E-GOVERNMENT AS A FACTOR TO DETERMINE COMPETITIVENESS OF MUNICIPALITY OF CULIACÁN, MÉXICO

Ana Elizabeth Ramírez Gómez *
Ana Luz Ruelas Monjardín **

ABSTRACT

In recent decades the processes in municipal public organizations have reformed strategies and modernized administration in important ways as part of the requirements for new public management models. They underscore the use of information and communication technologies as tools to help improve government efficiency and effectiveness and the relationship with citizens. ICTs (Information and Communication Technologies) have been included into government agendas as well as public policies on innovation and technological development.

In this paper we discuss how digital innovation through e-government enforcement—as part of strategies for modernizing public administration—can maximize municipal competitiveness and achieve an improved government-society link. Consequently, we discuss the public administration of the municipality of Culiacán, Mexico in which elements of institutional change are decisive.

We embrace the NPM and its framework for modernization and enforcement of digital innovation strategies. Particularly, we address the case of the municipal administration of Culiacán over the past periods of 2004-2013. We will analyze the processes of administrative reform and the carrying out of public policies and programs which have had ICTs as rector and linchpin. We will value the significant contributions of these factors to city competitiveness.

* El Colegio de San Luis, A.C. / email: dcs12014@colsan.edu.mx
** Universidad Autónoma de Sinaloa / email: aruelas@uas.edu.mx

INTRODUCTION

E-government and public organizations re-engineering were practiced during the last three decades of twentieth century with a set of changes in public administration worldwide. Since the 1970s, there has been a great impetus to the search of improved public management through digital systems and networks enforcement. Later, in the 1980s, the government apparatus, along with the decentralization of administrative functions on large scale, was resized. By 1990, administrative practices were arisen and framed in a new management model called NPM (New Public Management) carried out by Anglo Saxon countries—England, New Zealand and Austria—and North America—the USA and Canada (Sánchez, 2004).

According to Sánchez (2004), Mexican public administration perceives a large process of reform and modernization. An intense improvement, simplification and decentralization of public administration were proved during the chairmanships of Luis Echeverría (1970-1976), Miguel de la Madrid Hurtado (1982-1988), Carlos Salinas de Gortari (1988-1994) and Ernesto Zedillo (1994-2000). Alongside President Vicente Fox's political regime change (2000-2006), strategies based on the model of government innovation[1] were put into effect (see Table 1).

1 The Oslo Manual (2005:56) defines innovation as "the introduction of a new or improved product, (good or service), a process, a new marketing method or a new organizational method in the internal practices of companies organizing workplace and external relations." Thus innovation in public management from e-government enforcement meets expectations outlined here as it has changed the way public services are delivered online.

TABLE 1. MEXICO.
INSTITUTIONAL CHANGE IN PUBLIC ADMINISTRATION.

18th Century	19th Century	20th Century	21st Century
• The Colony • Bourbon Reforms in the Colony	• Independence • Parliament public administration • 1833 1st Administrative Reform • 2nd Administrative Reform. The Ministry of Development is established in 1853 • The Reform's public administration • 1857 Juárez's 3rd Administrative Reform. • Dictatorial public administration	• Revolution • 4th stage of 1917 Reforms • Leadership public administration • Presidential rule public administration • 5th stage of Administrative Reform with changes before 1970 • Luis Echeverría's 6th Adminstrative Reform (1971-1976) • José López Portillo's 7th Administrative Reform (1977-1982) • Neoliberal public administration • Administrative Decentralization Program (19831988) • Administrative Simplification Program (19891994) • Modernization of Public Administration Program (1994-2000)	• Program against corruption and APF Openness (2001 2006) • Estrategic Innovation Model (20012006) • Good Public Management Agenda (2002 2006) • Openness and Access to Information Law and IFAI's creation (2002) • Law on the Civil Service System and the creation of the Ministry of Public Service (2003) • Special Management Improvement Program (2008)

Source: Sánchez, 2004.

The set of new reforms to the Mexican government, as seen in Table 1, is a guideline for municipal institutions to assent to changes in their structures and functions. Thereby, they produce an institutional transformation under the model of New Public Management (NPM).

One particular input is the NPM reengineering in public organizations, as change of the dynamics in their structures, processes and regulations, among others. Furthermore, strategies implemented through new public policies to increase levels of social development and society's inclusion are increasing their information and knowledge. All of this is accomplished through the

carrying out of public policies on innovation. It can be seen that revolutionary changes in public administration are created from the intensified use of the ICTs (Information and Communication Technologies).

With President Vicente Fox's[2] political change, the enforcement of e-government in Mexico begins a process of reform and modernization. This is founded on the grounds of the NPM, which supports the delivering of results to society and citizen involvement in internal government, also welcoming government innovation (Frick, cited in Riera-Ortiz *et al*., 2010).

Moreover, stresses that state and municipal government have been joining efforts to reform and modernize as well as e-government has made a strategy to bring online services to the population through Internet portals. Upon a dynamic of "successful individual interaction", they try to create web pages whereby trust is built among citizens and business sector (Thomas, 1998; Porte cited in Torres *et al*., 2004). These portals, which have been carried out as media, have evolved into more complex platforms directly involving the public (Rivera, 2006).

Additionally, the progressive enforcement of e-government locally and in different regions of the world is increasing the chances of public services and information delivering. It has cut down mobility and displacement as well. Administrative procedures are reduced and response quality is improved meanwhile time and effort are saved. And most importantly, citizen participation is encouraged.

The process of forming a link between public involvement and citizen-administration is moving forward the concept of public management. This concept is based on "a process of change through the establishment of new patterns of interaction between municipalities and their environment." Thus "a greater role to civil society actors within the political process and the services provision is granted" (Blair and Stoker, 1991; cited in Huete, 2010, p.30). Altogether, openness to citizens is provided by governments as a key player in decision-making.

