UNIVERSITÀ POLITECNICA DELLE MARCHE
FACOLTÀ DI ECONOMIA "GIORGIO FUÀ"

Corso di Laurea Magistrale in International Economics and Commerce

Status and perspectives of *e-government:* the Municipality of Coriano

Relatore: Chiar.mo
Prof. Nicola Matteucci

Tesi di Laurea di:
Federica Urbinati Soldati

Anno Accademico 2019/2020

ABSTRACT

I termini "*e-government"* e "digitalizzazione" sono entrati a pieno titolo nell'Olimpo mediatico: digitandoli sul più potente motore di ricerca al mondo restituiscono rispettivamente ben 2.930.000.000 e 5.890.000 risultati.

Con l'affermarsi della nuova società basata sull'informazione, parallelamente allo sviluppo dirompente del settore ICT, si fa strada l'*e-government, che* oggi riveste un ruolo di assoluta rilevanza economica e politica, fornendo importanti risposte al cittadino.

Oggi è l'*e-government* a dominare le scene, rappresentando indubbiamente la destinazione della Pubblica Amministrazione. I dubbi persistenti riguardano però la soluzione: come fare ad arrivare il prima possibile alla meta? Quello che sappiamo è che la strada è ancora lunga.

Questo infatti è quanto emerge dall'analisi della letteratura inerente al panorama nazionale messa a confronto con quello europeo. Il clamoroso ritardo italiano nell'utilizzo dell'*e-government* viene attribuito a due fattori principali, entrambi legati alla composizione del capitale umano. Età media "troppo elevata" e titoli di studio "troppo bassi" rispetto alle media europea sicuramente concorrono tra le cause dell'arretramento digitale del Paese.

Lo scopo della tesi è quello di fornire una dimostrazione descrittiva supportata da evidenze empiriche, di quelli che possono ritenersi i reali indicatori di *e-government* e di quello che invece viene trascurato, o addirittura ignorato, all'interno della maggioranza delle Pubbliche Amministrazioni. I titoli di studio e l'età sono davvero entrambi fattori dirimenti ai fini di un buon livello di digitalizzazione all'interno della Pubblica Amministrazione? Se così fosse le *chance* per il nostro Paese di raggiungere i risultati attesi sarebbero minime. Infatti, se è possibile intervenire sulla valorizzazione dei titoli di studio, non è altrettanto vero che sia così agevole intervenire sull'età media troppo elevata dei dipendenti della Pubblica Amministrazione. Il motivo è semplice: l'innalzamento dell'età pensionabile (adeguamento alla speranza di vita) costituisce un limite invalicabile.

L'obiettivo che questa tesi si pone di dimostrare è però che questi due indicatori non siano davvero risolutivi. Il caso del Comune di Coriano, oggetto di analisi della presente tesi, dimostra che nonostante si trovi in perfetta linea con i parametri della media nazionale e abbia beneficiato della stessa base infrastrutturale favorevole dei comuni del medesimo territorio - fornita dalla Regione Emilia-Romagna e Lepida S.p.a. - sia stato in grado di approdare già da diversi anni nel mondo del digitale. Un lungo e complesso processo di

innovazione è stato possibile grazie ad una molteplicità di fattori: importanti e mirati investimenti strutturali, elevate e specifiche competenze professionali, capaci di governare un radicale processo di cambiamento, ingenti risorse sulla formazione del personale. Un percorso che progressivamente si è diffuso in modo capillare riuscendo ad influenzare positivamente sia tutti i suoi protagonisti sia la comunità dei cittadini, che oggi sempre più predilige il digitale al cartaceo. Così, seppur l'individuazione del problema del personale è una giusta intuizione, ciò che non è corretto è celarsi dietro una causa che appare immodificabile in un sistema pubblico come quello italiano. Occorre dunque scommettere e investire sulle risorse umane già presenti all'interno dell'Ente, valorizzarne le competenze acquisite con gli anni di esperienza, dotandole di preziosi strumenti tecnologici - oggi ormai largamente diffusi - guidando passo dopo passo il processo di riconversione del modo di pensare, da sempre il cambiamento più difficile. In altre parole, occorre affiancare le c.d. "hard skills" con le innovative "soft skills", che non sono né per i più giovani, né per i più preparati, bensì per chi ha la lungimiranza di cogliere nella digitalizzazione il modo più "semplice per semplificare".

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF GRAPHS

INTRODUCTION

If you open the dictionary and look for the definition of "digitization" you will read that, in electronics and computer science, digitization is the operation that translates an analog signal into digital form.

When it comes to Public Administration (henceforth, PA), the term digitization takes on a much broader meaning, which binds to itself a profound concept of innovation that starts, or rather it should start, from the person, who is at the centre of the whole process of change.

By digitizing the total provision of public services, the *digital divide* could seriously hinder access to services in some contexts. Digital technology can recreate bureaucracy and reduce the ability of institutions to understand the needs of citizens and to respond appropriately to them. This is why when we talk about digitalization we are talking about “innovation”, which differs well from the term “invention”: here there’s the key of the entire process of digitization in the PA. To innovate means combining a series of existing inventions to transform them into business models, services, products that did not exist before. For an innovation, unlike an invention, no research costs are needed: what is needed to innovate is instead a huge effort to adapt, evolve and combine what already exists in order to transform it into something that is ever more efficient and effective. Who takes on

the fundamental role in the digitization process is therefore the person, who is at the centre of every decision and action. The centrality of the person, a key point of the European Commission "Benchlearning" analysis, is a relevant theme which is also emphasized in the last **"*Piano Triennale per l'informatica nella Pubblica Amministrazione 2020-2022*"** (Three-year Plan for the Public Administration 2020-22). Indeed, since the new element of the last three-year Plan is the introduction of an important innovation, there will be the individual administrations to have to achieve the objectives listed, with a strong emphasis on measuring the results, thus presenting food for thought and an operational guide for all administrations. New technologies bring changes in every area of our life, and the Government plays the role of finding a compromise between the need to facilitate change and that of ensuring open and fair competition. Thus, the Central Government must follow the objectives and guidelines of the European Agenda in order to gain an European dimension, but at the same time it must guide its PAs by supporting them and taking into account the great deal of diversity among them. Moreover, Government has to face with the different sizing among the Local Public Administrations, and hence with the heterogeneity of *front-offices (*i.e. Municipalities). Society and technologies have influenced each other and have generated a process of transformation that has also affected the public sector,

interaction and citizens' relations with institutions, to the point that today we can speak of a new status of digital citizenship. But what is, and what can it be, the role of PAs in these mechanisms? How can the PA - through the use of new ICTs - favor and promote the exercise of the new digital citizenship, establish stronger links between its citizens and actively involve them in public decisions within of a renewed public sphere online and offline?

Starting from a review of the literature inherent to the national panorama in comparison with the European one, moving to the peculiarity of the Emilia-Romagna Region and then to the case study of the Municipality of Coriano, the purpose of this thesis is to provide a demonstration, first descriptive, then supported by empirical evidence, of what are to be considered the real indicators of *e-government* and about the factors that are instead neglected, or even ignored, within the majority of national Public Administrations. The major Italian delay in the use of *e-government* is attributed mainly to two factors, both linked to the composition of human capital: "too high" average age and "too low" educational qualifications compared to the European average certainly concur among the causes of the Country's digital retreat. The objective that this thesis aims to demonstrate, however, is that these two indicators are not essential for the purposes of a good level of digitization within the Public Administration. The

Municipality of Coriano, object of analysis of this thesis, despite being in perfect line with the parameters of the national average and has benefited from the same favorable infrastructural base of the municipalities of the same territory - provided by the Emilia-Romagna Region and Lepida S.p.a. - has in fact been able to arrive in the digital world for several years, starting from an internal innovation process, and therefore investing considerable resources on staff training, thus also positively influencing the local community of citizens, which today always more is pushed to the preference of digital to paper. Thus, even if the identification of the problem in the personnel is a correct intuition, what is not correct is to hide behind a cause that appears unchangeable in a public system like the Italian one. It is therefore necessary to invest in the human resources already present within the institution, and indeed to enhance the skills acquired over the years of experience by equipping them with valuable technological tools that are now widely used today. In other words, it appears essential to support the so-called “hard skills” to innovative “soft skills”, which are neither for the youngest nor for the most prepared, but for those who have the foresight to grasp the “simplest way to simplify” in digitization.

CHAPTER I.

E-GOVERNMENT IN EUROPE AND IN ITALY:

A COMPARATIVE ANALYSIS

I.1 INTRODUCTION

Last decades witnessed a wide revolution in information and communication technologies (henceforth, ICT) which led not only to changes in the daily lives of people but also in the interactions between governments and its citizens. These changes, in turn, are rapidly being transformed into new forms of government - called “electronic government” (or *e-government*) - by the massive spread of IT tools that have become the main driver of change for make government functions faster and more responsive to the needs of society and the economy in different countries levels of government.

E-government (henceforth, *e-gov)* services, if well-conceived, are able to transform the quality and efficiency of the public service. Indeed, thanks to the use of digital technologies it has been possible to carry out operational processes relating to administrative obligations which focused on modernization of the public system. Thereby, e-*gov* services have provided the attempt to radically

transform the relationship between the PA and citizens based on the enhancement of the internal efficiency of administrations through the launch of major reorganization projects based on the indispensable use of technologies and innovation. This is an essential prerequisite for adding value to the public service and enabling it to respond to the new quality of demand expressed by citizens. Specifically, *e-gov* aims to implement the integration and interoperability initiatives of the PA system spread throughout the territory, in order to allow access to services from any physical counter for anyone performing public functions. It is clear that it is not intended to confine the benefits of *e-gov* actions to electronic means of access only, but to offer both physical and virtual methods for the enjoyment of public services provided in a quick and transparent way: indeed, *e-gov* does not refer to the mere computerization of the administration but aims to expand its meaning to the inclusion of the redesign of a modern PA, implementing organizational changes and process engineering.

“Digital administration: Italy third to last in Europe”: this is the title of the latest edition of the report on *e-gov*, published by BEM Research (1) in November 2019, which highlighted once again how Italians in the use of *e-gov* are after the unflattering level of 24% observed in 2018, even retreated in 2019, passing to 23%. Hence, Italy not only has not improved, but also continues to perpetrate in its delay compared to other European states: its gap with respect to the other main EU countries (2) in the use of *e-gov* has therefore widened, reaching a value of 32 percentage points.

Two main causes that led to this chronic delay in the use of *e-gov* by Italians, can be found in the age-factor, given that Italy has an average population older than the rest of the European countries, and in a lower level of education. Moreover, even if it appears difficult to provide an empirical demonstration, a core issue in the development of *e-gov* in Italy has to be considered in the widespread lack (or

(1) Source: https://www.bemresearch.it/report/e-government/; BEM Research deals with big data, economic-financial research and analysis in the field of web marketing. It is a partner of the AgID - Agency for Digital Italy - for the definition of the guidelines of the public websites Administration. He also deals with private and university training. It processes the online performance index, the BEM Rank®, which expresses the ranking of the best online brands on the basis of an algorithm that considers several five factors: Google search trends; the visibility of websites on high traffic keywords; the speed of loading web pages; the usability of websites; the degree of online competition in the sector in which the company operates.
(2) The UK is included in the EU Member States as it officially left the EU on 1 February 2020, after the Report Research has been carried out.

absence) of education in IT subjects from schools, then poured into the methods of PA personnel recruiting, which do not take into account at all the IT skills and employee's propensity for innovation but rather they focus on assessments of specifics skills that have become consolidated and obsolete nowadays. Since we are addressing the PA, an analysis based on data referred to the personnel of PA in Italy will be carried out later in order to get a confirmation of the general intuition (**see Par. I.3.1**).

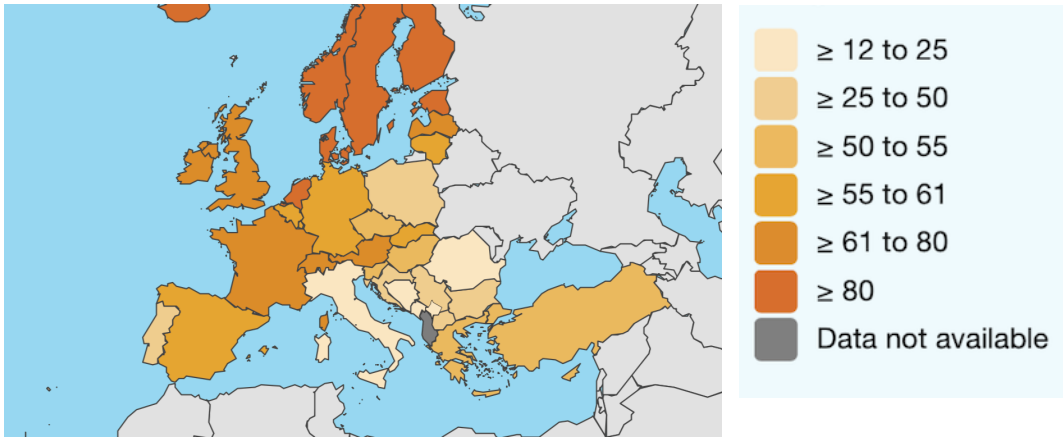
Year after year, it becomes more and more crucial to consider the status of European Union when it comes to Italy. After all, the Italian regulatory context is nowadays largely based on the international one: just think about 60% (3) of Italian decree-laws originates in Brussels. Hence, before investigate on what are considered the most influent factors responsible for the delay in the use of the *e-gov* by the PA in Italy, it is important to provide an overview on the general context, taking a look at the EU Member States and their degree of use of *e-gov* compared to Italy.

(3) Source: "Sole 24 ore", 10 May 2019.

I.2 *E-GOVERNMENT* IN EU: A GENERAL OVERVIEW

Figure 1.1- Individuals using the Internet for interacting with public authorities

Year 2019 (% of individuals)



Source: https://ec.europa.eu/eurostat/databrowser/view/isoc_bde15ei/default/map?lang=en

The diffusion of *e-gov* services in the European Union has been improving in 2019 according to the most recent statistics available from Eurostat: 53% of European citizens have used these services, compared to 51% in 2018. The situation in the Eurozone is slightly better, with 57% of users in 2019 (55% in 2018). Obviously, it is right to point out that PAs normative systems - which largely depends on many historical reasons, legacies and evolution - greatly diverge across countries and this results into a wide heterogeneity which makes it

difficult to capture the specificities of one single administrative procedure. For this reason, it has been preferable to overview just the general context of *e-gov* services usage in EU Member States, without getting off on the drivers which influenced it among the EU countries.

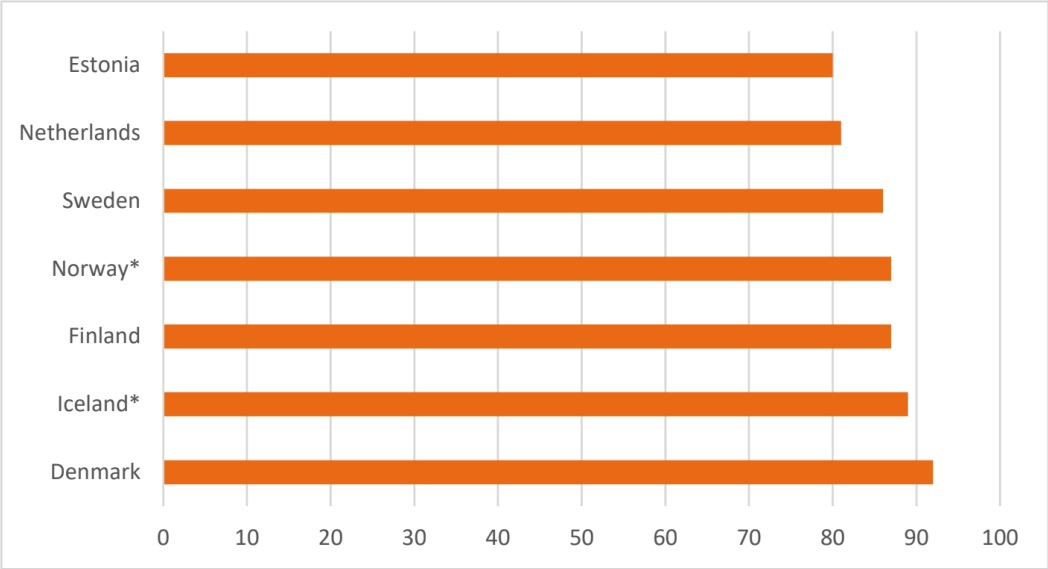
The **Figure 1.1** shows the overall European scenario in the degree of *e-gov* use in 2019, which has been classified into three clusters of EU countries which differ in the percentage range of individuals who interact with the PA by online mode:

- **The *"Leading group"***: among the countries belonged to this group we find the ones whose citizens are highly involved in the use of Internet for aims concerning the PA. The first position is held by Denmark with a percentage of 92 individuals who use Internet to interact with public authorities. Close to the leader is Finland (87%) followed by Sweden (86%), the Netherlands (81%) and Estonia (80%).

