

# The E-Government in Local Governance and Its Contribution to the Regional Development: A Comparative Study

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The purpose of this article is to designate the impact of the implementation of e-governance in municipalities and to suggest some proposals for further growth. More specific, in the first chapter, there is a theoretical approach of e-governance by presenting its definition and describing the current situation of the progression of e-governance to these municipalities. In the second chapter, it is presented a comparison between these municipalities about the implementation and progress of e-governance among them. Finally, in the third and last chapter, there are the conclusions and some proposals for future growth of e-governance to these municipalities.

*Keywords:* e-government, municipalities, local government, public administration

## Introduction

The Internet was created at the last decades of 20th century but has been growing rapidly during since the first decade of 21 century. The information and communication technologies (ICTs) are based on Internet and they have created a global revolution and a radical change in numerous sectors of humans' life. Their implementation in public management started in decade of 90's (Konstantinidou, 2016, p. 8).

At the beginning of 21st century, the governments of both developed and developing countries, recognizing the success, development, and impetus offered by the Internet to the private sector, found that its use and implementation in the public administration would add a remarkable and unprecedented added value to its organizational processes, while at the same time redeploying the an existing operating system, which has found dysfunctions, reliability, bureaucratic obstructions, and waste of resources (Kallinderi, 2006, p. 6). Through e-government, public administration gradually moves to the digital age and it is in line with the new technological trends that have prevailed in most areas of human activity, such as trade, trade, service provision, interoperability, communication, etc.

However, this transition of public administration to the digital age and its attempt to keep up with the technological requirements of modern times poses some very important risks, such as providing citizens with

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universal access to digital-electronic services provided by governments and public administrations of the countries concerned, as well as the maintenance of the “digital” security of civilian citizens and the protection of their personal data-narrative attacks (Konstantinidou, 2016, p. 9).

Total access presupposes the creation of conditions for equal citizen participation and easy use of electronic services, while according to Sharma and Gupta (2003), privacy protection presupposes security policies and standards that meet citizens’ expectations and create trustworthy relationships with the government.

It is therefore crucial to protect personal data for the implementation of e-government in developed and developing countries

## **Theoretical Approach**

### **Definitions and Theoretical Models**

The term “governance” includes the term “government”. A “government” can be defined as any form of central authority of an organized state that acts as the guardian of the legal order, in which collective decisions are taken and, through a framework of rules, are followed by the governed (Heywood, 2014, p. 338). E-government is the implementation and use of information and communication technologies by public administration in general, both by general government services and also by the local government services. Its aim and purpose is to improve the providing services to citizens, individuals, and professionals, as well as to enhance democratic processes through their participation (Davies, 2015, p. 45). According to the declaration of 26 September 2003, the Commission of the European Communities states that e-government is a combination of organizational change with the introduction and use of ICTs to further democratize processes, support to the fullest extent of public policies as well as the optimization of services provided by governments and public administrations of these countries (Commission of the European Communities, 2003, p. 4).

With regard to the Greek Public Administration, in 2013, the former Ministry of Administrative Reform and E-Government, and the current Ministry of Administrative Reconstruction, set out how e-government is the form of governance that uses ICT to upgrade, modernize, and restructure the services offered by the public sector, while adding an added value. As a result of these objectives, it is the most effective service of the citizen, the meeting of his/her needs and his/her participation in the procedures (Ministry of Administrative Reconstruction, 2013). According to the opinion of several scholars, the enhancement of transparency is another key reason for the necessary reform of the public sector.

The success of e-government, according to Al-Sobhi et al. (2009), is influenced by three dimensions: (1) the factors that affect its implementation; (2) the factors affecting its adoption and use by citizens; and (3) the role of intermediaries in bridging the gap between implementation and adoption. In Greek, the “mediators” are the Citizen Service Centers (KEPs), which have played an important role in bridging the gap between the adoption of e-government and its use by citizens; according to Heeks (2008), most of the existing e-government systems alone cannot solve the co-ordination between stakeholders.

In the Citizens Service Centers in Europe (e.g., Finland, Germany, Ireland, and Spain), there are governmental organizations that run one-stop-shops for the public and train citizens on services provided by the public administration (Department of Economic and Social Affairs [DESA] UN, 2012). In the Netherlands, “one stop services” started their operations in the early 1990s (DESA UN 2012) and to date they offer integrated services using ICTs.