Above all, changes resulting from decentralization – delegating responsibilities to local governments—has led the government to employ innovation practices

2 According to Hazán (2001), the Mexican political system has witnessed considerable changes. The first was observed from a hegemonic multiparty system in the early 1990s with different parties enrolled to the Partido Revolucionario Institucional (PRI) and its large percentage of votes at the polls. In 2000, however, the PRI lost the Presidential election and its presence in Congress was cut down. Thus a new phase in the Mexican political system began in which the Partido Acción Nacional (PAN) is in front of the chairmanship to resume the country's running.

within its governmental activities, enhancing their efficiency and effectiveness (Cabrero, 1998). Nevertheless, according to Tricas (2002), it is not only necessary for public administration to be placed in the path of public management innovation, but a further development into organizational changes—such as knowledge management, internal management, effective and efficient performance—to be fully absorbed into society's information and knowledge.

Hence in this paper we advocate the municipal government to account for the NPM and its requirements whereby modernization and carrying out of digital innovation strategies are framed. Particularly, we address the municipality of Culiacán in its recent administrative triennium 2014-2013 to bring focus on processes of administrative reform, enforcement of public policies and programs—which have been guiding and coordinating axis—, in addition to the insertion of information and communication technologies. We will account for these factors' significant contributions to municipal competitiveness.

1. MUNICIPAL COMPETITIVENESS

The study of urban systems' economic behavior in the last two decades has allowed a competitiveness model-based analysis of nations and cities (Sobrino, 2010). It has been their performance that has been the determining factor behind this competitiveness.

These analyses have placed considerable elements in the transformations of economic and social structures. Organizations are incorporated into new dynamics of production and interaction, in which information and communication technologies have been integrated. The latter endow us to re-conceptualize the relations between the parts of that dynamic.

According to Sassen (1991), cities like New York, London and Tokyo have joined the process of economic globalization through the convergence of services and technological innovations. Their economies have brought together a variety of specialized services and major financial centers.

Nonetheless, Latin America metropolis, according to Bors dorf (2003), Janoschka (2002, De Mattos (2002) [cited in Cuadrado-Roura and Fernandez (2005)], are trailing their own geographical and economic structure of the region: a macro cephalic urban system, strong segregation and social fragmentation, dependence on private cars, cooperative land [ejido] dichotomy, dual labor market, feedback from the informal economy, suburbanized industry as well as the dispersal of commercial, recreation and university centers.

Cities, such as Buenos Aires, Mexico City and Sao Paulo, have been enclosed in this merger process. This has faced new demands and policy-planning processes and led to higher levels of competitiveness.

As for the sub-national and local context, municipalities competitiveness[3] is forced upon the ability of local area to create employment, attract investment, create businesses and increase income from a permanent improvement of institutions, regulations and human and social capital. This is conceived taking into account that other territories try the same and dispute opportunities in local and external markets (Ibarra, Ceballos and Zomera, 2009).

In the early 1990s, Krugman (1994) conducted a review of the studies on nations' competitiveness whereby he noted that the term has been misused. The economic situation cannot be tackled from a "strive" between them, referring to market practices.

In the late 90s and early twenty-first century, new approaches have emerged from the study of competitiveness related to the agglomeration economy (Cuadrado- Roura and Fernandez, 2005). This approach retakes the theories of economic growth and elements which help to determine the degree of competitiveness of cities. According to Garza (2010: 513), the goal in quantifying the levels of competitiveness of cities is to face their increasing efficiency requirements and to be conveniently linked to the international economy.

Additionally, according to Garza (2010: 520), in the on paper approach of "urban political economy as a factor of production"[4], the determinants of competitiveness are displayed by two basic elements: a) economic, and b) strategic. The former denotes the production factors—labor, capital and urban fabric—, the geographical location of the city, its infrastructure, its economic structure and the amount of services offered. The latter, according to Kresl (1995: 51) [cited in Garza (2010)], the strategies are agreed upon the effectiveness of government actions, the effectiveness in urban planning, the link between the public and private sectors as well as the flexibility of institutions. The more the level of these two variables is raised; presumably a higher degree of competitiveness of the city is granted.

Conversely, Meer, Bruan and Berg (1999) have identified three factors by which a company's competitiveness is outlined: hardware, software and orgware. They underscore that cities build their decision-making on these competitiveness factors. The first category,

3 Among the studies of competitiveness in Mexico, we highlight Sobrino (2003, 2007); Cabrero, Orihuela and Zicardi (2007); Mexican Institute for Competitiveness A.C.; Aregional as well as the one by Universidad Autonoma de Sinaloa (Ibarra, 2008). Each of them offers different methodologies, framed models or approaches to meet the economic performance of Mexican cities.

4 According to Garza (2010: 519), economic growth is submitted to three production factors: urban fabric, labor and capital.

"hardware" is comprised of "hard" factors observed in clear-cut ways, such as infrastructure, capital, among others. In the case of "software", they refer to a qualitative and intangible aspect; i.e. structures and processes. As for the "orgware", they synthetize and articulate the enforcement of the mentioned factors, from the interaction of the public sector or, more appropriately, from the linking of the public and private sectors.

Moreover, referring to the competitiveness[5] of cities and their competitive advantages, the term "competitiveness", according to Cuadrado-Roura and Fernandez (2005:68), is understood as "the effort of cities to develop local productive capacities and improve the environment in which economic agents operate." Competitive advantages are explained as those "attributes which develop and build a city on their own to improve their economic and social position within its influential area and the urban system in which it works."

Various models and approaches in the study of competitiveness of cities and nations within a global context have been joined into former approaches. Considerable elements of each are as follows:

5 Sobrino (2010) states that for a city to be competitive, it must have the ability to attract investment as well as foreign and domestic capital, which result in "growth and prosperity for the cities."

TABLE 2. MAJOR MODELS AND APPROACHES OF COMPETIVENESS.

Approaches of Competitiveness	Concept Summary	Autor
Regional Capital Competitiveness Model	The city's capital is composed by middle tangible assets, fixed private capital, share of assets, relational and human capital, economies accumulation, connectivity and responsiveness, cooperation networks, relational and social services, and private training.	Roberto Camagni
Community-Based Competitiveness Model	The political capital is built by the government, businesses and civil society to convene civic entrepeneurship. This will have financial, physical, human, cultural and social capital to poverty ease, creation of jobs and community development.	James H. Johnson, Jr.

