

Abstract Proposal for the XVII IRPSM CONFERENCE

**PANEL TITLE: E-GOVERNMENT AS A RESPONSE TO MANAGING FINANCIAL AUSTERITY AND CRISIS SITUATIONS**

Learning from Failures: a Chance to Overcome the Crisis.

*E-Government Adoption in the Municipality of Palermo, Italy.*

*Due to its effect on regional and national competitiveness the issue of e- Government has become particularly relevant in the light of an ongoing financial crisis. Mostly because e-Government has a great potential in reducing the cost of regulatory compliance for government customers, in improving efficiency and tax administration and in avoiding frauds and errors. However, it must not be considered as a simple set of tools for technological innovation but rather a phenomenon that requires redesigning the entire institutional governance model and the roles of the main actors involved.*

*This paper presents part of the PhD thesis project of the author on the implementation and adoption of e-Government strategies in the Municipality of Palermo, southern Italy, in a crucial period of the starting of a new web portal project.*

*Research is being conducted adopting a managerial perspective with the help of Institutional Theory as a framework to understand the particular context and to depict the deep causes of lack of coordination among institutions. Moreover System Dynamics, a particular kind of dynamic simulation, will be used in order to individuate the variables affecting the adoption rate and to analyze what feedback foster or avoid the achievement of the tipping point to assure the development of e-services. A similar integrated approach to e-government, although with different applications, has been already proposed by Luna Reyes & Gil-Garcia (2011).*

**Keywords:** e-government, local government, competitiveness, financial crisis.

## Introduction

The aim of this paper is to analyze the state-of-the-art of e-Government development in the Municipality of Palermo. As many institutions around the world, the municipality is experiencing the implementation of a project of the “second generation”. The advantages of a second experience are a wider and deeper knowledge of the potential criticalities. However, this is not a guarantee of success since ICT is constantly evolving, and the Public Administration (PA) should evolve in parallel. Moreover, the latest financial crisis dampened local economy even further. Lack of resources constitutes a big obstacle to investments, investments that could be the way out of the crisis.

Even though the article will be focused on the current project, it will present also the previous project (MAIA<sup>1</sup>) since it built the basic architecture for the current project.

In the wake of a national plan, MAIA, the first e-Government project for the Municipality of Palermo, was presented in June 2002 and was shaped as a plan for the implementation of a web portal to allow an easier access to the municipal services for citizens and businesses.

The design of the portal was characterized by good availability of services but during the implementation phase it came out that MAIA had problems in the authentication process and did not allow an easy access to the users. In short, with the benefit of the experience, it is possible to observe how the approach was a *government-centered approach* in contrast with a more user-centered approach suggested, a few years later, by European Commission (2010) and recent literature (Verdegem P., Verleye G., 2009).

In 2011, thanks to a new stimulus of the national government, the municipal government undertook a new project that consists of the realization of a new web portal “Online Services Portal- Authentication System and online level 4 services”<sup>2</sup>. As the name suggests, this new plan aims to improve the authentication process and to make all the services to achieve Level 4 in the interactivity scale (fulfillment of the procedure online).

The success of the project is important not only for the improvement of the communication between the users and the PA but also for its effects in restoring trust in government and boosting the economy of the territory.

Moreover, “the development of a web portal will also create a complex network of actions and reactions, in which not only the goals and means are being discussed, but also

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<sup>1</sup> The acronym MAIA stands for “*Miglioramento delle Applicazioni e delle Infrastrutture Applicative per il governo della città di Palermo*”. The name refers to the improvement of tools and infrastructure of the Municipality of Palermo but is not intuitively bringing back to the image of a web portal and this obstacles the adoption.

<sup>2</sup> In original language: “Portale dei servizi on-line – Sistema di autenticazione e servizi on-line di livello 4”.

the inherent values that lay behind these goals and lay behind these technologies” (Bekkers, Meijer, 2012). This must imply a redesign of the administration.