### **The Present Situation of E-Government**

Over the past decade, e-government and ICTs have evolved and are constantly evolving to a great extent by governments and public administrations, especially in developing and developed nations. Of course, there are differences, as mentioned above, in their implementation as each country follows the model that is similar to and touches the strategic priorities it has defined (Konstantinidou, 2016, p. 36).

According to Tsoukalas (2004), information and communication technologies are applied either vertically or horizontally to broad public sector entities. More specifically, ICTs applied on a horizontal basis are related to interoperability, interconnection, and communication with these operators, while those applied on a vertical basis are related to the competencies, requirements, and needs of the each player distinctly (Tsoukalas, 2004, pp. 36-37).

Apart from this separation, ICTs are distinguished in back office and front office services and systems. Front office systems and services are addressed and serve the needs of the people, citizens, and businesses, whereby a framework of interaction among these poles is created, while back office defines the services and systems that process the results of and the data they derive from the operators with the public entities, as well as those systems are also responsible for organizing the interoperability between these (Tsoukalas, 2004, p. 47; Apostolakis, Lucis, & Halaris, 2008, pp. 27-28).

ICTs in public administration can be distinguished and depending on the audience they serve and address. More specifically, there is a distinction in systems and models, which are related to government to consumer (G2C), government to business (G2B), and among the broader government to government (G2G) (Apostolakis et al., 2008, pp. 105-106).

Another very important distinction between ICTs systems in public administration is also the distinction based on the type of digital services they offer, where they are divided into semi-automated, automated, and personalized, where the citizens-users do not have the right to intervene, this right has only the members of the public administration who are in charge of the respective competences (Tsoukalas, 2004, p. 44). According to Konstantinidou (2016, p. 38), there are also: (i) electronic information services; (ii) limited online services/services; (iii) vertical integration with web links of different systems; and (iv) horizontal integration with web links of different functional units .

Finally, according to Assar, Boughzala, and Boydens (2011), there are five stages of the interaction between ICTs systems with citizens and businesses, where the first stage is the provision of the necessary information to citizens, the second stage is the one-way interaction, the third is the two-way interaction, the fourth is the digital-electronic transaction with them, and the fifth and the last is the targeted actions.

Today most e-government systems are unable to resolve co-ordination between stakeholders: government, citizens, and business (Heeks, 2008).

### **The Implementation of E-Government in the 1st and 2nd Grade of Local Government**

Local government services are the broader public sector services with the most direct contact with citizens and businesses. Based on this assumption, the improvement of the services provided by local authorities to citizens and businesses can become a reality through the achievement of certain specific objectives. In particular, some of these objectives are to create the necessary infrastructure for these actors to implement e-government through the use of e-infrastructure, e-consultation and empowerment of citizens, and businesses (e-democracy), improving the efficiency of e-commerce, providing information to the public through e-policy,

the interaction of these bodies with citizens and businesses-service and the Belg allowance management of human and financial resources and the management of these bodies (Delitheou, 2011, p. 21). The KEDKE, with a view to strengthening the position of the local authorities in the information society, has established a structure for strategic cooperation with the first grade of local government (Koumiotis, 2011, p. 39).

However, according to Lambrou (2017), there are three main objectives of local government services about e-government and these are:

1. Simplifying and modeling processes using ICTs, thereby achieving resource savings and reducing red tape in these organizations. An example of the multidimensional implementation of ICTs, leading to the simplification of public procedures, is the latest technology (scanners) that already have some public services. These “smart” devices even work with a wireless network while photographing original documents while at the same time able to store, send, or post these documents where required.

2. The development of e-government through the creation and implementation of ICT-based programs and actions;

3. The implementation of the so-called “multi-level governance”, which will provide local authorities with enhanced capabilities and competencies in the implementation of e-government, using, of course, ICTs (Lambrou, 2017, pp. 50-51).

The first organized effort to use ICTs related to local government took place in 1997 with the creation of the “ota.gr” website by the Athenian-Macedonian News Agency, which is still present. This site, through the use of ICTs capabilities, offers opportunities to inform the general public on issues related to local government, with the main objective of promoting and supporting the actions developed by these bodies, as well as the creation a framework of reflection on these issues.

In 2000, the “Ariadne” program was launched pilot in its implementation and its main focus was on enhancing the efficiency and the services provided by the 2nd and 2nd degree local authorities. The main action of this program was to create around 1,000 one stop shops for these operators, offering multiple benefits to their managers and to the entire Greek public administration.

