

Gobierno electrónico municipal. El caso de los ayuntamientos del estado de Sonora, 2009 y 2011

Municipal Electronic Government. The case of the Municipalities of the State of Sonora, 2009 and 2011

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RESUMEN

Las organizaciones gubernamentales al constituirse como entes político-administrativos presuponen la necesidad inherente de utilizar y adecuar diversas herramientas estratégicas que legitimen su accionar. Una de esas herramientas, emanada de la nueva gestión pública (NGP), es la incorporación de las tecnologías de información y comunicación (TIC) en las actividades gubernamentales, la cual ha recibido el nombre de gobierno electrónico. En aras de contribuir al conocimiento y comprensión del uso de las TIC en los gobiernos municipales de México, este documento plantea como principal objetivo conocer el estado que guarda el gobierno electrónico en los 72 ayuntamientos del estado de Sonora, a través de la construcción del Índice de Gobierno Electrónico Municipal (IGEM), derivado del procesamiento de información proporcionada por el Instituto Nacional de Estadística y Geografía (INEGI), para los años 2009 y 2011. Uno de los principales resultados obtenidos se refiere a la poca estabilidad en los municipios del estado de Sonora, respecto de la posesión y administración de la infraestructura tecnológica básica (computadoras, líneas telefónicas y páginas web), lo cual permite entrever los problemas que limitan el desarrollo del gobierno electrónico municipal, la falta de un sustento normativo que garantice el resguardo de la infraestructura tecnológica municipal, aunado a un proceso de institucionalización política, administrativa y financiera del gobierno electrónico, ausente en los municipios del estado de Sonora.

Palabras clave

Gobierno electrónico; gobierno electrónico municipal; tecnologías de la información y la comunicación, Índice de Gobierno Electrónico Municipal; nueva gestión pública

ABSTRACT

Government organizations, when they become political and administrative entities, presuppose the inherent need to use and adapt various strategic tools that legitimize their actions. One of these tools, emanating from the New Public Management (NPM), is the incorporation of Information and Communication Technologies (ICTs) into government activities, which has been called Electronic Government (E-Government). In order to contribute to the knowledge and understanding of the use of ICTs in the Municipal Governments of Mexico, this document seeks as its main objective to know the status of Electronic Government in the 72 Municipalities of the State of Sonora, through the construction of the Municipal Electronic Government Index (IGEM) derived from the processing of information provided by the National Institute of Statistics and Geography (INEGI), for the years 2009 and 2011. One of the main results obtained, refers to the little stability in the municipalities of the State of Sonora, regarding the possession and administration of the basic technological infrastructure (computers, telephone lines and Web pages), which allows to finally see what is harmful which turns out to be for the development of the Municipal Electronic Government, the lack of a normative support that guarantees the protection of the existing Municipal Technological Infrastructure, together with a process of political, administrative and financial institutionalization of the Electronic Government, absent in the municipalities of the State of Sonora.

Keywords

Electronic Government; Municipal Electronic Government; Information and Communications Technologies; Municipal Electronic Government Index; New Public Management

INTRODUCTION

Government institutions, by constituting themselves as political-administrative entities, presupposes the intrinsic need to use and adequate different tools that allow the establishment and the generation of efficient and effective public actions that legitimize their decisions. Within these tools, a process of utilization and suitability of the information and communication technologies (ICTs) in the areas of the government has been silently conceived worldwide in the last 30 years.

Leaders and public servants have been using ICTs formally, informally, institutionally or not to reconfigure different patterns of political interaction, administrative procedures, public services, public consultation as well as interrelations between the government and society.

This phenomenon has received the name of electronic government (e-G) and has been understood as the incorporation and utilization of ICTs in government activities aiming at the legitimizing the political administrative processes of the modern state toward citizens in the search of constituting what has been called good government (The World Bank, 1992; The World Bank, 1994).

In the case of Mexico, the study of the use of technology has been focusing mainly on the activities of the federal and state governments, while the utilization and exploitation of technologies to substantiate the efficiency and efficacy of the activities of the city councils in municipal areas have been eclipsed and little analyzed.

In order to contribute to the knowledge and understanding of the use of ICTs by municipal governments in Mexico, this document poses as main objective, to know, analyze and characterize the state in which the e-government in the 72 city councils of the State of Sonora is, by developing and contrasting the Index of the Municipal e-Government emerging from the processing of the information provided by the 2009 Government National Survey, Public Security and Municipal Justice (ENGSPJM-2009) and the 2011 National Census of Municipal Governments and Delegations (CNGMD-2011), statistical events developed by the National Statistics and Geography Institute (INEGI).

Therefore, the two-initial section of discussion and reflection aim at unraveling the origins and foundations of the ICTs incorporation process to government activities, the conceptual meaning of the term electronic government, as well as the development of a relevant analytical proposal to study the use of ICTs in municipal governments. The third section gives specifications on the methodology used to obtain the Municipal Electronic Government Index, as well as the criteria to process and analyze the information provided by the INEGI.

Lastly, empirical details of the municipal e-government are provided for 72 city councils of the State of Sonora for the years 2009 and 2011 which consequently derive from the elaboration of critical conclusive arguments that mention the scopes and mainly the challenges the e-government faces in the city councils of the State of Sonora. These are characterized by a high centrality and an institutional fragility in the use of ICTs. At the

end, the reader is provided with a bibliographical support that serves as reference in theoretical, methodological and empirical terms for the study of the municipal e-government.

E-government

According to Gil-García and Luna-Reyes (2008), the so called e-government belongs to the fourth stage of use of the information and communication technologies (ICTs)ⁱ in the government. This stage is characterized by the creation, use and development of the Internet and computer networks as well as by the increase of the process capacity and connectivity of computer devices as of the 90's.

Its origins go back to the process of North-American Government reinventionⁱⁱ (National Performance Review, 1993; Osborne and Gaebler, 1994; Gore, 1994; Dawes, 2008), in which the main axioms of the new public management (NGP, [Spanish acronym]) were materialized: economic rationality and government corporatization (Hood, 1991; Hood, 1995; Aguilar, 2006; Schröder, 2006); the construction of a less expensive and more efficient government (Gore, 1994) that would allow the overlapping of a traditional and online bureaucracies (Fountain en Rivera, 2006), which would lead connaturally to the construction of new mechanisms of legitimacy of the modern State (Wolfe, 1987; Crozier, 1989; Cabrero, 1995) through the use of ICTs in the public administration (Dawes, 2008).

The substance of the also called e-government consists in a generic concept (Jain and Sharma, 2007), that refers to a social phenomenon (Gil-García, 2006), and does not have a consensual, unified or generalized definition, which leads to multiple interpretations (Prins en Gil-García and Luna, 2007; Sandoval-Almazán and Gil-García, 2008), and which investigation implies a trans-disciplinary effort (Gil-García and Luna-Reyes, 2006).

It is a notion that entails a meticulous interpretative complexity to understand "[...] the use of information technology at government level [...]" that does not manifest itself empirically and simply through the creation and development of Web pages but rather entails necessarily a previous political and administrative change of the government organizations, and in a nodal manner, in ways of legitimizing itself before society (Bonina, 2005; Rivera en Herrera and Gil-García, 2009).

