmer, 2002; Nielsen, 2003; Lautenbach *et al.*, 2006). The methodology is rooted in the theory of reasoned action (TRA) (Fishbein and Azjen, 1975) and the technological acceptance model (Azjen and Fishbein, 1980). These provide instruments for examining information systems (Bagozzi, 2007), focusing on user motivation and site characteristics, particularly in the development of usability studies (Nielsen, 1994). Here, the units of analysis are the public service portals run by the central governments of Latin American countries.

The analysis began with a content review or examination of each government's main web portal. From this, we developed a composite map to show the locations of information and services. The map was updated regularly throughout the study and organized into four types of portals: government, citizen, offices of the Head of State and mixed portals that somehow combined the other three (Table II).

Given the diversity of means of access to institutional information and services in each country, we chose portals primarily intended to offer information, services and attention to citizens (Chile, Costa Rica, Cuba, Ecuador, Mexico, Panama, Paraguay and Peru). In their absence, we selected mixed portals combining government information with citizen information and services (Colombia, the Dominican Republic, Uruguay and Venezuela); government web sites or portals (Argentina, Bolivia, Brazil and Honduras) or mixed State-government information web portals (Guatemala). Finally, in the absence of any other access to institutional information and services for citizens, we examined the web portals of the Offices of the Head of State (El Salvador, Nicaragua[3]). To fulfil the parameters of this study, in two cases, we examined beyond the citizen portal that operated as the search engine: specifically, the government portal of Costa Rica and the portal for the Office of the Head of State in Mexico.

Two tests, an automatic accessibility test and a heuristic test, were used to assess government web portal functionality between March and May of 2012. The accessibility determined whether the web portal facilitated access to all citizens, independently of any discriminating characteristics, in accordance with Web Content Accessibility Guidelines (WCAG) 1.0 and 2.0, developed under the Web Accessibility Initiative of the World Wide Web Consortium (W3C[4]). Of the various applications available to automatically evaluate web page compliance to WCAG 1.0, we selected and applied version 3.08 of the Web Accessibility Test[5] to each portal in "automatic mode." Problems were detected without the need for manual verification by analysts. We also selected the "do not continue" option in order to limit exploration to the home page of each URL.

To calculate the scores for each web portal, we subtracted points from an initial score of 100. Web portals were penalized and points subtracted according to the number and degree (serious or moderate) of the deficiencies detected. Serious deficiencies were related to WCAG Priority 1, or criteria that a web site developer should meet in order to avoid excluding certain groups of citizens from accessing web portal information. Moderate deficiencies correspond to WCAG Priority 2 criteria that the developer should also meet. Serious deficiencies were penalized in groups: from 1 to 5 (-25 points); from 6 to 10 (-50 points); from 11 to 15 (-75 points); more than 15 (-100 points). Moderate deficiencies were also grouped: from 1 to 10 (-15 points); from 11 to 15 (-25 points); from 16 to 20 (-50 points); from 21 to 30 (-75 points); more than 30 (-100 points).

Table II.
Web portals with
State or Government
information and/or
citizen attention
portals in LA
countries

Country	Head of state web portal	Government web/portal	Citizen's web portal
Argentina	www.casasada.gov.ar/	www.argentina.gob.ar/	-
Bolivia	www.presidencia.gob.bo/	www.bolivia.gob.bo/	-
Brazil	www2.planalto.gov.br/	www.brasil.gov.br/Similares	-
Chile	www.gobiernodechile.cl/	-	www.chileatiende.cl
Colombia	http://wsp.presidencia.gov.co/	www.gobiernoenlinea.gov.co/	-
Costa Rica	www.presidencia.go.cr/	www.gobiernofacil.go.cr	www.gob.go.cr
Cuba	-	www.cubagob.cu	www.cuba.cu/
Ecuador	www.presidencia.gob.ec/	-	www.tramitesciudadanos.gob.ec
El Salvador	www.presidencia.gob.sv/	-	-
Guatemala	www.guatemala.gob.gt/	-	-
Honduras	www.presidencia.gob.hn/	www.gob.hn/	-
Mexico	www.presidencia.gob.mx/	-	www.gob.mx/
Nicaragua	www.presidencia.gob.ni/	-	-
Panama	www.presidencia.gob.pa/	-	www.panamatramita.gob.pa/
Paraguay	www.presidencia.gov.py/	-	www.tramitesparaguay.gov.py/portal
Peru	www.presidencia.gob.pe/	http://optic.gob.do/CAC/PortaldeEstado/tabid/74/Default.aspx	www.serviciosalciudadano.gob.pe
Dominican Rep.	www.presidencia.gub.do/	http://portal.gub.uy/	www.mac.gob.pe/
Uruguay	www.presidencia.gub.uy/	-	www.311.gob.do/
Venezuela	www.presidencia.gob.ve/	www.gobiernoenlinea.gob.ve/	-