Three Ts Competitiveness Theory	Talent is associated with diversity index. The lower individuals' homogeneity over a wider area, higher the likelihood of innovation in the area. Talent, technology spending and tolerance are summarized as keys of competitiveness.	Richard Florida
Culture of Innovation Competitiveness Theory	Benefits of collaboration between cities: collaborative networks within industrial clusters. They share resources and enhance the others' abilities by mutual benefits for a common purpose.	Docherty, Gulliver and Drake
Cultural Credit Competitiveness Theory	The cultural aspect encourages innovative ideas and should not be seen as a cost factor to achieve non-economic goals.	Dziembowska and Funck
Theory of Competitiveness and the Dividend of Artistic Activities	Culture as a basis for the creation of a more competitive area.	Markusen and Schrock
Model of Hard and Soft Networks for Urban Competitiveness	Partnership model whereby a mode of collaborative and social operation is created, leading to a social and economic success.	Edwar J. Malecki

Sources: Rojo (2011); Camagni (2002); Johnson Jr. (2002); Florida (2002); Docherty, Gulliver and Drake (2004); Deziembowska and Funck (1998); Markusen and Schrock (2006); Malecki (2002).

In the above chart (Table 2), we highlight the proposals made by Malecky (2002) from a model of hard and soft networks. This model plans the dynamics of interaction and collaboration among sectors and society, which enables growth. This approach is linked to what is proposed by Meer, Bruan and Berg (1999) about the orgware factor in the metropolitan and local context.

Therefore, in the present analysis orgware competitive factors and the concepts of "soft" and "hard" networks are taken up from a metropolitan and local context (Malecki, 2002). It allows us to authorize decisive evidence on the degree of competitiveness of cities, specifically the municipality of Culiacan, Sinaloa. For this purpose, the exercise will be performed from the observation of empirical evidence. Regarding this ev-

idence, we will include e-government in the municipalities' public administration management from the citizen-public interaction and set in a collaborative model of mechanisms for planning, coordination and management.

We should note that the inclusion of information and communication technologies in an e-government strategy is essential to streamline the delivery of public services and to enable the internal and external connectivity demanded by social and business sectors. Furthermore, it contributes to the link between public organizations, citizens and businesses. It provides a greater transparency and accountability, efficiency and effectiveness in public administration in order to set policies for the socioeconomic development, to attract foreign investment and visitors; thus enabling the city to compete successfully in globalization.

2. NEW PUBLIC MANAGEMENT AS A CHANGE FACTOR IN MUNICIPAL ADMINISTRATIONS

In the last three decades of the 20th and early 21st century, the organizations and institutions have noticed deep transformations which have come from economic, political and social changes, such as economic crisis, social demands, etc. All of these are marked by an increasing process of globalization. Thus governments have made reforms during their administrative periods as of models of public management to produce changes in the organizations by modernizing the public management. It all began as a proposal to fight legitimacy crisis (Cabrero, 2011).

In Mexico, the model of New Public Management (NPM) was first encompassed during the 90's. Firstly, strategies and federal public policies according to the assumptions of effectiveness, decentralization, hiring and performance evaluation were applied (Aguilar Villanueva, 2011) in order to, consequently, establish a greater impulse in cities' administrations.

Currently, the NPM seeks a greater approach in management strategies and reforms (Gil-García y Martínez, 2011) with the citizen as, in fact, "the center of the NPM" (Aguilar Villanueva, 2011). As a result, those strategies have been delimited by incorporating the ICTs, precisely, to achieve a better correlation and government-citizen interaction, improving services provision as well.

These adaptations and new schemes presented in public administrations, according to Albuquerque (1994, cited by Finquelievich, 2004), have to overflow "the traditional role of the basic service supplier." Also, they complement the agreement of "innovation in territorial surroundings".

It is important to emphasize the main characteristics of the NPM, retaking the *Westminster* model that

was proposed by S. Boris (Aguilar Villanueva, 2011, p. 170). It retakes one of the key components of city competitiveness which is the inclusion of ICTs in Public Municipal Administration (PMA). ICTs have their origins in electronic government:

a) Quality service to the citizen user-client;
b) Operative Autonomy;
c) Measurement of products and outcomes;
d) Human resources management;
e) Information and Communication Technologies, and
f) Privatization.

Specifically, two dimensions have been established as of the incorporation of e-government. Araya and others (2004, p.23) refer it as the screen metaphor—that is, that in front of the screen, citizens and services users are found and behind the screen, the processes that enable the offer of a "public service by digital means". By doing so, the processes are simplified, costs are reduced and the information is more efficient; which finally leads to a minor presence of bureaucracy" (Frick, 2003).

However, the incorporation of this new model of management into the public sector, as of e-government and a process of NPM, is aspired to incorporate the government-citizen nodal component. According to Leitner (2003, cited in Torres *et al.* 2004), through this model a process of linking between public sector and society is created (G2C, C2G, G2E, E2G, R2C, C2R y G2G) , by exposing in the public scenario new practices in which these actors are interrelated.

Additionally, according to Arellano y Cabrero (2005, p.603) and following Ostrom (1973), one of the arguments of the NPM is that the participation of the citizens will be achieved once the design of public policy is made. In this participation, "public managers will first design the program by means a measure of results and eventually the citizens— seen as clients—can define the ones that are better for them and to participate in the evolution of the public program".

In spite of the e-government's promises and expectations, the main objective is that the citizen satisfies the provision of public services and takes action in the solution of common problems. By participating in the decision-making, they contribute to the improvement of governmental transparency, democracy and, with it, to the achievement of local public management.

3. E-GOVERNMENT AS THE CONTRIBUTION IN THE ADVANTAGE FOR A MUNICIPAL COMPETITIVENESS

Culiacán is demographically, politically and economically the most important municipality from the 18 that make up the State of Sinaloa, Mexico. It is the main city of the state and it carries the name of Culiacán de Rosales. It also represents 10.87 % of the state's total surface and it is located on the central part of Culiacán's syndicate.

Culiacán has 858,638 inhabitants (INEGI, 2010), representing approximately 31% of Sinaloa's total population. Its economic support lies in agro-industry, with a GDP income per capita of 11,200 USD, similar to the national average (Ibarra, 2011). In spite of having indicators of internet infiltration higher to the national (only 26.3% of total homes in 2010), it has a really marked digital breach. According to Ruelas (2012), by 2010 scarcely 41.3% of the households in the city owned a computer and, from that number, only a 32.7% had its own internet connection. This indicates a high digital exclusion.

