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E-Government: An empirical study in municipalities*

Gobierno Electrónico: estudio empírico en alcaldías

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Abstract

The objective of this paper is to analyze e-government in the municipalities of the state of Táchira, Venezuela. The study is quantitative. In this regard, a questionnaire with dichotomous questions divided into two parts is applied, the first one integrated by twelve items in order to evaluate the application of Electronic Government in the municipalities and the second part integrated by eleven items in order to evaluate the pros and cons of Electronic Government. The sample was intentional and non-probabilistic and was integrated by eighteen managers of the municipalities. The results reveal that e-government is being implemented, but there is still a long way to go. With the advance and popularization of information and communication technologies, which are fundamental for the development and implementation of E-Government, it is unjustifiable that today's municipal governments do not take advantage of the benefits offered by technologies. It is concluded that although the vast majority of municipalities have the necessary elements to implement e-government efficiently, there is still much to be done in this regard since basic tools are being used. The benefits offered by technologies for efficient management and better interaction with the communities are not being taken.

Keywords: E-Government, Information and Communication Technologies, Municipalities

Resumen

Este trabajo tiene como objetivo analizar el gobierno electrónico en las alcaldías del estado Táchira, Venezuela. El estudio es de tipo cuantitativo. Al respecto, se aplica un cuestionario con preguntas dicotómicas dividido en dos partes, la primera integrada por doce ítems a fin de evaluar la aplicación del Gobierno Electrónico en las Alcaldías y; la segunda parte integrada por once ítems a fin de evaluar los pro y contras del Gobierno Electrónico. La muestra fue intencional y no probabilística y está integrada por dieciocho gerentes de las alcaldías. Los resultados revelan que se está aplicando el Gobierno electrónico, pero aún hay un camino largo por recorrer. Con el avance y la popularización de las tecnologías de la información y la comunicación, que son fundamentales para el desarrollo e implementación del Gobierno Electrónico, resulta injustificable que hoy en día las alcaldías no aprovechen las ventajas que ofrecen las tecnologías. Se concluye que si bien la gran mayoría de las alcaldías cuentan con los elementos necesarios para implementar el gobierno electrónico de forma eficiente, es mucho todavía lo que falta por hacer al respecto, puesto que se usan herramientas básicas y se desaprovechan las bondades que están ofreciendo las tecnologías de cara a lograr un gestión eficiente y una mejor interrelación con las comunidades.

Palabras Clave: Gobierno Electrónico, Tecnologías de la Información y Comunicación, Alcaldías

SUMMARY

INTRODUCTION. – RESOLUTION SCHEME. – I. Research problem. – II. Methodology. – III. Writing plan. – 1. Dimensions of Electronic Government. - IV. Research results. - CONCLUSIONS. – REFERENCES.

Introduction

To ignore the remarkable growth and influence of information and communication technologies (ICTs) in the functioning and evolution of contemporary societies would not only be foolish but also absurd (Brunner et al., 2023). Recent events of global and Latin American relevance have taken place, which would have been impossible to document, record, and

denounce without the intervention of these technologies, a scenario unimaginable in the 70s and 80s, where concealment and impunity prevailed (Villegas-Cervantes & Velásquez-Gutiérrez, 2023).

Similarly, discoveries and events related to the cosmos, such as the detection of water on Mars, the possible existence of life on that planet, the use of satellites and drones, long-distance electronic payments, as well as the ability to know in real-time the results of elections anywhere in the world or sports competitions, are just some of the many opportunities that the advance and expansion of these technologies provide us with on a daily basis (Wahyuningrum et al., 2022).

ICTs have permeated and transformed all aspects of our daily lives since there is practically no moment in which we do not depend on them for information and communication without time and space restrictions (Ogunsola & Tiamiyu, 2021). The impact of ICTs on our lives is extremely broad, ranging from global discoveries to more personal moments, such as recording a birthday, a wedding, or a vacation (Hermawan, 2023). In this context, it is evident that ICTs have been integrated into all levels of society, from small clothing or food stores to large multinational corporations, spanning both the family and the global environment and being present in both the public and private spheres (Eslava-Zapata et al., 2023).

For this reason, governments at all levels, regional or national, should not be left out of the impact of ICTs on their management and administration (Maimunah & Obaid-Obaid, 2022). Failure to do so would not only mean a lag behind global dynamics but, more crucially, a wasted opportunity to use an essential tool in the efficient functioning and development of public management (Koniyo et al., 2023). Furthermore, they would be losing the ability to know in real-time the needs of the communities they serve, as well as to provide the necessary management control mechanisms, not only to ensure transparency but also to achieve the proposed objectives (Alzayed et al., 2024).