Note: The analyzed URLs are shaded

Source: Author's own elaboration

Additionally, we carried out an accessibility evaluation within the WCAG 2.0 framework in order to identify parallels in the final scores. However, since the WAT 2.0 only exists in beta version, the results were not included in the calculation of the final score of each web portal. The final score of the accessibility test reflected obstacles to accessibility for each portal, regardless of the access device used.

The heuristic or expert test is a diagnostic method in which qualified personnel analyze the web page and describe its potential problems (Nielsen, 1994; Dumas and Redish, 1999; Kruk, 2001; Hassan and Martín, 2003b). Using a criteria checklist, between two and five evaluators examined each page to test several parameters related to availability and performance. After contrasting and agreeing on their observations, the evaluators completed a report of their results.

For this study, we applied the test model developed by Bouzas-Lorenzo and Mahou Lago (2012), with minor variations, to the dimensions of technical usability and communication/participation. Inspired by the works of Nielsen (2003), Hassan and Martín (2003b), Donker-Kuijer *et al.* (2010) and Fernández *et al.* (2011), the reference study includes a checklist for the heuristic test for technical usability, consisting of 37 indicators measuring quality, availability and performance, grouped into five parameters:

- (1) Searchability: based on the idea that the web portal should be visible to the citizen, with a single environment and the best positions in search engines[6].
- (2) Identity: the web portal should provide information regarding the organization it belongs to.
- (3) Design-style: portal interface should be friendly and attractive, with a coherent, informative structure and mechanisms that facilitate information discrimination according to its importance for the citizen.
- (4) Navigation: the web portal should facilitate navigation by the user and the possibility of access to content within the system. The user should be able to navigate rapidly without getting lost and have quality help tools available.
- (5) Security: the web portal should guarantee a navigation experience that is as confidential as possible, preserving with full legal guarantees the data generated in communication with the user and protecting it from unauthorized use by third parties.

In calculating the final score, points were weighted according to the importance attributed to each parameter in relation to usability: searchability (15 percent); identity (8 percent); design-style (30 percent); navigability (35 percent) and security (12 percent).

The heuristic test for communication/participation was based on the principle that each portal should guarantee both user communication with the portal managers and support for bi-directional and multi-directional communication with other services provided by the organization and with its environment (the social actors concerned) (Anthopoulos *et al.*, 2007). Attention was given to the range of mechanisms that foster communication, particularly synchronic communication with users.

In accordance with some of the suggestions made by Scherer *et al.* (2009) and Maier and Reimer (2010), ten indicators were used in the heuristic test for communication/participation. These were grouped into the three parameters of user assistance, consultation/debate and suggestions/complaints. As in the technical usability test, the resulting scores were weighted according to their significance in facilitating citizen participation based on available technology: user assistance (40 percent); consultation

and debate (30 percent); suggestions and complaints (30 percent) (Bouzas-Lorenzo and Mahou Lago, 2012).

Finally, though this study was primarily conceived to ascertain the level of web portal service, reveal obstacles to the development of e-government practices and highlight areas for improvement, in the final report we also weighted each dimension separately: accessibility (20 percent); technical usability (40 percent) and communication/participation (40 percent). Weighting was based on an initial literature review of electronic service indicators and usability, followed by an analytical hierarchy exogenous weighting proposal process (OECD-JRC, 2008). Specific weights for each dimension and parameter were determined by academic and technical experts with experience in directing ICT projects for the public sector, government and administration.