From the enlarged perspective, the development and implementation of the e-government even though it implies the innovative use of ICTs (telephone, computers, Internet, electronic agendas, etc.) in its everyday public administration (Edmiston en Gil-García and Luna, 2007; Gil-García and Luna Reyes, 2008; Herrera and Gil-García, 2009; OCDE, 2014), its objective is to establish itself as a tool that allows the realization of a good and better government (OCDE, 2003; Grönlund en Gil-García and Luna-Reyes, 2008; The World Bank, 2009).

Therefore, it is sought that the so-called e-government has a positive impact on the promotion of democratic values and mechanisms, the improvement of public services, as well as on the government transparency channels offered to citizens, companies or other public organizations (Fang, 2002; United Nations, 2005; CLAD, 2007; Scholl en Gil-García and Luna-Reyes, 2008; The World Bank, 2009; Gil-García and Martínez, 2011), anytime and anywhere (Zweers and Planqué en Gil-García and Luna-Reyes, 2008), 24 hours, seven days a week (Holden, Norris & Fletcher en Gil-García and Luna, 2007), contributing thus with the construction of an efficient (Rodotá, 2007) and public and legitimate public administration.

To speak of e-government is to refer to a political-administrative process that seeks to reconfigure the relations between the State, the market and society through the construction of an electronic governance understood as the action of governing that aims at achieving a stable multidimensional development (economic, social and institutional), through the intensive and advanced use of ICTs in the government's decision-making process (Naser and Concha, 2011).

Electronic Government in Mexico Municipalities

Gil-García, Mariscal and Ramírez (2008) point out that the Mexican government started using ICTs as of the 70's since several state companies such as Petróleos Mexicanos (PEMEX, [Spanish acronym for Mexican Petrol Company]), Comisión Federal de Electricidad (CFE, [Spanish acronym for Federal Power Company]), Nacional Financiera (NAFIN, [Spanish acronym for National Financing Company]), as well as the Universidad Nacional Autónoma de México (UNAM [Spanish acronym for Mexico National Autonomous University]), incorporated the use of computer equipment in their activities.

Over the years this use extended to other spheres of the government, which led to the emergence of public entities such as the Comité de Autoridades de Informática de la Administración Pública (CAIAPF [Spanish acronym for Public Administration Informatics Authorities Committee]) and the Comité de Informática de la Administración Pública Estatal y Municipal (CIAPEM [Spanish acronym for State and Municipal Public Administration Informatics Authorities]).

According to Herrera and Gil-García (2009), the process of institutionalizing the use of ICTs in the public administration of the federal government took place between 1995 and 2000 through the Public Administration Modernization Program and the Informatics Development Program, both coordinated and sponsored by the federal government. This process would be reinforced in the next six-year presidential period by developing lines and objectives related to what would be considered the formalization of an electronic government strategy.

This perspective has led to ponder on the need to incorporate technologies to the political-administrative processes not only in the spheres of intervention of federal agencies but also in the state and municipal levels.

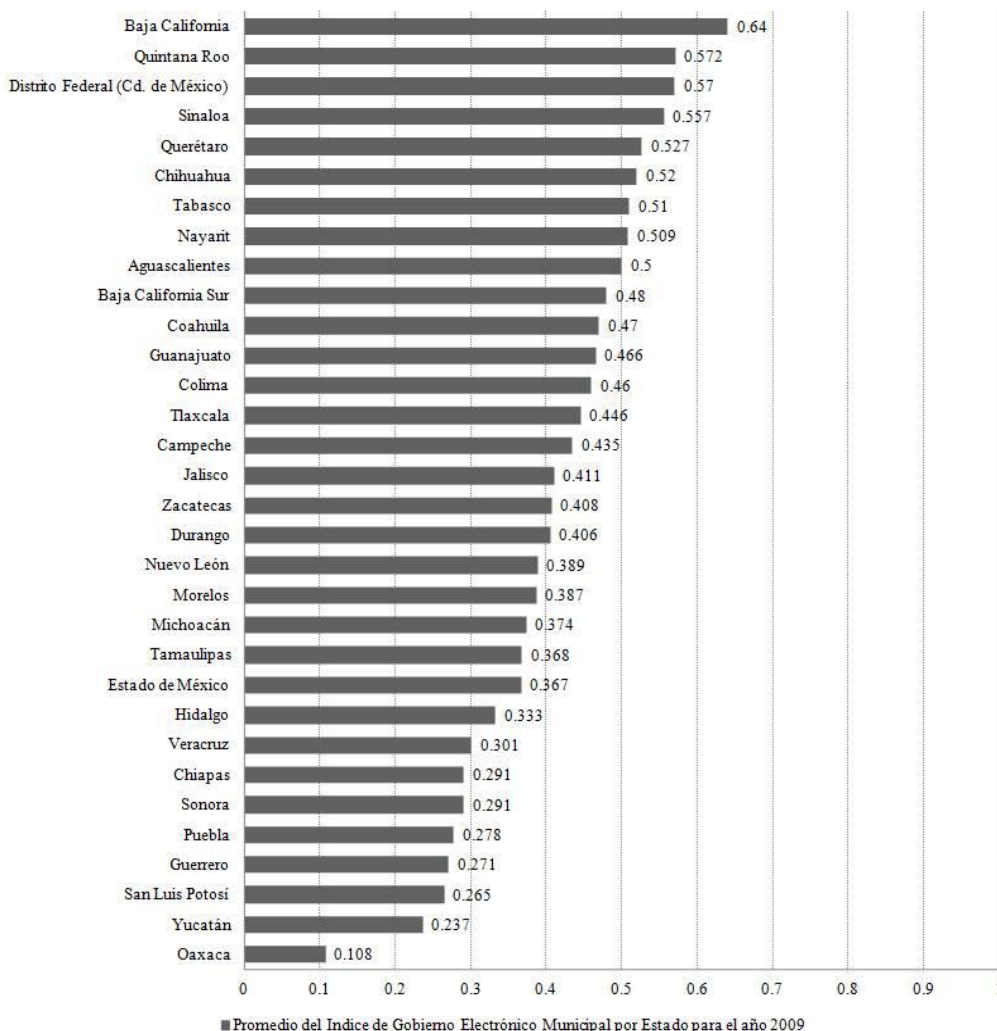
The municipality is “[...] the country’s smallest territorial constituency” (Mendieta and Nuñez en Colín en García, 1999, p. 45) that creates a sphere of government (Ziccardi, 2003) where a sub-national character of political-administrative space takes place (Meyer, 1995), and which is organized through two powers: the executive power (mayor) and legislative power (city council) which administrative dimension is constituted through the city council defined as the local bureaucratic arrangement through which the municipal authority’s public services and human and financial resources are operated and exercised. This structure is integrated mainly through the mayor, community representativesⁱⁱⁱ and councilors^{iv} (Herzer and Pérez, 1989; Reynoso and Villafuerte, 2003).

In this context, the municipality begins to be seen as a government structure that requires the use of ICTs in her activities and decision-making processes; however, in quantitative and qualitative terms, it represents the greatest challenge of the development of electronic government due to the complexity, heterogeneity, problems, infrastructure, type of political class and public problems that occur in every space of the 2 456 municipalities that make up the Mexican Republic (INEGI, 2008).

Under such conditions, the priority lies in the study, analysis and characterization of the state in which the municipal electronic government stands, being understood as the constant and ongoing use of all types of ICTs in the city council that allows providing citizens with the information, services or products of the municipal government at any time and place (24 hours a day, 365 days a year). This can be done through democratic procedures, profitable transactions and efficient regulations in the exercise of their political rights and in search of the constitution of a good and better municipal government, a better and greater citizen participation by fostering the transparency of the city council’s activities where the stakeholders’ heterogeneity in search of the realization of their public objectives through legitimate causes and under the condition of a normative institutional structure (Martínez-Becerra and Hernández, 2014).