In the municipal government's three-year-period of 2005-2007, a reform in public administration was started, defined in NPM, by incorporating the ICTs to modify the government-citizen linking and the offer of public services through e-government.

By 2008 (see figure 1), the central strategy of "Digital City-Innovative Municipality" emerged as one of the basic premises of the Municipal Plan of Development (2008-2010), as well as the public policy "Digital Community" with the objective of innovating the municipality through ICTs. Within the public policy of Digital Community, e-government was incorporated as one of the fundamental pillars (see figure 2).

"Digital City-Innovative Municipality" was one of the initiatives that the Mayor Jesús Vizcarra Calderón (2008-2010) successfully inserted into the public agenda with widespread administrative dynamism. The Mayor, during public meetings with the main social actors and local entrepreneurs, suggested it only a few months after he was elected pillar of the administration. Nonetheless, connectivity problems will soon put an end to its most popular program, "Digital Culiacán" (Ramírez, 2010), leaving a sequel of mockery among the population and the media. However, some public services—such as payment of council taxes and water services—was and still continues to be efficient.

The fact we appreciate is that the favorable Mayor's political positioning promoted a suitable decision-making to make local e-government a reality. Therefore, it is highly important to emphasize the role that the ruler played in order to incorporate the topic of a digital government in the public agenda, by dealing with political game and against speech structure.

Indeed, in relation to the public policy of Digital Community and one of the main programs that makes it up as e-government—free and responsible internet, digital backpacks, etc.—was handled reiteratively in the media. It emphasized the objective of making Culiacán "a city in process of transformation".

Additionally, in the following period of 2011-2013, a continuity to the digitalization strategies was intended. This was a consequence of the non-relevant results that had contributed to the improvement of public services management and the achievement to an improved linking with the citizens.

Nowadays, Culiacán's municipal administration website does not show any modifications in relation to the ones observed during the administrative period 2008-2010. Neither new applications nor the modification or improvement of pre-existing applications are contemplated. Public services online are limited to water services. In 2010, it was possible to pay council taxes as well, however this service has been suspended indefinitely. The leader-citizen interaction online has been reduced to only suggestions or complaints through mail-box, without giving the interested party the chance to receive a proposal through the same channel. Besides, the website presentation lacks dynamism and the links are redundant, both making the website unfriendly to users.

Municipality of Culiacán

Figure 1. Geographic Location of Culiacan's Municipality, Mexico. Source: INEGI, 2013.

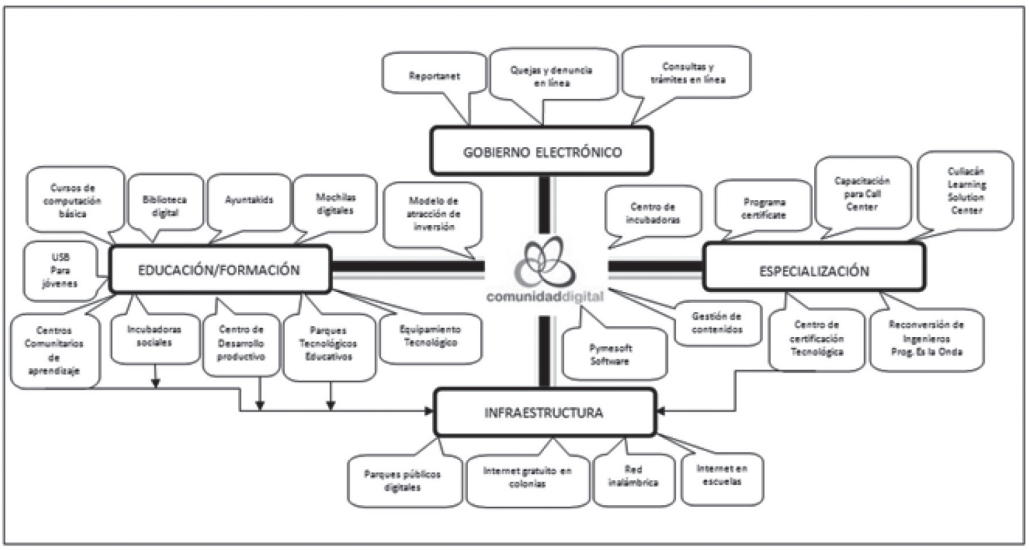

Figure 2. "Digital Community" Programs, Culiacán, Mexico, 2008.
Source: Public administration of Culiacan's municipality, Sinaloa, Mexico (2008).

4. COMPETITIVE MUNICIPALITIES

An analysis that retakes all the different perspectives that contribute to explanatory elements will lead this study. We build two indicators to help explain Culiacan's competitive advantages, facing municipalities of the Mexican Republic which were considered with "high competitiveness" in 2011 (Cabrero, 2012). It is important to emphasize that Culiacán forms part of the group of studied municipalities.

Considering e-government as key factor, we retake the model based on efficient nets of interconnection within strategies of governmental innovation to enable competitive advantages. This model considers "soft and hard nets" as key factors to competitiveness, as proposed by Malecki (2002), as well as orgware factors (Meer, Bruan and Berg, 1999), from a metropolitan and local context. We want to warn that hard nets will be those which provide technological capacity and internet connection, and the ones that enable and quicken the encouragement of the government-citizen interaction.

5. METHOD

Step 1 – As initial step, we build the first indicator called "Functional E-Government Index" (FEGI). We retake elements that make up e-government, according to a managerial perspective [Gil-García y Martínez, (2006) cited in Sandoval and Gil-García, 2011], and the microscopy of a specific group of cities (Sobrino, 2010).

FEGI index was built from the proposal of the studies made by Luna, Duarte, Gil-García, Luna-Reyes y Sandoval-Almazán (2009, 2012). We regard also four components or e-government stages: Information, Interaction, Transaction, Integration and Participation; as well as their orientation in relation to the measurement of the same.