Graph 1.2.a- Individuals using the Internet for interacting with public authorities:

The "Leading group" countries

Year 2019 (% of individuals)



Source: Eurostat, 2019

Latest update 10-14-2020, 11 pm

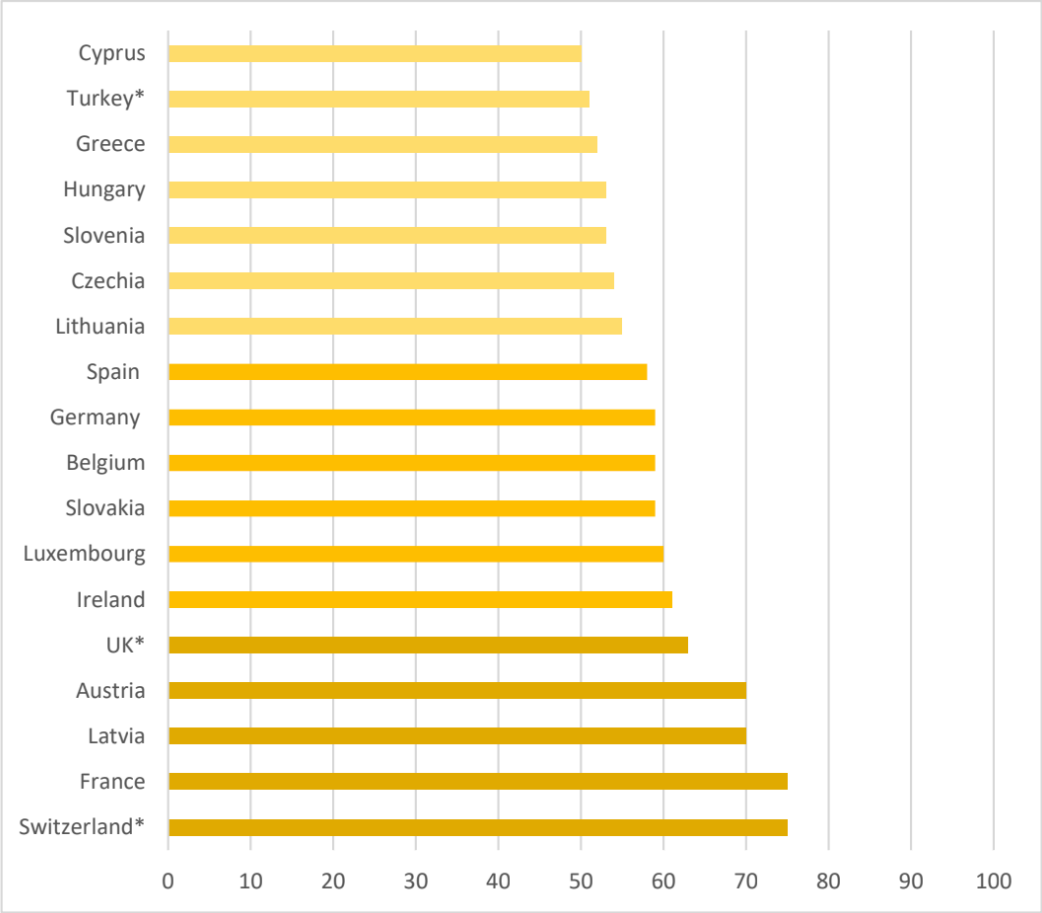
* These countries are in Europe, but they are not EU Member states.

- The "Group with a medium degree in e-gov use": the middle group, to which the countries with a percentage range of 50-80 of individuals using *e-gov* systems belong, is made up of the majority of EU Member States. Among these, in descending percentage order, we find: France (75%), Latvia (70%), Austria (70%), Ireland (61%), Luxembourg (60%), Slovakia (59%), Belgium (59%), Germany (59%), Spain (58%), Lithuania (55%), Czechia (54%), Slovenia (53%), Hungary (53%), Greece (52%) and Cyprus (50%).

Graph 1.2.b- Individuals using the Internet for interacting with public authorities:

The "Group with a medium degree in e-gov use" countries

Year 2019 (% of individuals)



Source: Eurostat, 2019

Latest update 10-14-2020, 11 pm

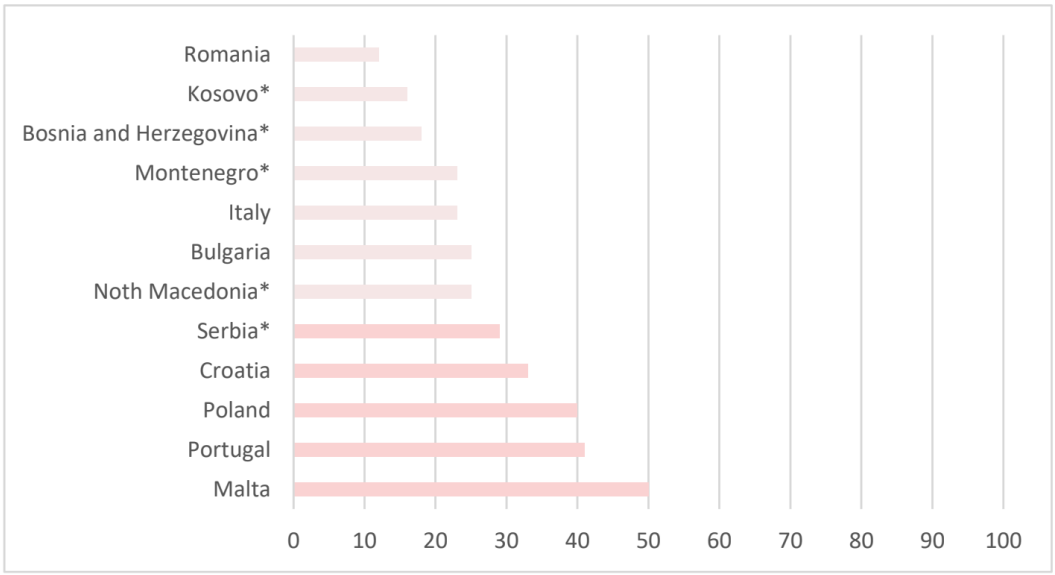
* These countries are in Europe, but they are not EU Member states.

- **The "Tail group":** the countries included in this group are characterized by a very low degree in use of *e-gov* by citizens. Italy is second to last with a percentage of 23, and it is followed only by one EU Member State, Romania, which has a very little percentage of 12. Slightly above Italy there is Bulgaria (25%) and then, in ascending order, Croatia (33%), Poland (40%), Portugal (41%) and Malta (50%).

Graph 1.2.c- Individuals using the Internet for interacting with public authorities:

The "Tail Group" countries

Year 2019 (% of individuals)



Source: Eurostat, 2019

Latest update 10-14-2020, 11 pm

* These countries are in Europe, but they are not EU Member states.

Why do some countries perform better than others in *e-gov* services?

The study by European Commission in collaboration with Eurostat, named "Benchlearning" analysis (4), aimed to answer this question, by considering two absolute and three relative indicators as the benchmarks for measuring *e-gov* performance of European countries.

The absolute indicators of *e-gov* performance – "Penetration" and "Digitalization" – are both compared with the relative ones – the users, governmental, and digital context characteristics of a country. This study underlines how a country which aims to improve "Digitalization" level should invest in policies concerning the "User Centricity", "Transparency", "Cross-border Mobility", and "Key Enablers" while to improve "Penetration" level it is required a relevant raising in citizens' awareness about what is the *e-gov* services availability, in order to increase the number of online users.

As a result, from the comparative analysis among European countries, relevant differences in the performance of *e-gov* emerged and, eventually, what should be highlighted is the high and common need to improve the levels of "Digitalization".

(4) Source: https://ec.europa.eu/digital-single-market/en/news/egovernment-benchmark-2020-egovernment-works-people; The study's "benchlearning" analysis calibrates the benchmark performance of each country against various characteristics.

What countries have to do in order to achieve this goal is investing in policies that will let them to enhance all of these level benchmarks. Indeed, among them there are both *back* and *front-office* digitalization parameters which must go always together.

The intrinsic reason for the name of "Benchlearning" analysis lies in the offer of advice to be implemented with the aim that each country can improve its performance by looking at the behavior of others. This means that countries with similar cultural and regulatory backgrounds, but different levels of *e-gov*, can and should look to others and try to imitate them in order to get better and better results. As it will be highlighted later, user has to be at the centre of the overall process of innovation since every change starts from him. Hence, the final goal is to advance more and more the needs of citizens in order to reach the moment in which citizens themselves will define their own needs and address them on its own. Even if in most countries this is still a mirage, the final achievement aims to a system without any interposition, and thus to an excellent functionality in the *front-office* services (e.g. Municipalities) that in turn depends on the efficiency of the Central Government System (*back-office*).

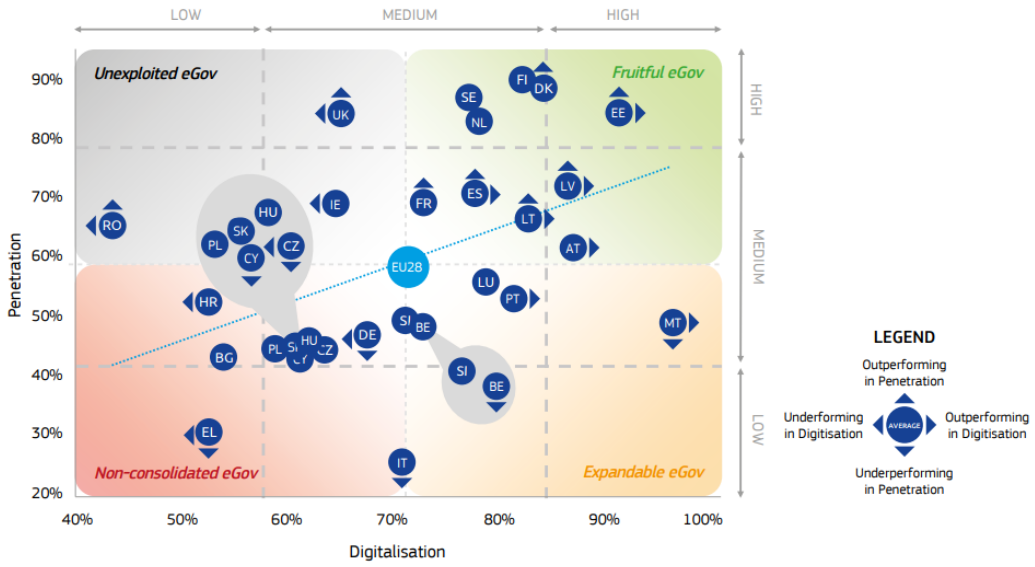
For almost the totality of European countries (34 out of 36), “User Centricity” is the indicator which appears to be the most developed of their digital government.

What really matters first is to make online services available in a user-centric way, before boosting “Transparency”, Cross-border Mobility” and “Key Enablers”. This is why almost every countries place “User Centricity” at the top of their focus, while they largely differ on the other level benchmarks.

In the case of Italy, what emerges is a major concern on “Transparency” next to “User Centricity”. Moreover, as to absolute indicators, Italy shows underperformance in “Penetration” but appears auspicious in term of “Digitalization”. What it is meant with “Penetration” is, in a few words, the demand for online public services, counterposed to “Digitalization”, which is intended, on the other hand, as the measure of the online supply side.

A reliable interpretation behind this data, therefore, lies partially in the distrustful attitude of the citizen towards his own reference Local Public Administration, in addition to a widespread digital illiteracy typical especially of the older age group. What is still too low, indeed, is not the supply of online services, but the demand, or rather the effective use of these by citizens. In other words, what is needed more is not solely innovations, but boosting users towards “innovation attitude”, trying to convince them to make use of the more “comfort” and fast online services rather than waste time in traveling to PA offices in person.

Figure 1.3- *E-gov* absolute performance on "Penetration" and "Digitalization"



Source: https://www.capgemini.com/wp-content/uploads/2020/09/eGovernment-Benchmark-2020-Insight-Report.pdf

*Arrows indicate the relative performances

The **Figure 1.3** shows the placement of all the 28 EU Member States in 2019 and identifies four different scenarios: "**Fruitful *e-gov***", to which belonged countries with a high level of both Digitalization and Penetration, "**Expandable *e-gov***", referring to countries with higher levels of Digitalization and lower levels of Penetration, "**Unexploited *e-gov***" which includes countries with lower levels of Digitalization combined with higher levels of Penetration and "**Non-Consolidated *e-gov***" where countries with a low level in both indicators are encompassed.

As shown in the **Figure 1.3**, at the top-levels we find on one hand Denmark (DK) and France (FR), which present an outstanding performance in “Penetration” and keep up with “Digitalization”. On the other hand, the UK and Romania (RO) even if are outperforming in “Penetration”, as for “Digitalization” they turn out an underperformance. In the opposite side of the matrix, notable countries are Austria (AT) and Portugal (PT) which has reached outperformance in “Digitalization” and are well underway in “Penetration”, and Malta (MT) which instead fallen short in “Penetration” but still achieving outperforming in “Digitalization”.

This kind of comparison among the different EU Member States which takes into account both absolute and relative performance indicators of each country is useful for them not only to better understand their position with respect to the other EU Partners, but also to give a sign of the possible existence of bottlenecks and, if any, if they prevail on the demand or supply side of digital services. In general, what could be deduced again by giving qualitative assumptions, is the occurrence of a positive relationship between the usage of *e-gov* services and the level of digital literacy and the number of daily Internet users. Moreover, users characterized by a higher trust in PA they address, are more willing to avail online tools and public services. Furthermore, it is strengthened the evidence that

countries which perform better in “Digitalization” have often higher level of implementation and development of broadband infrastructure. What is also to highlight is the importance of the digital skills a country owns that let it to convert every public services from analogical into digital, i.e. a strong and accurate integration between *front* with *back office* services, a detailed definition of all the standard procedures, by assigning exact classification, a coordinate and interoperable way of collect and manage data thanks to a proper use of technology. In this way, the confidence and perception of PA, as an institution, let citizens to rely more on the services offered and help everyone in the long and hard process of digitalization.

The placement of Italy (IT) reveals, as we could expect, an underperformance in “Penetration” but a performance in “Digitalization” that seems to follow the right path. It is not so easy to give a detailed and complete explanation to this result, due to a consistent lack of data availability, but it is surely proper to explain this outcome as an insufficient use of already-existing ICT, which in turn, is linked to reasons arising from the settlement of PA personnel (**see Par. I.3.1**).

In short, governments should focus on the multiplicity of technological possibilities in order to take advantage by adapting them as best as possible to what are primarily the needs and requirements of citizens and users. To pull it off, it is necessary for the governments to invest largely in citizen engagement and then to manage to bring users on board. Moreover, the presence of civil servants who are suitably prepared to drive citizens is crucial, so that they can be promoters of the organizational change and therefore supporters of the entire innovation process of *e-gov* services.

I.3 *E-GOVERNMENT* IN ITALY: STATUS AND PERSPECTIVES

I.3.1 Evidences on *e-gov* services "delay": the factor "Human Capital"

As previously mentioned, age and level of education are the two main factors that determine the spread of *e-gov* in European countries and Italy places its major delay in the diffusion of *e-gov* services on both these parameters, showing structural differences with the rest of Europe. Indeed, Italy presents both an average population that is older and with a lower level of education. What is also noteworthy, study plans of the Italian education system do not foster future employees' attitude to innovation: still today the Italian school is based on "ancient" structures and this is a further element that explains the Italian chronic delay in digitization, and specifically in the diffusion of *e-gov*, which would seem more attributable to contents rather than to the level of education.

This shallowness of contents has thereby repercussions on the recruitment methods that are currently used for skimming applicants to public competitions addressed to aspiring public employees. In fact, they do not enhance either the innovative capacity or the importance of digital skills and the IT world as a whole. The direct consequence is a missing synergy between school and labor market,

another proof of a school system in need of reformation due to its too theoretical learning roots. This represents a drawback both for future employees and the businesses, given that it does not let students to be properly educated and, on the other hand, it puts companies in a stalemate due to a lack of available personnel strived to innovation and change, which are the basis of the entire digitalization process. As for the peculiar case of PA, the problem worsen by the fact that hiring processes are governmental and that is why the government must be the first party concerned and involved in the change.

The last Report on *e-gov* by BEM Research presented a study that compares the number of individuals who have had interactions with the PA through the Internet in the last 12 months (5) in Italy and in the Eurozone (6), giving a classification by age and educational qualification (**see Table 1.4.a and Table 1.4.b**).

Following the comparison with the Eurozone average a rather evident delay in the use of *e-gov* services emerged: in the “25-54" age group, typical of those who are presumed to have completed their educational studies and are in full working phase, just over half (53%) of those with a "high" qualification (degree or higher)

(5) Data are referred to 2018

(6) The comparison of Italy is made not only with the Eurozone, but also with the countries considered to have the most similar characteristics to the Italy’s ones. Specifically, they are: Spain, France and Germany.

used *e-gov* in 2018, against the Eurozone average of almost 82% (including: Spain with 83%, Germany with 82% and France with 91%).

Table 1.4 - Individuals who have had interactions with the Public Administration through the Internet in the last 12 months - age classification and educational qualification

Year 2018 (%)

a. Italy

Education qualifications	12-24	25-54	55-74	Total
Low	17	11	6	**9**
Medium	30	31	25	**29**
High	46	53	42	**50**
Total	**25**	**29**	**16**	**24**

Source: Report on e-government 2019, BEM Research; https://www.bemresearch.it/report/e-government/

b. Eurozone

Education qualifications	12-24	25-54	55-74	Total
Low	43	36	19	**30**
Medium	64	62	44	**57**
High	77	82	70	**79**
Total	**56**	**63**	**39**	**55**

Source: Report on e-government 2019, BEM Research; https://www.bemresearch.it/report/e-government/

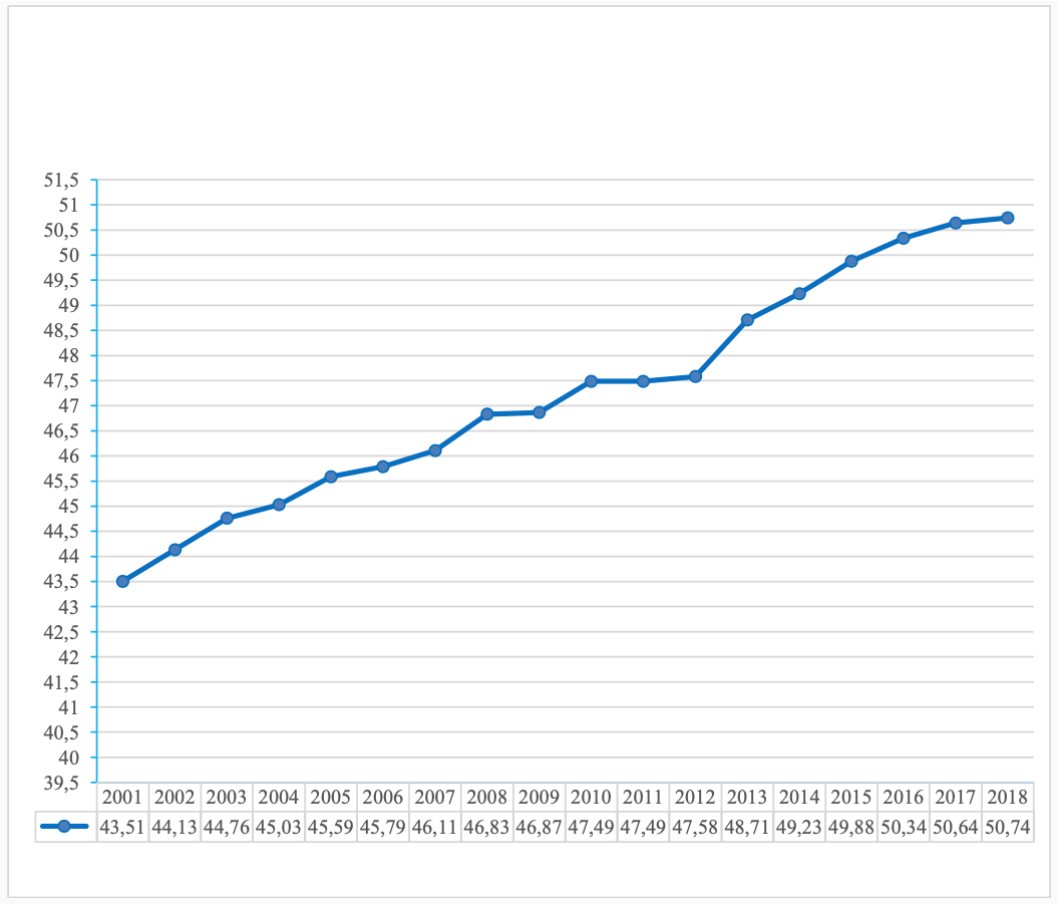
Going deeper in the analysis, the **Graph 1.5** shows the time series of the average age of personnel employed in PA in Italy over a period of eighteen years, starting from 2001 till 2018 (7). Despite the aggregate nature of this indicator behind the totality of public employment, it is able to provide a long-term view and evidence of an upward trend in the aging of PA personnel that has become structural. As can be seen, the trend is monotonic throughout all the analysis period.