Gil-García and Martínez (2011) through their pioneer work in this regard, were the first at national level to obtain the so-called Municipal Electronic Government Index which allowed measuring the degree of progress in the use of ICTs in city councils.

As shown in Graph 1, the municipal government of the States of Baja California, Quintana Roo, Federal District (Mexico City) and Sinaloa, obtained the highest values with indexes 0.64, 0.572, 0.57 and 0.557 respectively, while city councils of Chiapas, Sonora, Puebla, Guerrero, San Luis Potosí, Yucatán and Oaxaca federal entities registered figures below 0.30, which suggests a weak and fallacious use of ICTs in their government activities.



Graph 1. Municipal Electronic Government Index Average per Federal Entity, 2009.

Source: Gil-García y Martínez (2011, p. 485).

In 2009, the State of Sonora city councils were ranked 26 over 32 federal entities that make up the Mexican Republic, with an index of 0.291. It is important and urgent to conduct a specific analysis of the reality that occurs in every one of the 72 municipal governments in regard to the use of ICTs in their government activities.

Methodology

In order to know, analyze and characterize the state of the municipal electronic government in the federal entity of Sonora, we started by processing the data from the National Government Survey, the 2009 Public Security and Municipal Justice (ENGSPJM, 2009,[Spanish acronym]), and the 2011 National Municipal Governments and Delegations Census (CNGMD, 2011, ,[Spanish acronym]), which are government statistics information projects developed by the National Statistics and Geography Institute (INEGI).

The results obtained helped elaborating the Municipal Electronic Government Index (IGEM) in the State of Sonora for 2009 and 2011, upon the proposal developed by Gil-García and Martínez (2011), and built on the basis of the quantitative articulation of a group of five categories of municipal statistical information: computer indicator^v, phone lines indicator^{vi}, Internet connection^{vii}, Website information^{viii} and Website functionality^{ix}. These results are added and divided by the total number of components; this yields a value between 0.0 and 1.0^x, representing the state of the basic components in the development of electronic government.

The indexes obtained are stratified into three large groups: low intensity IGEM^{xi}, medium intensity IGEM^{xii} and high intensity IGEM^{xiii}, and geospatially referenced through the IRIS.SCIENCE program, based on the geo-statistical framework of the State of Sonora and the 2005 municipal geo-statistical framework. A municipal division map of the entity was created showing the Municipal Electronic Government Index stratification.

The 2009-2011 Municipal Electronic Government of the State of Sonora

The State of Sonora is divided politically and territorially into 72 municipalities in which, according to the 2010 Population and Housing Census, reside a total of 2,662,480 inhabitants of which, 53.11% are concentrated in the municipalities of Hermosillo, Cajeme and Nogales.

According to the data from the National Government Survey, the 2009 Public Security and Municipal Justice of the INEGI, the State of Sonora in 2009 had a total of 72 mayors, 72 city councilors and 500 community representatives who had 18,114 bureaucrats under their mandate, of which 79.10% were men and only 20.90% women.

In regard to the per capita distribution of the municipal bureaucrats per city council, the existing imbalance was evident. The governments of Hermosillo, Nogales and Cajeme concentrated 52.10% of the total bureaucrats, while in La Colorada, Bavispe and Granados had only 9, 7, and 4 bureaucrats to attend the demands and needs of an average of more than one thousand residents in these localities.

In regard to the technological infrastructure, in 2009, there was a total of 2,768 computers in the municipal governments of the State of Sonora, of which 45.3% were concentrated in agencies of the Hermosillo city council while the local governments of

Granados and Onavas had only two and one computer respectively, which were used exclusively by the mayor or the city council secretary.

In regard to the technological connectivity, 67 municipal governments had an Internet connection while Arivechi, Divisaderos, Nacori Chico, Soyopa and Tepache were the only city councils not to have access to said informatics resource.

In 2009, there were a total of 629 telephone lines of which five of every 10 lines were located mainly in the Hermosillo, Navojoa and Cajeme city councils, while the municipal governments of Atil, Mazatán, Onavas, San Felipe de Jesús and Soyopa only had an average of telephone line.

Lastly, in regard to the Web service, in 2009, 47.22% of the municipal governments had an electronic site in which they offered the citizens information and interactive services mainly.

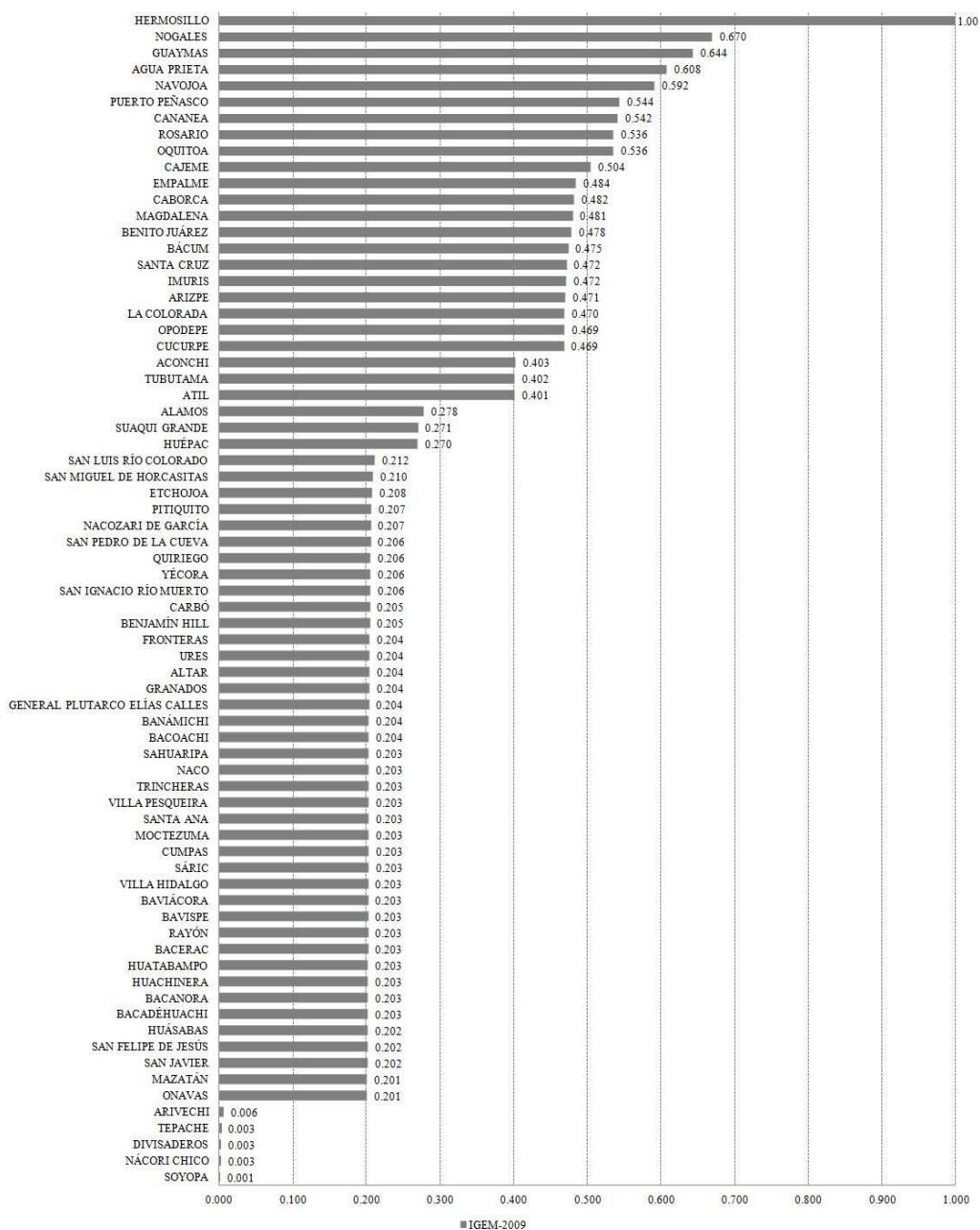
In order to gather and analyze the foregoing information, we developed the Municipal Electronic Government Index for the State of Sonora in 2009, which afforded the following information (Graph 2).

