

E government: Dimensions attended in local governments in Latin America case of Mexico

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Abstract

The digital government collaborates several years ago with the fulfilment of the Sustainable Development Goals, and this has been premeditated in federal, regional and local governments. Which, through methodologies, strategic planning, information and communication technologies, innovation and human capital, have joined the initiatives suggested by international organizations such as the union nations, Organization for Economic Co-operation and Development, etcetera, with the goal of ensuring their incorporation. However, its complexity means that governments, especially local, face problems of understanding, analysis, interpretation and application of these suggestions, since they must consider all the aspects that electronic government implies, such as the dimensions and actors. Derived to the above, this article shows field studies to show progress in the attention of these dimensions and actors, as well as propose administrative strategies to increase their progressive attention, supported of scientific methodologies and technologies and documentary research that will guide the investigation.

Keywords: Egovernment, dimensions, actors, administrative strategies, local governments.

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1. INTRODUCTION

Digital Government Context

1.1 E – Government concept

The e-government. It refers to the use of information and communications technology by the public sector with the aim of improving the provision of information and public service provided. In this sense, it is encouraging citizen participation in the decision-making process, making the government more accountable, transparent and efficient.^[1] On the other hand, the digital government is closely linked to collaborate with the fulfilment of the 17 objectives of Sustainable Development, which makes its design, development, implementation and monitoring complex.^[2] Moreover, it is important to identify the stages for the cross of the governments, in the scanning process and implementation of information technologies and communication, through different areas suggested by the digital government, such as:

- Phases
- Dimensions
- Actors
- Indicators

1.2 Phases of the e - government

These stages are the non-hierarchical, that is, it is not necessary that one end to another begins, if they evolution, in the measure that increases the complexity of systems, where it is associated with technological developments and (ICT) tools are incorporated for governance, where the whole society are benefited.^[3] The levels are: 1. Emergent or basic, Interaction, 3. Transaction, 4. Connected or processing, Stage 5. Integrated

Process. While the United Nations (2018), classifies the stages into 1. Emergent, 2. Enhanced, 3. Transactional and 4. Connected. It presented below in the Illustration 1, each of the stages and a brief description of each one.

To identify the stage, briefly describes each.

- Stage one Emerging information services. Government websites provide information on public policy, governance, laws, regulations, relevant documentation, and types of government services provided.
- Stage two Enhanced information services. Government websites deliver enhanced one-way or simple two-way e-communication between government and citizen, such as downloadable forms for government services and applications.
- Stage three Transactional services. Government websites engage in two-way communication with their citizens, including requesting and receiving inputs on government policies, programmes, regulations, etc. Some form of electronic authentication of the citizen's identity is required to successfully complete the exchange.
- Stage four. Connected services. Government websites have changed the way governments communicate with their citizens. They are proactive in requesting information and opinions from the citizens using Web 2.0 and other interactive tools.

1.3 E government Dimension

El e-government can be support integrated service delivery in the economic, social, and environmental

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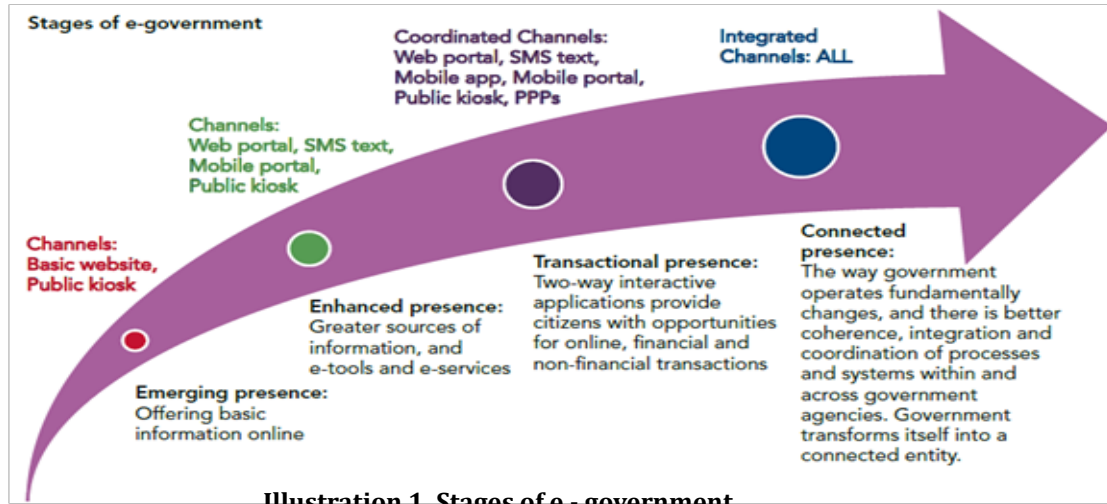


Illustration 1. Stages of e - government

Source: United Nations e-government Survey 2018, (United Nations, 2018)^[2]

dimensions of sustainable development^[21]:

- Social dimension. It refers to the management, creation, processes to improve access to information and innovation, which leads to better decision making about: Employment, Health and Social welfare
- Economic dimension. Its objective is to generate information for decision-making regarding the creation of enterprises and employment, as well as the satisfactory implementation of ICT for the attention and monitoring of companies.
- Environmental dimension. Its purpose is through the Information and Communication Technologies, generate information, solve, and avoid problems over natural resources, avoid over exploitation, environmental resource systems, and depletion of non-renewable resources.

These dimensions go hand in hand with the actors, evolution, and dimensions of e-government, since more degree of evolution, better technology, infrastructure and generation of knowledge, which in turn improves the communication and interrelation between the actors, thus supporting the dimensions, to finally measure the performance of these through the e-government indicators.