Nonetheless, for our explanatory analysis, only "Interaction and Transaction" Components will be retaken as we consider that they foster, in a greater scale, the government-citizen linking (see figure 3 and Table 3). That is, in the reconfiguration of scenarios; events of offer of public services, communication, information, transparency, and clarity in the services will take place.

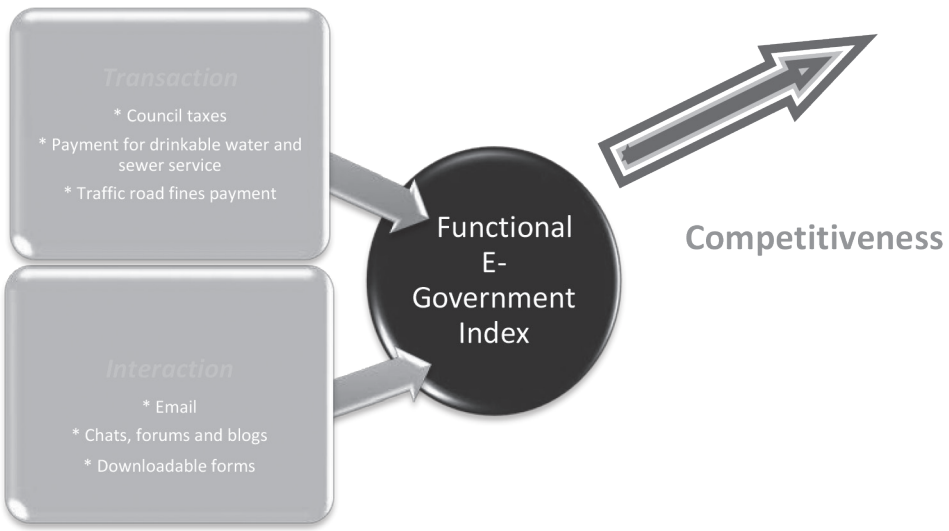

Figure 3. Functional E-Government Index.
Source: Own creation.

Additionally, so that the calculation of the Transaction and Interaction Components could be made, 25 Mexican cities were considered, all of them valued with

"high competitiveness" according to the 2011 Mexican Cities Competitiveness Index carried out by the Center of Research and Economical Teaching (Cabrero, 2012). The municipality of Culiacán was taken into account as part of this group of cities (see Table 4).

In order to do the calculation, an analysis of the 25 different councils' websites was carried out. From the observation and interaction *in situ,*[6] it enabled us to establish whether there was the presence or not of e-government efficiency. In terms of the Transaction Component, we took into account for the study, the presence and functioning of the application for council tax payment, drinkable water and sewer services' payment and traffic road fines payments online. As for the Interaction Component, it was established by the presence and functioning of email, chats, forums and blogs—same that can serve as interaction media for the citizen with the public server—as well as downloadable formats (see Table 3).

TABLE 3. COMPONENTS OF THE FUNCTIONAL E-GOVERNMENT INDEX.

Transaction	Interaction	FEGI
CTRAN: (Number of evaluated Transactions aspects that can be made in the city administration website / Total number of Transaction evaluated aspects) * 100 Yes = 1 No = 0 Example: CTRAN= (2/3) * 100 = 66.66	*CINT:* (Number of Transactions evaluated aspects that can be made in the city administration website / Total number of Interaction evaluated aspects) * 100 Yes = 1 No = 0 Example: CINT= (1/4)* 100 = 25	*PT*= (CTRAN + CINT) /2 Example: PT= (66.66+25) / 2 PT= 45.83

Source: Ramírez and Ruelas, 2014; based on the measurement made by Luna, Duarte, Gil-García, Luna-Reyes and Sandoval-Almazán (2009, 2012).

6 It was built on the basis of the observations to each of these websites of 25 municipalities' councils for about a span of 25 minutes. We collected the data on the operation thereof. Note that these tests were conducted in October 2014.

TABLE 4. MAIN CITIES WITH "HIGH COMPETITIVENESS", ICCM-CIDE, 2011.

NO.	CITY	WEB SITE
1	MEXICO CITY	http://www.df.gob.mx/
2	HERMOSILLO	http://www.hermosillo.gob.mx/
3	SALTILLO	http://www.saltillo.gob.mx/
4	QUERÉTARO	http://www2.municipiodequeretaro.gob.mx/
5	CHIHUAHUA	http://www.municipiochihuahua.gob.mx/
6	SAN LUIS POTOSÍ	http://www.sanluis.gob.mx/
7	MONTERREY	http://portal.monterrey.gob.mx/
8	AGUASCALIENTES	http://www.ags.gob.mx/
9	GUADALAJARA	http://portal.guadalajara.gob.mx/
10	MONCLOVA	http://monclova.gob.mx/mva01/
11	TIJUANA	http://www.tijuana.gob.mx/
12	JUÁREZ	http://juarez.gob.mx/jrz/
13	MEXICALI	http://www.mexicali.gob.mx/ayuntamiento/
14	TORREON- LA LAGUNA	http://www.torreon.gob.mx/
15	DURANGO	http://www.municipiodurango.gob.mx/
16	CUERNAVACA	http://www.cuernavaca.gob.mx/
17	CULIACÁN	http://culiacan.gob.mx/
18	NUEVO LAREDO	http://www.nuevolaredo.gob.mx/
19	PUEBLA	http://www.pueblacapital.gob.mx/
20	CANCÚN	http://cancun.gob.mx/
21	LOS CABOS	http://www.loscabos.gob.mx/#
22	LA PAZ	http://www.lapaz.gob.mx/
23	PIEDRAS NEGAS	http://www.piedrasnegras.gob.mx/
24	LEÓN- SILAO	http://www.leon.gob.mx/leon/
25	MORELIA	http://www.morelia.gob.mx/

Source: ICCM-CIDE, 2011 (Cabrero, 2012).

Step 3- Subsequently, with the obtained results from the IINTER of 25 cities, a comparison was made by retaking *benchmarking* perspective (Kresl, 2010). This perspective allows a comparison of indicators for different cities and, hence, the structure of a new hierarchy of competitiveness within them. It is noteworthy that hierarchy was made from the highest to the lowest indexes and granting them a value of 100.0.