Even if there is no empirical evidence to demonstrate the causes of this unpromising trend, this could be certainly attributed to a series of factors linked to country's political choices arising from the persistent burden of the huge sovereign debts and the consequent restrictive budget policies (so-called austerity policies) and thus to a resultant stop in employee turnover. In this way, if in 2001 the average age of PA personnel was 43.51 years, in 2018 it has reached a value of 50.74, aging by 7.23 years.

(7) latest year of available data; https://www.contoannuale.mef.gov.it/struttura-personale/eta.

Graph 1.5- Average age of PA personnel in Italy

Years 2001-2018 (chronological age in years)



Source: https://www.contoannuale.mef.gov.it/struttura-personale/eta

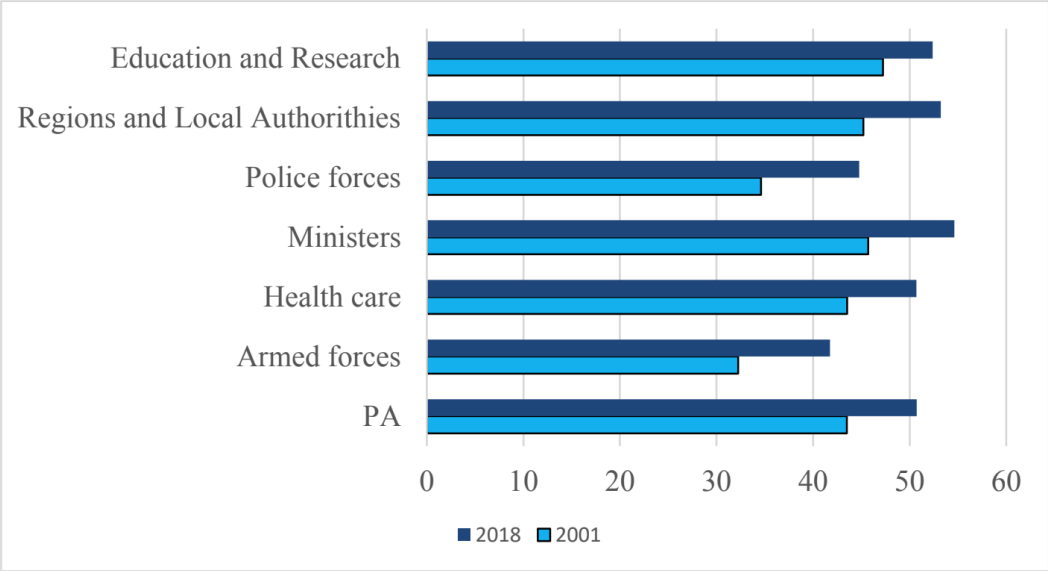
* The graph refers to the total personnel working in the PAs except for workers with flexible contracts (fixed terms, community service, in training and work, temporary workers). The Total Personnel consists of "Permanent Staff" and "Other Staff". "Permanent staff" means personnel with a permanent employment relationship, including executives on a fixed-term basis as they hold positions of function not properly attributable to temporary needs of administration.

The **Graph 1.6** shows a breakdown by PA sectors of the average age of personnel in 2001 and 2008. A growing trend in age is what also results from this more in-depth analysis. With the exception of the "Armed Forces" and "Police Forces" sector, which remain far below the 50-year level (8), the average age in 2018 for the entire PA is 50.74 years (as we noticed in **Graph 1.5** too). Specifically, in 2018, “Ministers” and staff of the “Regions and Local Authorities” have the highest seniority level and increase over years, respectively 54.61 and 53.22 years. Furthermore, by carrying out an analysis by age-group within each sector, it is noted that within the sectors "Ministries" and "Regions and Local Authorities", the age-groups that have the highest concentration (%) of personnel are “50-59 years” and “over 60 years”. In 2018, “Ministers” sector has employed 48.18% of its staff in age-groups “50-59” and 28.25% in “over 60”. "Regions and Local Authorities”, moreover, held a percentage of 44.90% in the “50-59” age-group and 23.30% in the “over 60” one. These data are strongly averse to the numerous central and peripheral *e-gov* projects, since these two sectors are the fundamental pillars on which the entire structure of the PA rests.

(8) It must be considered that with the Law 226/2004 it was abolished the compulsory conscription.

Graph 1.6- Average age of permanent personnel by PA sectors

Years 2001, 2018 (chronological age in years)



Source: https://www.contoannuale.mef.gov.it/struttura-personale/eta

*** See Graph 1.5**

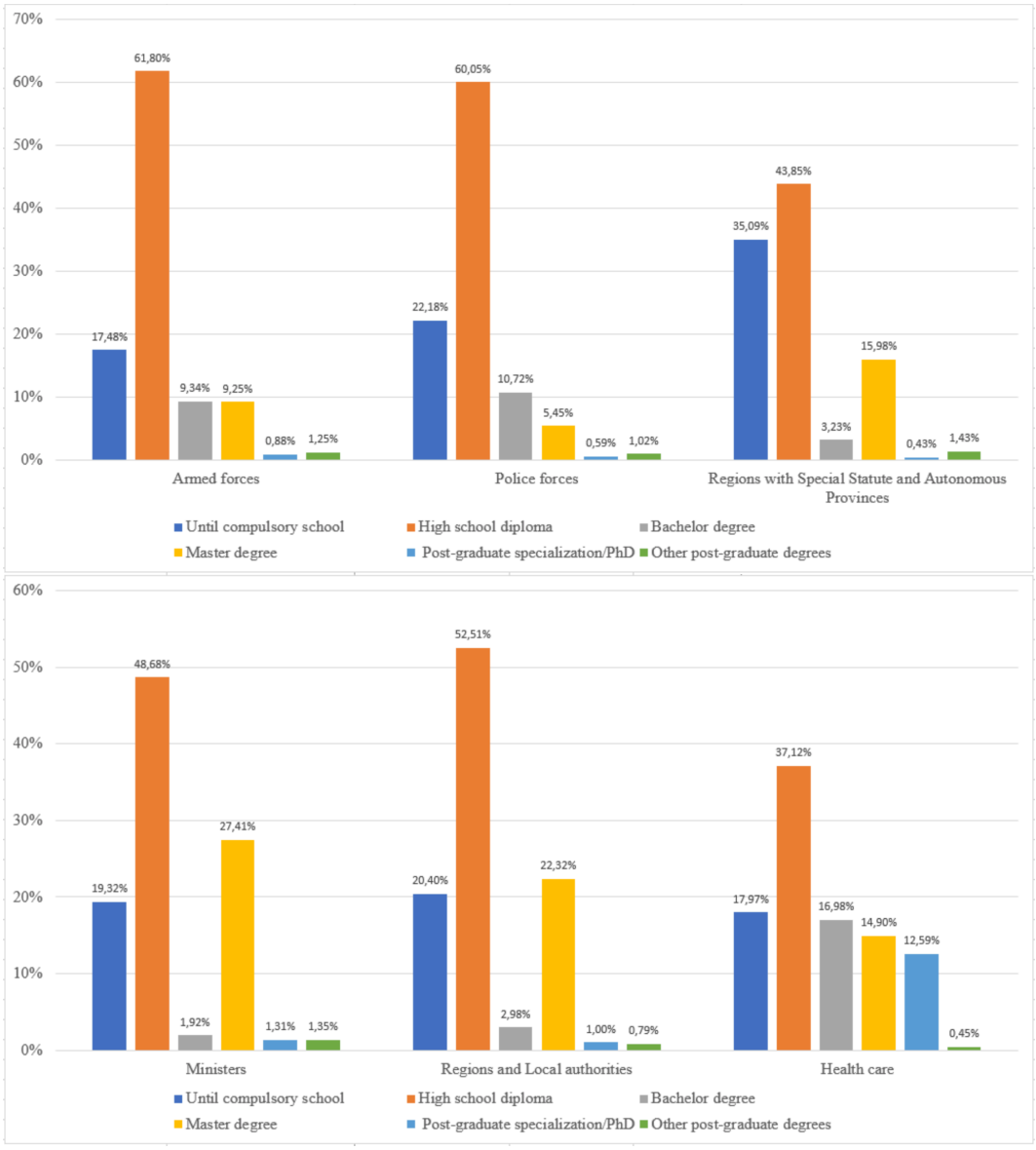
As for the level of education, the **Graph 1.7** provides an answer that is not quite complete and detailed, but rather focused on the sectors considered relevant for the purposes of our analysis. It is shown how personnel in PA is distributed by educational qualifications and what catches the eye from this macroscopic assessment is primarily the high percentage of personnel with only the "High school diploma" as educational level for all of the sectors taken into account.

What is also noteworthy is that the sector of “Ministers” and that of “Regions and Local authorities” have a fifth of their staff who have the minimum level of education (“Until compulsory school”) and the sector of “Regions with Special Statute and Autonomous Provinces” has even a much higher percentage of staff with this level of education (it reaches 35,09%). The only sector of “Health care” can boast a satisfactory level in the share of personnel with a level of education equal to or higher than the “Bachelor degree”: indeed, if we add them together, almost half of the staff of “Health care” sector has a Bachelor degree as a minimum level of education, whose almost a third has got the “Master degree” level.

These data can only be given explanations relating to clientelism policies supported by a rationale of recruiting which is linked to former irreversible choices. In other words, this is the proof of a “block” in turnover that has always characterized PA employment and that, despite the gradual increase in graduate rates, it seems not to follow the same trend.

Graph 1.7- Distribution of personnel in PA by educational qualification and sector

Year 2018



Source: https://www.contoannuale.mef.gov.it/struttura-personale/eta

*** See Graph 1.5**

I.3.2 The three-year Plan for IT in the Public Administration 2020-2022

Online services have been always the basis of every digital plan for over twenty years now. Starting from the 2000 Action Plan of the then Minister Lucio Stanca, the indications on matter have never been lacking, passing through strategic lines, *e-gov* plans and three-year plans.

In the light of what has been described so far, it is good to dwell on the possible solution to the problem of the delay in digitization in PAs in Italy, and this solution, or at least hopefully so, is represented by the Strategic evolution model of the information system of the Public Administration, conceived by the AgID (9) in implementation of article 14-bis, paragraph 2, letter b) of the Digital Administration Code (CAD) (10) and the PAs operate in compliance with it as established in article 12 of the same CAD.

The Plan is the tool used as a guide to establish the rules to promote the digital transformation of the country by operating on the Public Administration.

(9) The Agency for Digital Italy (AgID) is the technical agency of the Presidency of the Council which has the task of guaranteeing the achievement of the objectives of the Italian Digital Agenda and contributing to the diffusion of the use of information and communication technologies, favoring the innovation and economic growth. AgID has the task of coordinating the administrations in the implementation process of the Three-Year Plan for Public Administration IT, promoting the digital transformation of the country. Moreover, it supports digital innovation and promotes the dissemination of digital skills also in collaboration with international, national and local institutions and organizations.

The three-year Plan for IT in the PA 2020-2022 contains elements strongly oriented towards making public bodies responsible for the actual implementation of the objectives. It is in its consolidation phase: in its third edition it sees an active participation of the Local Public Administration (henceforth, LPA) in line with the bottom-up strategy envisaged in previous editions. In fact, also this latest edition has been built with an active and structured involvement of central public administrations and local authorities, who shared the drafting and discussion of this document.

The Plan 2020-2022 is a natural evolution of the two previous editions (the first one, 2017-2019, and the second one 2019-2022) but it obviously offers more practical solutions related to the proper implementation of the previously planned actions. What give us a positive thinking is that in a few years there has been a valuable evolution, originally in the Plan and then in the action. But the bad news is that this enhancement has engaged a number of PA which is still too little.

(10) The Digital Administration Code (CAD) is a single text that brings together and organizes the rules concerning the computerization of the Public Administration in relations with citizens and businesses. Established with the Legislative Decree of 7 March 2005, n. 82, was subsequently modified and integrated first with the legislative decree 22 August 2016
n. 179 and then with the legislative decree 13 December 2017 n. 217 to promote and make digital citizenship rights effective. With the latest regulatory intervention, the CAD has been further rationalized in its contents. An action of deregulation was carried out, both by simplifying the language and by replacing the previous technical rules with guidelines, by AgID, the adoption of which will be faster and more responsive with respect to technological evolution.

The new Plan 2020-2022, which is greatly leaner that the previous one (84 pages compared to 339), has set a major challenge for the coming years: the implementation part is to be verified but also to be supported. Implementation is the responsibility of the administrations which, even when they are faced with often ambitious objectives, must consider them sustainable because it is with the same ones we have dealt with in the drafting of the Plan. “In this perspective, while maintaining continuity with the previous one, the 2020-2022 Plan introduces an important innovation with reference to the recipients of the objectives identified for each of the issues addressed. In fact, the individual administrations will have to achieve the objectives listed, often "ambitious" but sustainable, as they are built on experience, comparison and the needs of the recipient administrations. These are wide-ranging objectives, however, expressed in very concrete results.

The innovative element of this Plan lies precisely in the strong emphasis placed on measuring these results, thus introducing food for thought and an operational guide for all administrations: the culture of measurement and consequently of data quality becomes one of the main reasons for this approach”. Even in this case there is an evident link to the “Benchlearning” plan: this data measurement and

sharing, indeed, can be attributable to a similar scope of that which European Commission aims - *sharing to compare, compare to learn, learn to improve*.

The last three-year Plan 2020-2022 is divided into three parts: the three-year Plan, the technological component and the Governance.

In the first part of the "Executive summary" it is useful to note the guiding principles that confirm continuity with the previous Plans.

Below the list of all the **"Guidelines of the three-year Plan for IT in the Public Administration 2020-2022":**

- **Digital & mobile first** (digital and mobile as the first option): public administrations must create primarily digital services;
- **Digital identity only** (exclusive access through digital identity): PAs must exclusively adopt digital identity systems defined by the legislation, ensuring at least access via SPID;
- **Cloud first** (cloud as the first option): public administrations, when defining a new project and developing new services, primarily adopt the cloud paradigm, taking into account the need to prevent the risk of lock-in;
- **Inclusive and accessible services**: public administrations must design digital public services that are inclusive and that meet the different needs of people and individual territories;

- **Public data as a common good**: the information assets of the public administration are a fundamental asset for the development of the country and must be valued and made available to citizens and businesses, in an open and interoperable form;
- **Interoperable by design**: public services must be designed to operate in an integrated and seamless way throughout the single market by exposing the appropriate APIs;
- **Security and privacy by design:** digital services must be designed and delivered securely and guarantee the protection of personal data;
- **User-centric, data driven and agile**: administrations develop digital services, providing agile ways of continuous improvement, starting from the user experience and based on the continuous measurement of performance and use;
- **Once only (e.g. ANPR)**: public administrations must avoid asking citizens and businesses for information already provided;
- **Cross-border by design** (conceived as cross-border): public administrations must make relevant digital public services available cross-border;
- **Open Source**: public administrations must prefer the use of software with open source code and, in the case of software developed on their behalf, the source code must be made available.

As mentioned before, with regard to services, the latest Plan establishes for PAs a more consistent use of existing “software as a service” solutions and recommend the reuse and sharing of software and skills between the various administrations: in this way, the adoption of validated models and tools is available to all. Moreover, it is demanded the constant monitoring by the PA of its online services. Hence, what is aiming with this three-year Plan is providing indications aimed at pooling the experiences of the PAs to obtain homogeneous and non-dispersive innovation paths.

The 2020-2022 Plan considers the three great challenges **(*Strategy for technological innovation and digitization of the Country 2025)*** and provide strategies to overcome them.

- Firstly, it promotes the development of a *digital society,* where services put citizens and businesses at the center, through the digitization of the PA which is the engine of development for the whole country. Through the identification of actions, virtuous models are fostered together with the creation of new digital services with the final aim to improve the efficiency and transparency of existing services, which help citizens and businesses to access online to services.
- Secondly, it contributes to the spread of new digital technologies in the Italian productive fabric, encouraging standardization, innovation and experimentation in

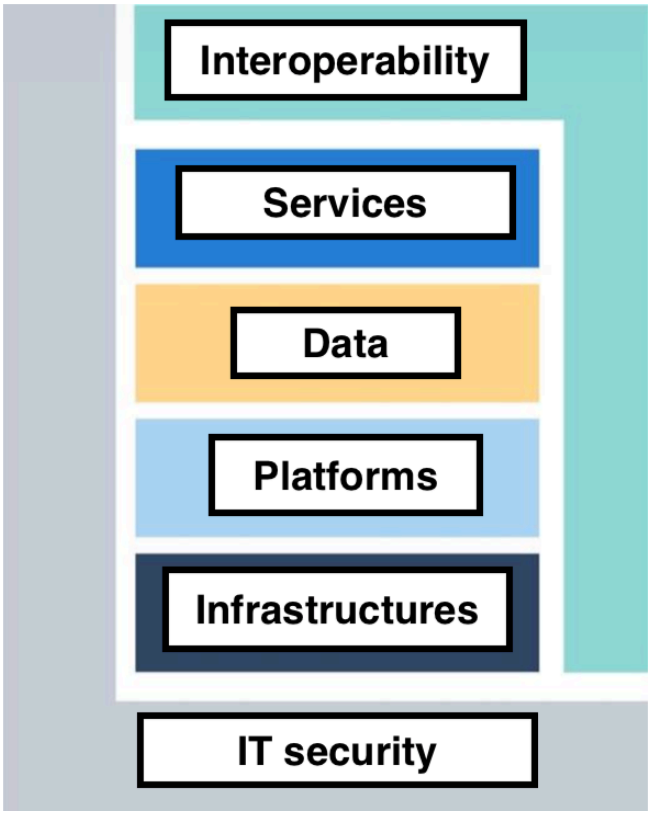
the field of public services. And this it is made possible through a collaboration with the various local, regional, national and international realities (i*nnovative country*).