1.4 Actors of the e - government

The activities and relationships that are generated in the implementation and operation of e - government are directed to four main actors such as citizens, companies, employees, and the government itself. Each of these actors have their own interaction with e - government in which information and knowledge are generated through strategies and processes.^[4] This knowledge generated, serve to develop trends, projections and decision making about the needs and requirements of those actors. Whose normative foundation is reflected in local, regional and national regulations (see Illustration 2)

Below is the definition of each of the actors and their interaction with e-government:

- Government to citizen (G2C). They are the institutional e-government portals that provide information to the public about administrative services, provide basic information on procedures through ICT from anywhere with an Internet connection 24 hour a day. The fact of offering 7x24 services allows reducing deadlines, simplifying procedures and reducing geographic and time barriers for institutions and citizens.

- Government to enterprises (G2B). They are the portals in charge of providing administrative and information services to the business sector. The benefits are similar to those obtained by citizens (flexibility, saving time and money).
- Government to employee (G2E). They are the portals in charge of satisfying information needs and services for public administration employees.
- Government to government (G2G). Responds to government management by providing different services: planning, inventories, acquisitions, among others.

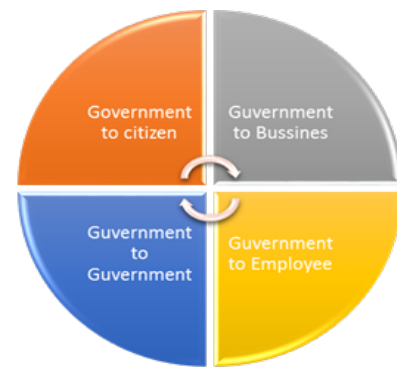


Illustration 2. Actors of the e-Government

Source: General Analysis of Electronic Government in Mexico, Pérez, Camacho, Mena, & Arroyo (2016)

Each of these actors generates information and the knowledge for the e-government, which is used to make investment decisions, focus on vulnerabilities, provide public services, and identify needs and other aspects in favor of optimizing resources, transparency and better control of administrative and operational processes. These actors go hand in hand with the dimensions, indicators and stages of evolution of e-government.

1.5 Indicatorsof the E - government

To perform this research and analyze development in the implementation of e-government, it did a documentary study about indicators suggested by United Nations.^[2] Besides indicators, to identify as they help assess progress in the implementation of information technology in

government, however these are not apparent in local level (local governments), which it gave rise to these research and proposal. In the Illustration 3, it shows the components of the indicators suggest by United Nations [2] for the e-government

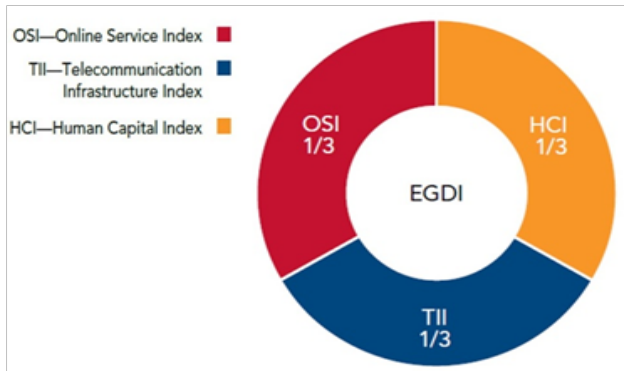


Illustration 3. Components of the development index of e-government

Source: United Nations e-government Survey 2018, (United Nations, 2018)

As can be evidenced are three major components: the index of online services, telecommunications infrastructure and finally the index of human capital. What makes e-government index is integral. Moreover, in Illustrations 4, 5 and 6 it shows the indicators of each component to identify in detail the areas that give rise to e-government Index:

Index based on the ability of national administrations to use online technology in the execution of government functions. It is based on a global survey of the online presence of the 192 Member States. The results are combined with a set of indicators that contain the capacity of the country to participate in the information society. Calculation Methodology: Weighted average of the three standardized scores in the most important dimensions of electronic administration: $EGDI = (0.34 \times \text{online service index}) + (0.33 \times \text{telecommunication index}) + (0.33 \times \text{human capital index})$ (Naser, 2010).

1.5.1 The telecommunications infrastructure index.

It is composed of five indicators: number of computers per 100 people, the number of Internet users per 100 people, the number of telephone lines per 100 people, the number of mobile phones per 100 people and the number of band subscribers. Fixed width per 100 people. The International Organization of the International Telecommunication Union was the primary source of data in each case (See Illustration 4).

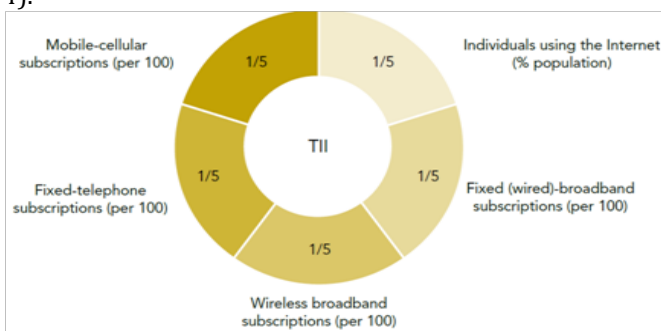


Illustration 4. Telecommunications infrastructure index
Source: United Nations e-government Survey 2018, (United Nations, 2018)

Their indicators are:

- Adult literacy rate
- Combined enrolment rate (primary, secondary and tertiary)

1.5.2 The index of human capital.

It is a composite of two indicators: adult literacy rate (%) and the combined gross rate of primary, secondary and tertiary enrolment (%). The United Nations for Education, Science and Culture was the main source of data in both cases. The gaps were completed using data from the UNDP Human Development Report 2018 (See Illustration 5).