In particular, these services have created immediacy in trade between citizens and local society enterprises and their respective local government and, at the same time, functioned as an intermediate hub between local government bodies and general government (National Interoperability Frameworks Observatory, 2014, p. 10; Apostolakis et al., 2008, p. 371). According to the NIFO (2016), only the first five JEPs in the above mentioned form and capacity were launched in 2002, implementing the above actions with the use of ICT.

Also, until 2002, with the creation of the “ASTERIA” program, an important effort was made to introduce the ED through the use of ICTs to the local government of the island of Greece. This program has enabled these municipalities, through the “Citizens’ Bureau”, to carry out all administrative procedures and services related to citizens and businesses in the local community (General Secretariat for the Aegean and Island Policy). More specifically, the executives of these offices were responsible for electronically requesting any request from citizens and companies of the local community to the appropriate prefecture or other administrative department that did not have their seat in their island of residence and to take them again the responses of these services on the part of the citizens, thereby helping to avoid the movement of those in charge of these decentralized services, and to reduce the costs and time by the public administration, but also by the administration (Christopoulos, 2015, p. 75)

According to Delitheou (2011), undeniable is the fact that in the last few years, the first grade local government services have made very important steps to progress towards digital transformation. As a result of these efforts, most of these operators now have one, albeit rudimentary, Internet connection, with some of them having high connectivity speeds and some others not.

Also, till today, several infrastructures have been created and deployed to support IT through the use of ICTs to these organizations, regardless of the fact that some of these infrastructures are more or less sophisticated (Delitheou, 2011). Characteristically, according to surveys carried out in 2011 at 170 local authorities in the country, 54% of them have low Internet connectivity speeds, while in the case of those with a population of less than 5,000, this figure is 82%. In addition, only 55% of these 170 operators provide electronic public services, while 87% of them provide only information to the public and only 38% of them offer the possibility for visitors to their websites to retrieve files and applications (Delitheou, 2011, p. 51).

Similar results are reported by Flak, Olsen, and Wolcott, (2005) who surveyed 30 municipalities in southern and south-eastern Norway in 2005 and showed low implementation of the most advanced e-government functions, although Norway is stable among top countries active in the ICT and Internet world. Municipal websites provide more information and less interaction with the public.

In municipalities and communities, the biggest problem is the interoperability and communication between them and the central government bodies, but also among them, as most municipalities do not have the necessary digital-electronic infrastructures for handling and exchanging documents with these operators through the use of ICT. Only a few of these municipalities have successfully developed some internal information systems that can interconnect electronically various internal structures and services of these agencies (Tampakis, 2008, p. 52)

### **European Union Initiatives for the Development of E-Government in Local Authorities**

The message sent by the European Commission to everyone is:

Connectivity for the benefit of all means that it will not matter where you live or how much money you earn. That is why we propose today to equip every European village and every European city with free wireless Internet access in the main centers of public life by 2020. (Jean-Claude Juncker, President of the European Commission)

Among the 10 priorities of the European Commission for the years 2015-2019 is the “digital single market” where the primary objective is to help large and small businesses, researchers, citizens, and public authorities make the most of new technologies, securing the necessary digital skills for all and funding research into high-performance health and information technology in the EU ([https://ec.europa.eu/commission/priorities/digital-single-market\\_el](https://ec.europa.eu/commission/priorities/digital-single-market_el)).

At the local level, this period is promoted the “Free Wi-Fi for Europeans” program. Through WiFi4EU, the European Commission wants to ensure free Wi-Fi connectivity for citizens and visitors in public places, such as parks, squares, public buildings, libraries, health centers, and museums all over Europe. The goal of the WiFi4EU program is to support the installation of modern Wi-Fi equipment in social life centers with a budget of EUR 120 million for the period 2018-2020. Via the WiFi4EU gateway, municipalities across Europe are invited to subscribe to and participate in the various calls (on average every six months) to allow them to receive a free Wi-Fi hotspot voucher in their public spaces, public libraries, museums, public parks, squares, etc. ([https://ec.europa.eu/commission/news/wifi4eu-2018-nov-05\\_en](https://ec.europa.eu/commission/news/wifi4eu-2018-nov-05_en)).