Results

After carrying out the tests described in the previous section, the average total score for the web portals analyzed was 108.95 out of 250 total points. Nine countries scored above average and two (Colombia and Venezuela) scored above 70 percent (Table III).

The data regarding the dimensions analyzed (accessibility, usability and communication) were aggregated and synthesized into four groups according to the degree of development[7], with intra-group relations listed from greater to lesser development:

- (1) High: Colombia, Venezuela, Panama, Mexico.
- (2) Above average: Uruguay, Chile, Argentina, Brazil, Costa Rica.

Country	Portal type	Accessibility (/50 p.)	Usability (/100 p.)	Communication (/100 p.)	Total (/250)
Argentina	<i>Government</i>	42.50	64.77	31.50	138.77
Bolivia	Government	0	39.63	0	39.63
Brazil	Government	0	73.62	46.50	120.12
Chile	<i>Citizen</i>	30.00	71.69	39.00	140.69
Colombia	Mixed Citizen + Government	0	87.45	100.00	187.45
Costa Rica	<i>Citizen</i>	42.50	51.01	23.00	116.51
Cuba	<i>Citizen</i>	0	47.85	4.00	51.85
Ecuador	<i>Citizen</i>	0	48.35	30.00	78.35
El Salvador	Head of State	0	55.81	0	55.81
	Mixed Head of				
Guatemala	State + Government	0	55.57	24.00	79.57
Honduras	Government	0	58.99	0	58.99
Mexico	<i>Citizen</i>	30.00	66.77	57.50	154.27
Nicaragua	Head of State	0	49.00	0	49.00
Panama	<i>Citizen</i>	30.00	70.30	69.00	169.30
Paraguay	<i>Citizen</i>	0	71.08	28.00	99.08
Peru	<i>Citizen</i>	0	67.45	24.00	91.45
Dominican Rep.	Mixed Citizen + Government	0	51.77	54.00	105.77
Uruguay	Mixed Citizen + Government	42.50	70.18	38.50	151.18
Venezuela	Mixed Citizen + Government	37.50	71.84	73.00	182.34
Average		13.42	61.74	33.78	108.95

Table III. Overall results and scores for the analysis of accessibility, usability and communication/participation for the central citizen attention/government portals in LA countries

Notes: In italics and shaded are countries with web portals scoring above the regional average on each dimension

Source: Author's own elaboration

- (3) Below average: the Dominican Republic, Paraguay, Peru; Guatemala, Ecuador. Web portals in Latin America
- (4) Low: Honduras, El Salvador, Cuba, Nicaragua, Bolivia.

Although the accessibility scores should not be underestimated regarding digital inclusion of physically disadvantaged citizens, the deficiencies detected penalized countries with more advanced web portals, such as Colombia and Brazil.

The tri-dimensional (accessibility, usability, communication) or bi-dimensional (accessibility excluded) scores of the web portals analyzed show that portals developed exclusively to provide citizen information and services and mixed government/citizen service portals tended to score above average, while exclusively presidential web portal models presented the lowest scores.

The classification of results, in relation to the indices of internet usage among the population (Table I), revealed that in high and above average countries, services tended to be more diverse and technically developed than what the corresponding internet usage rate and infrastructure development indices would indicate. In below average and low countries, web development was proportional to the internet penetration rate but inferior to that of infrastructure capacity based on available resources. Colombia and Venezuela presented the most positive results, with web portal functionality levels above what would be expected from their internet usage rate and infrastructure. In contrast, web portals in Brazil and Argentina performed below expected levels.

With some caution regarding the conceptualization of the objects analyzed, we observed parallels between our data (Table III) and that of UNDESA (2012) regarding the electronic services development index (Table I). However, in this study, Venezuela, Panama and Paraguay scored above UN results, whereas El Salvador scored below them.

We shall now describe in detail the results for each of the dimensions studied.