1.5.3 The Online Services Index

It is a composite of four indicators that correspond to the four stages of development of Electronic Government: Emerging information services, improved information services, Transactional services and integrated services, this index is based on the ability of national administrations to offer online services to citizens. To reach the value of this index, the research team evaluated national websites of each country, as well as the websites of the ministries of education, social services, health and finance. Among other things, the national sites were tested according to a minimum level of content accessibility according to the World Wide Web Consortium Guide (See Illustration 6).

It is important to note that the Human Capital Index (Illustration 5), consider the Survey questionnaire is organized in specific thematic (Subthemes) structured in four topics, corresponding to the four stages of e-government development. United Nations [2] identifies the subthemes; moreover, Naser [4] makes a proposal of 10 indicators plus 6 extended, to the evaluation of e-government. It should be noted that there are still no known data of these indicators, however, it is important to publicize, since in some future could work to obtain information.

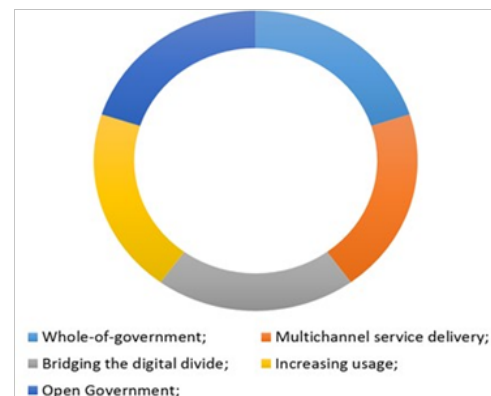


Illustration 6. Online Services Index
Source: United Nations e-government Survey 2018, ONU (2018)

Their indicators are:

- Emerging information services
- Enhanced information services
- Transactional services
- Integrated services

It is important to note that the Human Capital Index (Illustration 5), consider the Survey questionnaire is

organized in specific thematic (Subthemes) structured in four topics, corresponding to the four stages of e - government development. United Nations^[2] identifies the subthemes; moreover, Naser^[4] makes a proposal of 10 indicators plus 6 extended, to the evaluation of e-government. It should be noted that there are still no known data of these indicators, however, it is important to publicize, since in some future could work to obtain information.

The key indicators are:

1. CEG1 Percentage of employed in government institutions routinely using computers for their work
2. CEG2 Percentage of employees in government institutions routinely use the Internet for their work
3. CEG3 Percentage of employees in government institutions routinely use e-mail for your work
4. CEG4 Percentage of government institutions with Internet presence in your own website or the website of another entity
5. CEG5 Percentage of government institutions with corporate networks (LAN, WAN, Intranet)
6. CEG6 Percentage of government institutions with interoperability standards
7. CEG7 Percentage of government institutions with Internet access by type of access (narrowband, fixed broadband and mobile broadband)
8. CEG8 Percentage of government organizations offering services platforms users, according with this type of platform available: web, phone, fax and mobile phone
9. CEG9 Percentage of government institutions offering online services by type of activity
10. CEG10 Percentage of government institutions offering online services by type of service

Extended Indicators

1. EEG11 Percentage of ICT expenditure in the total expenditure, government organizations
2. EEG12 Percentage of employees in ICT in government organizations
3. EEG13 Percentage of employees in government institutions with computer skills
4. EEG14 Percentage of employees in government institutions with skills in using internet
5. EEG15 Percentage of government organizations that provide ICT training to their employees
6. EEG16 Percentage of ICT budget spent on ICT training

2.Documentary research to identify the dimensions and actors served by the local government: Case of Mexico

Although local governments are integrated into different aspects of e government, this article refers to the dimensions and actors that, to identify what progress has been and how these governments are harmonizing their processes. Regulatory framework, organizational structures, adoption and implementation of Information Technologies, specialized human capital, strategic planning in the short, medium and long term, and how these changes have affected the attention and monitoring of said actors and dimensions. In the case of Mexico, although it has tried to stay above the world average, it takes further efforts to improve the index e-government, and

likewise that not only the federal government evidencing progress on these indicators, the state governments and even local governments could make the effort to incorporate the indicators suggested by the UN, to standardize efforts and generate synergy in the solutions in the three levels of government as well as sharing knowledge and skills. I suggest a uniform growth in the nation or even region of Latin America. However, this does not happen in the case of local governments, not generate their own indicators, that result confuse the objective pursued with the Information Technology and Communication, as is the use of social networks as a channel only communication for contact with citizens or generate web portals that do not receive attention causing loss credibility. In this sense, it is presented in Table 1, a perspective of local e-government in Mexico, which is to identify the degree of maturity of e local government, but they do not consider all the indicators identified by the UN to validate the level of progress. However, they support to give us an idea of which areas needed to develop.

Table 1. Maturity of e-government in Mexico in 2018

Topic	Weighing
ICT infrastructure	27%
Organizational structure	22%
Regulatory framework	8%
Impulse to digital government	18%
Digital service maturity	17%
Security and privacy of information	8%
Total	100%

Source: Secretary of the public function, cited in Ruiz Morales Contreras (2018), "Perspectives local e-government in Mexico," Toluca, Autonomous University of the State of Mexico, p. 79.

In this line of the ideas, as mentioned above, local governments generate their own indicators such as the use of social networks, possession and creating web pages, interaction with mobile devices and digital communication, that serving to measure the use of information technologies, they do not use the indicators suggested by the.[2] Which that can disperse the real goal with the of e-government, where local governments are more concerned about the use of these digital media, that by the entire context surrounding the use and successful implementation of ICT.