The European Commission has selected 2,800 municipalities—including 117 Greek—for a WiFi4EU coupon of EUR 15,000 in the first WiFi4EU application form, which took place on 7-9 November 2018. It will

be noted that there will be three additional invitations, for which municipalities that have not received a voucher can apply (<https://ec.europa.eu/digital-single-market/en/news/preliminary-results-second-wifi4eu-call>).

### **A Comparative Study Among the Local Government Departments on the Implementation of E-Government**

In recent years, more and more municipalities in the country have made significant progress in the development of e-government through the use of information and communication technologies.

#### **Municipality of Trikkaion**

A more typical example of this is the Municipality of Trikkaion, which is the first smart city in Greece and has been distinguished for three consecutive years (2009-2011) in the list of the 21 smarter cities in the world.

One of the first actions of the municipality in its effort towards digital transformation was the provision of free Internet via Wi-Fi in most of the city. The so-called “e-dialogos” program, through which participatory governance is promoted, has been created, providing citizens with the opportunity to shape the issues to be discussed in the city council, including digital polls and polls, etc. (Spinellis, Vassilakis, Tsouma, & Pouloudis, 2018, p. 57).

Also, in municipality’s website, there is the “Demosthenes” platform, which is a special platform in which the citizens have the opportunity to submit their complaints to the municipality (e-Trikala). The “Tele-Providence” platform, which includes the provision of care and welfare to vulnerable groups through telecare, is based on telemedicine and telecare systems (e-Trikala).

Another of the platforms that have been set up to serve the visitors of the municipality is “Trikala tourism”, which provides all the necessary information that may interest tourists-visitors of the city, such as an electronic list of city sights, digital maps, weather forecasts, etc. (e-Trikala). In addition, with regard to the movements and in particular the means of mass transportation, the municipality has installed an advanced telemetry system capable of providing reliable and accurate information to the public on the location of the buses and their waiting time at the stops (e-Trikala).

In the near future, the municipality will also implement other innovative programs and platforms, such as interactive parking system, issuing of certificates from the municipality by automatic machines, scattered in the city, modernized lighting system, etc.

All these platforms and e-services were made with the contribution of the municipality’s development company, e-TrikalaAE, through which the municipality managed to overcome bureaucratic obstacles and develop innovative actions (Spinellis et al., 2018, p. 58).

#### **Municipality of Platanias in Crete**

In addition to the Municipality of Trikala (<https://trikalacity.gr/>), there are other municipalities that have developed innovations in e-government through the implementation of ICTs. More specifically, the Municipality of Platanias (<https://www.platanias.gr/>) in Crete has created a special profile in the “Messenger” application, which belongs to “Facebook”, which operates with artificial intelligence in the form of “bot”. This “bot”, through artificial intelligence, is tasked and configured to respond to all Messenger users who send any message to that service (Trasanidis, 2018, p. 49).

#### **Municipality of Athens**

As the largest city in the country, the City of Athens, which according to the latest census is the largest

population of the country, which amounts to 664,046 inhabitants (ELSTAT, 2018), has in recent years made considerable efforts in the digital transformation of the provided services to its citizens, while developing a number of pioneering programs and solutions (Spiliotakou, 2017). In this context, the Municipality of Athens is developing a series of innovative actions in the areas of sustainable urban mobility, open data, and energy saving while participating in a large number of European Union programs concerning municipalities (Spiliotakou, 2017, p. 54).

Like the Municipality of Trikala, the City of Athens also provides free Wi-Fi hotspots to the public in some of the city's most central locations. Also, the City of Athens has created some digital applications for mobile phones and tablets that provide important information on the best routes people and visitors can plan, telematics systems on public transport and controlled parking spaces. In addition, an advanced geographic information system (GIS) has been created that provides a wealth of information to the public about the geospatial data within the city planning plan. Finally, an e-portal has been set up and operates within the City of Athens website (<https://www.cityofathens.gr>), which provides information and data on various areas of the municipality's responsibilities as well as various electronic services to citizens (Spiliotakou, 2017, p. 54).

### **Municipality of Thessaloniki**

Municipality of Thessaloniki (<https://thessaloniki.gr>) is the second largest in population of the country with a population of 325.182 inhabitants (ELSTAT, 2018). Both in this municipality and in the City of Athens, the great geographical and urban area as well as the large number of citizens and visitors create the need for a better and faster service to the public in line parallel with the requirements of modern public administration, which have as their central axis the course of public services towards digital transformation (Trasanidis, 2018, p. 53).