Accessibility

The accessibility test revealed that twelve of the nineteen Latin American portals analyzed presented problems when measured against WCAG 1.0. Four countries (Argentina, Costa Rica, Uruguay and Venezuela) showed no serious deficiency with respect to the guidelines, and three countries (Chile, Mexico and Panama) exhibited only a few deficiencies (Table IV).

Of the ten countries that offered either a citizen service or mixed citizen/government portal, Costa Rica, Uruguay and Venezuela met international accessibility guidelines. This is particularly significant because most of the citizen service portals were developed recently and problems detected in this sphere erode the quality of public service interface.

Ecuador, Colombia, Cuba, Bolivia, Honduras, Peru and Brazil presented the lowest accessibility scores, with serious deficiencies. This was surprising in the case of Colombia and Brazil, which have high usability scores, as we shall discuss.

In the methodology section, we described the application of a second accessibility test based on WCAG 2.0 as purely orientative and not included in the calculation of the final scores. The patterns that emerged from the WCAG 1.0 test were basically reproduced in the application of WCAG 2.0. Uruguay was the only country to fully comply with the guidelines, followed by Chile, Costa Rica, Cuba and Mexico. On the other end of the spectrum, the results for Cuba, Bolivia, Paraguay, Ecuador, Honduras, Colombia and Brazil presented abundant anomalies.

Table IV.
Number and type of
deficiencies detected
in the web portal
accessibility analysis
(WCAG 1.0) for
selected LA countries

Country	Number of deficiencies						Points subtracted	Total (/100)	Total (/50)
	Serious		Moderate		Mild				
	Aut	Man	Aut	Man	Aut	Man			
Argentina	0	7	2	14	2	14	-15	85	42.5
Bolivia	19	191	472	441	85	180	-100	0	0
Brazil	11	205	20	152	4	38	-100	0	0
Chile	1	98	5	113	24	22	-40	60	30
Colombia	39	439	90	189	38	85	-100	0	0
Costa Rica	0	9	5	10	0	9	-15	85	42.5
Cuba	34	269	86	235	4	54	-100	0	0
Ecuador	47	2,260	1,657	1,784	543	1,113	-100	0	0
El Salvador	6	300	202	123	NK	NK	-100	0	0
Guatemala	2	400	39	235	0	61	-100	0	0
Honduras	13	55	196	157	25	47	-100	0	0
Mexico	1	59	7	36	1	14	-40	60	30
Nicaragua	6	38	10	52	1	16	-100	0	0
Panama	4	74	4	70	1	18	-40	60	30
Paraguay	18	217	95	256	47	100	-100	0	0
Peru	22	155	222	178	41	56	-100	0	0
Dominican R.	4	130	55	105	8	41	-100	0	0
Uruguay	0	46	1	41	0	16	-15	85	42.5
Venezuela	0	155	12	563	7	27	-25	75	37.5

Notes: Aut, automatic mode of measurement; Man, manual mode of measurement

Source: Author's own elaboration

Usability

On the heuristic usability test, the average score for the nineteen Latin American countries evaluated was 61.7 out of 100 possible points. Colombia (87.45) showed itself to be the most advanced country in this functional dimension, followed by Brazil, Venezuela, Chile, Paraguay, Panama and Uruguay. Ecuador, Cuba and Bolivia scored below average.

Searchability had the highest average score in these countries, with 11 of the 19 countries obtaining the highest possible score. In other words, they have highly visible web portals in the search engines, with exclusive URLs that are not dependent on other entities and do not create confusion for the user. In spite of this, half of the government and citizen service portals presented anomalies related to searchability. This generally involved not achieving prominent positions in the search engines and was more conspicuous in countries with a mixed citizen/government portal.

Oddly enough, the portals evaluated in Colombia and Panama had modest searchability scores but the highest identity scores. Citizens in these two countries may have more difficulty finding the right page in a search, but know it to be the correct site once found. The entity offers abundant information regarding where the user is.

Other deficiencies in the web portals analyzed involved the absence of a tagline to accompany the corresponding logo, information regarding the name and purpose of the organization or institution, or an organizational identity label describing "who we are." The most extreme cases were the inverse of Colombia and Panama: the user can reach the portal with relative ease but once there, may have doubts about the identity of the web page if unfamiliar with it or insufficiently informed.