- Thirdly, it promotes *sustainable, ethical and inclusive development*, through innovation and digitalization at the service of people, communities and territories, while respecting environmental sustainability, thus thanks to the simplification of services and the consequent strengthening of citizens' digital capabilities.

The **Figure 1.8** provides the simplified representation of the Strategic Model which allows to describe the digital transformation in a functional way. This representation consists of two transversal levels: the interoperability and security of information systems and vertical levels of services, data, platforms and infrastructures.

Among the technological drivers, “interoperability” assumes an important relevance. The logic behind the theme of “interoperability” is actually the ability of two or more systems to connect with each other and communicate automatically, exchanging information and sharing resources and it can be achieved by adopting common standards and rules, not necessarily by sharing physical infrastructure. The development of an interoperable system in the PA is therefore the basis of an evolved and well-developed *e-gov* system

Figure 1.8 - Strategic evolution model of the information system of the PA



Source: https://www.agid.gov.it/it/agenzia/stampa-e-comunicazione/notizie/2020/08/12/il-piano-triennale-linformatica-nella-pa-2020-2022

CHAPTER II.

REGIONAL POLICY FOR PA INNOVATION.

FOCUS ON EMILIA-ROMAGNA REGION

II.1 INTRODUCTION

Policies for innovation and the information society have been considered in last decades as an important tool to relaunch competitiveness in consideration of the fact that they can contribute both to economic development by acting as a multiplier of gross domestic product, and to relaunching well-being and the quality of life of citizens. In this context, a key role has been played not only by the Central Government, but mostly by regional and local realities that have been radically transformed by the information society. The focus on the regional level originated from the considerations elaborated by the European Commission (DG Regio) about the "Regional Dimension of Europe": hence, Regions can become the engine of growth based on technology and innovation, contributing to European politics aimed at defining the benefits for citizens.

According to this view, Regions are seen as an "intermediate" between European institutions and LPAs: here comes the birth of "Digital Agenda Going Local"

initiative, with the ultimate goal of raising awareness of the Entities of each Region on the digital issue and therefore inducing them to pursue the common objectives set by the European Agenda.

As introduces the title of the thesis, the Municipality of Coriano - which will be dealt in the next chapter (**see Chapter III**) - is the core of this dissertation. Hence, it is a must to award many of the objectives achieved by this small municipality for its geographical favorable geopolitical position - in Emilia-Romagna Region - which is undoubtedly in an advanced stage of the implementation of digital technology thanks to its great infrastructural deployments achievement. In the course of this Chapter an analysis on the previous steps and future perspectives of the Emilia-Romagna Region will be carried out, in order to trace the common ground of the Municipalities in the same regional territory, and hence, moving to the properly path that the Municipality of Coriano has been able to explore and navigate. Specifically, the Emilia-Romagna Region, located in the middle of Italy, is undoubtedly one of the most developed regions of all the Italian mainland from every macro-economic point of view: thus, even in the context of *e-gov,* for decades it has put in place dedicated policies for the mountains in order to reduce the social and economic gap with the more developed areas of the region (i.e. *digital divide*).

Figure 2.1 - Location of Emilia-Romagna compared to the rest of Italy

Figure 2.2 - Coat of Arms of Emilia-Romagna flag

The entire national policy for PA innovation has held its basis in the final goal aimed at simplifying all bureaucratic processes and therefore at modernizing the relationships between user and PA. “Simplification” process, however, has been challenged, and this struggle continues to persist over the years, due to an evidence that seems to be insurmountable for the definitive resolution of the analogic world into the digital one.

What is intended to emphasize is the complexity of the transformation of regulations - characterized by a high degree of subjectivity and interpretability - into procedures which are characterized instead by the binary code, typical of information technology. Indeed, IT requires certainties that are not always available within organizations and which must therefore be sought. Digitization process, even before dematerialization, must then face a profound cultural process.

The objectives of the digital PA are thought to be achieved through interventions that concern administrative action, and hence, administrative procedures and processes, which in turn depend on regulatory ones. It has thus become a widespread need throughout the PA to find a solution to the "difficulty of simplifying". In this regard, various solutions have been proposed and then implemented, and today continue to be conceived and developed, in order to try increasingly cancel this gap between the legal and digital world.

Dematerializing does not mean solely reducing the amount of paper produced, but it is rather a process with a much broader purpose: simplifying, but acting in a digital context. This implies a series of objectives that are reduced to an improvement of services and then to a facilitation of the interactions among the actors involved - citizens, businesses and other PAs.

II.2 LOCAL PUBLIC ADMINISTRATION IN ITALY: A SURVEY ON THE STATUS OF ICT

For some time now, ICT has represented - in all Italian regional situations- one of the policies that plays an important role in the regional planning. A new approach to innovation has been internalized at an infra-state level, overcoming the "input-output" logic in favor of a complex system, which does not limit itself to injecting resources, but acts to positively influence the social processes of creation and transfer of knowledge through a strategy that includes the enhancement and growth of human capital and the business system, the infrastructural conditions, and the regulatory framework. The use of ICT can concern both internal management activities - which aim to improve the efficiency of the entity in terms of expenditure cost-effectiveness - and activities oriented to the offer of online services - which meet the need to improve interaction with users and orienting the public offer more towards citizens' needs. Even if these are two different aspects of ICT utilization, there exists a connection between them: indeed, within certain limits and for some functions, a certain level of computerization of internal management activities is a prerequisite for digitizing also in relation to users.

The offer of *e-gov* depends on the level of infrastructural equipment of the ICT that PAs holds and how much they make use of it in the performance of their

internal functions and towards users. Data and information about it can be obtained from various statistical sources (11), however, it seems hard to carry out a descriptive analysis of these data, given the fragmentary nature of the public sector. Indeed, this sector is characterized by different divisions of entities which perform, with varying degrees of autonomy, particularly heterogeneous functions and employ productive processes which are not suitable to the advantages offered by ICT. In addition, the presence in the local sector of entities variously distributed on the national territory which operate in very different socio-economic contexts and whose dimensions, and consequently the organizational complexities, can be extremely different. In the main international benchmarking initiatives and publications, the "mistake" that is committed (I mean, the large oversight) is, hence, to underestimate the importance of the level of LPAs, focusing instead on the one of the Central Government. This oversight is probably due to the fact that there is a general belief in considering the level of Central institutions (*back offices*) more relevant than the local one (*front office*) in defining the achieved position of a specific country, besides the obvious difficulty (i.e. considerable costs) in processing such numerous statistical data.

---

(11) Main sources are:
- "ISTAT": https://www.istat.it
- "Banca d'Italia": https://www.bancaditalia.it

A decisive aspect is that the decentralized (or local) level of government is undoubtedly more insightful and penetrating with respect to the Central one: just think of the large number of public bodies there are in Italy! Italy is a country characterized by a high degree of centrality of the suburban levels of government: the Regional government, especially, has taken on an increasing role in the delegation of regulatory, administrative and even fiscal functions.

The National Statistical Institute of Italy, named “ISTAT”, has largely contributed to provide useful data to show a completer and more detailed picture of the overall position of the Italian *e-government* compared with the the rest of EU.

The “ISTAT”, in fact, has recently conducted, or rather updated, a survey started for the first time in 2009, then subsequently updated and properly modified in 2012, 2015, and 2018, relating to LPAs and the degree of utilization of ICT.

The survey aimed to acquire information on the technological equipment available in the LPAs to support internal administrative activities and relations with citizens, businesses and other Public Administrations, helping to complete the statistical information system on the information society in harmony with what is defined from the European Union.

The collection of information took place by the statistical offices of the Regions and the local “ISTAT” offices, which have managed the survey in their area of

competence by using the technique of the self-compilation of an electronic questionnaire available on the Gino platform which guarantees the authentication and protection of the data transmitted (12).

The **Table 2.3** shows an overview of the current (2018) situation regarding the use of ICT by the Italian LPAs and makes a comparison with the previous editions (2009, 2012 and 2015) of the survey.

As regards the use of ICT tools specifically intended for relations with users, "ISTAT" noted that over 99% of LPAs have institutional websites; since this data refers to 2012, it has been certainly improved, given the positive trend of all the linked services offered by LPAs. Moreover, the survey highlights that over 98% of LPAs allow to display and/or acquire information from their sites.

What has notably increased, furthermore, is the percentage of LPAs allowing the download of forms: from 70% in 2009, it has reached almost 95% in 2018.

Nevertheless, the percentage of LPAs that allow the forwarding of forms by users and the completion of the requested service process are much lower: respectively of 68.3% and 47.8% (in 2018).

(12) The main analysis measures which resulted as an output of this survey concern a data collection on the existence of IT infrastructure, ICT training, management of ICT functions, ICT equipment, connectivity, cloud computing, dematerialization and computerization of management activities, *e-procurement*, open data, the offer of online services, monitoring and innovation.

Table 2.3 - Main indicators of the use of ICT in local public administration (LPAs)

Years 2009, 2012, 2015 and 2018 (% values)

ICT ORGANIZATION	2018	2015	2012	2009
LAPs with internal independent IT offices	16,0	16,8	17,4	16,5
LAPs which organized an ICT training course	16,9	19,4	20,0	17,8
Employees who attended ICT training courses in the previous year	9,5	7,7	6,3	7,7
ADOPTION OF BASIC TECHNOLOGIES	**2018**	**2015**	**2012**	**2009**
Employees with Internet access	87,0	84,6	83,6	72,9
Desktop PCs per 100 employees *(in 2009 PCs per 100 employees)*	94,5	90,3	84,4	89,0
Laptops per 100 employees	8,3	7,7	7,2	
Other mobile devices per 100 employees	10,8	8,1	3,2	
LAPs which use Smart card readers	77,2	64,2	63,1	49,1
LAPs which use GIS instruments	34,4	32,5	30,4	26,5
LAPs which use CAD instruments	43,4	43,8	47,8	47,5
LAPs which use handheld GPS	6,6	6,7	7,7	7,5
ICT WHICH CAN REDUCE LAP COSTS	**2018**	**2015**	**2012**	**2009**
LAPs with Intranet	48,3	55,6	40,5	41,7
LAPs with Internet using VoIP	35,3	31,9	24,1	16,1
LAPs which in the previous year made purchases in e-Procurement	80,9	79,5	30,3	22,9
LAPs which use Open source solutions	50,9	54,1	55,2	48,9
Local authorities that use cloud computing services	34,3	25,7	10,5	-
SERVICES OFFERED BY THE LAP	**2018**	**2015**	**2012**	**2009**
LAP with its website	-	-	99,4	91,3
Display and/or acquisition of information (1)	98,5	93,5	90,5	89,8
Acquisition (download) of forms (1)	92,8	85	75,9	67,8
Online submission of forms (1)	68,3	58,3	36,7	15,6
Telematic initiation and conclusion of the entire process relating to the requested service (1)	47,8	33,8	19,1	7,6
LAPs which provide free wi-fi "access points" on their territory	46,7	51,8	27,4	-

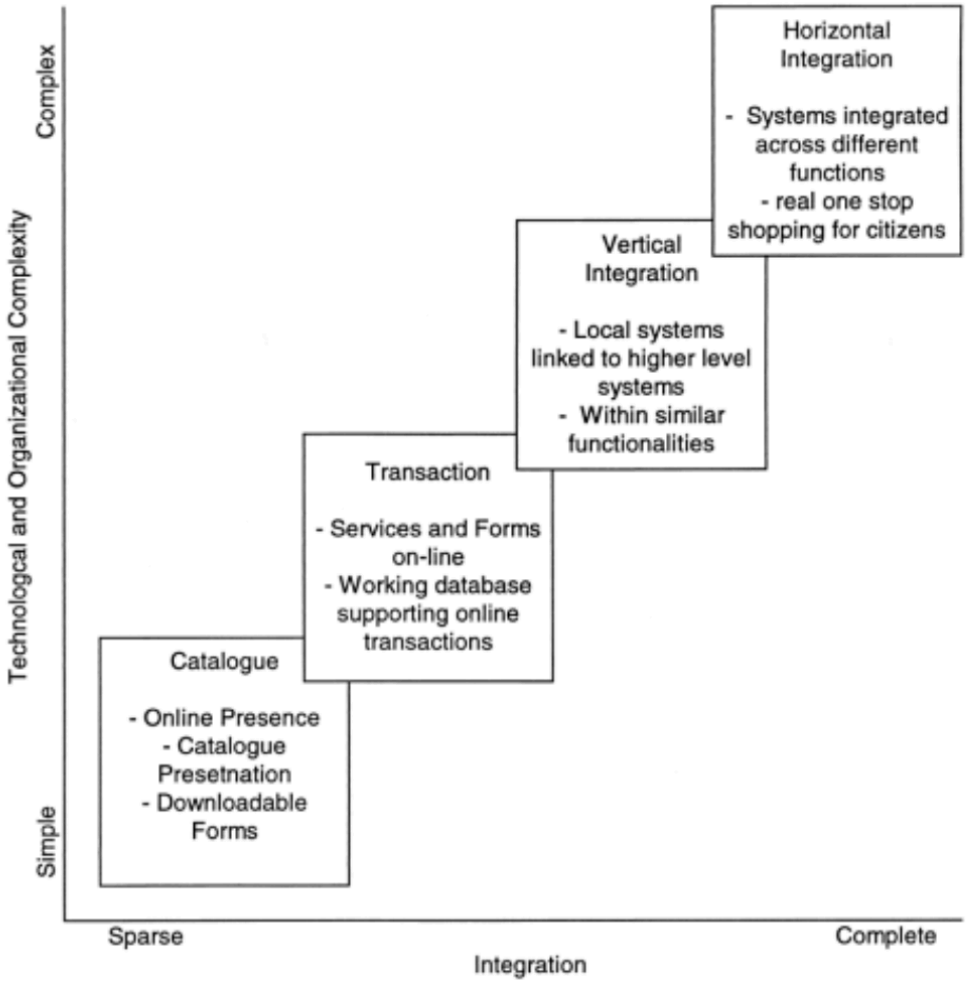
Source: ISTAT 2020, https://www.istat.it/it/archivio/241550

(1) Since 2015 the denominator is the total of LPAs; until 2012 the denominator was the total number of LPAs with a website

Looking at the "E-*government Development Model*" proposed by Layne and Lee (2001) (13), shown in the **Figure 2.4**, interaction modalities just considered, which are characterized by increasing degrees of complexity, can be placed in phase 1 and 2 of the model. Specifically, "display and/or acquisition of information" and "acquisition (download) of forms" are typical of phase 1 of the model (catalogue), while that of bidirectional interaction of phase 2 (transaction). As long as the integration of the *front-office* and *back-office* digitalization processes is not completed, the advantages of ICT will only be partially exploited and the *e-gov* project will not be able to overcome the first phases of the envisaged evolution from the most popular reference models.

(13) Based on technical, organizational, and managerial feasibility, Layne and Lee (2001) regarded e-government as an evolutionary phenomenon and proposed a four-stage model. The four stages, as discussed below, are catalogue, transaction, vertical integration, and horizontal integration. Catalogue, delivers some static or basic information through web sites. Transaction, extends the capability of the former and enables citizens to fulfill some simple online transactions such as filling out government forms. Vertical integration, initiates the transformation of government services rather than only automation of its workflows. It focuses on integrating government functions at different levels, such as those of local governments and state governments. Horizontal integration, focuses on integrating varying functions of separate systems for providing users a unified and seamless service.

Figure 2.4 - Dimensions and Stages of E-Government Development



Source: Layne and Lee, 2001

The final considerations which “ISTAT” provided with the latest survey on ICT, in 2018, can be summarized as follows:

1. The larger municipalities are equipped with more advanced technologies

2. ICT training for staff is still too low

3. Software reuse is in sharp decline

4. Online-offered services are mainly dedicated to businesses

5. Online demand for growing users where the service improves

6. Still few LPAs investing in artificial intelligence and big data

7. Focus on municipalities in metropolitan cities

As expected, the demographic size of municipalities is related to the adoption of information technology, with very high percentage differences between large and small. Moreover, among the technologies aimed at reducing costs, the adoption of open source software decreased in 2018 compared to 2015 (from 54.1% to 50.9% of LPAs).

During the last two decades, Italy has been able to substantially reduce the gap with respect to the EU partners in terms of provision of digital infrastructures for *e-gov* but it wasn’t able to achieve satisfactory performance with regard to the

effective usage of these technologies. Moreover, together with the wide lack of digital competencies by users, the tight budget constraints and consequent block of personnel turnover have brought Italian PAs to a large need of the skills, training and organizational changes necessary to succeed in a real acceleration to the digital transformation.

In the case of specific Entities of LPAs, such as small Municipalities, the main issue lies in the level of competencies required: indeed, it is usually too high for structures with such inadequately equipments. The direct consequence is to make use of *e-gov* platforms provided by aggregators. For instance, in the Emilia-Romagna Region, it was set the MERER (14), one of the first structured regional platforms, which helped the single Entities (i.e. Municipalities) to be driven in the use of *e-gov.*

(14) The Emilia-Romagna Region Electronic Market (MERER) is an e-procurement tool that Intercent-ER makes available to Public Administrations of the territory for the purchase of goods and services below the threshold of Community significance, through the electronic sending of Requests for Offer (RdO) to authorized suppliers.