In this sense, it shown the digital government index, which takes as indicators ^[5]:

- Use social networking
- Tenure and website creation
- Interaction with Mobile Devices
- Digital communication

In this sense Ruiz, Morales, & Contreras [1] present a scheme where some features of change and its possible limitations in the use of digital tools are listed in the index of Digital Government (see Table 2)

Table 2. Expressions of change and limitations in the digital government in Mexico

Dimensions	Ambit	Expression of change	Limit
Internal	Internal Management	<ul style="list-style-type: none"> • Creating new structures • Definition of new working methods • Involvement of decision makers • Participation operating levels of the structure • Transformation of mental models • New forms of communication 	<ul style="list-style-type: none"> • Legal Constraints • Organizational culture • Resistance to change • Informal rules • Lack of political will
External	Servicing	<ul style="list-style-type: none"> • Increased service quality • Guidance to citizens • procedures not subject to rapid business hours • Making payments comfortable and easy • Obtaining proofs (documents) with valid 	<ul style="list-style-type: none"> • Legal Constraints • Population with limited internet access • Distrust of citizenship to digital processes
	Offer information	<ul style="list-style-type: none"> • Easily accessible Websites • Clear identification of information • Ability to download files in different formats 	<ul style="list-style-type: none"> • Population with limited internet access • Lack of accessibility
	Democratic participation	<ul style="list-style-type: none"> • S y n c h r o n o u s communication channels (chat) • A s y n c h r o n o u s communication channels (forums, email) 	<ul style="list-style-type: none"> • Population with limited internet access • Lack of accessibility, or ignorance of the various interaction options • Distrust

Source: Secretary of the public function, cited in Ruiz Morales Contreras [1], "Perspectives local e-government in Mexico," Toluca, Autonomous University of the State of Mexico, p. 79

3. Field research, results and analysis about the dimensions and actors of digital government

Putting into practice the information and knowledge obtained from the e - government actors, a field study was carried out in which one of the variables to be studied was how local governments meet the needs of these actors, combining it with the organizational structure.

Survey to Local government: Based on a sample of 96 municipalities out of a total of 2446 (See Graphic 1)

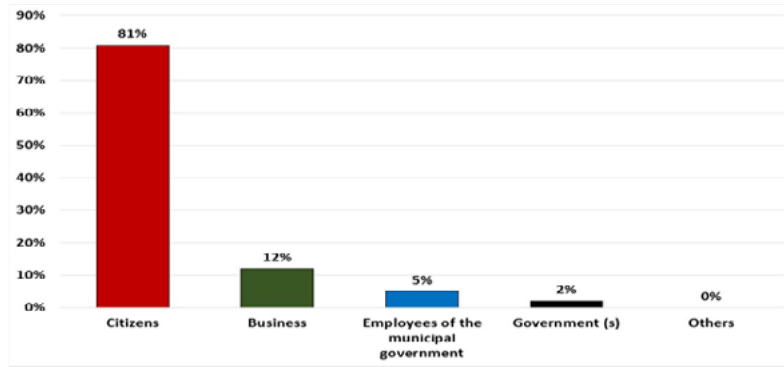
As can be seen in Graph 1, most employees of the municipal government give attention to more than 80% of the requests originated by citizens, this according to the population involved. It is important to point out that the second item with requests from enterprises, in which case, focus to request information on business creation, incentives and payment of taxes (See Graphic 2).

In relation to Graphic 2, many of the employees that attend services are based on attributions that grant them their functions, with 45%, followed by attributions of the National Constitution, and later by the manual of procedures with 22%. In the

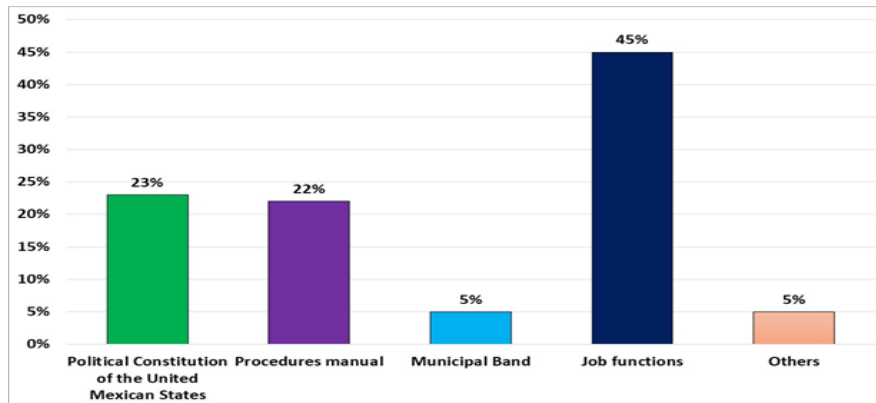
latter, it could not be demonstrated that the procedures manual exists, so it suggests that there would mechanisms that establish the steps to follow-to-follow up on the petitions of the actors involved.

In relation to knowledge of the normative framework that sustains its functions and procedures to meet the requests of the actors and dimensions involved, just over 90% indicates that the regulatory framework of the municipality (municipal districts, local laws) is the one that plans strategies, plans or programs for the attention of the services (See Graphic 3).

With the objective of identifying the use of Information Technologies in the services provided to the actors involved, the main work tool is the spreadsheet with 40%, followed by information systems with the 25 % and finally the word processor and social networks, as work tools. It is important to mention that the information system is for the follow-up of public service requests, provide information on the requirements, government advertising, located in an emerging phase (See Graphic 4).