The website of the Municipality of Thessaloniki, according to Mitsiopoulos and Trasanidis (2017), offers the possibility of two-way interaction between the visitors and the electronic services of the municipality.

A very important and innovative online platform on this site is the online platform "Improve My City". Through this online platform, registered users have the ability to submit complaints and complaints, as well as to inform the competent services of the municipality about any kind of harm related to it and located within its civil network.

The Municipality of Thessaloniki has achieved a significant progress towards digital transformation, especially as the site "Municipality of Thessaloniki, E-Government Gateway", registered users have access to the open data, as well as many services and processes that are fully digitized, such as for example, is the "improve my city" online application, the ability to appeal to the municipal police of the particular municipality, the possibility of public complaints the supporter of city, etc. However, the development and progress of e-government in this particular municipality towards digital transformation remains the fact that most of the provided electronic services of the municipality remain at the 1st and 2nd level of digital transformation, as it is not required by these services authentication and identification of user information so that they move on to the next step of these processes, but these processes do not work are entirely electronic (Mitsiopoulos & Trasanidis, 2017, pp. 26-27).

### **Municipality of Heraklion**

The Municipality of Heraklion is a municipality that has been distinguished as one of the 21 smarter cities-worldwide based on the Intelligent Community Forum headquartered in New York. Like the other

smart cities in Greece, the Municipality of Heraklion has free access points to the Internet within its geographical boundaries as well as a municipal fiber optic network (Spiliotakou, 2017, p. 60). Additionally, through the electronic platform “[www.heraklion.gr](http://www.heraklion.gr)”, there is a plethora of electronic services to the citizens as well as a large number of geospatial data (Spiliotakou, 2017, p. 61). Finally, this municipality uses telematics systems in its urban transport services to provide more accurate and reliable information to the traveling public and undertake various actions to enhance sustainable and green development (Spiliotakou, 2017, p. 62).

### **Municipality of Kifissia**

Another Municipality of Athens that provides a more comfort life to its citizens is the Municipality of Kifissia. The “smart” applications it has adopted are:

- [www.kifissia.gr](http://www.kifissia.gr) (Portal of the Municipality) which offers municipal information, two-way communication, and access to electronic services.
- [www.kifissia.gr/kif/gdimoti](http://www.kifissia.gr/kif/gdimoti) (Public Office): Electronic submission of requests concerning daily routine (cleanliness, electric lighting, street condition, etc.), real-time update of citizens on the development of their request.
- <https://www.kifissia.gr/sadk> (Electronic Applications) (granting of Certificates, Certification, etc.): Submission of applications without moving, taxisnet authentication.
- <http://www.kifissia.gr/el/blog/kifissia-in-action> (Kifissia in Action): Free digital mobile phone application, Submit everyday requests directly from the mobile phone.
- Management System of the Social Service of the Municipality: Management of information and data of vulnerable groups
- <http://www.kifissia.gr/el/decisions> (Decisions of Collective Instruments): Access from our computer or portable device to decisions of the collective organs of the municipality.
- Electronic Protocol: An information system for the collection, recording and distribution of migrant documents by whatever means they are produced, registered, or trafficked. It is used by the Protocol Department and the three municipalities with on-line connection to the central server of the municipality.
- Smart benches: This is an integrated digital convenience station. They have built-in housings that convert solar energy into electricity while having two USB ports, each capable of charging any electrical device and one inductive charging port where wire-free charging can be provided if the mobile has inductive charging technology.
- Use of the trust and use social platform in the Municipality of Kifissia. Through this platform, Kifissia’s shops, businesses, and freelancers have the opportunity through their professional electronic accounts to communicate their offers, discounts, and news, but also to participate in competitive procedures, making their business competitive and present in the new conditions of digital reality. The success of the trust and use platform in strengthening the local market in Kifissia confirms the golden prize it received in the recent Best City Awards in the category “Economy-Development” and in the section “Viewing Local Entrepreneurship” (<https://enypografa.gr/?p=215828>).

### **Municipality of Chalkida**

Another Municipality of Greece, which has developed innovative and innovative systems based on information and communication technologies, is the Municipality of Chalkida (<https://dimoschalkideon.gr>). More specifically, the municipality has developed and installed an electronic intelligent lighting and controlled



parking system, facilitating and simplifying the services provided to citizens. Additionally, an electronic platform is available on its website which offers a wealth of information and services, such as the ability to make electronic payments and the online submission of complaints and complaints related to the particular Municipality (Spiliotakou, 2017, p. 64). Finally, within the geographical boundaries of the municipality, a fiber optic network has been created, through which free access to the Internet is offered to all citizens, while in the municipality buildings alternative energy sources have been installed, thus enhancing the reduction of energy consumption (Spiliotakou, 2017, p. 65).