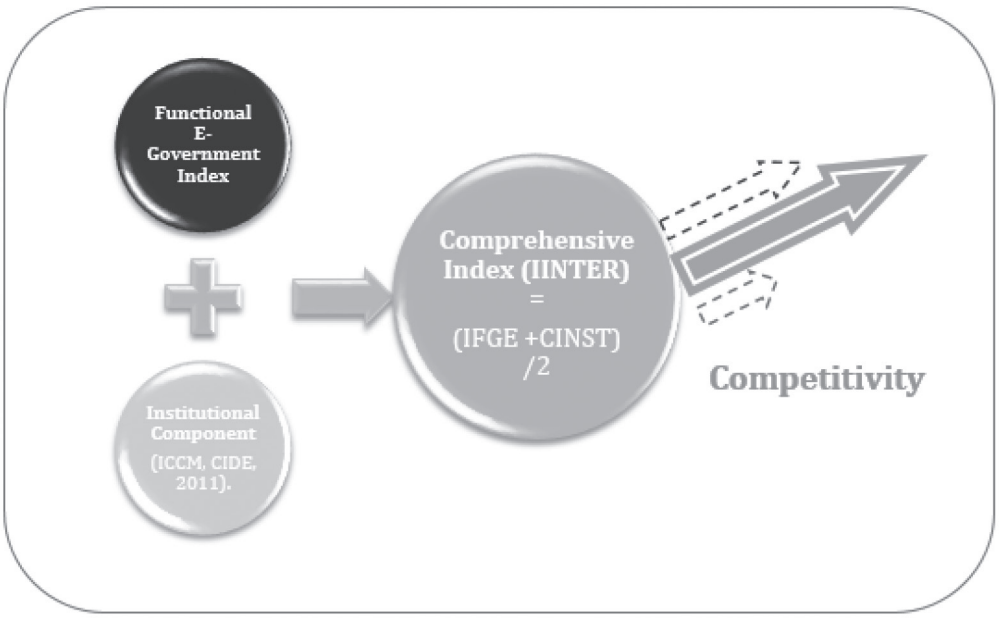

Figure 4. Comprehensive Index.
Source: Ramírez and Ruelas, 2014.

6. DATA ANALYSIS

According to figures described by the 2011 Mexican Cities Competitiveness Index (ICCM-CIDE [7] in Spanish), the city of Culiacán is ranked 17th in the top 25 cities with "strong competition" as of the hierarchy results from a total of 74 metropolitan areas of Mexico for 2011. It demonstrates the presence of important strengths for competitiveness.

Furthermore, it locates Mexico City in first place, followed by Hermosillo, Saltillo, Querétaro, and so on. It is noteworthy that Culiacán is located far from Hermosillo, which is a neighboring city located in the northwest of the country and with similar population size as well.

Regarding Functional E-Government Index (FEGI) (see Table 5), México City, Puebla, the metropolitan zone León-Silao and Morelia are in the first places with an index of 100.0. They convene and demonstrate the government-citizenship interaction timely from email applications, chats, forums or blogs to downloadable forms.[8]

Likewise, these three cities' websites are available to citizens and users and allows to make payments

7 According to Cabrero (2012) the ICCM has four components: economic, institutional, socio-demographic and urban-environmental.

8 In the websites of these cities' councils, interaction occur through social networks (Facebook, Twitter, Instagram), videos (YouTube), podcasts and blogs.

online—property tax payments, the drinking water and sanitation, traffic taxes and other council taxes— without having to go to the municipal offices in person. It is observed as well that these municipalities have achieved a government-society interaction and usage of the major applications in their websites. This thereby achieves paperwork and transactions to expedite in the city's public administration.

Continuing with the EGDI and the three urban areas formerly mentioned, Hermosillo, Tijuana and Cuernavaca are ranked fifth to seventh. They share the same index of 87.50 as for they offer most of the service applications up to this index. These results demonstrate these cities are undergoing a transition to e-government. We can see it from administrative reform processes and their critical factors leading to a successful carrying out of projects upon ICTs (Naser and Concha, 2011).[9]

Subsequently, ranked 8th to 16th we have the group made up by nine urban areas with an index of 75.00: Querétaro, Chihuahua, Monterrey, Guadalajara, Juárez, Mexicali, Culiacán, Cancún and La Paz; followed by Aguascalientes ranked 17th with an index of 70.83. It should be highlighted that there is a lack of interaction and online applications for streamlined transactions as well as the lack of citizen integration and participation in the city bureaucracy.

With respect to the 18th and 19th positions, the city of San Luis Potosí and the metropolitan area of La Laguna, including Torreón, lies an index of 62.50. Next ranked 20th to 22nd, we have Durango, Los Cabos and Piedras Negras respectively with an index of 58.33. And then with an index below 50.00, there are the cities of Nuevo Laredo (45.83), Saltillo (41.67) and Monclova, located in the 25th position of this group of cities.

With reference to the above, there is evidence of a scarce dynamic in these cities' websites, which reveals a poor functionality of their e-government. Similarly, distant administrative online services are observed, far from a project with strategies and processes leading to an effective and efficient management.

Additionally, the above evidence exposes the Interaction Component in the case of the cities ranked 18th to 25th. It is accomplished as a media and linker element. Interaction element encourages the govern-

9 Critical factors of IT projects: the policy and strategic context, processes, technology and implementation.

ment-citizen interaction, in which the citizen becomes an "active" actor rather than just a service recipient. In the meantime, the Transaction Component offers a system with security policies for property taxes payments. Despite this, payments forms for other online public services or municipal taxes, whether rights or contributions are not presented.

It is important that these 25 cities have been regarded with high competitiveness according to 2011 ICCM-CIDE. Nevertheless, to get hard data we developed the Comprehensive Index [10] (hereinafter IINTER), so to have a greater representation of e-government functionality and those factors related to councils' institutional aspects.

Regarding IINTER hierarchy (see Table 6), the city of Morelia is ranked first with an index of 96.50. Morelia is a city whose APM establishes it as modern as it implements NPM strategies and promotes changes in its structures and processes. Thus, in the medium term, the city will strengthen institutions and bring important competitive advantages. It is noteworthy that in 2011 ICCM-CIDE this city ranked 25th within its city group. Yet the taken-up e-government and institutional components (ICCM-CIDE, 2011) both have contributed to competitive advantages criteria.