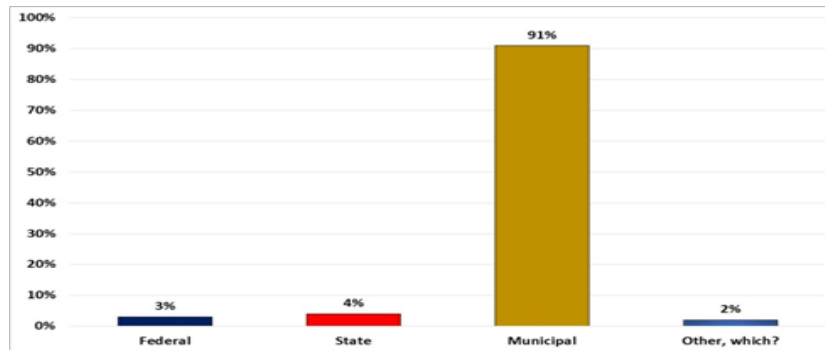


Graphic 1. Which of the following Actors/Dimensions do you attend most often?
 Source: Own (2020), result of field research to a sample of 96 municipalities



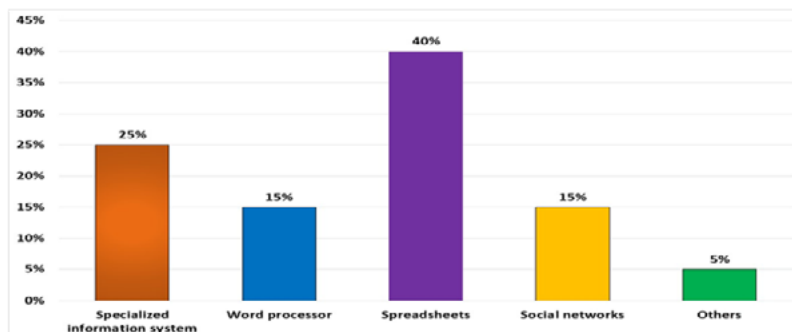
Graphic 2. What is the legal framework that gives attributions for the attention of the requests of the different actors?

Source: Own (2020), result of field research to a sample of 96 municipalities



Graphic 3. Is there a strategy, plan or program in which you supported for the attention of these actors?
 Source: Own (2020), result of field research to a sample of 96 municipalities

In relation to the knowledge of the normative framework that sustains its functions and procedures to meet the requests of the actors and dimensions involved, just over 90% indicates that the regulatory framework of the municipality (municipal districts, local laws) is the one that plans strategies, plans or programs for the attention of the services (See Graphic 3).



Graphic 4. Which of the following technological tools do you use for your work?
 Source: Own (2020), result of field research to a sample of 96 municipalities

With the objective of identifying the use of Information Technologies in the services provided to the actors involved, the main work tool is the spreadsheet with 40%, followed by information systems with the 25 % and finally the word processor and social networks, as work tools. It is important to mention that the information system is for the follow-up of public service requests, provide information on the requirements, government advertising, located in an emerging phase (See Graphic 4).

Analyzing the information in a comprehensive manner, the use of information technologies, although it is focused on serving the public services of the citizen, it is important to diversify this attention to the processes and business, government and employee needs. Without meaning to stop serving the percentages, rather keep them and increase them. On the other hand, it is important to analyze the potential of information technologies suggested by the United Nations, as well as to contextualize these to the local environment, where they can be developed and implemented in the long term. For this, there are different alternatives for such analysis, so, from the administrative perspective, a specialized organizational structure is proposed, capable of analyzing, developing, implementing and evolving the application of digital government.

This structure must be integrated by specialized human capital, in order to design the technological infrastructure, systematization of processes, technological innovation. In order to ensure its successful implementation. Derived from the above, this strategic administrative proposal is presented in the following section, based on an organizational structure

4. Administrative strategy based on an organizational structure, to increase attention to the dimensions and actors of digital government

The proposal lies in the proposing an organizational structure that progressively positions itself in higher hierarchy and interference, obtains maturity, experience, and greater participation in design accompaniment, preparation of local public policies, decision-making, technological innovation within and outside of municipal governments, and modernization strategies. Where the Information Technologies are an essential tool to collaborate in the scope of the objectives that the municipal authorities raise with a view to the implementation of the e government. To this, a divisional organizational structure is generated that allows having units or areas that are partially "autonomous", derived from their functions, and an increase in the complexity of their activities. This structure need interact with the rest of areas of the government.

Once the Divisional Organizational Structure goes through the evolutionary life cycle in the development phase, it must go through the stages of evolution and maturity in a permanent way the needs of process optimization, knowledge generation, increasing interaction between divisions, sharing of information and knowledge between different divisions, make the use of IT tools more and more demanding. It is until then when it must move to an Organizational Network Structure, which will allow in addition to continue using Information Technologies will increasingly demand the interaction and feedback of information between the different units / divisions. This will allow operating, coordinated, balanced and integrated to more

than one division of the government.

Once the Organizational Structure of the Network has reached a level of knowledge, maturity and growing interaction between the different units / divisions of the local government, it is suggested to start with the design and implementation of a hybrid structure between the network and virtual organizational structure. Where all the units / divisions, allow to generate a base frame for the simultaneous, coordinated, balanced and integrated operation of more than one division, to interact in processes and knowledge with similar elements to the outside of the municipal government, to interact with municipalities with the same structure, to share knowledge, information, and these in turn can potentiate its operation. It is important to point out that, in the organizational structure, the suggested Information Technology Division is the one that will be able to collaborate in the design and implementation of network and hybrid structures so that all units / divisions can interact inside and outside of its environment, in addition to generating knowledge banks in a coordinated way.

4.1 Phases of implementation of the proposal

Once the analysis of the historical and theoretical information of the organizational structures has been carried out, and documentary and field research has been carried out, a municipal organizational structure to incorporate Information Technologies is proposed. The organizational structure proposed in the municipal public administration, consists of 3 phases that are due to the growth in the complexity of the organizations, as well as the incorporation of Information Technologies.

4.1.1 Phase 1. Inclusion

Inclusion of an area of Information Technologies. The transcendence of the proposal lies in the strategic incorporation of the information technologies as part of the organizational structures of the local government. Derived from the above, its detail the proposal.