Table 2.5 - Municipalities by main technological equipment used, region and class of demographic amplitude

Year 2018

Regions	Municipalities with:								
Classes of demographic size	Desktop PCs	Laptops	Other mobile devices	Smart cards readers	GIS instruments	CAD instruments	Handheld GPS	Videoconference devices	Wireless local networks
Piemonte	99,8	50,6	21,8	75,7	33,3	25,6	3,1	8,5	62,3
Valle d'Aosta	100,0	78,4	44,6	79,7	32,4	35,1	9,5	9,5	64,9
Lombardia	99,7	65,6	35,0	96,2	24,9	47,7	4,9	16,0	66,4
Pr. Aut. di Bolzano	98,9	95,1	43,8	71,4	84,4	32,6	16,8	7,5	52,0
Pr. Aut.di Trento	98,9	75,0	37,5	92,6	67,6	60,8	10,8	19,9	59,7
Veneto	100,0	82,0	49,3	72,7	45,5	55,0	5,8	17,5	63,4
Friuli-Venezia Giulia	100,0	80,0	31,8	93,8	47,4	58,2	4,2	14,5	46,9
Liguria	99,3	63,2	24,7	53,3	46,1	37,1	9,0	14,6	62,2
Emilia-Romagna	100,0	87,1	59,1	90,8	55,9	68,8	10,2	28,4	75,3
Toscana	100,0	85,8	57,3	98,5	58,0	71,9	19,0	50,7	79,2
Umbria	100,0	76,5	45,9	76,5	32,1	49,4	15,7	45,7	71,1
Marche	100,0	74,7	32,3	98,0	43,8	53,8	3,2	24,0	75,2
Lazio	99,7	51,4	19,8	50,4	19,3	31,5	4,3	14,9	55,2
Abruzzo	99,6	43,3	15,9	67,9	24,5	37,5	2,8	23,0	58,0
Molise	100,0	30,0	1,5	50,9	7,1	26,7	1,2	4,8	66,8
Campania	100,0	44,0	18,3	68,1	20,3	37,5	7,5	17,9	61,1
Puglia	98,8	65,5	25,1	62,6	29,3	44,1	3,4	22,3	57,0
Basilicata	100,0	33,9	17,3	49,1	18,8	31,3	3,1	14,1	65,4
Calabria	97,6	34,7	13,8	54,5	11,1	14,1	3,3	11,4	62,1
Sicilia	100,0	70,3	26,7	67,3	25,0	36,5	4,4	17,2	64,9
Sardegna	98,6	64,5	27,1	86,4	54,3	67,1	5,0	28,1	64,1
Italy	**99,6**	**62,0**	**30,1**	**77,4**	**33,7**	**42,8**	**5,8**	**17,8**	**63,7**
60.001 and more	100,0	97,6	78,3	90,0	85,1	90,3	40,7	55,0	87,0
20.001 - 60.000	99,8	91,0	65,4	82,5	69,4	78,4	18,3	34,5	74,5
10.001 - 20.000	99,7	88,1	59,5	85,5	51,6	72,9	10,7	27,2	70,7
5.001 - 10.000	99,7	81,1	46,0	79,9	43,4	63,5	7,2	22,7	67,3
3.001 - 5.000	99,8	69,4	32,2	79,8	31,5	48,1	5,6	16,1	65,6
2.001 - 3.000	99,7	62,3	24,6	77,2	29,7	42,2	5,7	18,9	59,2
1.001 - 2.000	99,0	51,9	18,5	72,2	24,1	29,4	3,0	15,2	60,5
Until 1.000	99,8	36,6	10,3	73,8	21,6	17,0	0,9	8,5	59,2
More than 5.000	99,7	85,6	54,7	82,4	52,2	70,0	11,6	27,5	70,4
Until 5000	99,6	51,8	19,4	75,1	25,6	31,0	3,2	13,6	60,8

Source: ISTAT 2020, https://www.istat.it/it/archivio/241550

*percentage of municipalities, unless otherwise indicate

The **Table 2.5** is extrapolated from data coming from the survey on the use of ITC by LPAs "ISTAT" made on 2018. As it is shown, we can appreciate the good results achieved by Municipalities of Emilia-Romagna compared to many of other Regions of Italy.

The next Paragraphs will address the peculiar case of the Emilia- Romagna Region, one of the Italian regions which has achieved the greatest results in terms of digitalization, and specifically in the field of infrastructures necessary for the maintenance of all the processes of technologic innovation.

After all, what should be pointed out, is that in the process of providing services, LPAs need to exchange information and documents with each other: the ability to deliver services promptly and digitally therefore depends not only on the degree of computerization of the individual entity or category of entities, but also on the ability of the individual components of the PA system to interact horizontally and vertically, resulting into a proper network. Here comes the theme of "interoperability", main feature of the latest three-year Plan for IT in the Public Administration 2020-2022 (**see Par. I.3.2**).

II.3 DIGITIZATION OF PUBLIC ADMINISTRATION IN EMILIA-ROMAGNA REGION

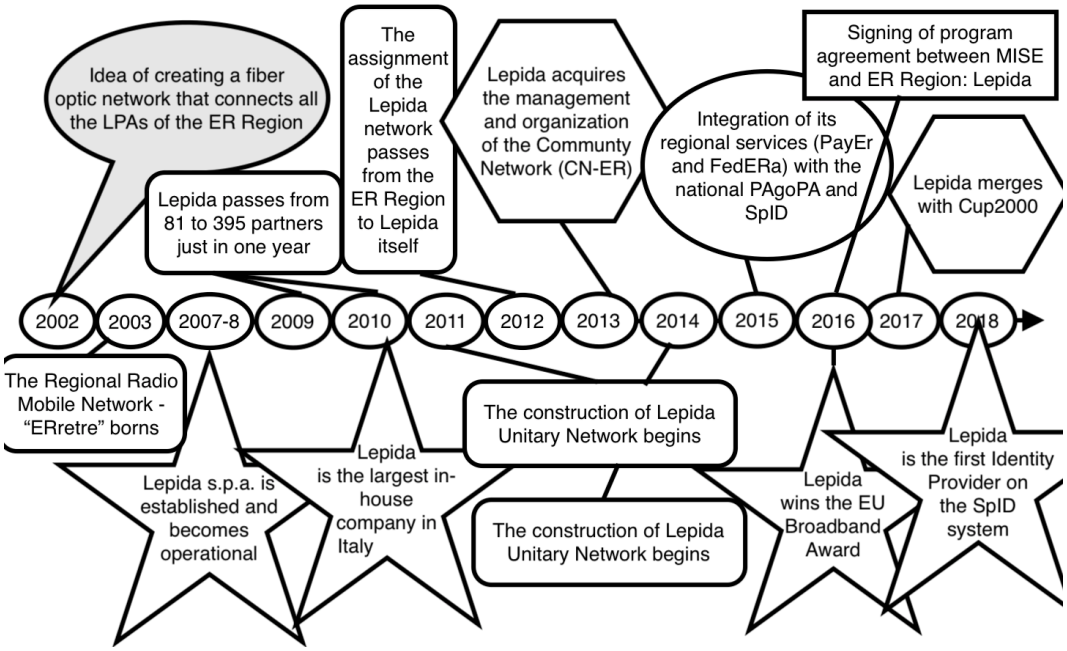
II.3.1 The crucial role of Lepida S.p.a.: the storyline of its first ten years of life

A primary experience of dematerialization in the PA was conducted by Lepida S.p.a. - an *in-house* company of the Emilia-Romagna Region and a primary actor in public subjectivity for the realization of the Regional Digital Agenda.
Before going straight with the review of the main steps taken in the realization of this profound simplification process, it is introduced a walk through the main stages that characterized the first 10 years of Lepida S.p.a.'s life to provide a general overview of the importance that this company has had throughout the process of digitization of the PAs, especially in the Local Entities (e.g. Municipalities) of the Emilia-Romagna Region.

In 2002 the idea was born of creating a fiber optic network that connects all the LPAs of the Emilia-Romagna Region, as the Emilia Street had already done in the past. The idea finds space and also funding in the "Emilia-Romagna Telematic Plan 2002-2005", and this is how the adventure of the Lepida Network begins.

Figure 2.6 - Main chronological steps of the Lepida S.p.a. storyline

Years 2002-2018



In 2003 the Regional Radio Mobile Network for emergencies called "ERretre" was born, for municipal police, health and civil protection. In 2004 with the Regional Law 11, the Region defines strategies and actors for the development of the information society in its territory; the creation of the Lepida network is formalized and the entity that will manage it is defined - the Lepida company - then established in 2007, whose majority shareholder is the Region, followed in subsequent years by the other Local Authorities.

Lepida becomes operational in 2008, and at the end of 2009 it has 81 partners who become 395 after one year (2010) when Lepida becomes the largest *in-house* company in Italy and the manager responsible for a single network. The "Joint Technical Committee" with Telecom is also established to solve the *digital divide* problems in the territories. It is the "first three years of activity": the three year period in which the organizational structure of Lepida is consolidated and the procedures and the management activities are defined and implemented. This is the three-year period that sees not only a huge improvement in terms of network and connectivity performance, but also the start of services (FedERa, SuapER, the consolidation of ConfERence, MultiplER, Lepida TV) in addition to dealing with the transition to digital terrestrial. At the same time, the R&D activity begins in order to identify solutions that meet the needs of the shareholders: video surveillance systems, sensor networks, authenticated service profiling and filtering mechanisms (the latter mechanisms necessary for the use of the Internet in schools and in Wi-Fi, with authentication systems for squares, for example). In 2011, the Regional Plan against the d*igital divide* is defined to cover the entire Emilia-Romagna territory at at least 2 Mbps by 2013. Lepida becomes the public operator with the *in-house* constraint to work solely and exclusively for the purposes of its members, and not to provide connectivity directly to citizens and

businesses in their own offices, but being able to facilitate telecommunications operators working in the area. With this change, the use of the Lepida network in contrast to the *digital divide* begins, also through agreements that give bandwidth to private telecommunications operators operating in areas of market failure. The change allows the use of the network also to citizens who are browsing in public places (e.g. libraries) or other places managed by entities powered by the Lepida network. 2011 is the year in which the construction of the Lepida Unitary Network and of the South Radio Backbone begins, and of the migration of the first nodes to this network; meanwhile, the services see the development and improvement of the PayER payment platform. It is 2012: Lepida obtains ISO27001 and ISO900 certification, which will then be reconfirmed for all subsequent years. Lepida begins to deal with the interconnection of schools and the procedure for the assignment of the Lepida network from the Emilia-Romagna Region to Lepida itself is started.

In 2013 we have two key events in the history of Lepida: the first is the merger by incorporation of LTT, a public company in the Parma area with activities similar to those of Lepida; the second is the transfer from the Emilia-Romagna Region to Lepida of the management and organization of the Community Network. Furthermore, in the same year an agreement for the development of broadband is

signed between the regions and the MISE, which sees Lepida as one of the implementing bodies. The "second three-year period of activity" is the three-year period in which the Lepida network from the PA network becomes also the territory network against the *digital divide*. It is 2014, and the Regional Law on attractiveness is approved: moreover, the Law 14/2014 allows the development of industrial areas with ultra-broadband. 2014 is the year in which the new DataCenter & Cloud division is built (implementation of four territorial DCs), and it is also the year in which the Lepida Unitary Network is completed. Finally, 2014 is the year in which the "BUL Plan 2014-2020" of the European Union starts. In 2015, the diffusion of the free Wi-Fi access service is encouraged to enhance the territory through a public notice addressed to all member bodies. It is also the year in which the integration of PayER and fedERa services begins with the national PagoPa and SpID. 2016 is an intense year: it is recalled the completion of the South Radio Dorsal and the continuation of work on the industrial areas that see 21 production areas built. The signing of the program agreement between MISE and the Region allows the development of BUL with the construction of fiber optic backbones by Lepida and access by a concessionaire. Lepida wins the European Broadband Award 2016 in the "Cost reduction and co-investement" category for the BUL model of industrial areas. On

the services front, the measurement of the services provided by Lepida is started in order to understand what makes sense to keep and what makes sense to discard. Finally, the New Digital Integrations Division is established in response to the need of the shareholders regarding the coordination of the ICT functions within the entities and the general digital system. In 2017, steps are taken to make Cup2000 and Lepida a single major ICT reality. A single general management is established between the two companies and the same organization chart is implemented. With the "Emilia-RomagnaWi-Fi" project, Wi-Fi is brought to institutions throughout the territory through two calls and the Regional Law 11/2014 is also amended. In terms of services the new SuapER platform is implemented and it is witnessing the switch-off of PayER on PagoPA and increase in work on Local Digital Agendas is provided. In 2018 the merger project between Lepida and Cup2000 goes ahead through regional laws but also all the necessary acts and it becomes effective as of 1 January 2019. Lepida is the first public Identity Provider on the SpID system. Furthermore, the first Smart working experiments begin at its partners.

Of course, the subsequent projects from 2019 to date have been many and relevant, but mostly aimed at technological innovation rather than infrastructural intervention.

Given that the purpose of this analysis is far from the study of structural processes but rather focuses on the steps that each individual institution could and should take in order to make each administrative procedure increasingly digitized, and therefore simplified, the detailed analysis focuses on important procedural innovations that the Emilia-Romagna Region disseminated among its Public Local Entities thanks to the valuable contribution of Lepida S.p.a..

II.3.2 GeDoc Model and FlowER: dematerialization for simplification

Vasco Errani, former President of the Emilia-Romagna Region, set as a strategic objective for the legislature - in the then Government plan 2010-2015 - “the preparation of a simplification plan, based on various operating platforms. Among these, in the first place, the use of the web as a tool for transparency, knowledge and information on procedures and opportunities for citizens”.

The final achievement expected had a strong belief in the necessity of an intervention that could allow for an effective and concrete simplification of administrative procedures, in order to limit the number of actors involved in the process of intervention and activity and thereby into a relevant decrease in costs and response times.

"Simplification Law" (art. 1 of the Regional Law 18/2011), indeed, was able to provide the Emilia-Romagna Region with great basis for pursuing the "objective of raising the level of quality of administrative action and decision-making processes as a whole, through measures aimed at developing the quality of legislative acts, achieve concrete results of simplification of administrative procedures, further develop the simplification of organizational structures".

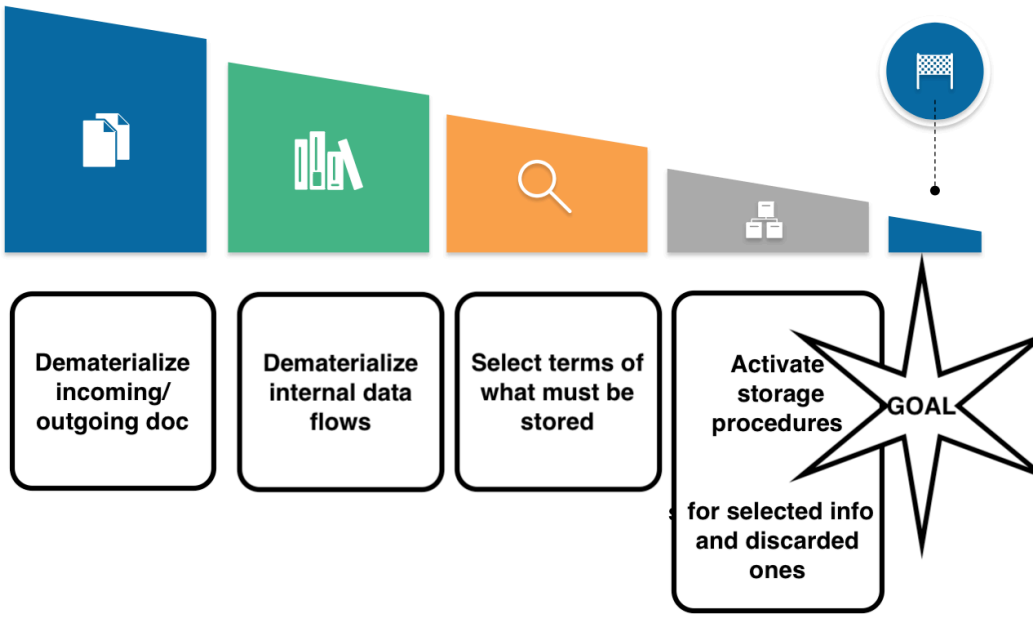
In order to succeed in the achievement of this serious challenge, two key models have been developed, giving as a result a relevant push in the building of the digital PA- within PAs of Emilia-Romagna: the infrastructure for digital document management (**GeDoc-DOC/ER**) and the methodology for dematerialization of administrative processes and document flows (**Flower**).

As a consequence, four main steps (**see Fig. 2.7**) have been completed firstly by Emilia-Romagna Region, and then from most of Local entities, thanks to the development and implementation of these well-structured and useful tools:

1. Dematerialization of all incoming and outgoing documentation;
1. Dematerialization of all internal data flows;
2. Selection of what must be stored in the short, medium and long-term;
3. Activation of appropriate storage procedures for the selected information and discarded ones to the rest.

The above steps have been successfully deployed by almost every single LPA within the Region, enabling them to achieve the ultimate goal, reaching a high degree of simplification in its processes.

Figure 2.7- Challenges and objectives of GeDoc Model for the documental dematerialization and simplification



-GeDoc model

The GeDoc (New Documental Management System) represents one of the most useful aids in the overall process of simplifying processes. Indeed, it has led to the almost fully overcoming of documentary islands, making integration among different applications possible and thus, making advanced search functions

available with the final achievement of a real knowledge sharing among all the systems which have been allowed to deposit their own documents in the Unique documental Repository.

The **Figure 2.8** shows the difference between the previous and the actual process (with a GeDoc model setting) and it can clearly provide the idea of a simplification trial. Hence, the great intent of GeDoc model has been to allow users from all Homogeneous Organizations areas of an Entity or Groups of Entities to manage the processes within the application relating to Administrative Proceedings strictly connected to particular document types such as incoming and outgoing documents.

The implementation of this model by the PAs has been crucial for the step towards an idea of administration increasingly accessible but with the least amount of paper possible, thus evolving into a real digital world. The IT document management system has therefore become the core of the life of institution by intercepting all document flows, regardless of the vertical applications that produce them. Once the management of documents from all flows and the one of the entire document life cycle have been centralized, the attention has been placed on the conservation method, entrusted once again to a centralized system: the Emilia-Romagna regional archive system - the **ParER** (**see Figure 2.9**).