Regarding our main interest, Culiacán is ranked fifth with an index of 87.50. Upon NPM parameters. It is striking that in the city had an average rate of 75.00 in EDGI, however. It found favor in the first position with an Institutional Component index of 100.0 in 2011 ICCM-CIDE. The arithmetic reached a high level in positioning local competitiveness.

It is important to mention that within its "Transaction" Component in EDGI, the application for traffic fines has not been considered by the local government to be paid on the website. The payment of council taxes, unlike other municipalities, has been integrated into charging complex strategies. It facilitates an effective proceeding to citizens without cost and in little time.

Nevertheless, according to its EDGI Interaction Component, this municipality is enabling and functional. This advises a permanent citizen-public organization link which allows direct communication to meet social issues concerns and administrative operations.

10 Like FEGI, it was got from the highest hierarchy (100.00) to the lowest with respect to cities' positions.

It is also noted that according to IINTER, cities like Monterrey and Guadalajara are situated below the city of Culiacán despite being cities with better performance and economic growth as well as greater competitiveness, according to 2011 IMMC-CIDE, and higher EDGI. It has a smaller index in the 2011 IMMC-CIDE Institutional Component subscript.

TABLE 5. FUNCTIONAL E-GOVERNMENT INDEX AND COMPREHENSIVE INDEX.

No.	MUNICIPALITY	FEGI	INSTITUTIONAL COMPONENT	COMPREHENSIVE INDEX
1	MEXICO CITY	100.00	71	85.50
2	PUEBLA	100.00	81	90.50
3	LEÓN- SILAO	100.00	82	91.00
4	MORELIA	100.00	93	96.50
5	HERMOSILLO	87.50	89	88.25
6	TIJUANA	87.50	81	84.25
7	CUERNAVACA	87.50	81	84.25
8	QUERÉTARO	75.00	94	84.50
9	CHIHUAHUA	75.00	85	80.00
10	MONTERREY	75.00	69	72.00
11	GUADALAJARA	75.00	84	79.50
12	JUÁREZ	75.00	82	78.50
13	MEXICALI	75.00	73	74.00
14	CULIACÁN	75.00	100	87.50
15	CANCÚN	75.00	91	83.00
16	LA PAZ	75.00	88	81.50
17	AGUASCALIENTES	70.83	88	79.42
18	SAN LUIS POTOSÍ	62.50	85	73.75
19	TORREON- LA LAGUNA	62.50	79	70.75
20	DURANGO	58.33	96	77.17
21	LOS CABOS	58.33	82	70.17
22	PIEDRAS NEGAS	58.33	74	66.17
23	NUEVO LAREDO	45.83	90	67.92
24	SALTILLO	41.67	91	66.33
25	MONCLOVA	33.33	65	49.17

Source: Ramírez and Ruelas, 2014.

TABLE 6. COMPREHENSIVE INDEX FOR CITY'S COMPETITIVENESS.

MUNICIPALITY	COMPREHENSIVE INDEX	RANK
MORELIA	96.50	1
LEÓN- SILAO	91.00	2
PUEBLA	90.50	3
HERMOSILLO	88.25	4
CULIACÁN	87.50	5
MEXICO CITY	85.50	6
QUERÉTARO	84.50	7
CUERNAVACA	84.25	8
TIJUANA	84.25	9
CANCÚN	83.00	10
LA PAZ	81.50	11
CHIHUAHUA	80.00	12
GUADALAJARA	79.50	13
AGUASCALIENTES	79.42	14
JUÁREZ	78.50	15
DURANGO	77.17	16
MEXICALI	74.00	17
SAN LUIS POTOSÍ	73.75	18
MONTERREY	72.00	19
TORREON- LA LAGUNA	70.75	20
LOS CABOS	70.17	21
NUEVO LAREDO	67.92	22
SALTILLO	66.33	23
PIEDRAS NEGAS	66.17	24
MONCLOVA	49.17	25

Source: Ramírez and Ruelas, 2014.

7. CONCLUSION

In the last three decades of the 20th century institutions and organizations have noticed deep transformations that come from economic, political and social changes such as economic crisis, social demands, etc. In addition, globalization has delimited these changes from the concentration of power and from the performance of global institutions. Nevertheless, to face this, organizations have been making reforms during their

administrative periods, as well as in their model of public management.

Organizational transformations have emerged from the introduction of processes of decision making and they seek to strengthen, guarantee the well-being and obtain a social legitimacy. Also, modernization within the relational theme schemes as well as in the processes of the public administrations in Mexico, essential changes in these structures that lead to a greater institutional transformation haven't been presented yet.

However, one should be warned that not only is it necessary that municipal administrations are situated in the way of modernization, but also that they take place in organizational changes, internal management, efficient performance and the establishment of linking mechanisms State-Society.

Regarding Culiacan's municipality, in spite of its integration in those dynamics instructed by the NPM, there hasn't been any emerging key factor that provides strongholds that puts it with competitive advantages, despite the results shown in the presented indicators, in which elements of an electronic government are warned, and whose exchange of looks are still far from each other.

Culiacan has experimented a lack of continuity in the strategies of Municipal Plans for Development, either for a scarcity of financial resources or due to the lack of interest from the public officers, who are replaced each three-year-period, characteristic of a public server for the prevailing politicization.

In the same direction, under a policy of state, city government is required to introduce changes that will lead to compensate the requests of the civil society, where the participation of the citizenship is a key factor to generate the building of a new constitutional model to govern. This change, influenced by the usage of ICTs, propones a new process that integrates more ways of intervention, where the public sector is opened to dialogue, to citizen participation and with it to democratization.

This involves the professionalization of the people in charge of creating new public policies, which implies that the ones which direct the renovation processes of the strategies for the Municipal Competitiveness Development, are not fixed to the ups and downs caused by the three-year-period that only obstruct the continuity of new strategic projects such as design, implementing, monitoring and evaluation of the electronic government.

It is of extreme importance to bear in mind that the new public policies based, most importantly, on the unfolding of information and communication technologies on a municipal level, require not only of the continuity of strategies for development, but also of huge inversions in infrastructure and net equipment, software and hardware, that the vast majority of the Mexican councils lack.