- Proposal one organizational structure strategic:
 - Proposal of positions, functions, obligations and responsibilities, with the normative support
 - Suggestion of interaction that will have the organizational structure
 - Analyses cost/ benefit of the proposal.
 - Normative strategies for the collaboration of the proposal in the decision-making like municipal programs, municipal plan of development, municipal band, regulations, among others.
 - Suggestions in the distribution of municipal budget, for the works strictly of technological modernization through, the systematization of administrative process and operatives, as well as systems of strategies support
 - Proposal of processes that stimulates the transparency in the activities and process, per the laws, propitiating well the feedback and increase the credibility with the citizens
 - Propitiate through administrative and technological conceptual models, the viability of information among the municipal dependencies and citizens, backed with the normative framework corresponding
 - Propose program, aligned to the normative framework for increase gradually the efficiency and efficacy in the municipal processes, for offer a best service to the

citizens, and internally generate a web of knowledge of information

- Recommend reengineering of process, and therefrom, propose corrections, delete duplications of the functions areas, with the goal to maximize the resources and speed up the benefit of the local public services
- Recommend through different technologies platforms, the interaction between the municipal authorities and the citizens
- Backed the proposal, supported for the regulatory framework, or in failing proposal a series correction with the goal of include of the information technologies in the municipal environment satisfactorily
- Process of strengthening for the incorporation of the information technologies in the local organizational structures

It shows the next conceptual diagram the proposal (According the Illustration 7).

As can be seen in Illustration7, it is suggested to start with an Information Technology section and depending on the degree of assimilation and use (adapt UN evolution indicators), increase the hierarchy to Directorate or Secretary with direct report to the municipal presidency.

4.1.2 Phase 2. Integration

Evolution of the Simple, Functional and Divisional Structures to Network Structures although the complexity of the organization is an important factor for structures to evolve from my point of view, they can initiate the transition from simple, functional and divisional Structures to Network structures where the current functions will not be lost, rather it will have an interaction with the other areas in a permanent way to collaborate with the achievement of the general objective. As can be seen in Illustration8, the municipal structure is organized in such a way that the secretariats, management and other areas remain with the same hierarchical level as they had in simple, functional and divisional structures. What is added is the interaction and service provided between the areas, which will be reflected in a better communication, giving rise to feedback, complementing ideas and knowledge

without losing authority and functions? On the other hand, it is important to point out that the normative part must be modified according to the suggestion of areas and their interaction, to delimit their interrelation and scope. The application of the Network structure depends on the maturity in the application of phase 1 (See Illustration8), where it is necessary to elevate the Information Technology Department with a direct report to the municipal presidency, in addition to the Technological infrastructure needed to support the change to a Network structure.

As can be seen in Illustration8, the network structure starts with the massive interaction between units / divisions of the organizational structure in which information flows and shares, interdependent processes are carried out. In addition to this, the area that collaborates in the design and implementation of information systems and IT services for the correct execution of activities is the Information Technology Division.

4.1.3 Phase 3: Evolution.

Network and Virtual Structure. In this phase, it is an important to assess the maturity of phase 2 (through e-government indicators, suggested by United Nations [2], where the degree of maturity will result in a Network and virtual structure. Where Information and Communication Technologies play an important role. Given the nature of this research will focus only on information technologies.

As can be seen in Illustration9, the basis and support of the proposal is the Network structure, and in it are added virtual structures with the possibility of interacting and covering the four-dimensional needs of e-government [2]

This model will be generate knowledge networks, databases and interaction between different factors, which will allow the analysis of information for long-term decision-making (See Illustration 9).

In phase 3, it can be observed that the organizational structure generates virtual divisions to give attention to four actors of the digital government: Citizens, enterprises, government and employees, in this stage of the organizational structure given the increase in the complexity

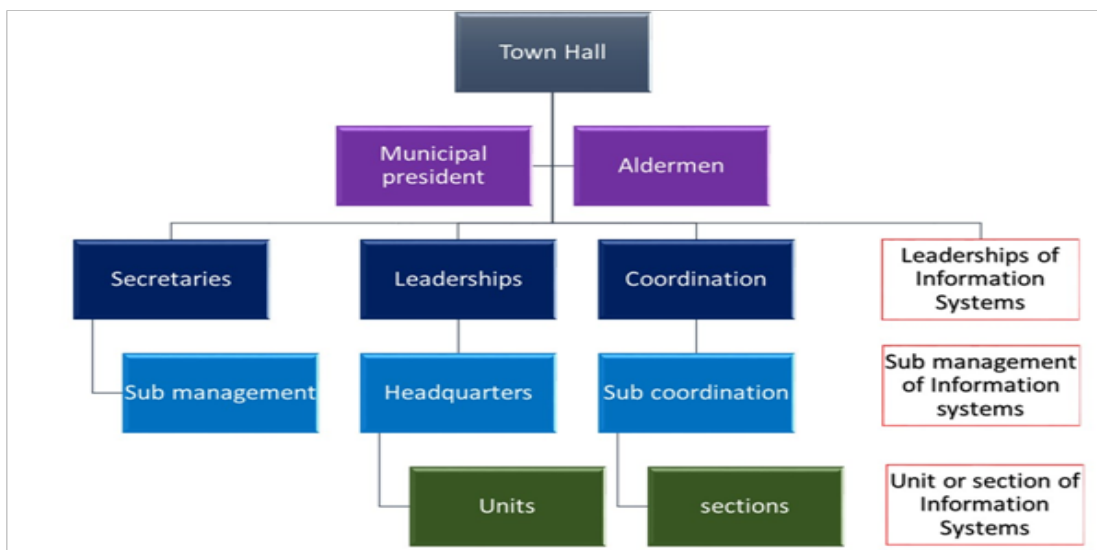


Illustration 7. Organizational structure of the proposal

Source: Own (2020). Taken as references: Municipal Organic Law of the State of Mexico, Municipal laws (2018) and internal regulations of the municipals (2018).