The phase of implementation started in January when the new website was released online. So in this moment is crucial to define the services in the most suitable way and to start communicating and educating the population to the innovation. At first, this new website will progressively provide the traditional services in a digital format. Later on, it should become an instrument of active participation and expression of democracy.

Section 1 reports the effects of the latest financial crisis in Sicily and discusses the new role of the PA in the Sicilian context. Institutional Theory will help in framing the case study of the web-portal of the Municipality of Palermo in section 2. In section 3, System Dynamics will be applied to the above-mentioned case study in order to recognize the feedbacks underlying to the development of the portal. Section 4 contains the conclusions.

### **1. The financial crisis and the need for redesigning the Public Administration.**

The latest financial crisis hit Sicily later but harder than the rest of Italy in spite of the fact that the economic system was less financial. According to “38<sup>th</sup> Report Sicilia” edited by Di.Ste Consulting for Fondazione Curella, during the past year, Sicily lost 3% of its GDP (Italy about 1,7%). The cumulative rate (2008-2012) reports a loss of 10% of GDP against an Italian average of 6,5%. Significant decreases were recorded also by the employment rate (-2,2%), consumption (-4,1%) and investments in industrial equipments (-12,8%).

The data about the shortfalls of consumption and investments are probably the most alarming. Household and businesses cut their expenses under the effective decline of their purchasing power. Moreover, the adoption of a strong contractionary fiscal policy worsened their perception of the reality, and their expectation for the future is still pessimistic.

The Municipality of Palermo, as most areas of southern Italy, was hardly hit by the financial crisis though its economy is not based on the financial sector but real. The crisis was indeed mainly driven by fear and loss of *trust in government* with consequent aversion of citizen and businesses towards consumption and investment. This approach generated a feedback that made harder and harder for the government to gain trust again.

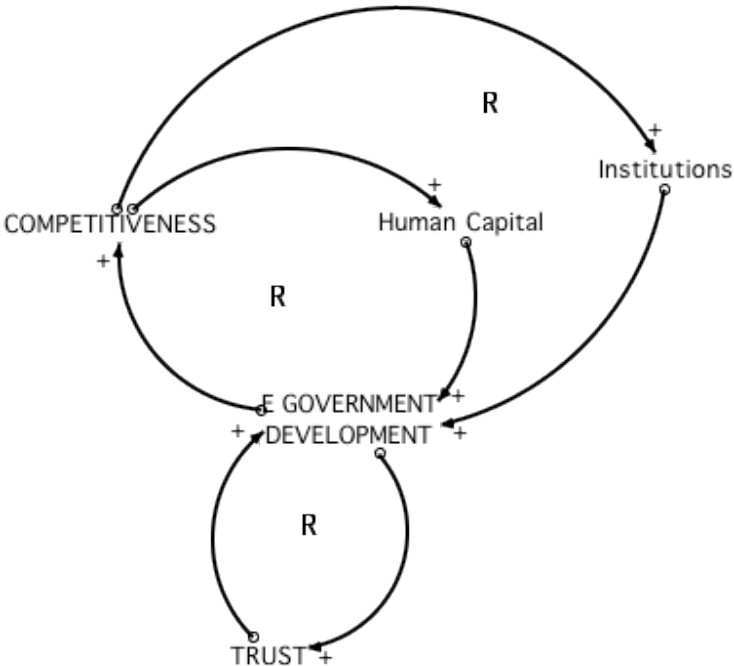
In this context, e-government could provide the key to inject trust through a renovation of the Public Administration. ICT and e-Government have been deemed a way of increasing trust in government (Pina et al., 2010). But the same variable (trust in

government) has been recognized as a key factor in the adoption of e-services (Srivastava S.C., Teo T.S.H., 2009; Carter L., Weerakkody V., 2008). Lack of trust is an obstacle to adoption. From here the urgent need to find a key to interrupt this vicious circle that keeps consuming trust and resources. The key can be found in the re-organization of the Public Administration, a change to make it suitable for ICT innovation.