As can be noted, in 2009, Hermosillo municipal government was the best positioned in terms of the Municipal Electronic Government Index had a greater number of computer equipment, quantity of telephone lines, connection of the Internet and a website that provided information, interactive and transactional services. Guaymas and Agua Prietas had values of 0.60, 0.644 and 0.608 respectively.

Conversely, the Arivechi, Tepache, Divisaderos, Nacori Chico and Soyapa city councils had values amounting to figures inferior to 0.007 of the index which implies a weak technological infrastructure since they registered minimum quantities of computer equipments, telephone lines, lacking Internet connection and website (Graph 1; Map 1).

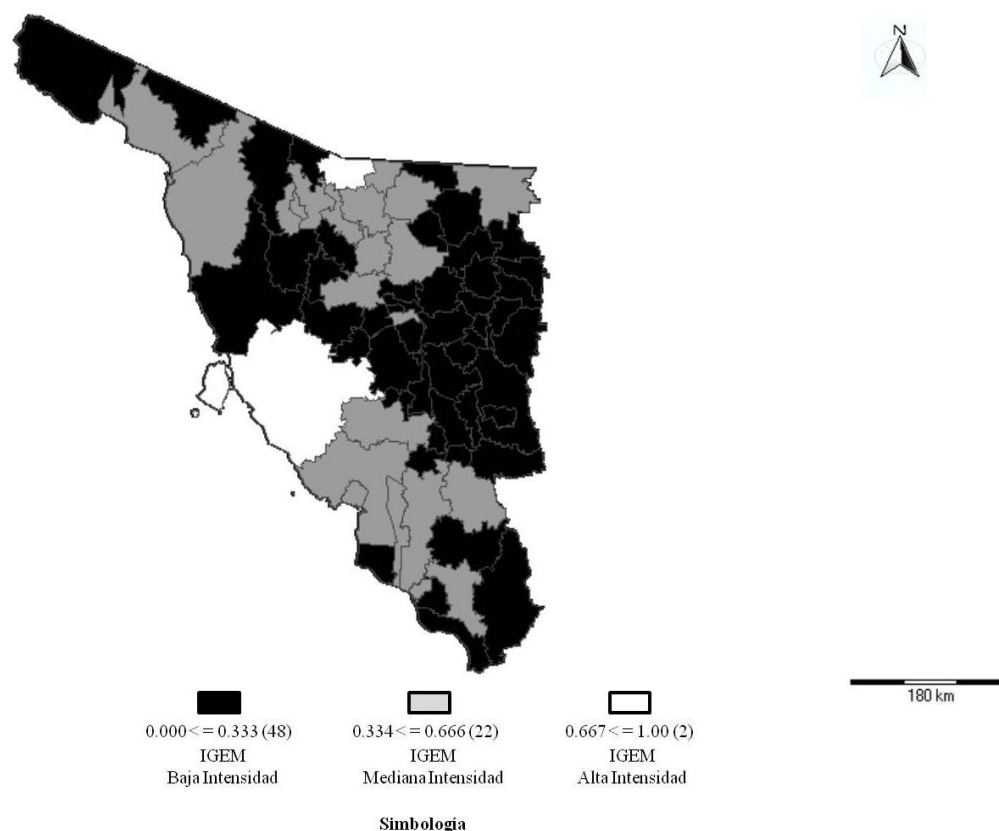
The foregoing highlights the fact that from the municipalities bordering the United States of America, only the municipality of Nogales presents a high density situation which combines the factors of development of the municipal electronic government while 48 of the 71 remaining municipalities had values of low intensity (Map 1).

The foregoing is troubling since 66.67% of the governments lacked the technological infrastructure to incorporate and use the ICTs in their work activities, and in the majority of the cases, the web pages proved to be basic and rudimentary for potential scopes of quality service provided to the citizens by the Internet. This implies that the development of the municipal electronic government in the State of Sonora turned out being centralized and unbalanced at the same time.



Graph 2. Municipal Electronic Government Index, State of Sonora, 2009.

Source: developed by the author based on the proposal of Gil-García y Martínez (2011), according to the results of the National Survey of Government, Public Safety and Municipal Justice (ENGSPJM, 2009), of INEGI.



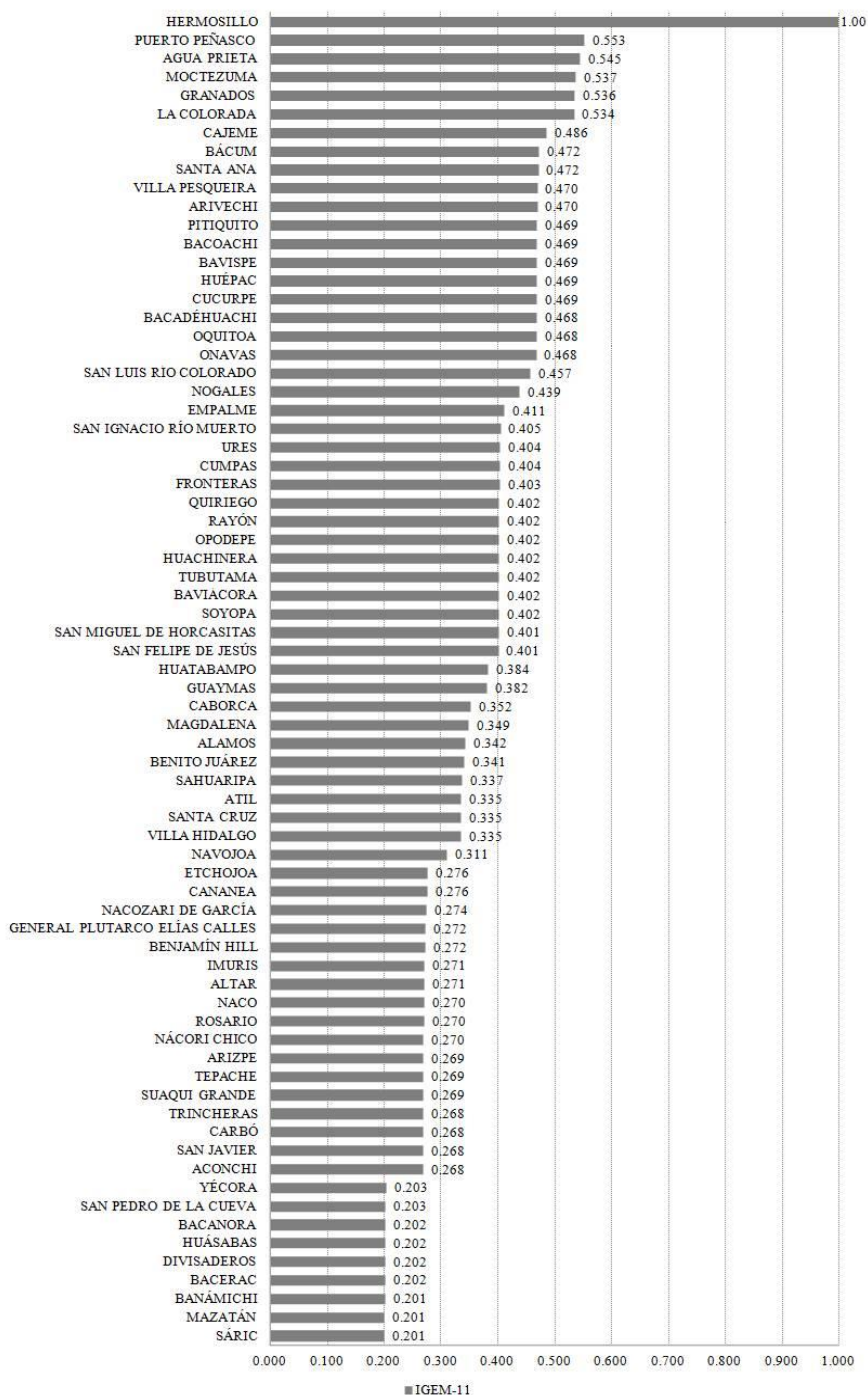
Map 1. Municipal Electronic Government Index, State of Sonora, 2009.