Figure 2.8- Difference between the GeDoc model setting and the former (traditional) setting and the documental Repository

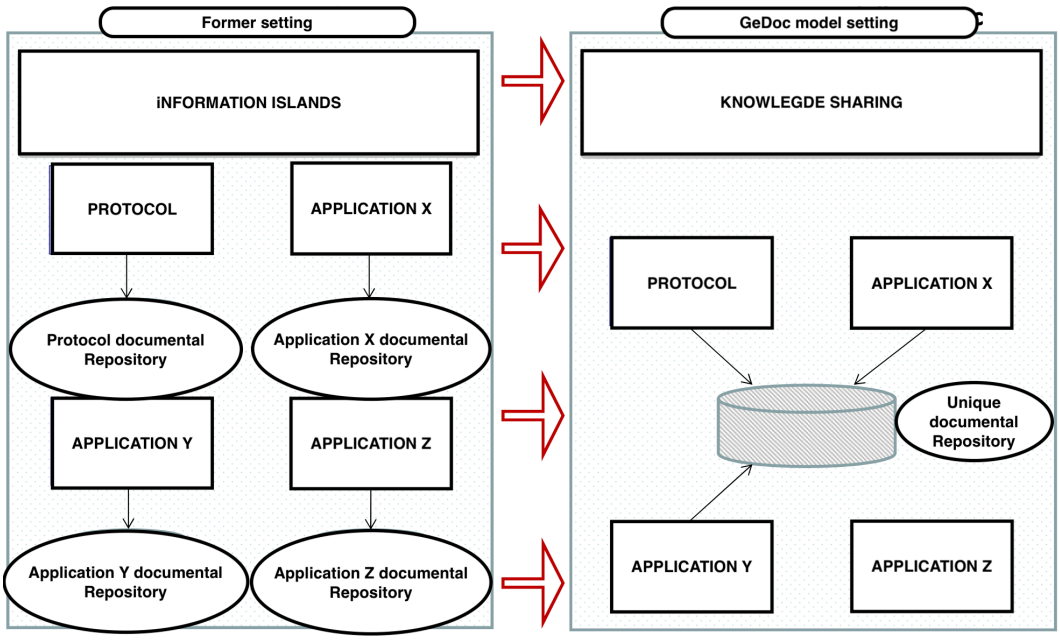
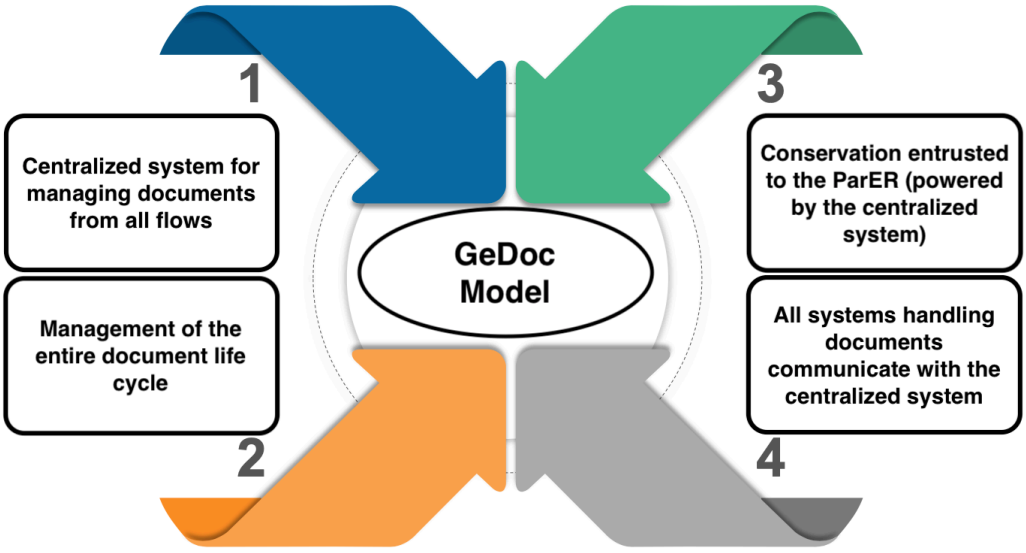


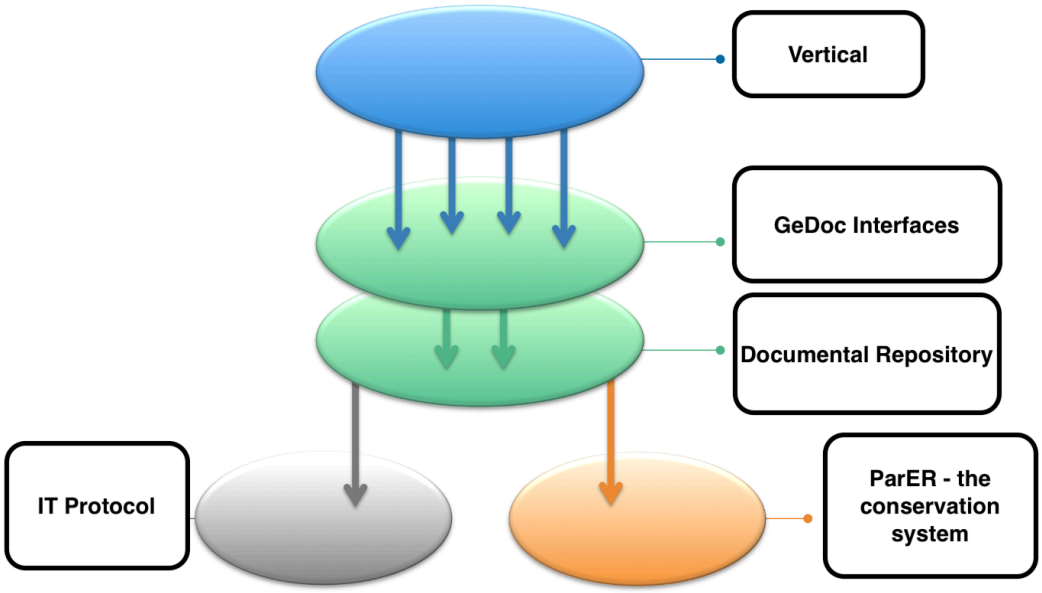
Figure 2.9 - Key principles of GeDoc Model



This centralized system have been made possible thanks to a technological tool - the **DocER**- which has played the role of a glue between the vertical applications asking for document services and the ones providing document services (**see Fig. 2.10**). In this way, **DocER** provided the technological solution, adopted within the Community Network of Emilia Romagna (15), for document management, which allows PAs to concretely implement the GeDoc document management Model developed for Bodies by the Emilia-Romagna Region. The main advantages delivered by this tool relate to a simplified treatment and search for objects, due to the non-duplication of these, and an easier maintenance of integration system, thanks to a consistent storage of information managed with IT systems. Moreover, the relevant savings in out-of-pocket management costs and the greater efficiency of the staff and of the general structure led to a deeper economic sustainability, increased by a strong reduction in paper and toner consumption and therefore by a considerable environmental sustainability. To conclude, what is remarkable is a consequent increase in the effectiveness of the whole system which translates into greater user satisfaction, who in the end is the real fulcrum of the entire public system.

(15) With Resolution DGR 758/2013, the New Convention for the functioning, growth and development of the Emilia-Romagna Community Network (CN-ER) was approved to create the organizational conditions to implement the purposes and projects contained in the Telematic Plan of Emilia-Romagna, now AdER Digital Agenda of Emilia-Romagna; CN-ER is a territorial aggregation on a regional basis (Article 30 TUEL), with its own headquarters (at the headquarters

Figure 2.10- Operating structure of the DocER Centralized system



As it is shown in **Figure 2.10,** the Doc/ER acts as the main supporting documental infrastructure for the management of dematerialization, thus allowing to overcome the first great challenge of the PA simplifying processes.

At this stage of the process, therefore, the focus has been moved on administrative procedures and in this regard, a methodology for the dematerialization of both the administrative procedures and the documental flows has been developed: the FlowER.

---

of the Emilia-Romagna Region, which is conferred power of representation of the CNER itself), with solid and participatory governance, entrusted to the "Permanent Committee for Guidance and Coordination with local authorities" (Art. 6, paragraph 4 LR 11/04), and with a specific active role on the part of the LepidaSpA Company.

-FlowER

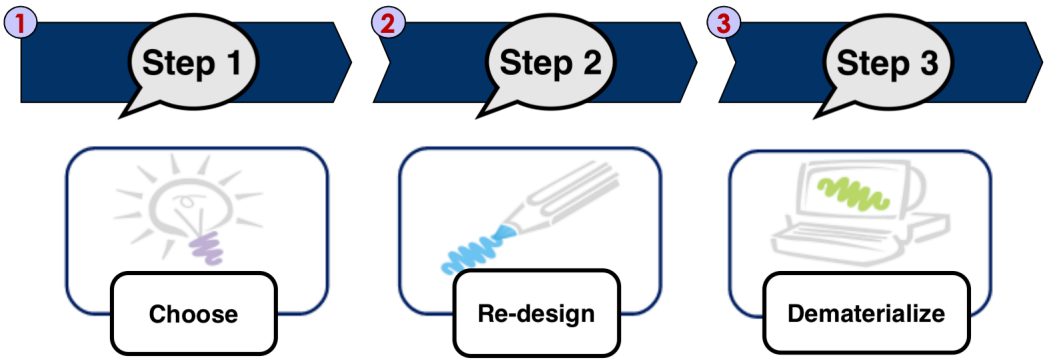
As mentioned in the introduction of this Chapter, a big issue that still appears very difficult to overcome nowadays is the struggling from being able to give a digital meaning to administrative procedures: thus, this means being able to translate their typically highly subjective processes - described by legal language characterizing the regulatory world - into a computer language - which instead responds to the binary code.

With regard to this hard challenge, the Region developed a project aimed at accompanying the dematerialization of administrative procedures and document flows: the **FlowER**. The main objective of the FlowER project is to rationalize and consolidate the dematerialization processes already in place, or to start new ones, to ensure more effective document and, consequently to simplify procedures for the benefit of both those who work in the institution and final user. Institutions which use FlowER program are part of a system perspective, of sharing practices and experiences; they make their work available to other organizations and can benefit from the knowledge acquired by others; moreover, they can make use of the tools and support of the Emilia-Romagna Region. In other words, it is a "dematerializing process" according to the "CN-ER style", where everyone's contributions is crucial for the entire system innovation.

The considerations underlying this project are to be traced back to the substrate common to all PAs: indeed, the legislation (e.g. administrative procedures, transparency, document management and IT document, domain on the administrative procedure) on which the LPAs are based is the same and therefore it follows that the PAs present in the territory use the same administrative functions. For instance, all the Municipalities perform the function of authorizing the start of production activities in the same way. In this way, the FlowER really managed to provide a traversal method of sharing results by leveraging a social approach (bottom-up) and establishing a central node for the governance of the entire process. Thus, FlowER has made possible the collaboration between the single Entities, giving the opportunity to add procedures already analyzed and then importing them into a system accessible to all the LPAs.

The **Figure 2.11** briefly sum up how the FlowER process works: starting from the choice of the procedure involved in the documental flows and documents, moving to the analysis of the documental flow and, hence, the re-design and streamline of it, up to the final goal of dematerialization of the process. To do this, a constant engagement with technological area is required: here, the **Doc/ER** comes into play.

Figure 2.11- Steps involved in FlowER process



At this stage, thanks to the documental infrastructure (Doc/ER) and the method and tool (16) for the analysis of documental flows, the PA is allowed to run the proceedings, through the construction of minimum process units in order to produce digital documents in a simple and fast way, without losing the legal reliability of the administrative document. Thus, simplification and dematerialization are paths that meet towards the same goal and the FlowER process has been able to support the dematerialization of procedures in LPAs and at the same time identify proposals and indications of simplification for the regional legislator.

(16) FlowBOX is a tool that guides the institution with the analysis methodology, providing a focus on documents and documentary actions and consequently reaching, together with another specific tool, the FlowDesigner, at a dematerialized process design.

Dematerializing therefore becomes an opportunity for each single LPA to rethink, streamline and improve procedures, homogenize and standardize the methods of production, management and conservation of documents with a final rethinking of archives in order to make them accessible over time.

To conclude, the theme of administrative simplification, in alternating phases the object of interest on the political agenda of every institutional level, is back today of great relevance: there is a strong need to lighten the bureaucratic machine, not to follow an erroneous conception of PA seen as a burden to be dismantled, as much as to affirm and strengthen the positive role that the administration of "public affairs" can and must play in a time of economic difficulty. The simplification of the rules, the review of procedures with a view to greater adherence to the needs of the end user and the homogenization of the action carried out by the various institutional levels are objectives that are once again urgent and present in every public policy that has the ambition to affect the well-being and development of the territory and of the country as a whole.

II.3.3 What's next? The Digital Agenda of Emilia -Romagna

The Digital Agenda of Emilia-Romagna (henceforth, DAER), defined by the Regional Law 11/2004, concerns both the policies of the Region and the Local Entities which are aimed at the development (or rather improvement) of the information society in the regional territory and at the promotion of digital services for citizens, businesses and PAs.

The Emilia-Romagna Region has set the ambitious goal of reaching a full (100%) digital share by 2025, dreaming a society made of "zero differences" among places, people, enterprises and cities and thus offering everyone with a completely "digital ecosystem". This is certainly a challenging target for the Region, and even unconceivable for most of the other Italian Regions.

But here the pole position of the Emilia-Romagna Region comes into play. As introduced before, nowadays the transversality of the legislation reigns: indeed, here again the centrality of the user plays as the main theme of the DAER design strategy. User must have an active role and thanks to the digitalization it will be finally possible to continuously define a decisive means for the development, valorization and renovation of the human capital contribution. In other words, it is important the promotion of a new model of active citizenship, in which new forms of collaboration and "exchanges of mutual benefit" are enabled, based on

symmetrical relationships between service users, businesses, third sector associations and voluntary work. In this way, it will be possible to reach a high degree of involvement, implemented internally within the institution: thus, for instance, awareness-raising meetings and in-depth seminars could play a crucial role in order to spread the culture of open data and stimulate the co-design of a common working method.

The Emilia-Romagna Region today boasts its competitiveness thanks to its many technological advancements completed in the last decades, and especially the infrastructural ones, but tomorrow, it is need to shift this advantage to his ability to grasp the challenges that society presents. In this sense it must aim at a digital that is no longer driven by technology (hence, invention) but by an extension of skills (hence, innovation).

CHAPTER III.

THE MUNICIPALITY OF CORIANO:

A FOREFRONT REALITY

III.1 INTRODUCTION

"Defining the digitization of public administration is not at all easy. And any attempt could appear reductive, however we cannot be exempt. The definition that appears most appropriate is that of a big bet". This opens the book written in December 2016 by the Head of Digital Transition of the Municipality of Coriano, Dr. Carla Franchini. Just over 5 years have passed, and the bet can be said to have been won. This chapter represents the heart of all my thesis work and the engine of what led me to undertake a deepen analytical study on the issue of digitization in Public Administration.

First of all, it is necessary to say that I am currently employed in the Municipality of Coriano and I have been working there since last October 2020. I was hired following the decision to reopen the Municipality of Coriano, after a long closure due to the emergency state due to Covid-19: few Municipalities have managed to reopen their doors to the public in such a serious state of health emergency, and

the Municipality of Coriano can boast of having won ***also*** this challenge. And I say ***also*** because this is only the latest digital challenge this small Municipality has won. But this is only the end of the story…

The reason why the entire Chapter II has been dedicated to the Emilia-Romagna Region now takes on a meaning: in fact, the Municipality of Coriano is located in Emilia-Romagna and owes part of its favorable position to the powerful infrastructural base, thanks to the numerous initiatives, as seen in Chapter II, and above all to the presence of an undisputed colossus such as Lepida S.p.a. and its major contribution to the overall process of digitization in the public sector.

The idea is to consider the Municipal Entity as a highway: it is therefore necessary to start with a huge investment in the creation of a functional and reliable infrastructure (e.g. the road) before being able to care about where to place the rest areas and services, exits and the entrances, and finally before being able to make the motorway service accessible to the community (e.g. cars).

Likewise, the digitization process of each single Municipality must take into account several steps which must be followed in a precise order. And here comes the importance of Lepida S.p.a., which is the first actor who plays a fundamental role in the digitization process in the peculiar case of the Municipality of Coriano (and obviously of many others Municipalities of the Emilia-Romagna Region).

Lepida S.p.a. was the one who first equipped the Municipalities of the Region - such as Coriano - with the infrastructural network: then, it was possible to take the steps towards digitalization, which would have been impossible in the absence of such an advanced infrastructure. What takes on much relevance, once the infrastructure has been established, is the strategy implemented by each individual local entity, which is what ultimately made the difference. In this sense, my analysis is aimed at demonstrating how the Municipality of Coriano, despite being in the Italian peninsula and therefore facing the same limits as the other Italian Municipalities, but being in the advantageous position of Emilia-Romagna Region, has managed to make the difference. Hence, the question is aimed to answer is what made the difference, whether it has been the age, the level of education, the specific preparation of employees in IT subjects. These are undoubtedly factors which can affect the level of digitization, but they're not the only ones what really made the difference. The real difference lies in the employees' attitude to innovation, change and adaptation, and this is achieved if the change comes from the "inside", not from the external environment. In other words, it has to be pushed by employees (supply-side) rather than to be pulled (demanded) by citizens.

III.2 THE “DIGITAL JOURNEY” OF THE MUNICIPALITY OF CORIANO

The period subject to analysis of the digital journey of the Municipality of Coriano begins in 2013, when Dr. Franchini was hired and started to work hard together with the employees of the Municipality to succeed in the final goal of digitalization and therefore the simplification of each single process inside the Municipality: indeed, the interventions carried out in the period 2013 to date have affected the architecture of the Information System of the Municipality of Coriano. Today it can be said that the evolution made in this period has been of such magnitude that it has affected almost all areas, both from the point of view of the hardware and software infrastructures, and from that of the organization of information flows and data storage. Before going straight with the research method and the results of the analysis, the main innovations made to the structure of the institution in the period indicated are retraced. In order to provide a precise and clear state of the art of every steps taken in the interest of digitization of the present Municipality, a semi-structured interview was carried out with the manager of the "Area 1” (i.e. the “General Services”) (17), as well as the Deputy

(17) The the Municipality of Coriano is organized into five different areas: “Area 1” addresses the general services (e.g. PRO, laws and contracts), “Area 2” handles the personal services (e.g. demographic office, social services), “Area 3” concerns with the financial services (e.g. waste and

Secretary of Municipality and no less the “Head of Digital Transition” - the Dr. Carla Franchini. This can help to deliver a deeper picture of the current state of digitization within the present Entit. In detail, the following paragraphs telling the birth, the subsequent development and the objectives pursued through the digitization of both internal and external processes and therefore the innovation of the entire approach to the Local Public Administration, both by employees and citizens sides. The interview is based on two different stages of action: the first one addresses the period 2013-2017, corresponding to a first mandate, and the second one concerning the period from 2017 to date (February 2021).