The need of redesigning the Public Administration has been recognized by most of the national governments. “A modern and innovative public administration is important in term of service efficiency and quality improvements and because it creates the basis for social literacy towards innovation” (De Petra G., De Pietro L., 2004).

According to Panozzo (2005) the role of PA in promoting competitiveness is a direct consequence of the phenomenon of globalization. The competitive boundary was extended to take as a reference the *local territorial system*, homogeneous areas of attraction. Each area offers a *territorial product*, which is the result of the production in the private sector and of course requires the massive intervention of the public sector in terms of infrastructures, regulation, social services. Technological innovation is an enabling factor for territorial planning.

E-government development has been tested to depend on competitiveness (Srivastava and Teo, 2009). They also found out that human capital and public institutions quality can make the relationship stronger.



**Figure 1.** CLD explicating feedbacks among e-Government Development, Trust and Competitiveness.

Figure 1 represents a *casual loop diagram* (CLD) that helps in recognizing the connections and the feedbacks underlying to the generic process of e-government development. It connects e-government, competitiveness of the territory, quality of the institutions and human capital according to literature hypotheses. It also makes explicit the existence of a bidirectional relation between e-government development and trust.

CLDs help in capturing the hypotheses and the mental models of the analysts. The arrows indicate the existing links. Each link is then assigned a polarity positive (+) or negative (-) (Sterman, 2000, p.138). Positive or negative are not attributes of the quality of the produced effect: they indicate if the dependent variable is linked to the independent one with a direct (+) or inverse (-) relationship. In Figure 1, all the polarities are +, this meaning that there is a direct relation between the involved variables (i.e. the more the competitiveness, the more the human capital). Each “R” represents a feedback loop. They are all reinforcing. If the virtuous circle starts, it can lead to exponential self-sustaining growth. But in this moment, the circle is working the other way round, depleting resources.

## **2. Case study: the Municipality of Palermo.**

It is important to make clear that this work does not aim to establish a mere comparison between the two projects undertaken by the municipality of Palermo because it would not be homogeneous. What is important, on the other hand, is to observe how the managerial approach influenced the result of the first project and what improvement can be done to assure a better impact of the second.

The first E-Government project for the Municipality of Palermo was presented in June 2002 to take part to the notice of funding issued in 2001 for E-Government implementation by the Italian Department of Technological Innovation. It was called “M.A.I.A.”, Italian acronym for “*Miglioramento delle Applicazioni e delle Infrastrutture Applicative per il governo della città di Palermo*” (the name refers to the improvement of tools and infrastructure of the Municipality of Palermo but is not intuitively bringing back to the imagine of a web portal and this obstacles the adoption) and was shaped as a web portal to allow an easier access to the municipal services for citizens and businesses. The project was approved in November 2002 and co-funded by the Department of Technological Innovation with 340.000 euro. The General Administration of the Municipality allocated 1.221.000 euro for the project execution.

The project was committed to the Information System Department of the municipality with the technical support of an ICT company, *Sistema Palermo Informatica S.p.A.* (SISPI) in

February 2004. At that time, SISPI was a subsidiary of the Municipality of Palermo that owned 51% of the shares.

It was clear to the national Department of Technological Innovation (presently enclosed in the Department of Public Administration and Innovation) that infrastructures and human resources were not ready to support a complete digitalization of public services and the failure of the national project for electronic ID cards (mainly because of a lack of funding) implied the need for new investments on the digital identification process.

MAIA's objectives in this first attempt were downsized to three main goals. First of all, it was necessary to build the infrastructures and purchase the facilities (servers, storage, etc.) needed in order to offer a *new service model*. The second goal consisted in providing citizens a one-stop shop, a unique *front-end*. It was not important how the process was executed in the *back-office* (traditional or digitalized) but the service had to be delivered on time.