Source: developed by the author based on the proposal of Gil-García y Martínez (2011), according to the results of the National Survey of Government, Public Safety and Municipal Justice (ENGSPJM, 2009 [Spanish acronym]), of INEGI.

In order to know the trend in the development of the use of ICTs by municipal governments of the State of Sonora, we brought back the data from the 2011 Municipal Governments and Delegation National Census to characterize the state of the municipal electronic government. According to said information, in 2011, the total number of computers and telephone lines had increased of 80.31% and 105.09% respectively, that is, from 2,768 to 4,991 and 629 to 1,290 in comparison to the 2009 figures.

City councils that already had web service, went from 24 to 48 which represented a 100% increase in offering in all cases in regard to information services; and in 18 cases, offering interactive services and in 9 cases, transactional services.

In regard to the 2011 Municipal Electronic Government Index, the municipality of Hermosillo obtain the maximum value with an 1.00 index, quite the opposite for the Banámichi, Mazatán and Sáric city councils had an average value of 0.201 (Graph 3).

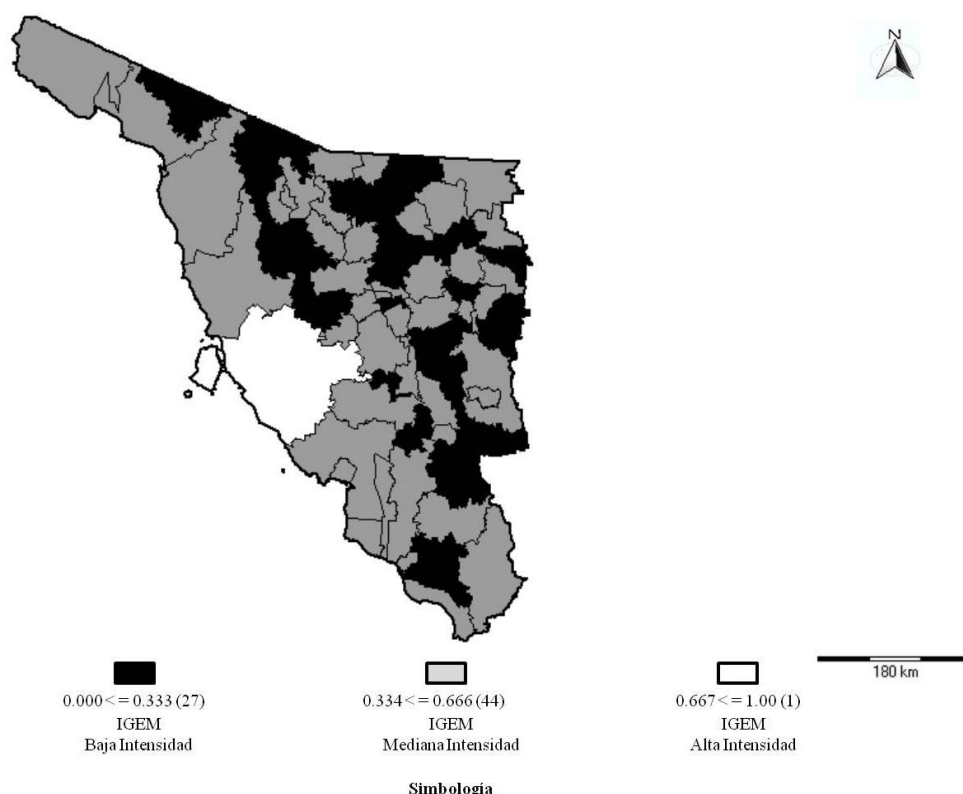


Graph 3. Municipal Electronic Government Index, State of Sonora, 2011.

Source: developed by the author based on the proposal of Gil-García y Martínez (2011), according to the results of the National Census of Municipal and Delegational Governments (CNGMD, 2011), of INEGI.

The Sáríc city council is a paradigmatic case since its technological infrastructure is stagnant. In 2011, it only had two computers and two telephone lines available to 69 municipal bureaucrats who offered services to more than 2,000 inhabitants.

In regard to the intensity of the combination of factors that composes the basic technological infrastructure, 27 municipal governments had a low intensity, 44 medium and 1 only had high intensity. (Map 2).



Map 2. Municipal Electronic Government Index, State of Sonora, 2011.

Source: developed by the author based on the proposal of Gil-García y Martínez (2011), according to the results of the National Census of Municipal and Delegational Governments (CNGMD, 2011), of INEGI.

In geographic terms, we observe a complete dispersion of the municipal spaces where the entities that govern them have had some kind of progress or setback in regard to the data obtained in 2009. This clearly reflects the little stability in regard to the possession and administration of the basic technological infrastructure (computers, telephone lines and web pages) which shows us how detrimental the lack of institutionalization of the use of technologies is in city councils; hence, the direct repercussion on the acquisition, conservation and maintenance of the ICTs being used in the municipal public administration.

In order to appreciate in a critical manner the progress or setbacks in the procurement, acquisition or conservation of the basic electronic components that give substance to the municipal electronic government in the State of Sonora, it is relevant to contrast the results obtained in 2009 and 2011 (Graph 4).

38.89% of the 72 municipal governments suffered a setback in their electronic government index. Only Hermosillo, Huásabas and Tubutama registered insignificant variations. 41 city councils had increases of which 92.68% of the cases were of low intensity (0.00 – 0.33) and 7.32% of medium intensity (0.34 – 0.66).

In comparative terms, the Arivechi, Soyopa, Moctezuma and Granados city councils registered a greater increase in amount of their index, i.e., 0.463, 0.400, 0.334 and 0.331 respectively, since the access of the use of the Internet and the web services had a positive impact in the development of its electronic government although the number of computers and telephone lines they already had remained relatively stable. (Graph 4)

However, the most interesting cases were those where the city councils suffered a decline in the value of their Municipal Electronic Government Index. Navojoa, Cananea, Rosario, Guaymas and Nogales were among those municipalities that registered a lack of stability despite their achievements and progress obtained in 2009, even if there was a significant increase in the number of computers available, telephone lines, as well as the access to Internet, this did not materialize into better and stable informative, interactive or transactional web services.