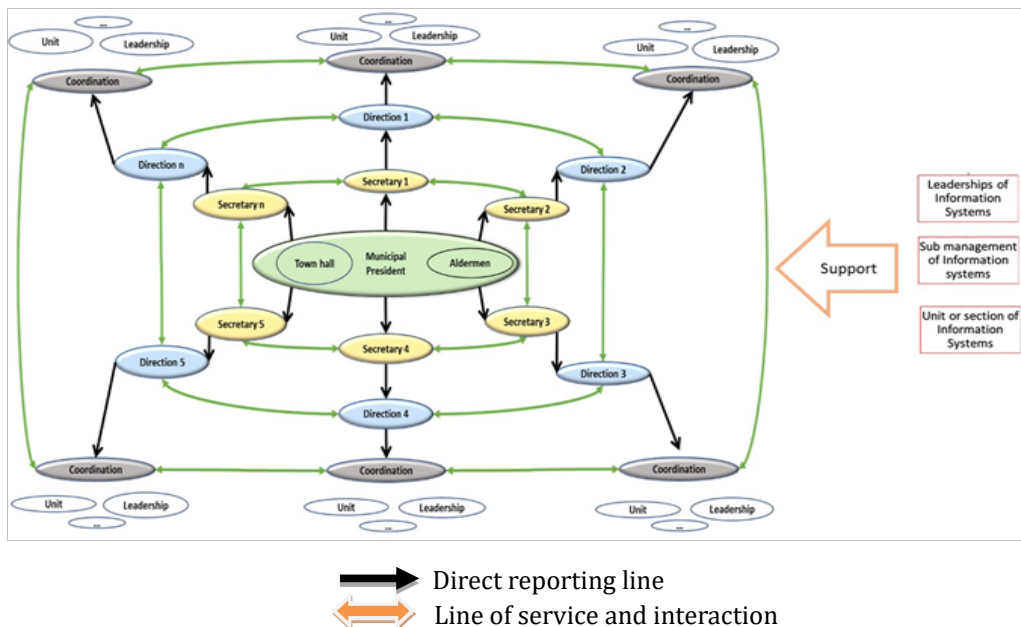


Illustration 8. Network Organizational Structure
Source: Own (2020)

of the activities and interaction with different units / divisions. The creation of divisions and virtual departments collaborates in the interaction and attention of requirements / needs have said authors. In this stage, the use of Information Technologies is continued in a more demanding manner, in which the Information Technologies division must continue supporting these activities, and above all to ensure the information, its flow, and the sharing of information. Interaction to the interior and exterior of the municipal governments.

This phase, although it is the last one in the proposed organizational structure, does not mean that it is the last, there will be alternate and / or new models that suggest the use of Information Technology. However, this proposal is an alternative for the design and implementation of e government. In which it is intended to accompany its implementation and that it would be satisfactory to evolve and give attention to the growth of activities and information management required by local governments.

5. Collaboration of the organizational structure in the design and implementation of the local e-government

Why is it considered that organizational structure current must be transformed according to the stages of e government development, to ensure its implementation? This is because according to the field research carried out and whose results are shared in chapter two. The municipal governments are incorporating Information Technologies, without performing a previous analysis, confusing concepts and applications of the scope and limiting the use of said IT, lack infrastructure to give continuity to the initiatives, lack long-term projection, in addition to not having the adequate human resources for the positions. On the other hand, according to said field study, it is observed that the participation of IT areas / divisions in strategic decision-making is limited by the hierarchical level assigned to it, in which technical support functions are assigned., computer maintenance, etc. (not because those functions are less). However, this is one of the transversal

specialties in which the existence of an IT division will allow participating in the design to provide a long-term response to the needs have all those involved. Besides collaborating with the evolution in the organizational structures and processes of modernization and technological innovation.

If the proposal were implemented, the Information Technologies Division would collaborate in:

- 1.Short, medium and long-term design of the organizational structure according to the suggested phases
- 2.Design, development and implementation of information systems for all units / divisions of the municipality progressively.
- 3.Collaboration to systematize the internal and external processes of the municipality of all areas / divisions in a progressive manner, identifying strategic areas and alternately incorporate other areas
- 4.Design and implementation of solutions that are specified in the municipal development plan inside and outside of the municipality
- 5.Support to the creation of policies and procedures of the IT division
- 6.Identify, design and develop innovation processes inside and outside the municipality where the following actors are involved: Citizens, employees of the municipal government, enterprises and the same government.
- 7.Promote the integration of activities and processes within the divisions of the local government
- 8.Prepare the integration of activities and processes outside the municipality
- 9.Direct involvement in process reengineering of the units / divisions of the municipality since all systematization must be guaranteed of a procedure and the regulatory framework.
- 10.Search process optimization
- 11.Guarantee the implementation of digital government in the following areas:
 - a.Guarantee transit between the stages of e government
 - b. Establish e government indicators
 - c. Identify and collaborate with the generation of strategies to meet the needs of the actors of the e government inside and