A unique front office was a big challenge for an administration of a large size municipality as Palermo, where each sector used to have its own documents recording system. Presidential Decree 445/2000 prescribed a single document recording system, a unique Protocol Identifier, but has not been realized yet. Moreover, even though it was not required to set up a digital back office, it was necessary to improve the communication among the offices in order to guarantee the possibility for the citizens to be allowed to follow their own procedures. In order to answer this need, SISPI S.p.A. realized an intranet called *Intr@com*. In 2004, the MAIA Executive Plan ("Rapporto Esecutivo B1") defined the main operational measures to be undertaken: specific training for 184 employees, a weekly monitoring of user satisfaction, a classification of the 53 available e-services among the 4 interactivity levels on basis of the ones suggested by the European Commission (information, unidirectional interaction, bidirectional interaction, trans-activity).

As a third goal, Sispi SpA started the implementation of a web portal available to citizens and businesses. The portal included all the major "ingredients" of E-Government strategies. The choice to maintain the traditional channels alive was present and clear in including the *Intr@com*. However, it is not clear which institutions were included in this Intranet and what kind of relationship was undertaken with the external ones.

The portal also provided a brief description for each of the 53 services towards businesses and citizens that were classified in the portal according to the *life-event approach*. The following municipal reports acknowledged that works were proceeding and defined the content of the portal in detail. In spite of that, MAIA was not complete yet and only

limited available areas were reproduced in the website *www.comune.palermo.it*. Curiously, the website was independent from the Information System Department of the municipality and from Sispi Spa and presented different version of the available forms creating confusion among the users. It was realized by a Webmaster directly depending on the Vice President of Cabinet to the Mayor of Palermo: the lack of coordination was evident.

In 2011, the City Council approved a new project described in the municipal resolution of the 31st of May 2011 as the *“natural prosecution of M.A.I.A. portal [...] that place itself inside a dynamic planning strongly oriented towards evolutionary strategies of the Municipal Department of Information System fostering direct services supply to citizens, businesses and other administrations”*.

The new project consists of the realization of a new web portal *“Portale dei servizi on-line – Sistema di autenticazione e servizi on-line di livello 4”*. As the name suggests, this new plan aims to improve the authentication process and to make all the services to achieve Level 4 in the interactivity scale (fulfillment of the procedure online). It was again put in charge of SISPI SPA (from 2009 totally hold by the Municipality of Palermo). The funds, an amount of 1.199.000 euro, will be provided by the Regional Department of Family and Social Policy to rely on the European intervention strategy 6.1.4.1. PO FESR Sicilia 2007/2013. The implementation should be completed by June 2013. The webmaster, though, is still independent.

Measuring e-government in order to evaluate different policies is not easy because of all the immaterial values involved. Nonetheless it is important to capture the feedbacks underlying given e-government system. The next section introduces a preliminary model, which constitutes the first attempt to answer this need.

### **3. The Use of System Dynamics to assess e-Government strategies in the Municipality of Palermo.**

In this section System Dynamics (SD) will be employed to analyze the presented case study and its critical points. The choice of this methodology is linked to the intention of providing a progressive approach to the problem, going in depth step by step without losing the general perception of the problem. Often, *“the heuristic we use to judge causal relations leads systematically to cognitive maps that ignore feedbacks, multiple interconnections, nonlinearities, time delays, and the other elements of dynamic complexity”* (Sterman, 2000). SD can help in clarifying the misperception of the feedback structure of the environment.