### **Municipality of Larisa**

Controlled parking via electronic system as well as the telematics system of city buses is also implemented by the Municipality of Larissa (<http://larissa-dimos.gr/el/>). However, this municipality has created a digital platform through which a great deal of information is provided on culture, economy, tourism, and other areas of interest to citizens and visitors of the city (Website of the Municipality of Larissa). In addition, Larissa is the first Greek city to join United Nations Educational, Scientific, and Cultural Organization (UNESCO's) "The Learning Town" program, through which its cities have the opportunity to train and develop their skills in new information technologies (Spiliotakou, 2017, p. 67).

### **Municipality of Veria**

The Municipality of Veria has also created an electronic portal that provides various information about the Municipality within which an application called "Digital Shopping Center" has been created, through which citizens have the opportunity to be informed about the prices and products of local businesses. Also, as in other municipalities in the country and in the particular municipality, there are free Internet access points for the citizens (Veria's website, <http://www.veria.gr/new>).

### **Municipality of Ioannina**

The Municipality of Ioannina, in the process of digital transformation, has created an innovative platform for the provision of telematic services, which gives real-time the conditions prevailing in the traffic system of the city and also provides real-time information for the free parking spaces within the city. In addition, the municipality's major innovations are the light-emitting diode (LED) lighting system, which is controlled by a central electronic remote control system as well as an innovative control and monitoring system for waste trucks through telematics systems (Municipality of Ioannina, <https://www.ioannina.gr>).

### **Municipality of Chania**

The Municipality of Chania is located in a geographical area, which mainly attracts a large number of tourists during the summer period, which is also a challenge for the municipality itself to upgrade and modernize the services provided by it. In this context, the Municipality of Chania, through its website, provides a plethora of electronic services, such as the electronic submission of complaints and complaints from citizens to the particular institution. In addition to many of the aforementioned municipalities, advanced telemetry systems, which provide all the necessary information about the public transport network as well as the controlled parking areas, have been installed in order to provide more efficient and faster passenger services. However, the most important innovation of the municipality, in addition to providing free broadband connection to the public areas within the geographical boundaries of the municipality, is the installation of "intelligent waste bins" with special sensors providing information through the use of ICTs for their

completeness, which is also a very beneficial solution for saving and managing waste (Municipality of Chania, <https://www.chania.gr>).

### **Municipality of Kalamata**

The Municipality of Kalamata has also developed telematics systems for informing drivers and passengers using transport, providing free wireless Internet access to the greater range of the municipality and modernizing the lighting system by installing LED lamps, thus saving large amounts of electricity (Municipality of Kalamata, <http://www.kalamata.gr/>).

### **Municipality of Xanthi**

The Department of Informatics of the Municipality of Xanthi in December 2014 designed, created, and managed the so-called “Digital Mapping” within the framework of the Technical Program of the particular Municipality (Municipality of Xanthi, <https://www.cityofxanthi.gr/>). This application provides all kind of information on the progress of the municipality’s projects through digital maps, while creating an interactive environment that is extremely friendly and user-friendly to the visitor (Delitheou, 2018, p. 149). Apart from this implementation, there are a number of applications available on the site of this municipality, which offer opportunities for public consultation and information for visitors and citizens of the city, while enhancing the transparency and user participation of the site (Delitheou, 2018, p. 150).

### **Municipality of Kozani**

The Municipality of Kozani uses e-government through ICTs in many of its providing services to citizens, making this two-way interaction more direct, faster, and more effective. In particular, the municipality in question, in addition to the services provided by the aforementioned intelligent cities, such as the provision of geospatial data via ICT, the electronic control system for controlled parking, and the possibility of participation citizens in the online public consultation (Municipality of Kozani, <https://cityofkozani.gov.gr/web/guest/home>). The Municipality of Kozani offers some additional innovative electronic services, such as teleworking and teleeducation, enabling citizens to work and trained electronic from distance. Finally, through the e-citizen service, the inhabitants of the municipality have the possibility to electronically inform the institution of any problems that occur within its geographical boundaries (Panagiotopoulou & Stratigea, 2014, pp. 21-22).