Conclusions

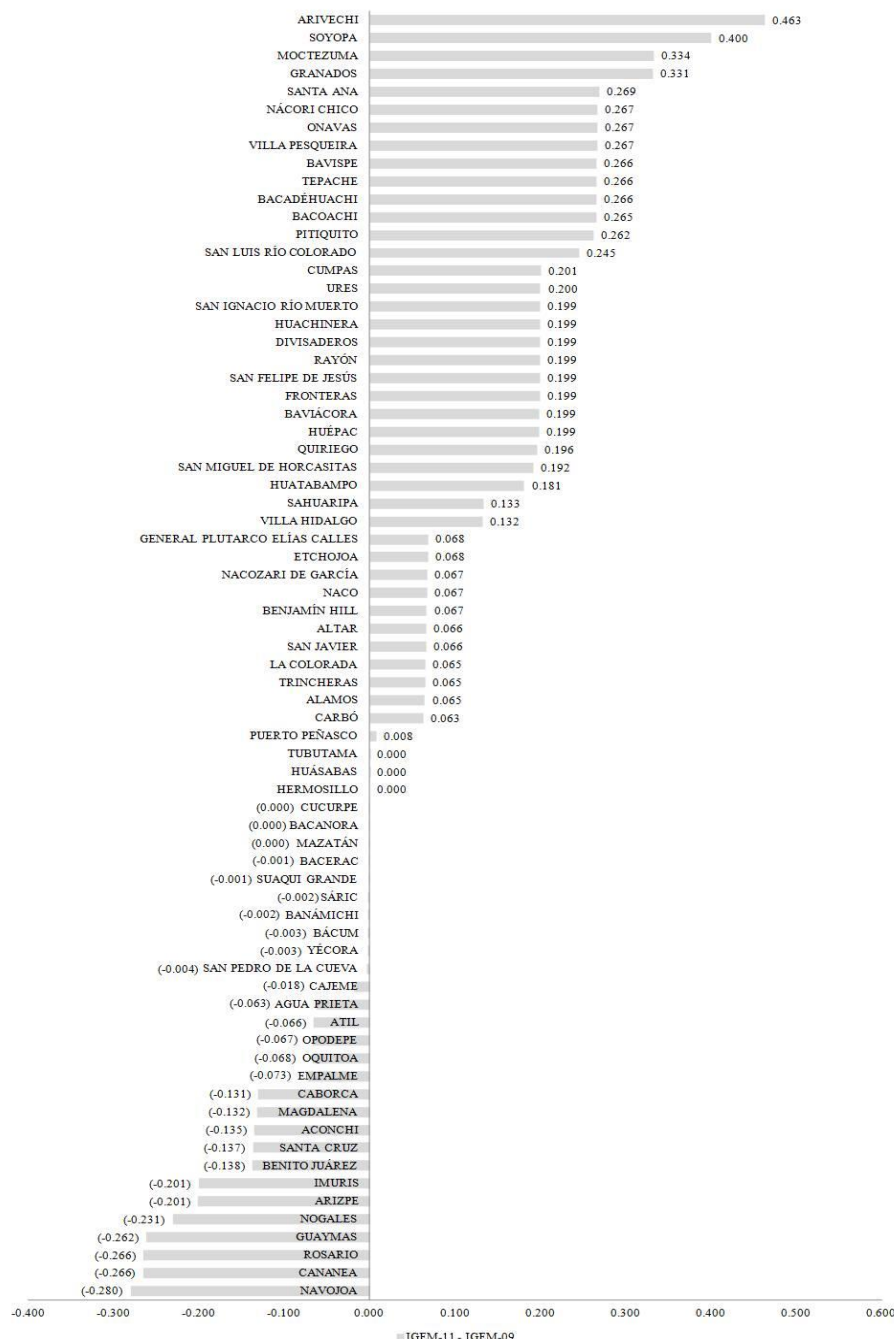
The electronic government is one of the bastions of the postulates of the new public management in terms of what this analytical current identifies as a good government even though it has had a diversified development per country and region, it constitutes a new mechanism of effective legitimacy within the accountability logic, management oriented toward results, efficiency, efficacy and citizen participation.

It should be understood that the so-called e-government is part of the reinvention processes of Anglo-Saxon countries as manifested historically in the North-American government that is conditioned by an economic rational and a managerial vision of the State and the government, that is in search of a greater efficiency at a lower cost of government activity through incorporating information and communication technology in their bureaucratic activities.

The study of the incorporation and use of ICTs in the Mexican municipal governments turn out to be transcendental and strategic in searching to construct a good municipal government, notwithstanding the latent state in which lies its development.

The foregoing is reflected in the study of the use of ICTs in Sonora city councils which was something almost nonexistent until now. This is very delicate since if the characteristics and the situation of the electronic government in its municipal

bureaucratic structures are unknown, it is almost impossible to understand the scopes and challenges the use of technology in local public administration implies.



Graph 4. Variation of the Municipal Electronic Government Index, State of Sonora, 2009-2011.

Source: developed by the author based on the proposal of Gil-García y Martínez (2011), according to the results of the National Survey of Government, Public Safety and Municipal Justice (ENGSPJM, 2009) and the National Census of Municipal and Delegational Governments (CNGMD, 2011), of the INEGI.

It is essential to start a research and follow-up process of the occurrence of the use of ICTs in the municipal governments of Sonora that intertwines each one of the findings diffused in this study and which are comparable to the results of the Municipal Governments and Delegation National Census (CNGMD, [Spanish acronym], obtained by the INEGI for 2013, 2015 and 2017. This will help bring more clarity in trying to understand the way in which one of the postulates of the new public management has caused impact or not on the local public administrations.

This research provides elements to perceive a high centralization of the technological resources, mainly in the Hermosillo city council where the differences are abysmal in comparison with the infrastructure available in the Arichevi, Tepache, Divisadetos, Nacori Chico and Soyopa in 2009, and Banámichi, Mazatán and Sáric in 2011.

In comparing the 2009 and 2011 data, the cases of Nogales, Guaymas, Rosario, Cananea and Navojoa, stand out in spite of having the ICTs necessary to generate a high intensity municipal electronic government; however, they underutilized their resources by not providing the electronic services that would have potentially generated an electronic interaction with citizens.

In just two years, 25 municipalities suffered some kind of setback in the quantity and use of technological resources they had. This, coupled with the existing municipal governments with a feeble and surviving infrastructure, suggests a very strong underutilization of the electronic legitimization mechanisms.

These issues are troublesome since they indicate that the municipal governments are outdated in regard to ICTs being used by their fellow citizens in their daily activities, hence, we can easily claim that a technological gap exists among municipalities.

It is urgent to create a regulatory framework to ensure the protection of the municipal technological infrastructure together with a political, administrative and financial institutionalization process of the electronic government, since, based on the results of our analysis, we have identified the lack of stability in the development and use of ICTs in the activities of the municipal civil servants.

Likewise, it is essential that the government of the State of Sonora, through its agencies and areas responsible of the municipal development, fosters the institutionalization of the use of ICTs in the political-administrative processes of the city councils where citizens may have access to a government that, at any time and place, through the Internet, may offer electronic services to solve or manage public problems with greater efficacy, efficiency and legitimacy.