In Venezuela, municipalities have begun to integrate ICTs in various aspects of their management, both in internal and external processes. This has facilitated the achievement of positive results by employing this tool, which drives adaptation, evolution, and modernization in municipal public administration (Carreño-Ríos & Pérez, 2019). This approach transcends the purely technological by introducing new values that enrich communication in order to promote the transparency of the administration and citizen participation (Saleh et al., 2021).

As can be seen, each municipality has the opportunity to adopt its own mechanisms and tools to continuously improve its management. In this sense, the implementation of Electronic Government (EG) is presented as an ideal option since it offers a wide range of possibilities to efficiently meet the established objectives, not only in terms of legal compliance but also in terms of the purposes to be achieved (Alryalat, 2024).

The implementation of GE is fundamental because it promotes greater inclusion of citizens in the relationship with those who govern them. Therefore, it is essential to adopt this type of governance to facilitate and improve government management. Organizations that have a well-defined vision and objectives and that are effectively managed have been able to adapt to dynamic and frequent changes, thanks to the creation of internal management models. Mayors' offices, as part of public and social organizations, have the capacity and responsibility to use ICTs to make their management more efficient and transparent, which makes them part of the general proposals that have been put forward (Al-Haddad et al., 2023).

Current laws and regulations are clear and extensive in terms of values, principles, and the use of tools that promote efficiency, modernization, and updating of the municipal public

administration to satisfy and meet the needs of the citizens. In this context, we consider the use of ICT to be of vital importance (Seyyed-Reza & Seyyed-Mousa-Khademi, 2021).

Therefore, it is clear that e-GE can generate significant changes in the way public administrations manage their internal processes and serve citizens. In addition, it can be an excellent means to facilitate access to information, which would allow active and responsible citizen participation, enriching communication between the mayor's office and the population. This, among many other advantages, is what the user can obtain with the implementation of GE in city halls (Schmitt, 2024). In this sense, the objective of this work was to analyze the GE in the municipalities of the state of Táchira, Venezuela.

Resolution scheme

1. Research problem

How is the management of the GE in the municipalities of the state of Táchira in Venezuela?

2. Methodology

The research is quantitative since instruments were used to identify the trend of the variables. The design was trans-sectional or cross-sectional since the variables were described at a specific time (Eslava-Zapata et al., 2023). Initially, an exploratory phase was carried out in which documents containing all relevant information on the topic of study were reviewed.

Subsequently, a questionnaire with dichotomous questions divided into two parts was applied; the first part consisted of twelve items in order to evaluate the application of the EG in the municipalities, and the second part consisted of eleven items in order to evaluate the pros and cons of the EG (Table 1).

The questionnaire was validated by three experts in the study area. The sample was purposive and non-probabilistic, considering the willingness of the managers to answer the questionnaire; therefore, the sample consisted of eighteen managers from the municipalities. The Microsoft Office Excel program was used for data analysis.

Table 1. Questionnaire to evaluate the Management of the EG in the Municipalities

N°	QUESTIONS	YES	NO
Application of EG			
1	Does the City Hall have a website?		
2	Does the City Hall have an e-mail address?		
3	Does the Mayor's Office generate electronic forms for the users for the procedures carried out?		
4	Does the City Hall have Internet service?		
5	Does the City Hall have Wifi service?		
6	Does the City Hall have social networks such as Twitter, Facebook, and Instagram, among others?		
7	Does the City Hall have a WhatsApp group for internal communication?		
8	Does the City Hall have a WhatsApp group for external communication?		
9	Does the City Hall receive payments of taxes, fees, or fines through electronic points?		
10	Does the City Hall make payments through electronic points?		
11	Does the City Hall receive payments of taxes, fees, or fines through electronic transfers?		
12	Does the City Hall make payments through electronic transfers?		
Pros and cons of EG			
13	Do ICTs facilitate the management of the Mayor's Office?		

14	Do ICTs provide optimal electronic equipment for communication and procedures?
15	Is the Internet service optimal?
16	Is the fixed and mobile telephone service optimal?
17	Are there power plants that can attend to failures in the electric service?
18	Do users and suppliers make use of technology to communicate with the Municipalities?
19	Do staff have adequate mobile telephone equipment?
20	Are the Internet and social networks used to publicize the management of the Municipalities?
21	Are there mechanisms to control the management carried out on the Internet and social networks?
22	Do the Internet and social networks allow us to know the needs of the communities?
23	Is there an electronic mechanism for monitoring and controlling the management of the Municipalities?