This research will borrow Lyneis' approach to business strategy consulting. It will proceed from the administration structure analysis (as introduced in the previous section) to the development of a small insight-based model before the development of a detailed, calibrated model, and finally the definition of an on-going strategy management (Lyneis, 1999). In this phase, the focus will be on the second step, the development of a small insight-based model. Ghaffarzadegan et al. (2010) suggested that "small system dynamics models can illustrate the sources of policy resistance in the environment, facilitate learning through extensive experiments, overcome the issues of overconfidence, bring different stakeholders to a shared understanding, and help policymakers learn about the importance of an endogenous perspective to problem solving". In this case, a small insight-based model can offer a first support to managers in order to start perceiving the whole picture of the involved actors in implementing e-government in general, and a single service in particular. Implementing an e-service leads to discussing whether change in the organization or technological change came first.

In theory, an e-Government project should include both technological and organizational issues. Often technology tends to be predominant and e-Government turns out to be a mere set of tools as in first Palermo web-portal's experience. The concept has been discussed by Asgarkhani (2006), who argued that "technology is undoubtedly the backbone of the infrastructure that is required to support electronic government initiatives. Yet there is danger in placing too much emphasis on the technology aspect of e-services." In fact, "The potential benefits of e-technologies in the public sector can only materialize when they are introduced as part of a well-planned and properly supported social, cultural and political environment" (Asgarkhani, 2006). In MAIA's experience, it is possible to recognize some of the criticalities later identified by Van Veenstra and Janssen (2010): "the pitfall of starting with the technical implementation is that it may be costly to implement new technology first without training employees to use the IT, which may result in a slow process with high costs, in which clients do not notice any of the changes. In this case, the main risk is that the potential of information technology is not realized or that it takes very long before it is realized".

This is why Management Systems have to modify the approach of the PA towards citizens. The relationship becomes closer, heading towards including citizens into deliberation processes (as a final result). Citizens are no more customers but *co-designers* (Gil-Garcia and Martinez-Moyano, 2005) of the online services delivered by their municipality. The organization should be revised also in the back office/front office boundaries.



Nevertheless, the analysis of MAIA Executive Plan leads to the identification of its intended objectives that do not seem to include citizens per se. In its premise MAIA approach was a *government-centered approach* in contrast with a more user-centered approach suggested by European Commission (2010) and recent literature (Verdegem P., Verleye G., 2009). The importance of users' attitude was again underlined by Garcia Sanchez et al. (2012) when writing: "In relation to collinearity problems, our results suggest that it is necessary to consider variables that represent the level of a population's culture and technological capabilities without introducing their economic level in the analysis of e-government development."

Going more in depth in the model, Figure 2, the final objective of the model will be to provide a projection of possible scenarios of development of the new portal. The hypotheses, that is to say the structure of the model, are the result of some interviews with a project leader of Sispi Spa and with a manager of the ex Information System Department of the Municipality of Palermo and the selected indicators are consistent with those validated by Carter L., and Weerakkody V., (2008) and Verdegem P., Verleye G., (2009).