III.2.1 Survey on the “digital journey” of the Municipality of Coriano

First stage: 2013-May 2017

The complete overhaul of the **LAN network**, which today is unique in terms of voice and data, first of all made it possible to drastically simplify the maze of cables of different types originally present at the Town Hall. Now both voice and data travel through cabling compliant with the latest technologies, ensuring signal stability, interconnection speed and safety in the transport of voice and data.

house taxes, personnel office), “Area 4” is responsible with the public works and “Area 5” which encompasses all the technical offices (e.g. urbanism, private building).

The complete network redesign also eliminated all office-level subnets that had been implemented over time to expand the original core infrastructure dating back to the 1980s. A further relevant benefit was brought by the use of **Voip technology** (Voice over IP) for the municipal switchboard, which is now no longer a foreign

body of the IT infrastructure, but is fully part of it and contributes to the increase in performance obtained from the deployment of the new integrated LAN network.

With regard to **network servers**, the rationalization process implemented has made it possible to drastically simplify their management. Now only the application server (on which the application software used by the internal offices are installed) and the file server (for backing up unstructured data produced by the offices) are managed internally by the organization. The web server and the mail server have instead been replaced by cloud hosting services that guarantee 24-hour access to certified server farms. Therefore, the activities of internal personnel for the supervision of the server room have been significantly reduced: this has made it possible to reallocate the resources available for carrying out design activities, which are qualitatively superior to those of mere management of the installed machinery.

The **computer protocol system** has been fully implemented. To acquire any incoming, outgoing or internal protocol, it is always necessary to associate the original document (which can be already digitally formed or scanned, in the case of paper arrivals). Furthermore, starting from 2016, any protocol registration is archived daily in the substitutive conservation system managed by the Regional Archival Center of Emilia Romagna (**ParER**), which guarantees the non-modifiability and accessibility over time of every document present in the protocol management system.

All the **acts** produced by the Entity (Council Resolutions, Determinations, Decrees, Ordinances, Contracts and any other acts) starting from the first January 2017 are produced in **native digital format**, as the Municipality of Coriano has taken the decisive step towards the transition to digital, by definitively eliminating the handwritten signature on paper. This was possible thanks to the replacement of all the management software applications of Protocol, Administrative Acts, Accounting, Taxes and Registry, which today are completely integrated with each other and guarantee the uniformity of the management information system. The transition to digital was also an opportunity to revisit the procedural flows of authorization and forwarding to the internal offices for each of the acts managed by the Entity, codifying the individual steps within the software procedures. To

date, all employees of the Entity are equipped with a device for the digital signature of the acts of their competence.

The management of all the **calls** of the City Council and the Board Commissions through **cloud services** has already been implemented since the end of 2013. With a simple application associated with an assistance contract, the entire paper notification process entrusted up to that moment to the notifiers was dematerialized. The advantages are a great paper savings, the exclusive use of the PEC for notifications, faster and simultaneous calls for all components, guarantee not to lose any document thanks to archiving via web and last, but non least a saving of human resources.

All **cemetery contracts** are now available in **digital format and archived** through a management application that associates with each concession both the positioning within the cemetery and the concessionaire and burial data. The work of scanning the paper concessions has therefore put an end to very long research activities for information in the folders in which the cemetery contracts have always been filed, making the work of the offices responsible for checking and issuing the authorizing titles more efficient.

There is no longer any analog fax device inside the Municipality. The old faxes have been replaced with a virtual fax service provided by the telephone company,

which converts all incoming faxes into e-mail messages; the **digitized flow of faxes** has been directly integrated into the protocol management system, in order to obtain the direct registration of any incoming fax.

The personal printers to be associated with each workstation are no longer purchased as early as 2012. In recent years they have been replaced with **multifunction centers** (print, copy, scan), which serve several offices at the same time and which the Authority has acquired not in ownership, but with rental agreements. The investment expenditure for printing devices was therefore eliminated, while at the same time also rationalizing the current expenditure through the signing of contracts at a certain cost and inclusive of all maintenance costs.

The replacement of 40 client PC workstations in the last five years has reduced the average age of the existing machinery, which is now much more reliable on average than in 2012. The process of **gradual replacement of PCs** has also made it possible to abandon operating systems no longer supported with security updates from their suppliers, reducing the vulnerabilities of the local network to any cyber attacks conducted against the most obsolete and no longer updatable operating systems.

The service contract with **Lepida S.p.a.** for connection to the regional network today includes not only connectivity services, but also membership of the Community Network of the Emilia Romagna Region (**CN-ER**) for the integration of the services developed ad hoc for all participating bodies (authentication **FedERa**, interoperability of cadastral services, document management). In addition, the Municipality of Coriano has joined a new Agreement with Lepida S.p.a. in order to extend the coverage of the fiber optic telecommunication network in order to eliminate the *digital divide* in the industrial, craft, commercial and residential areas of the municipal area which have not yet been reached from broadband.

In March 2017, the **RIGAS** (General Computer Register of Signed Acts) was established and activated within the IT Protocol software procedure; the design of which was internal, born from the need to concentrate in a single access point any deed signed by anyone within the entity; the RIGAS allows you to archive all documents - signed by anyone - that have external relevance and that bind the body even if free of charge, except for the documents that will be expressly excluded with formal provisions of the Municipality of Coriano. Basically, all the acts signed by anyone and having relevance outside the entity (not only those of a contractual nature, but also memoranda of understanding, agreements, RDO…)

have been entered in a computerized register, easily accessible and updatable. The inclusion of the RIGAS also allows you to monitor and extract in real time all the documents of external relevance depending on the characteristics, because the system allows the search by metadata (e.g. checking if and which contracts are expiring on 31 December, the agreements in place ...); in essence, the RIGAS allows immediate and direct verification of acts that have any type of effect in the entity. Furthermore, the RIGAS management software procedure makes it possible to carry out the automated daily replacement storage of all the documents present in the register at the Regional Archival Center, with the same guarantees of immutability and accessibility of all the records of the IT protocol. The Municipality of Coriano is maybe one of the few municipalities in Italy that registers and keeps all the contractual documents stipulated downstream of the acquisition by law and determines the related spending commitments.

Starting from January 2017, coinciding with the start of the production of the documents by the Entity in an exclusively digital mode, a technological infrastructure was activated that allows anyone (now enabled for Area Managers, for Administrators and the Municipal Secretary) to remotely access (via desktop or laptop) the management application software residing in the Municipality of Coriano to proceed with the digital subscription of all the deeds of their

competence (Council resolutions, determinations, documents to be registered). The possibility of operating directly remotely was introduced by the Municipal Council Resolution n. 166-2016 which established the **Office for the Digital Transition** pursuant to art. 17 Legislative Decree 82/2005, amended by Legislative Decree 179/2016. This allows those with signatory powers to be able to manage the activities of their competence on the management of the Entity regardless of where they are located.

Second stage: June 2017-February 2021

From the beginning of the new mandate of this Administration (June 2017) to date, further interventions have been made on the Information System of the Organization, continuing the path already undertaken of continuous and systematic improvement of existing infrastructures and optimization of work flows. The main activities carried out in the years of the new mandate are the following:

1. Replacement of all 17 and 19-inch LCD monitors assigned to individual workstations with 24-inch LED screens, in order to ensure greater productivity for each employee in the use of management software applications, better visual comfort and a more correct posture in carrying out office activities.

2. Switching to new subscription contracts for technical drawing CAD software and purchasing licenses updated to the latest versions available for metric calculation and job accounting software. The upgrade of these software applications affected all the workstations in the Technical Services Area dedicated to planning for Urban Planning, Public Works and Private Construction. In this way, the technical staff has all the most up-to-date and interoperable software tools with the file formats used by technicians external to the organization who interface daily with the offices of Area 4.
3. Purchase and installation of large format LED monitors (65 inches) for the completely digital management of planning activities for Public Works, Urban Planning and Private Construction. Each monitor (1 for each Service) has been associated with a personal computer equipped with all the design software, so as to be able to operate on large format layouts (up to A0) without having to use the paper printouts of the individual projects. but in interactive mode even in the presence of technicians external to the organization;
4. Set up in the “Sala Giunta” of a professional videoconferencing system consisting of: full hd projector, video projection screen, pc station with 65 inch full hd led monitor, videoconference kit with camera, microphones and loudspeakers. This system allows administrators to manage videoconferencing

sessions with remote correspondents, drastically reducing the costs of any travel, and allows all staff to carry out remote training sessions. In perspective, the videoconferencing system could also be used for council meetings with councilors in remote connection;

5. Implementation of the new management software system for building practices to replace the current now obsolete WinCE! Application. It is a completely cloud-based system and interoperable with the SiedER and SuapER regional platforms, which will allow the fully digitalized management of any building application (SCIA, CILA, building permit, etc.) starting from the acquisition of the application, with complete traceability of the individual preliminary stages, up to the issue of the authorization title. Full production has been implemented in March and April 2018.

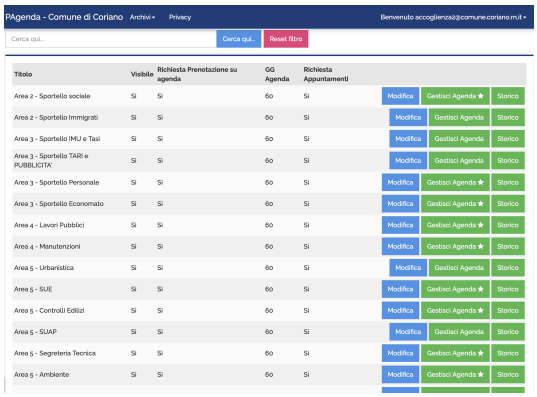
II.2.2 The advent of Covid-19: rearrangements and improvements

The year 2020 was a year of challenge for everyone, starting with individual citizens, firstly as human persons and their giant difficulties they had to face and then for companies, both public or private. I will not dwell on the consequences that Covid-19 has brought behind it because even if they are now well-known by most, they would be so many that they deserve a single document of interest. What I want to analyze, however, is the positive outcome that this pandemia had on digitization, which placed the entire community in a “forced" condition of conversion to digital due to the “lockdown” period, but which then found a citizen who changed and actively become digital even when there has been the possibility to choose between paper or digital.

As mentioned in the introduction of this Chapter, I was hired on the occasion of the great challenge of the re-opening of the Municipality of Coriano to citizenship, after a long period of closure due to the emergency crisis caused by Covid-19. On this occasion a new IT platform has been developed - called “PAgenda” - a virtual agenda which allows both employees and citizens to book an appointment in each single office of the Municipality. PAgenda is a clear example of innovation rather than invention: nowadays many technologies are

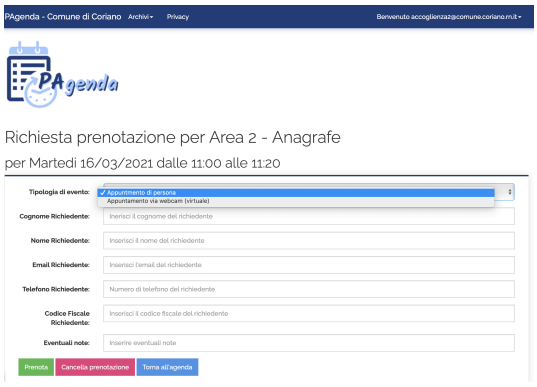
available but are not fully exploited and we are always waiting for an external input that poses a problem to be faced and solved.

Figure 3.1 - Virtual agendas by Offices on PAgenda



Source: https://www.pagenda.it/coriano/index.php

Figure 3.2 - Booking methodology with PAgenda



Source: https://www.pagenda.it/coriano/index.php

III.3 THE RESEARCH METHOD

This work is exploratory and adopts the method of the case study: in the previous Paragraph (**Par. III.2**) it has been retraced every crucial step that the Municipality of Coriano has gone through, telling how it moved from what was a hard "fight" against digitization to what today is a friend that one cannot do without. However, for demonstration purposes it is not enough telling what and how has been done but it has been considered to answer some research questions which has been analyzed by different methods. Specifically, the case examined is the digitization process that has taken place within the small Municipality of Coriano (18) through an analysis of data extracted from the management system that it has currently under license (i.e. Datagraph s.r.l).

During the drawing up period of this thesis, different kinds of analysis have been carried out, depending on the different research questions that have been aimed to answer:

- the “ Incoming Protocols" data of the period 2014-2021 were extracted and processed by means of the Management System currently in use by the Municipality and then a subdivision by format was made. In this way it has been possible to have a clearer image of the relation citizen-Entity - which is

(18) In the last survey carried out in 2017 by ISTAT the Municipality of Coriano counted 10,529 inhabitants.

been possible to have a clearer image of the relation citizen-Entity - which is embedded in the protocol system and of the trend which has been during the period of analysis.

- In addition, I presented a survey using different methods (by post, by test or by telephone) to the PROs (Public Relation Offices) of all the Municipalities of the Province of Rimini (of which Coriano belongs) and also to the Chief Towns of Province (of the Emilia-Romagna Region). In this way it emerged the difference in methodology of each "Protocol Office" and above all the specialness of the system implemented by the Municipality of Coriano.
- The "age" and "education qualification" of the employees within the Municipality of Coriano was analyzed (only for the available years data, i.e. 2014-2019) in order to get a comparison with the Italian average analyzed in the **Chapter I**. For this purpose it has been made the elaboration from the data extracted by the mandatory annual accounts, available on the Municipality website (19)

(19) https://www.comune.coriano.rn.it/amministrazionetrasparente-personale

III.4 RESULTS AND DISCUSSION

Table 3.3 - Monthly "Incoming Protocols" in IT Protocol System by different means of arrival

January of each year from 2014 to 2021

	2014	2015	2016	2017	2018	2019	2020	2021
Fax	142	48	23	41	6		2	
E-mail	156	135	116	108	146	197	271	567
Post	306	186	138	33	43	35	35	11
By hand	373	362	309	450	379	270	355	12
PEC	386	445	698	976	1074	1085	1034	1022
Registered letter	269	248	238	53	607	89	339	90
Total per month	**1632**	**1424**	**1522**	**1661**	**2255**	**1676**	**2036**	**1702**

The **Table 2.3** is the result of numerous extractions made with the management software currently in use in the protocol office of the Municipality of Coriano. As can be seen in the table, the data refer to the period 2014-2021, as 2014 is the first year of implementation for the management system currently in use. For this it was not possible to elaborated data referred to previous years. What catches the eye is certainly the data relating to the delivery of protocols by fax: in fact, since 2018 this method appears to have been essentially disused. The most relevant data from this analysis are to be considered in the number of certified e-mails

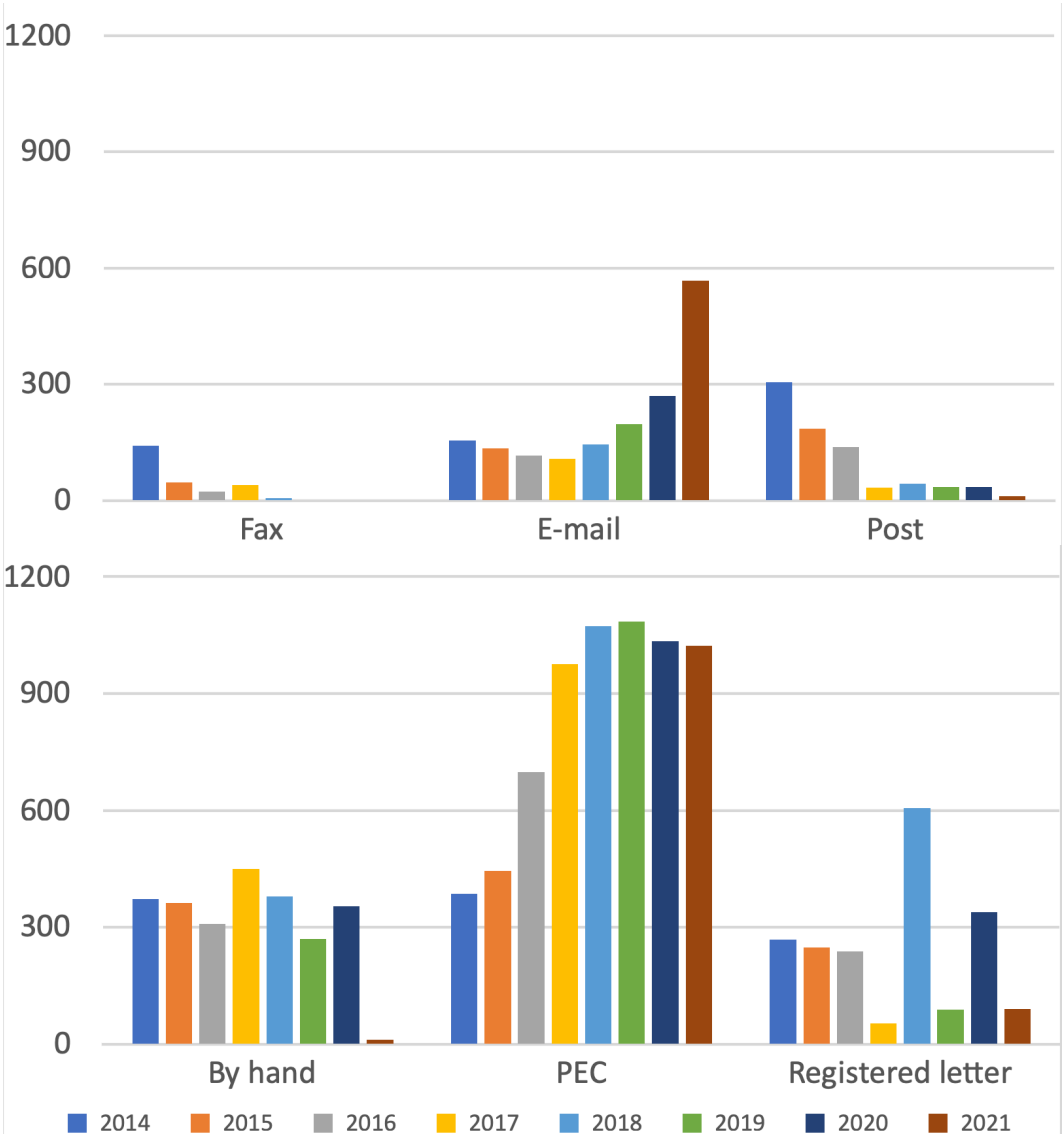
(I-.e. PEC) and emails that had a sensational surge at the expense of hand delivery which appears to take place in a clearly lower percentage.