Source: own elaboration.

3. Writing plan

3.1. Dimensions of Electronic Government

The implementation of ICTs in public management has generated an internal reorganization of institutions (internal dimension); however, the changes go beyond this since it also entails the creation of flexible structures that facilitate interaction with other administrations, promoting citizen participation and improving services through the use of the Internet (Alhanatleha et al., 2022). In addition, by expanding the dissemination of information, greater transparency (external dimension) can be achieved, and bureaucratic structures can be eliminated (Amoah et al., 2023).

The use of ICTs in public administration has allowed the automation of administrative processes, the storage of large volumes of information, and, in general, the restructuring of work areas. These changes, which correspond to the internal dimension, have involved the adoption of a new organizational structure, the elimination of unnecessary procedures, the reduction of costs, and the use of more efficient management tools. In this way, ICTs have improved public management, facilitating the storage of crucial information and promoting collaboration between departments, resulting in better results and more effective interaction with citizens (Nataliia et al., 2022).

GE has facilitated the integration of different units within the entity and fostered collaboration with other agencies to share databases, applications, and other integrated services. In addition, it has transformed management systems through the use of applications that simplify obtaining relevant information on the current situation of the public entity. The internal dimension of the GE is constantly evolving thanks to the advance of ICTs and social networks. This makes it possible to observe how ICTs improve the interaction between public administrations, citizens, the private sector, and other public organizations. In this context, two fundamental aspects stand out: the provision of services through the Internet and information transparency (Krasnykov et al., 2024).

The government citizen/government business relationship covers the interaction between public administrations and citizens and businesses, including aspects such as the provision of services, the dissemination of information, accountability, and electronic participation. It also covers the relationship between public administrations and businesses through the use of the Internet, with the aim of improving processes, negotiation, and business productivity (Garay-Rodríguez, 2023). The objective is to strengthen communication between public administrations and economic agents to optimize administrative procedures and generate a

positive impact on business management. Examples of this initiative include the provision of basic information, the publication of forms, access to databases, and other electronic services (Khan et al., 2021). On the other hand, the Government perspective seeks to optimize the relationship between public administrations through the integration of services, improved communication, the exchange of information, and unrestricted access to databases.

4. Research results

The results of the section related to the application of the EG are presented in Table 2. The analysis of item 1 shows that 66.70% of the respondents believe that the municipal governments do not have a web page. In the current era, marked by the use of technology, it is striking that most of the municipalities surveyed do not have a website. Regarding item 2, 83.30% of the managers indicate that the municipal governments have an e-mail address. This represents significant progress since, although many do not have a website, they at least have an e-mail address as a means of communication. Regarding item 3, 66.70% of the managers consider that the municipal governments generate electronic spreadsheets; this aspect is important progress in terms of the impact of the EG on management since electronic spreadsheets simplify procedures for users, promote paper savings, and facilitate the development of work.

Regarding item 4, 88.90% of the managers believe that the municipal governments have Internet service, a crucial aspect for the development of the EG. It is surprising that two city halls do not have Internet service, which is attributed to geographical reasons since they are located in areas of difficult access, which prevents the installation of fiber optics. Regarding item 5, 72.20% of the managers said that they do not have Wi-Fi, which makes it difficult to connect to other electronic devices such as cell phones, laptops, and tablets, among others. Finally, in item 6, 66.70% of the managers said that the municipalities do not have an account on social networks, which hinders the development of the EG.

From item 7, 88.90% of the managers consider that the municipalities have a Whatsapp group to transmit or receive internal communication. This is a positive aspect that facilitates communication among employees and promotes GE. Regarding item 8, 94.50% of the managers consider that there is no WhatsApp group for external communication, which makes it impossible to know in real-time the needs of the communities and the exchange of information on the daily events of the municipality. Regarding item 9, 72.20% of the managers consider that the municipalities are making use of ICTs in different processes, such as collection points and electronic payment.

Regarding item 10, it was found that 55.50% of the managers consider that the municipalities make their payments through electronic points; however, there are other municipalities (45.50%) that have not yet adopted this measure. Regarding item 11, it was found that 77.80% of the managers consider that the municipal governments receive payments of taxes, fees, or fines through electronic transfers. From item 12, 55.50% of the managers confirmed that the municipal governments use electronic banking to make payments, while 45.50% do not.