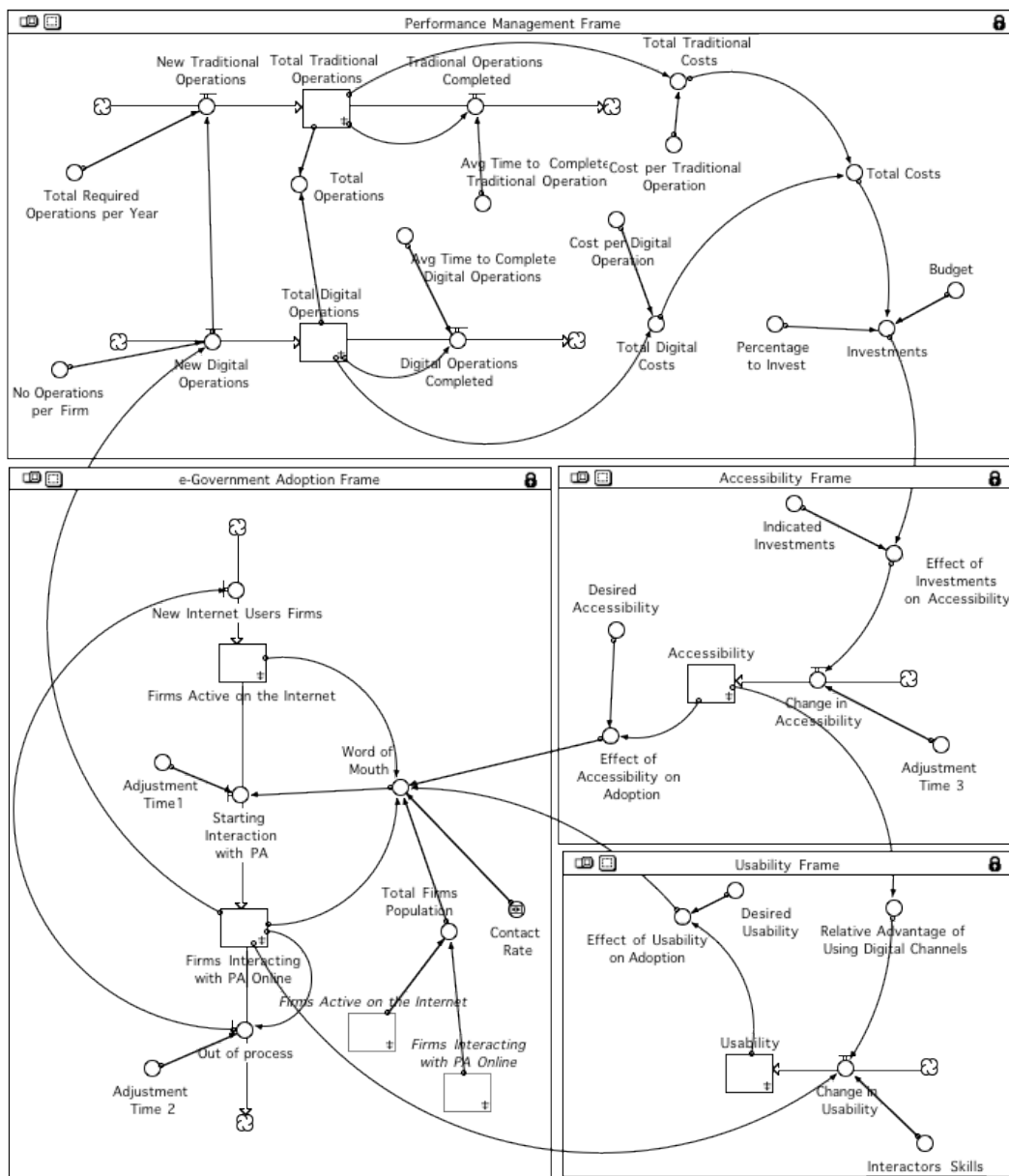
The model finds its roots in the "existence of a bidirectional relation between e-government development and administration effectiveness" tested by Garcia Sanchez I.M., Cuadrado-Ballestreros B., Frias-Acetuino J.V. (2012).

In its current version, the model includes four main sectors: an adoption frame, a performance management frame, an accessibility frame and a usability frame. The ideal application would be for those complex services where the traditional channel (going personally to the agency) seems to play an important role such as procurements and request for particular licenses.

As a typical Bass diffusion model, the *adoption frame* (in Figure 2) aims to show how ordinary Internet users can start to interact with the Public Administration through digital channels. This process is the complex result of the effect of many variables that must be identified and studied. Monitoring the correct development of the flow of *Starting Interaction* is the main goal of the model.