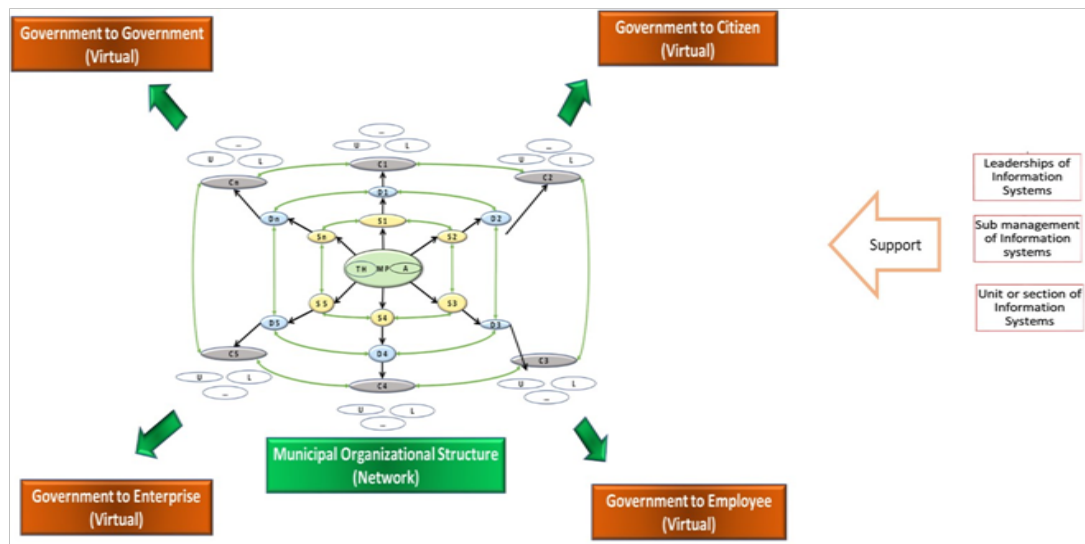


Illustration 9. Organizational Structure of Net - Virtual

Source: Own (2020)

outside of local governments.

Finally, the transition times between the phases, depends on the complexity of the organizations, where the planning and the creation of the infrastructure would sufficiently be robust to give opportunity to the evolution of the structures

5.1 Main functions of the organizational structure

The functions of the Directorate / Division of Information Technology are aligned to the phases of implementation of the proposed organizational structure. These functions are suggested being the following:

- Planning, design and execute policies on the use and application of Information Technology (IT) inside and outside your IT Division / Management
- Carry out research to identify needs that have a solution through Information Technology, supported by the regulatory framework
- Promote and direct the technological improvement of the processes of the local Public Administration, with Information Technologies
- Be part of the meetings in which the public policies of the local government are designed
- Have a voice and vote in the design of public policies, providing solutions from Information Technologies
- Guarantee the functioning of the Services and Information Technologies
- Have autonomy in executing their budget
- Permanently carry out research projects oriented to the efficient use of information, analysis, design, development and implementation of information systems with different technological platforms
- Guarantee Information Security of all services and information technologies
- Verify and apply corrective measures for the correct operation and use of information services and technologies
- Generate projects aligned to local public policies, with long-term projections
- Analyze, develop and implement information systems for operations processing, support for decision making, management support, knowledge management
- Plan the systematization in a progressive manner of the administrative and operational processes inside and outside

the municipal governments

- Conduct research to identify technological means available to the municipal government to achieve communication and interaction with the external environment (Citizen, businessmen, employees and governments)
- Ensure the transition of the following phases of digital government in terms of IT responsibility
 - o Emerging
 - o Improved
 - o Transactional
 - o Connected
- Analysis, development and implementation of intelligent systems in coordination with the rest of the information systems
- Design and implement indicators oriented to digital government
 - o Online services
 - o Human capital
 - o Infrastructure in Services and Information Technology
- Implement solutions using smart computing
- Creation of knowledge banks
- Design and implementation of virtual departments in coordination with the corresponding areas of the municipal government
- Guarantee the transition, implementation and start-up of virtual areas.
- Create mechanisms for interaction between all divisions / departments and operational and administrative areas for the exchange of information
- Ensure security mechanisms and control of physical and logical access
- Identify the mechanisms for interaction within and outside of local government
- Develop research projects on Information Services and Technologies in coordination with Higher Education Institutions at local, regional, national and international levels
- Generate and disseminate research products in coordination with Higher Education Institutions and national and international research centers
- Carry out the inventory of Services and Information Technologies of the municipal government

- Develop processes, documentation and other activities to obtain quality certificates focused on administrative processes, information security, information technology and information systems
- Planning attendance at training courses
- Procure the continuous preparation of their human resources in studies, university and postgraduate
- Plan, organize and implement internal audits
- Monitor the permanent functionality of information services and technologies
- Identification of errors / incidents and application of corrective measures
- Plan, organize and implement controlled contingency tests
- Ensure satisfactory interaction with all the information systems inside and outside the municipal government
- Provide technical and administrative follow-up to the infrastructure in Services and Information Technologies installed, as well as ensure its growth in functionalities and optimization permanent.

It is important to mention that the local, regional and national regulatory framework must support these functions, in order that the solutions they provide, or implement are directly linked to the task and collaboration with the activities and responsibilities of the local government.^[6]

Conclusion

The implementation of e-government has suggested that local governments design in a comprehensive manner, the adoption of Information and Communication Technologies; however, a long-term analysis is required in relation to their impact and benefit for citizens. , embodied in the systematization, promptness of attention, quality services, in addition to providing mechanisms for the presentation of strategic information, which serves to make decisions ranging from the allocation of resources, as well as the services with greater demand / need. This dares the different actors and mechanisms of the government.

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References

1. Ruiz, Morales, Contreras. Perspectives del e - government local en México, Toluca: Universidad Autónoma del Estado de México, (2018).
2. United Nations. "e - Government survey 2018: e-government in support of sustainable development." New York: United Nations, (2018) 7-19..
3. Pérez, Camacho, Mena, Arroyo, "General Analysis of Electronic Government in Mexico," Revista de Tecnología y Sociedad, 5(9) (2018).
4. Naser, Indicators of electronic government, (2018).
5. Araiza, Del Carmen, Araiza, Sapién, Piñón, "Evels of electronic government: literature review," Punto de Vista, 1 (2009) 1-7.
6. Digital Municipal Government, Gobierno Digital, (2018).
7. Naciones Unidas. Objetivos de Desarrollo Sostenible, (2018).