Inclusion of a label expressing the identity of the web portal may be less necessary for a presidential site, unless the information offered includes data regarding the composition, regulation and structure of the institution. However, it is very necessary in citizen service portals to avoid confusion regarding identity or institutional affiliation. Efforts to solve identity deficiencies should be combined with institutional marketing actions that promote the corresponding web portal among citizens.

In the area of design and style, the average score of these Latin American countries was 22.61 out of 30. Colombia again led the group, followed by Chile, Panama, Argentina and Costa Rica. The design and style parameters measure how comprehensible or understandable a web portal is: whether the home page provides clarity regarding the portal and its uses, balance between hierarchy of content and ease of use, a friendly impression, correct use of labels, emphasis on critical content, information distinguishable from services, menu availability, inclusion of an online services catalog and consistency in terms of style and color. These and other significant elements create an agreeable and comfortable user experience.

The most important issues that require correction on the lowest-scoring web portals involved dispersed and mixed content with insufficient distinction between information and services; lack of an online services catalog and corresponding information regarding processing levels and possibilities and, in particular, a lack of structure to facilitate profiled access of content for “citizens” or “companies.”

In the analysis of navigation features (portal size, absence of obstacles that slow down navigation, availability of translation into other languages, inclusion of help functions, content search, etc.), the average for all the LA countries evaluated was 19.36 out of 35 points. Ten countries scored above the average, led by Colombia, Uruguay, Chile, Panama and Argentina. Essentially, the countries without a citizen or mixed citizen/government portal presented the worst results. Main issues involved excessive traffic that affected navigation speed, non-availability of content in at least one other language, weak navigation aids and deficient functioning of web site search functions.

Finally, services related to security clearly scored lowest of all. The overall average was 2.28 out of 12 and only the Colombian *Gobierno en línea* portal demonstrated sufficient diversity of features and information: including information regarding data and form protection (ceding/revoking of data), navigation with the digital certificate or identity document/certificate and links that require a digital certificate from the provider (trustworthiness).

A synthesis of the results of the usability analysis indicates that the sites tend to be more informative than service oriented. Latin American countries have highly visible, unmistakable and fairly attractive web portals, but with navigation and especially security issues. Prominent positions in search engines and a friendly portal are of questionable advantage in the face of clumsy navigation, the lack of user information regarding privacy or the absence of features that guarantee confidentiality and authentication of identity in transactions.

Communication/participation

Communication, along with accessibility, was the lowest scoring of the three dimensions explored, averaging 33.78 out of 100. Five countries (Colombia, Venezuela, Panama, Mexico and the Dominican Republic) offered technologically diverse online platforms for communication and participation. Specifically, Colombia clearly offers its inhabitants a variety of attention, consultation, and participation services that

adequately meet current technological standards. In contrast, Cuba, Honduras, El Salvador, Nicaragua and Bolivia present the lowest capacities in this area.

To determine the variety of communication/participation features available to citizens, we examined citizen services, consultation and participation mechanisms and other features related to suggestions and complaints in the web portals themselves. We also examined other web portals designed specifically for these purposes and linked to the former group.

Of the three parameters analyzed, individualized citizen attention by e-mail, virtual mailbox, instant messaging or social media accounts showed the highest partial results, with an average of 16.42 out of 40 total points. Scores were lower for the other two parameters: suggestion/complaint mechanisms (11.05 out of 30 points) and especially consultation/debate mechanisms (6.31 out of 30). Colombia, Venezuela, Uruguay and Panama had the best results for consultation and debate mechanisms through surveys, fora, participation spaces and blogs. The best suggestion/complaint portals were found in Colombia, Panama, Mexico, the Dominican Republic, Venezuela, Brazil, Chile and Costa Rica.