REFERENCES

Aguilar Villanueva, L. F. (2011). *Gobernanza y gestión pública*. México D.F.: Fondo de Cultura Económica.

Beerman, M. (2011 [1982]). Todo lo sólido se desvanece en el aire. La experiencia de la modernidad. Mexico D.F.: Siglo XXI.

Cabrero, E. (1998). Las políticas descentralizadoras en México. México D.F.:Miguel Ángel Porrúa.

_____ (2011). Cambio en la administración pública. In Cejudo, G. M. (Comp.), Nueva gestión pública. Siglo veintiuno editores, Biblioteca Básica de la Administración Pública, Mexico.

_____ (Ed.) (2012). Retos de la competitividad urbana en México. Centro de Investigación y Docencia Económicas, A.C. Mexico. (In press).

Finquelievich, S. (2004). Indicadores de desarrollo local en la Sociedad de la Información: El eje del conocimiento. VI Taller Iberoamericano e Interamericano de Indicadores de Ciencia y Tecnología. Buenos Aires Argentina, September 15th-17th.

Garza. G. (2010). Competitividad de las metrópolis mexicanas en el ámbito nacional, latinaomericano y mundial. Estudios Demográficos y Urbanos, Vol. 25, No.3, pp. 513-588.

Gil-García J. R. y M. G. Martínez Tiburcio (2011). Tecnologías de información y comunicación en las administraciones públicas municipales de México. En Cabrero E. y D. Arellano (Coord.), Los gobiernos municipales a debate. Un análisis de la institución municipal a través de la Encuesta INEGI 2009. Centro de Investigación y Docencia Económicas, A.C., Mexico. Pp. 433-503.

Gómez- Castro, S. (2007). Decolonizar la universidad. La hybris del punto cero y el diálogo de saberes. En Santiago Castro-Gómez y Ramón Grosfoguel (Eds.) El giro decolonial. Reflexiones para una diversidad epistémica más allá del capitalismo global. Bogotá, Siglo del Hombre Editores, Universidad Central y Pontificia Universidad Javeriana.

Hazán, M. (2001). The Structure of Mexican Elites: an Enduring Puzzle. International Review of Sociology, Vol. 11, No. 2, pp. 217 - 229.

Huete García, M. A. (2010). Nueva Gobernanza y servicios municipales. Buenos Aires: Miño y Davila Editores.

Ibarra, Escobar G., Ceballos T., y D. Z. Partida (2009). Capacidades competitivas del sistema urbano de México. Juan Pablos Editor, Universidad Autónoma de

Sinaloa e Instituto Sinaloense de Cultura.

Instituto Nacional de Estadística y Geografía (2010). Estadísticas. Available in: http://www.inegi.org.mx/Sistemas/temasV2/Default.aspx?s=est&c=19007, consulted 9 May 2012. 09

_____ (2013). Cartografía. Available in: http://gaia.inegi.org.mx/mdm5/viewer.html, consulted 26 August 2013.

Kresl, P. (2010). Competitividad urbana una revisión de la teoría y práctica. En Sobrino, J. (Coord.), Competitividad urbana. Una perspectiva global y para México. El Colegio de México, A. C., Mexico. Pp. 39-50.

Manual de OSLO. Guía para la recogida e interpretación de datos sobre innovación (2005). Co-edition OCE, EUROSTAT. 3rd ed. Available in:

http://www.conacyt.gob.sv/Indicadores%20Sector%20Academcio/Manual_de_Oslo%2005.pdf, consulted June 5 2011.

Meer, J. , Braun, M. y L. Berg (1999). Competitividad y cohesión metropolitanasLa exigencia de capacidad de organización y redes estratégicas. Revista Papeles de economía española, No. 80. pp. 248-265.

Naser, A. y G. Concha (2011). El gobierno electrónico en la gestión pública. Santiago: Instituto Latinoamericano y del Caribe de Planificación Económica y Social (ILPES).

Luna, D. E., Duarte A., Gil-García, J. R., Luna-Reyez, L. F. y R. Sandoval-Almazán (2012). Índice de Gobierno Electrónico Estatal: Comparativo de las mediciones 2011 y 2012. Documentos de trabajo de la División de Administración Pública, Centro de Investigación y Docencia Económicas, A.C., Mexico.

Ramírez Gómez, A. E. (2010). Políticas públicas que incentivan el uso de Internet. El caso de Culiacán, Sinaloa. MD thesis in Management and Public Policy. Universidad de Occidente.

Rivera-Ortiz, A., y A. Paéz Moreno (2010). Innovación, burocracia y gobierno electrónico en la administración pública. Social Studies School UNLZ, Vol. VII, No. 12, pp.25-42.

Rivera Urrutia, E. (2006). Concepto y problemas de la construcción del gobierno electrónico. Revista y Política Pública, Vol. XV, No. 2, pp. 259-305.

Rojo Castañeda, A. (2010). Capacidades competitivas regionales de Sinaloa: el caso de Culiacán. BA thesis in International Studies. International Studies and Public Policy School, Universidad Autónoma de Sinaloa.

Ruelas, A. L. (2012). Internet y los accesos públicos. Cibercafés en Sinaloa. UAS/Juan Pablos Ed., Mexico.

Sandoval- Almazán, R., Luna-Reyes, Luna-Reyes, L. F., y J. R. Gil-García (2010). Índice de Gobierno Estatal: la medición 2009. Work files from División de Administración Pública, Centro de Investigación y Docencia Económicas, A.C., Mexico.

Sassen, S. (1991). The global city. New York, London, Tokyo. New Jersey: University Press.

Tricas Lamana, F. (2002). E-servicios, un reto para las administraciones públicas: la transformación de procesos. VII Congreso Internacional del CLAD sobre la Reforma del Estado y la Administración Pública. Lisboa, Portugal, 8-11 Octubre.

Sánchez González, J.S. (2004). Reforma, modernización e innovación en la historia de la administración pública en México. México D.F.: Porrúa, Instituto de Administración Pública de Quintana Roo.

Sobrino, J. (2010). Competitividad urbana. Una perspectiva global y para México. México D.F.: El Colegio de México, A.C.