Always referring to Figure 2, from the number of interactors, it is possible to connect to the performance management frame and to determine the number of new digital operations ( $\text{New Digital Operations} = \text{Firm Interacting with PA online} * \text{No of Operations per Firm}$ ) and by difference the number of new traditional operations (given the assumption of a total number of operations requested per year). The term operation is used to refer to an activity related to the request of an e-service. From here, it is possible to calculate the total cost of

the service. The definition of costs is fundamental to support managers in the analysis of cost and benefits of the project. When comparing the digital procedure with the traditional one, the savings are expressed in terms of “time saving” that is to say “working hours”. And this is why they cannot be automatically transformed in economic terms since the flexibility of the staff employed in the PA is very limited. This constraint is one of the main issue municipal governors are dealing with. Yet the model suggests a budget process where the “time savings” can be turned into economic savings to allow new investments. However, even though difficult to apply in the municipality, this is not far from the reality of Sispi Spa that can reallocate the employees and gain efficiency.



**Figure 2:** Current version of the SD model.

The results of investment in term of *accessibility* will be measured with the help of some focus group for the chosen services. Sispi Spa is organizing different meetings with

interested representatives. In order to distinguish accessibility from usability is useful to remember the definition. “Accessibility indicates the degree (ease or barrier) of access and usability of ICT systems, service offers, applications and information via ICT (information and communication technology). Barriers to accessibility refer to technical, audio, visual, semantic and language barriers, lack of skills, exclusion of certain constituencies, etc.” (Codagnone, Wimmer 2007). Accessibility concerns the “supply side”, what the PA can do to provide a good service to the population.

On the other hand, as already seen before, usability is (in part) up to the users. According to Codagnone C., Wimmer M. (2007) “*usability* is the degree to which users are able to use a system with the skills, knowledge, stereotypes and experience they can bring to bear”.

The more skilled is the population, the more usable the system can be. If the population has good skills, it can help in designing better services, consistent with their needs. The importance of investment in digital education and assistance of the population is remarkable. But the goal of the project focused on the implementation of a given number of online services and on the way they should be delivered; in other words the focus is on the *availability* and *sophistication* of online services and does not include *usability* issues (perceived ease of use) and average computer skills of the population addressed.

Most of the feedbacks in the model are reinforcing. It means that once they properly start, they can reach a tipping point that means they can feed themselves back. But if the tipping point is not achieved, the process could work the other way round until a complete depletion of the resources.

Finally it is important to describe another key element of the model: the *contact rate*. The *contact rate* can be defined as the ability to discover the choices of others. It expresses how fast the user population becomes aware of the innovation. The evaluation of this parameter is deeply linked to the experience of the expert in each sector to which the model is applied.

#### **4. Conclusions.**

This work presents part of the thesis project of the author. It outlines the research objectives and the chosen research methodology. Even though acknowledging that the research is still developing, it is already possible to present some consideration that will be later investigated in the thesis.

First of all, a big issue is the acceptance of the new channels of interaction within the organization: every single agency fears an overload of digital inquiries that would not be able to face during the first days of implementation of a new service with bad consequences

for the reputation of the office. Moreover, there is a cultural resistance of the employees who perceive the digital channels as an increase of their workload in the short-term.

To solve this problem, Van Veenstra and Janssen (2010) suggested driving the migration to digital channels as a process in place of a project with implementation deadline to assure careful decision makings.

Trust of population and education play an important role and need investments. In general, it is not possible to achieve result in ICT innovation without expenses. But the efforts in make government more efficient could lead to savings in the long run.

Spreading information about the portal is crucial for the development of the portal. In some ways, the municipality competes for the attention of its citizen with the aim of becoming reference web-portal.

Moreover, it must be noted that developing e-government in the municipality without interfacing with the other institutional level is not recommended. Further research should make clear the role of the regions towards their municipality. It is necessary a process of standardization to assure interoperability and the chance for an Italian citizen or business to be home everywhere in the country. As remarked by Ferro E., Sorrentino M., (2010) “the challenge for the future is to find the right balance between the constitutionally recognized autonomy of local municipalities and the centralization of activities such as standard definition and solutions development that may allow the attainment of an effective and sustainable e-government implementation”.

## **5. Acknowledgements.**

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