Mechanisms for communication and participation involving spontaneous unidirectional suggestions or complaints by citizens and multi-directional interaction (fora, debates, etc.) were generally integrated within mixed government/citizen portals. Six countries offered this type of space in a citizen portal providing integral service including information, processing and participation. The most highly developed were the *Gobierno en línea* portals of Colombia, Venezuela and other countries, and the *Centro de Atención al Ciudadano* site in the Dominican Republic, many of which are still being improved. Web portals designed exclusively for citizen attention and/or participation, linked to government portals or intended for online processing are still embryonic in many places: examples include the *311 Centro de Atención Ciudadana* (Panama), *Mejor Atención al Ciudadano* (Peru), *Participa* (Panama) and *Participación Ciudadana* (Uruguay).

In the extensive list of anomalies detected in this dimension, underdevelopment is most evident in the following areas:

- (1) participation mechanisms are limited to centralized spaces for the entire public administration and not sectorially selective;
- (2) difficulty in finding contact e-mail addresses;
- (3) citizen attention services only operate as a source of link and contact information, but offer no direct consultation options (Argentina, for example);
- (4) little attention is given to managing government or citizen portal fora content that is not hosted by social media (*Portal Brasil*, for example);
- (5) the web portals intended for citizen participation function as news spaces (Ecuador's *Enlace Ciudadano*) or documentation access points (the Dominican Republic's *Portal del Ciudadano* only allows interaction regarding budgetary allocations);
- (6) lack of survey space and predominance of feedback regarding the functioning of the web portal itself; and
- (7) User attention mechanisms involving virtual mailboxes require excess identification data, offer little anonymity and have weak confidentiality/data protection features.

It is important to emphasize that the communication analysis was intended to examine technical features and characteristics in order to assess the quality of the bi-directional communication process. These results reflect the performance of open government initiatives and indicate a need to strengthen citizen accessibility and direct participation features: the main objective of emerging open government policies.

Conclusions

We used a heuristic test to examine accessibility, usability and communication/participation in nineteen Latin American government web portals intended for citizens.

The overall results suggest that web portals focused more on institutional and informative content, which are characteristics that usually correspond to the initial phases of e-government development. These are gradually being replaced by portals that reflect greater commitment to government-citizen relations by offering more services and multi-directional communication mechanisms. The best service and performance results coincided with citizen service portals or mixed government/citizen portals offering both institutional information and electronic processing services.

Overall, the portals analyzed presented insufficiencies, especially in areas of compliance with international accessibility guidelines and diversity of communication/participation features for citizens. Only the functionalities relating to usability showed positive global performance, but not in areas of security.

In broader and clearer terms, Latin American government web portals are highly visible in search engines, well-designed, easily identifiable and facilitate user navigation. However, they create accessibility barriers, present insufficient transaction confidentiality and provide little user-administration communication or space for e-participation. Future research should further examine the quality of information offered and the operative efficiency of online services and communication/participation mechanisms.

Notes

1. The global average for electronic government is 0.49 (with the maximum score being 1). The following Latin American countries are below average: Ecuador and Paraguay (0.48); Guatemala and Honduras (0.43) and Nicaragua (0.38) (UNDESA, 2012).
2. The global average for electronic participation is 0.26 (out of a maximum of 1). The following Latin American countries are below average: Ecuador and Guatemala (0.23); Bolivia (0.21); Uruguay (0.18); Paraguay (0.15); Honduras and Nicaragua (0.13) and Cuba (0.05) (UNDESA, 2012).
3. Lacking other alternatives, the United Nations uses the same type of web portals as a reference in its report (UNDESA, 2012).
4. Available at: www.w3.org/TR/1999/WAI-WEBCONTENT-19990505 (accessed May 2, 2012). The 2.0 guidelines are based on the W3C Recommendations of December 11, 2008. Available at: www.w3.org/TR/WCAG20/ (accessed May 2, 2012).
5. Available at: www.tawdis.net (accessed May 2, 2012).
6. For the searchability test, we considered as a sufficient reference the Google search engine, which, according to April 2012 data from Stat Counter Global Stats (2012), had an average of over 90 percent of the market share in Latin America. The formulas used to detect its position in the search window were “(name of country) citizen portal” or “(name of country) government”.
7. A standard deviation of $\sigma = 46.05$ was used as the reference score.

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