### **Municipality of Patra**

The municipality has also developed a telematics system for informing passengers on arrivals and departures of bus stops and the implementation of an electronic ticket for urban transport based on ICTs (Municipality of Patra, <http://www.e-patras.gr/>).

### **Municipality of Loutraki-Perachora-Agioi Theodoroi**

The Loutraki-Perachora-Agios Theodoros Municipality has developed the “Loutrakiplus”, which is an innovative program for the development of the cyclical economy, entrepreneurship, employment, and social cohesion. For the successful implementation of this program, members of the municipality cooperate with specialized scientific and non-staff members in institutional cooperation with the European Union. As part of this program, the digital platform “Loutraki Business” has been developed, which is an electronic guide for local stores, thus enhancing their digital visibility (Municipality of Loutraki-Perachora-Agioi Theodoroi, <http://www.loutrakiplus.com/>).

**Municipality of Argos-Orestiko**

The Municipality of Argos-Orestiko has developed an environmental protection program through telemetry and remote monitoring systems for pumping stations and water reservoirs of the municipality. Also, in municipal buildings and schools within the geographical and administrative boundaries of the municipality, biomass is used as the main fuel (Municipality of Argos-Orestiko, <http://www.argosorestiko.gr/>).

**Municipality of Eretria**

The Municipality of Eretria implemented an automation and telemetry program for water supply networks, aiming at the more efficient management and utilization of the municipality's water reserves (Municipality of Eretria, <http://eretria.gr/>)

**Municipality of Voula-Vouliagmeni**

The Municipality of Vari-Vouliagmeni replaced the old municipal lighting network, which consisted of conventional lamps and in its place placed type lamps, creating a smart electric lighting network in this way. This municipality has also set up a dedicated electronic citizens' complaint platform for any matter concerning this organization, but identifying the applicants' data in order to ensure their authentication. Finally, through the electronic services of the municipality, the visitor has the opportunity to be informed about the most important points of interest within the geographical and administrative boundaries of the municipality through a dynamic map which is connected and supported by Google maps (Municipality of Voula-Vouliagmeni).

**Conclusions and Suggestions**

It seems that the full development of ICTs and the establishment of e-government are not easy to achieve in all Local Authorities and, respectively, the achievement of a better quality of life for citizens.

Initially to provide services that focus on the citizen and the business, while at the same time serving the public administration by reducing its costs and reducing bureaucracy; reforms require strategic targeting, political support, and a series of structural changes with major the organization and management of information, interoperability to establish a commonly accepted framework for information security, institutionalize the user identification, establish information management structures, assuming adjustment of established ways of working, and to promote activities that will ensure the acceptance of the social partners, widespread access to online services and the gradual reduction of the digital division.

Moreover, in order to enable local authorities to reach a satisfactory level of local government and service of citizens, the importance of creating innovations is a catalyst factor. And in order to achieve their progress and sustainability in the modern changing socio-economic environment and the constantly new technologies that are a necessary prerequisite is the "change", with the driving force of readiness. When there is readiness, organizations are moving more steadily towards success.

The management of local government has to adapt and adapt its employees to the new challenges posed in various areas of local government.

One area that can boost a municipality that has developed its e-services is entrepreneurship. Local government will be able to direct the new entrepreneur or the entrepreneur who wishes to engage in entrepreneurship by integrating them into either local or European programs that require information and communication technologies, making their business competitive and present in the new digital reality environment.

Most of the municipalities mentioned above provide some similar services based on information and communication technologies, using and applying, in many cases, one municipality the successful example of the other as a good practice. More specifically, all the above-mentioned municipalities have within their geographical and administrative boundaries Wi-Fi hotspots for citizens, portals, e-services, and electronic applications for mobile phones.

Most of these municipalities have dedicated electronic platforms through which citizens have the possibility to file their complaints and to register various requests to these bodies. Also, many of them have special LED light bulbs, telematics systems for informing the public about the arrivals and departures of public transport, as well as special sensors that inform drivers for free parking spaces within the geographical boundaries of the municipalities of them. In addition, many of these municipalities provide through their websites geospatial data (GIS), optimal path planning for routes within their geographical boundaries, digital public information plates, and a fiber optic network.

However, only some of them provide more extensive and sophisticated information based on information and communication technologies, such as electronic payments, e-KEP, e-commerce, teleworking, and teleeducation.

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