Lastly, it is important mentioning that previous studies (Gil-García and Martínez, 2011) inform of the existence of a local political class that understands and comprehend very little about the use of ICTs as a strategic tool in the correct administration of public issues. The foregoing, together with a bureaucracy poorly trained to use technology optimally, as well as the fact that the technological infrastructure lacks the appropriate protection, updating and financing, may entail that the scopes obtained in terms of possession of computers, telephone lines, Internet and the creation of web pages, are

solely unreal achievements conditioned to the personal styles of governing of the presiding local authorities, and are not the results obtained by a rational planning based on the attainment of objectives that entail the constitution of a good municipal government.

REFERENCES

- Aguilar, L. F. (2006). *Gobernanza y gestión pública*. México: Fondo de Cultura Económica.
- Bonina, C. (2005). *Tecnologías de información y nueva gestión pública: experiencias de gobierno electrónico en México*. (Documento de trabajo núm. 167). México: Centro de Investigación y Docencia Económicas.
- Cabrero, E. (1995). *Del administrador al gerente público. Un análisis de la evolución y cambio de la administración pública, y del perfil de dirigentes de organizaciones gubernamentales*. México: Instituto Nacional de Administración Pública A.C.
- Centro Latinoamericano de Administración para el Desarrollo, CLAD. (2007). *Carta Iberoamericana de Gobierno Electrónico*. Santiago de Chile: Centro Latinoamericano para la Administración y el Desarrollo. Recuperado de <http://old.clad.org/documentos/declaraciones/cartagobelec.pdf/view>
- Coordinación Estatal para el Fortalecimiento Institucional de los Municipios, CEFIM. (2010a). *Guía práctica del presidente(a) municipal*. San Luis Potosí: Gobierno del Estado de San Luis Potosí 2009-2015. Recuperado de http://cefimslp.gob.mx/documentos/guias_practicas/PRESIDENTE_MUNICIPAL.pdf
- Coordinación Estatal para el Fortalecimiento Institucional de los Municipios, CEFIM. (2010b). *Guía práctica del (la) síndico*. San Luis Potosí: Gobierno del Estado de San Luis Potosí 2009-2015. Recuperado de http://cefimslp.gob.mx/documentos/guias_practicas/SINDICO.pdf
- Coordinación Estatal para el Fortalecimiento Institucional de los Municipios, CEFIM. (2010c) *Guía práctica del regidor(a)*. San Luis Potosí: Gobierno del Estado de San Luis Potosí 2009-2015. Recuperado de http://www.cefimslp.gob.mx/documentos/guias_practicas/REGIDOR.pdf
- Crozier, M. (1989) *Estado modesto, Estado moderno. Estrategia para el cambio*. México: Fondo de Cultura Económica.
- Dawes, S. (2008). The evolution and Continuing Challenges of E-Governance. *Public Administration Review*, 68, S86-S102.
- Fang, Z. (2002). E-Government in Digital Era: Concept, Practice and Development. *International Journal of the Computer, The Internet and management*, 10(2), 1-22. Recuperado de <http://unpan1.un.org/intradoc/groups/public/documents/apcity/unpan016377.pdf>
- García, R. (1999) *Los municipios en México. Los retos ante el futuro*. México: Centro de Investigación y Docencia Económicas / Miguel Ángel Porrúa.

- Gil-García, J. (2006) Enacting State Websites: A Mixed Method Study Exploring E-Government Success in Multi-Organizational Settings. *39th. Hawaii International Conference on System Sciences (HICSS-39 2006)*, 4-7, 1-10. Recuperado de <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.68.1295&rep=rep1&type=pdf>
- Gil-García, J. R. y Luna-Reyes, L. F. (2006). Integrating Conceptual Approaches to E-Government. En M. Khosrow-Pour. (Edit.), *Enciclopedia of E-Commerce, E-Government and Mobile Commerce* (pp. 636-643). United States of America, IGI Global Snippet. Recuperado de <http://www.irma-international.org/viewtitle/12606/>
- Gil-García, J. R. y Luna-Reyes, Luis F. (2007). *Modelo Multi-dimensional de medición del gobierno electrónico para América Latina y el Caribe*. Santiago de Chile: CEPAL. Recuperado de http://repositorio.cepal.org/bitstream/handle/11362/3570/S2007079_es.pdf;jsessionid=28604303B8413EFDC6FEB43FD24B6CF7?sequence=1
- Gil-García, J. R. y Luna-Reyes, L. F. (2008). Una breve introducción al gobierno electrónico: definición, aplicaciones y etapas. *Revista de Administración Pública*. XLIII (2), 49-71. Recuperado de http://www.inap.mx/portal/images/REVISTA_A_P/revista%20rap%20116ok.pdf
- Gil-García, J. R., Mariscal, J. y Ramírez, F. (2008). *Gobierno electrónico en México*. México: TELECOM/CIDE. Recuperado de <http://www.libreriacyde.com/librospdf/DTAP-214.pdf>
- Gil-García J. R. y Martínez, M. G. (2011). VII. Tecnologías de información y comunicación en las administraciones públicas municipales de México. En E. Cabrero y D. Arellano. (coord.) *Los gobiernos municipales a debate: un análisis de la institución municipal a través de la Encuesta INEGI 2009* (pp. 433-503). México, Centro de Investigación y Docencia Económicas.
- Gore, A. A. (1994). *Un gobierno más efectivo y menos costoso. Informe de la National Performance Review*. México: EDAMEX.
- Herrera, L. y Gil-García, J. R. (2009). Implementación de e-gobierno en México: Un análisis de los determinantes de éxito de la estrategia “Canales alternos de atención” del INFONAVIT. (Documento de trabajo, núm. 240). México: CIDE. Recuperado de <http://libreriacyde.com/librospdf/DTAP-240.pdf>
- Herzer, H. y Pérez, P. (1989). Municipio y participación popular en América Latina. *Desarrollo Económico*, 29(114), 187-205. Recuperado de https://www.jstor.org/stable/3466961?seq=1#page_scan_tab_contents
- Hood, C. (1991). A Public Management For All Seasons? *Public Administration*, 69, 3-19.