Another fact that appears important to consider is how during January 2021, despite the fact that the doors of the Municipality were open to the public, the Covid-19 pandemic played a strong impetus towards digitization: this represents what was meant by a type of “Push-supply” rather than “pull-demand”. Citizens therefore preferred to use the digital methods of delivering documents rather than resorting to the risk of contagion and therefore delivering the document by hand at a time when they found themselves forced to do so because they were strongly encouraged by the Local Entity (i.e. Municipality of Coriano). Surely in order to be able to say with certainty that this change will take place regardless of the health emergency, we must wait for this condition to be resolved and return to normal life, but this data undoubtedly represents a strong hope for a change that arises from a need and becomes a habit for citizens.

The **Graph 3.4** is just a graphical representation of data contained in the **Table 3.3** in order to provide a clear vision of what has just been described.

Graph 3.4 - Monthly "Incoming Protocols" in IT Protocol System by different means of arrival

January of each year from 2014 to 2021



Source: elaborated data extrapolated by Datagraph s.r.l. management system

**Data are expressed in numbers of arrivals*

Table 3.5 and **Table 3.6** arise from a survey carried out with different methods: by telephone calls or email contacts, and in some cases thank to direct acquaintances, which allowed a detailed collection of information capable of making a comparison of the various IT protocol systems implemented in the various Municipalities of the Province of Rimini (**Table 3.5**) or in the Chief Towns Municipalities of the Emilia-Romagna Region (**Table 3.6**).

The results of this survey evidenced the almost uniqueness of the registration system of the Municipality of Coriano's Protocol Office. In fact, with the exception of Morciano di Romagna and Bologna - which is not to be considered comparable for obvious reasons to the Municipality of Coriano (the Municipality of Coriano is a municipality of 10,000 inhabitants against almost 390,000 inhabitants in the Municipality of Bologna), Coriano appears to be the only one to have developed a unique central system of documental registration, allowing citizens to communicate with every office within the Town Hall by means of a unique code - the protocol number - which is univocal and simplify a lot the overall process of both internal (employees) and external (citizens) stakeholders.

Table 3.5 - Municipalities within the Province of Rimini equipped with an Automatic IT Protocol System

February 2021

Municipality	Automatic Protocol System	Other response system	Citizen request
Bellaria-Igea Marina	NO	NO	By phone
Casteldelci	NO	NO	By post
Cattolica	NO	By post	-
Coriano	YES	-	-
Gemmano	NO	NO	By phone
Maiolo	NO	NO	By phone
Misano Adriatico	NO	NO	By phone
Mondaino	NO	NO	By phone
Montefiore Conca	NO	NO	By phone
Montegridolfo	NO	NO	By post
Montescudo- Montecolombo	NO	NO	By phone
Morciano di Romagna	YES	-	-
Novafeltria	NO	NO	By phone
Pennabilli	NO	By post	-
Poggio Torriana	NO	NO	By phone
Riccione	NO	NO	By phone
Rimini	NO	By post	
Saludecio	NO	NO	By phone
San Clemente	NO	By post	
San Giovanni in Marignano	-	-	-

Municipality	Automatic Protocol System	Other response system	Citizen request
San Leo	NO	NO	By phone
Sant'Agata Feltria	NO	NO	By phone
Santarcangelo di Romagna	NO	NO	By phone
Talamello	NO	NO	By phone
Verucchio	NO	NO	By phone

Source: survey submitted to the PRO of each Municipality in the table on February 2021

Table 3.6 - Chief Towns Municipalities of the Emilia-Romagna Region equipped with an Automatic Protocol System

February 2021

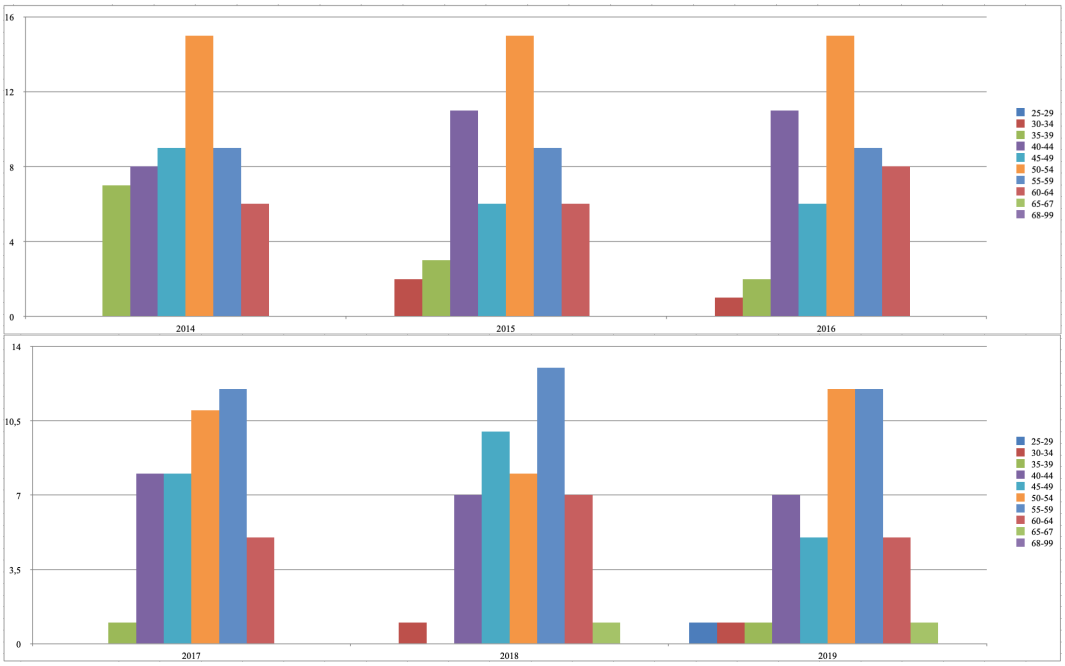
Municipality	Automatic Protocol System	Other response system	Citizen request
Bologna	YES	-	-
Ferrara	NO	By post	-
Forlì-Cesena	NO	NO	By phone
Modena	NO	NO	By phone
Parma	NO	NO	By phone
Piacenza	NO	NO	By phone
Ravenna	NO	YES	By post
Reggio-Emilia	NO	NO	By phone
Rimini	NO	YES	By post

Source: survey submitted to the PRO of each Municipality in the table on February 2021

As demonstrated in the **Chapter I**, the age factor and educational qualification were the two main causes attributed to the delay in the digitization of the Italian PA. The following **Graphs** (**3.7, 3.8, 3.9**) give a confirmation of the general trend by showing that also within the Municipality of Coriano the average age is quite high and the level of education is medium-low. However, what is intended to prove is that these are not the only indicators of *e-gov* to focus on and hence to attribute the responsibility for the widespread delay at national level.

Graph 3.7 - Distribution of the Municipality of Coriano personnel by age group

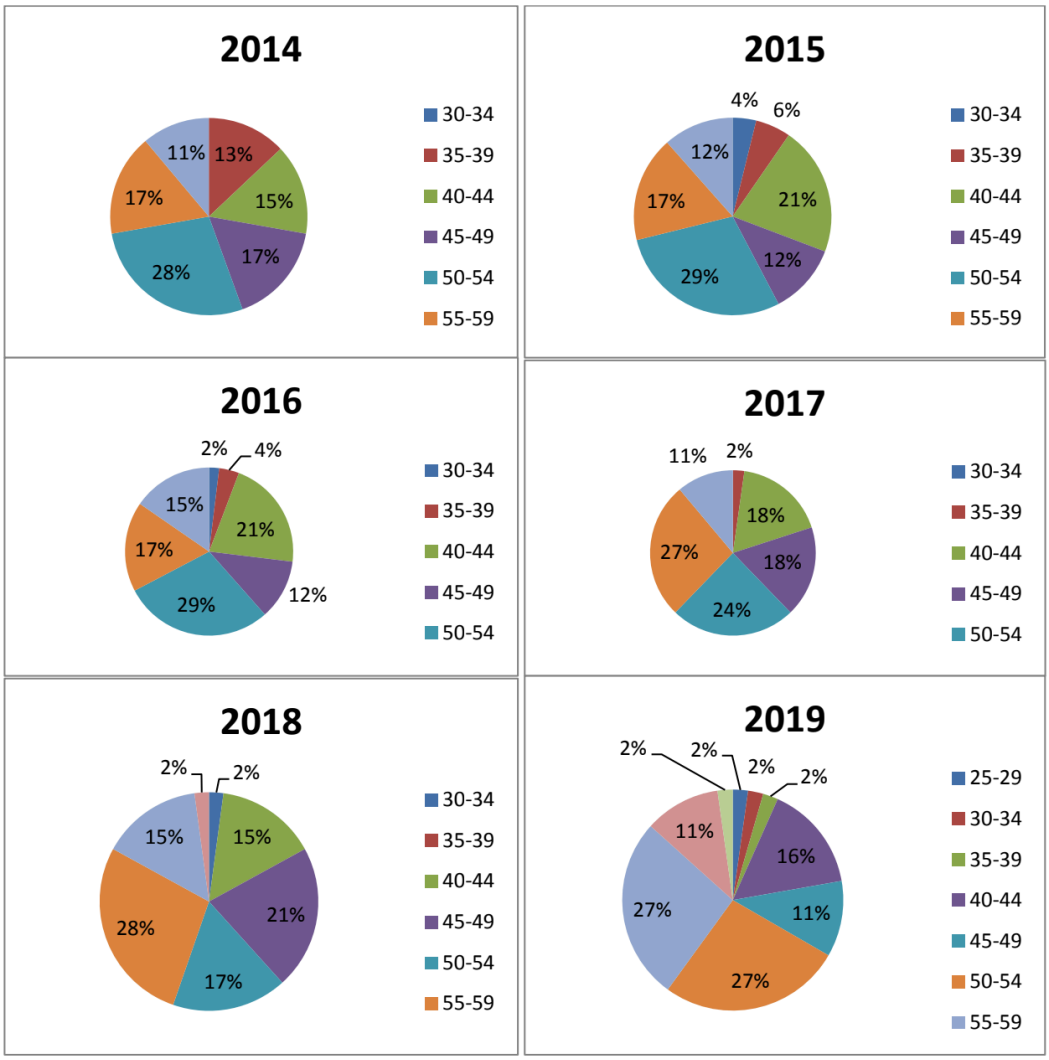
Years 2014-2019



Source: Elaborated data from https://www.comune.coriano.rn.it/amministrazionetrasparente-personale

Graph 3.8 - Percentages of the Municipality of Coriano personnel by age group

Years 2014-2019



Source: Elaborated data from https://www.comune.coriano.rn.it/amministrazionetrasparente-personale

To conclude, what it is necessary to do is to invest in human capital and therefore it is not entirely wrong to think that with a substantial rejuvenation and a higher level of education of the staff it would apply to a completely digital public system,

but this would remain only a theoretical hypothesis, too difficult to implement - if not impossible - in a country like Italy, for obvious political reasons and which have always represented a consolidated basis of our public system. In this context, the Municipality of Coriano has tried to find the solution in investing in the personnel already employed in the Town Hall who was already deeply prepared thanks to numerous years of experience. In this way, thanks to numerous training courses and huge structural investments the Municipality of Coriano has struggled to make the change not of the people but within each person.

Graph 3.9 - Distribution of the Municipality of Coriano personnel by educational qualification

Years 2014-2019

Source: Elaborated data from https://www.comune.coriano.rn.it/amministrazionetrasparente-personale

CONCLUSIONS

The work of this thesis relies on the execution of a case study analysis. The ability of citizens to assume a proactive behavior towards the use of ICT, and therefore digitization, in relations with the public sector is increasingly a key factor to PAs' success nowadays, but Italy continues to perpetrate in its considerable delay compared to the EU average, occupying the penultimate place in the ranking if we look at the degree of diffusion of *e-government*. Two main causes that led to this chronic delay in the use of *e-gov* by Italians, can be found in the age-factor, given that Italy has an average population older than the rest of the European countries, and in a lower level of education. In this context, however, the Benchlearning's analysis shows that the real matter behind this considerable lag in Italy lies in the demand-side for *e-government* ("Penetration") rather than the supply-side ("Digitalization"). Even if these are two different aspects of ICT utilization, there exists a connection between them: indeed, within certain limits and for some functions, a certain level of computerization of internal management activities is a prerequisite for digitizing also in relation to users.

The object of study is the innovative "digital approach" developed and then implemented by the Municipality of Coriano. Undoubtedly, the geo-political position of Coriano - i.e. in the Emilia-Romagna Region - has affected its major

achievements in the digitalization of internal processes within the Town Hall. Specifically, the large infrastructures provided by Lepida S.p.a. to all the public institutions of the regional territory have played a crucial role as a starting point, allowing the present Municipality to enjoy the benefits arising from the great thrust of the company with the substantial support of the Region. Indeed, the Emilia-Romagna Region today boasts its competitiveness thanks to its many technological advancements completed in the last decades, both infrastructural and procedural ones, but it is absolutely needed a shift of this advantage to his ability to grasp the challenges that society presents. In this sense it must aim at a digital that is no longer driven by technology (hence, invention) but rather by an extension of skills (hence, innovation) and change in employees and citizen's habits. It is therefore necessary to bet and invest in the human resources already present within the organization, to enhance the skills acquired through years of experience, equipping them with precious technological tools - now widely used today - guiding step by step the process of reconversion of the way of thinking, always the most difficult change. In other words, it is necessary to support the so-called "hard skills" with innovative "soft skills", which are neither for the youngest nor for the most prepared, but for those who have the foresight to grasp the "easiest way to simplify" in digitization.

REFERENCES

C. FRANCHINI. F. MINAZZI, *Dalla carta al digitale. La nuova gestione documentale nella P.A. dopo la riforma del CAD (D. Lgs. 179/2016). Focus su documenti digitali e firme elettroniche*, Maggioli Editore, December 2016

N. MATTEUCCI, P. SERI, *Editoriale: "La PA digitale: un ossimoro italiano?"*, Research Gate, September 2015

N. MATTEUCCI, *E-government e capitale umano nella Pubblica Amministrazione italiana. Una prospettiva di medio periodo*, Prisma, n.2/2019, Research Gate, 17 November 2020

P. SERI, A. BIANCHI, N. MATTEUCCI, *Diffusion and usage of public e-services in Europe: an assessment of country level indicators and drivers*, Telecommunications Policy, Elsevier, May 2014

A. CENINI, *E-government per lo sviluppo. Il piano del Governo per la digitalizzazione della Pubblica Amministrazione*, 2004

C. MARIA ARPAIA, P. FERRO, W. GIUZIO, G. IVALDI, D. MONACELLI, *L'e-government in Italia: situazione attuale, problemi e prospettive*, Banca d'Italia, Eurosistema, February 2016

E. CARLONI, *AI, algoritmi e pubblica amministrazione in Italia,* Dosier «El derecho para una inteligencia centrada en el ser humano y al servicio de las Instituciones», March 2020

P. COLETTI, *L'innovazione digitale per il miglioramento nell'amministrazione pubblica: le azioni delle Regioni italiane,* in Amministrare (Il Mulino), 2013

A. ROMOLINI , E. GORI, S. FISSI, C. DURANTE, La digitalizzazione della pubblica amministrazione e l'utilizzo degli open data per la trasparenza, in book: Smart technologies, digitalizzazione e capitale intellettuale, Publisher: Franco Angeli, November 2020

A. NATALINI, F. STOLFI, *Mechanism and Public Administration Reform: The Cases of Better Regulation and Digitalization*, Macquarie University, 2012

E. ZANOLI, La PA interamente digitale per semplificare. I percorsi locali di dematerializzazione dei processi in Emilia – Romagna, https://cached.forges.forumpa.it/assets/Speeches/13089/lb_16_zanoli_elisa.pdf

L. CASTELLANI, *Administrative traditions matter. The Italian style and the New Public Management. An historical perspective,* Research Gate, July 2019

D. CEPIKU, M. MENEGUZZO, *Public Administration in Italy, European Perspectives for Public Administration. The Way Forward*, Geert Bouckaert and Werner Jann, Leuven University Press, January 2020

N. THIJS, G, HAMMERSCHMID, E. PALARIC, *A comparative overview of public administration in EU28*, EUROPEAN COMMISSION, November 2017

G. OIKONOMOU, *Variations in the Quality of Government within the European Union: a Comparative Approach of Northern and Southern Public Bureaucracies*, European Integration Studies, October 2019

SITOGRAPHY

AGID: https://www.agid.gov.it

Il Piano Triennale per l'Informatica nella PA 2020-2022: https://www.agid.gov.it/it/agenzia/stampa-e-comunicazione/notizie/2020/08/12/il-piano-triennale-linformatica-nella-pa-2020-2022

BEM RESEARCH: https://www.bemresearch.it

Rapporto sull'e-government 2019: https://www.bemresearch.it/wp-content/uploads/2019/11/report-egov-2019-bemresearch.pdf

ISTAT: https://www.istat.it

Rapporto 17 aprile 2020: https://www.istat.it/it/files//2020/04/Report_Ict_AP_LOCALI_2018.pdf

SOLE 24 ORE: https://www.ilsole24ore.com

https://www.ilsole24ore.com/art/la-ue-e-inutile-60percento-decreti-legislativi-italiani-nasce-bruxelles-ACh9ZAB

MEF-CONTO ANNUALE: https://www.contoannuale.mef.gov.it/struttura-personale/eta

EUROSTAT: https://ec.europa.eu/eurostat

https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Archive:Internet_use_statistics_-_individuals

https://ec.europa.eu/eurostat/databrowser/view/isoc_bde15ei/default/table?lang=en

https://ec.europa.eu/eurostat/databrowser/view/isoc_bde15ei/default/map?lang=en

EUROPEAN COMMISSION: https://europa.eu

- https://ec.europa.eu/italy/

https://ec.europa.eu/digital-single-market/en/news/egovernment-benchmark-2020-egovernment-works-people

OTHER WEBSITES:

- https://www.lepida.net

- digitale.regione.emilia-romagna.it

- https://www.comune.coriano.rn.it/amministrazionetrasparente-personale