Table 2. Application of GE

GE					TOTAL RESPONSES	TOTAL %
N°	YES	%	NO	%		
1	6	33.30	12	66.70	18	100.00
2	15	83.30	3	16.70	18	100.00

3	12	66.70	6	33.30	18	100.00
4	16	88.90	2	11.10	18	100.00
5	5	27.80	13	72.20	18	100.00
6	6	33.30	12	66.70	18	100.00
7	16	88.90	2	11.10	18	100.00
8	1	5.50	17	94.50	18	100.00
9	13	72.20	5	27.80	18	100.00
10	10	55.50	8	45.50	18	100.00
11	14	77.80	4	22.20	18	100.00
12	10	55.50	8	45.50	18	100.00

Source: own elaboration.

The results of the section on the pros and cons of the EG are presented in Table 3. From item 13, 55.50% of the managers consider that the use of ICTs helps to simplify the management of municipal governments. As for item 14, 88.90% of the managers believe that municipal governments have optimal electronic equipment for communication and procedures. Item 15 shows that 61.10% of the managers believe that the municipal governments have an excellent Internet service, which is a favorable element for the development of the EG.

Regarding item 16, 61.10% of the managers believe that the municipalities have an optimal fixed and mobile telephone service; however, there are municipalities (38.90%) that do not have a good fixed and mobile telephone service, which is a setback for the development of a good EG. With respect to item 17, 88.90% of the managers consider that the municipal governments do not have power plants to deal with failures in the electric service, which hinders the development of the EG. Item 18 shows that 77.90% of the managers believe that users and suppliers do not make use of technology to communicate with the municipal government, which may be due to the fact that municipal governments do not provide sufficient mechanisms for citizens to communicate with them.

Regarding item 19, 77.90% of the managers consider that city hall personnel have adequate mobile telephone equipment, which favors the implementation of the GE since it allows for the flow of information and communication in real time among officials. Item 20 shows that 77.90% of the managers believe that the municipal governments do not use the Internet and social networks to publicize their management; however, it is advisable not to use these tools for political propaganda. Item 21 shows that 88.90% of the managers believe that the municipal governments do not have mechanisms to control the management of the Internet and social networks.

Item 22 shows that 83.30% of the managers consider that the municipal governments do not have tools on the Internet or social networks to meet the needs of the communities. Regarding item 23, 77.80% of the managers consider that the municipal governments do not have any electronic mechanism for management follow-up and control.

Table 3. Pros and cons of GE

Nº	YES	%	NO	%	TOTAL RESPONSES	TOTAL %
13	10	55.50	8	45.50	18	100.00
14	16	88.90	2	11.10	18	100.00
15	11	61.10	7	38.90	18	100.00
16	11	61.10	7	38.90	18	100.00
17	2	11.10	16	88.90	18	100.00
18	4	22.20	14	77.90	18	100.00
19	14	77.90	4	22.20	18	100.00
20	4	22.20	14	77.90	18	100.00

21	2	11.10	16	88.90	18	100.00
22	3	16.70	15	83.30	18	100.00
23	4	22.20	14	77.80	18	100.00

Source: own elaboration.

Conclusions

With the advancement and popularization of ICTs, which are fundamental for the development and implementation of GE, it is unjustifiable that today, many, if not all, municipalities do not take advantage of the benefits offered by these ICTs to effectively implement GE. The question arises as to whether this lack of logical and coherent use of ICTs to implement the EG in an adequate and effective manner responds to a deliberate intention or, on the contrary, is it due to simple ignorance of the great benefits that ICTs offer to optimally and efficiently implement the EG? In any case, there is no justification for not implementing the EG since the use of ICTs facilitates both management and transparency.

It is important to remember that a mayor has the responsibility to manage the resources of the municipality and must provide citizens with all the necessary means to solve their procedures through a good EG, as in the case of making payments or improving communication. Therefore, municipalities should consider the use of technological tools to improve their interaction with citizens. The automation of all processes will allow municipalities to save time and costs, which will result in more efficient management and will also benefit the citizens, who will be able to access the procedures related to the municipality more quickly and easily.

It is crucial to take advantage of the use of the Internet, Wi-Fi, social networks, and web pages to provide as much information as possible about the administration and management of the municipalities. This will help to strengthen transparency and generate trust in citizens by demonstrating that they are working correctly through accountability. The EG is an excellent mechanism for monitoring and control of management, which helps to reduce corruption.

By offering various channels for information and communication with citizens, mayors' offices will also promote greater and better integration of citizens in public management. In addition, through the EG, mayors' offices can facilitate all kinds of procedures and formalities without citizens having to physically go to their facilities, which benefits users in all aspects, especially the most vulnerable citizens, such as the elderly and the disabled.

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