- Hood, C. (1995). The “New Public Management” in the 1980s: Variations on a Theme. *Accounting, Organizations and Society*, 20(2/3), 93-109.
- Instituto Nacional de Estadística y Geografía, INEGI. (2010). *Encuesta Nacional de Gobierno, Seguridad Pública y Justicia Municipal 2009*. Aguascalientes, Instituto Nacional de Estadística y Geografía.
- Instituto Nacional de Estadística y Geografía, INEGI. (2014). *Censo Nacional de Gobiernos Municipales y Delegacionales 2011*. Aguascalientes, Instituto Nacional de Estadística y Geografía.
- Jain-Palvia, S. C. y Sharma, S. S. (2007). E-Government and E-Governance: Definitions/Domain Framework and Status around the world. *Journal of the Fifth International Conference on E-Governance*, pp. 1-12. Recuperado de http://www.iceg.net/2007/books/1/1_369.pdf
- Laufer, R. y Burlaud, A. (1989). *Dirección pública: gestión y legitimidad*. Madrid: Instituto Nacional de Administración Pública/Ministerio para las Administraciones Públicas.
- Martínez-Becerra, J. J. y Hernández, M. Á. (2014). Los retos del gobierno electrónico municipal en el estado de Oaxaca. *RECAI Revista de Estudios en Contaduría, Administración e Informática*, 3 (6), 121-144. Recuperado de <https://recai.uaemex.mx/article/view/8959/7613>
- Meyer, L. (1995). El municipio mexicano al final del siglo XX. Historia, obstáculos y posibilidades. En M. Merino. (coord.) *En busca de la democracia municipal. La participación ciudadana en el gobierno local mexicano* (pp. 231-252). México: El Colegio de México.
- Naser, A. y Concha, G. (2011). *El gobierno electrónico en la gestión pública*. Santiago de Chile: Instituto Latinoamericano y del Caribe de Planificación Económica y Social/ Comisión Económica para América Latina y el Caribe.
- National Performance Review. (1993) *Reengineering through Information Technology*. Washington DC: National Performance Review/Government Printing Office.
- Organisation for Economic Co-operation and Development, OECD. (2003). *The E-Government Imperative*. France: Organisation for Economic Co-operation and Development.
- Organisation for Economic Co-operation and Development, OECD. (2014). *Recommendation of the Council on Digital Government Strategies*. Paris: Organisation for Economic Co-operation and Development-Publishing. Recuperado de <http://www.oecd.org/gov/digital-government/Recommendation-digital-government-strategies.pdf>
- Osborne, D. y Gaebler, T. (1994). *La reinención del gobierno. La influencia del espíritu empresarial en el sector público*. Barcelona: Paidós.

- PuronCid, G. (2012). Uso de la Infraestructura Tecnológica en la Gestión Municipal en México. *RECAI Revista de Estudios en Contaduría, Administración e Informática*, 1(2), 21-40. Recuperado de <https://recai.uaemex.mx/article/download/8943/7575>
- Reynoso, S. R. M. y Villafuerte, M. Á. (2003). *Manual básico para la administración pública municipal*. México: Instituto de Administración Pública del Estado de México, A.C. Recuperado de https://transparencia.info.jalisco.gob.mx/sites/default/files/Manual_Basico_para_la_Administracion_Publica_Municipal.pdf
- Rivera, E. (2006). Concepto y problemas de la construcción de gobierno electrónico. Una revisión de la literatura. *Gestión y Políticas Públicas*, XV (2), 259-305. Recuperado de <http://www.redalyc.org/pdf/133/13315202.pdf>
- Rodotá, E. (2000). *La tecnopolítica. La democracia y las nuevas tecnologías de la comunicación*. Buenos Aires: Losada.
- Sandoval-Almazán, R. y Gil-García, J. R. (2008). Chapter III. Limitations of Evolutionary Approaches to E-Government. En G. D. Garson y M. Khosrow-Pour. (coord.), *Handbook of Research on Public Information Technology* (pp. 22-30). United States of America: IGI Global.
- Schröder, P. (2006). *Nueva gestión pública: aportes para un buen gobierno*, México: Fundación Friedrich Naumann. Recuperado de <http://relial.org/uploads/biblioteca/44dbee76837e79a6c07bb8219d021843.pdf>
- The World Bank. (1992). *Governance and Development*. Washington D.C.: The International Bank for Reconstruction and Development/The World Bank.
- The World Bank. (1994). *Governance. The World Bank's Experience*. Washington D.C.: The International Bank for Reconstruction and Development/The World Bank.
- The World Bank. (2009). *E-Government Primer*. Washington DC: InfoDev/World Bank.
- United Nations. (2005). *UN Global E-government. Readiness Report 2005. From E-government to E-inclusion*. New York: United Nations Publication.
- Wolfe, A. (1987). *Los límites de la legitimidad. Contradicciones políticas del capitalismo contemporáneo*. México: Siglo XXI.
- Ziccardi, A. (2003). La planeación urbana municipal, ¿función normativa o sustento de la gobernabilidad local? En E. Cabrero. (coord.) *Políticas públicas municipales. Una agenda en construcción* (pp. 129-154). México: Centro de Investigación y Docencia Económicas / Miguel Ángel Porrúa.

ⁱ Gil-García and Luna-Reyes define information and communication technologies as "hardware, software, and networks as well as the social and organizational structures needed to support their adequate functioning" (2006, p.642).

ⁱⁱ Dawes (2008) indicates that the reinvention process of the North American government was highly influenced by the arguments of Osborne and Gaebler's book entitled *Reinventing Government*. How the Entrepreneurial Spirit is Transforming the Public Sector, from the symbiosis generated by the proposal to incorporate entrepreneurship into public administration.

ⁱⁱⁱ The community representative "is empowered to safeguard the legality, honesty and efficiency of the public service provided by the employees of the Municipality, and is responsible for monitoring and defending municipal interests and legally representing the City in litigation to which it is a party" (Arestegui in CEFIM, 2010b, p.5).

^{iv} "The Regidor (a) is a municipal authority that integrates the City Council of a Municipality and participates in the decision-making in a collegial manner. To be part of the decision-making process in the City Council, the Councilor (a) must participate in the Cabildo Sessions and work in commissions" (CEFIM, 2010c, p.18), the number of Councilors that make up the City Council, will depend on what I determined the local organic laws or those that have some state interference.

^v "This indicator was obtained from the total number of computers of the municipal public administration. It was normalized and has values ranging from 0 to 1 [...]. To normalize, all computer values were divided by the highest number of computers" (Gil-García and Martínez, 2011, p.445).

^{vi} "This indicator was obtained from the total telephone lines of the municipal public administration. It was normalized and has values between 0 and 1 [...]. To normalize this indicator, all telephone line values were divided by the highest number of this variable" (Gil-García and Martínez, 2011, page 445).

^{vii} "Este indicador se refiere a si el municipio tiene conexión a Internet, tiene valores de 0 a 1 [...]. 1 si tiene conexión y 0 si no tiene conexión" (Gil-García y Martínez, 2011, p. 445).

^{viii} "The indicator indicates if the municipality makes its information available on its website, it also has a value of 0 and 1 [...]. It has the value of 1 if you make your information available on your website and 0 if you do not make your information available" (Gil-García and Martínez, 2011, p.445).

^{ix} "This indicator is the average of the sum of the different types of services provided by the municipality (informative, interactive and transactional), has values between 0 and 1 [...]. This average was obtained by providing the same value to each type of service, in such a way that the sum of the three was 1, that is, the value of each service was 1/3. And the municipality that does not provide any type of service has 0" (Gil-García and Martínez, 2011, p.445).

^x The closer the Municipal Electronic Government Index approaches the value of 1.0, the better the intensity in the integration of its components, while the higher its value is close to 0.0, the worse or null will be the existence and integration of the components of the basic technological infrastructure necessary for the operation of the Municipal Electronic Government.

^{xi} The index of municipal electronic government of low intensity, refers to those municipal spaces where the basic or minimum conditions do not exist for the incorporation of the TIC in the governmental activity of the city council, since the basic technological infrastructure with which it counts is null or practically non-existent, their values oscillate between 0.00 and 0.3333.

^{xii} The index of electronic government of medium intensity, characterizes those City Councils where there is a minimum of a basic technological infrastructure (Puron, 2012), their values range between 0.3334 and .6666.

^{xiii} The high intensity electronic government index shows those municipal governments that, having the basic technological infrastructure, are in a position to promote the interaction of the municipal government with citizens through informative, interactive and / or transactional services, their values fluctuate between 0.6667 and 1.00.

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