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Administrative traditions and barriers to AI implementation in public administration: an exploratory study with case studies from Italy and Spain

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Abstract

The aim of this thesis is to advance the understanding of barriers to Artificial Intelligence (AI) implementation in public administration by comparing two countries with similar administrative traditions: Italy and Spain (Sotiropoulos, 2006; Kickert, 2011; Kullman & Wollman, 2019). Although they belong to the Southern European administrative model, performance differences in digital transformation have been observed, as highlighted by e-government indexes (European Commission, 2023; United Nations, 2024; Zehiali & Mussari, 2025). Recent indicators, such as the AI Global Index (Mostrous et al. 2024) and the Artificial Intelligence Preparedness Index (AIPI, 2024), rank Spain ahead of Italy in AI readiness, while the Oxford AI Readiness Index, which focuses specifically on the public sector, shows Italy outperforming Spain. This inconsistency underscores the need to investigate how historical and cultural factors influence AI implementation within public administrations. To address this, the thesis employs a comparative case study approach (Agranoff and Radin, 1991) and applies the Technological-Organisational-Environmental (TOE) framework (Tornatzky & Fleischer, 1990) to categorise barriers and enabling factors and operationalises characteristics of the Southern European administrative tradition to explain cross-country differences. Empirical evidence derives from semi-structured interviews with civil servants across local, regional, and national levels in both countries. Findings reveal that in Spain, major barriers include data quality, limited funding, and privacy compliance constraints, while in Italy, organisational challenges such as internal resistance to change and data quality issues dominate. Regarding administrative traditions, Spanish civil servants predominantly perceive legalism as the main obstacle, whereas Italian respondents emphasise bureaucratisation, especially at lower levels of government. The study makes conclusions on the influence of historical and cultural elements on AI implementation and contributes to the growing body of

empirical research on AI implementation in the public sector (Mergel et al., 2023; Merhi, 2023; Tangi et al., 2023).

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List of Abbreviations

AI	Artificial Intelligence
CV	Computer Vision
EU	European Union
HLEG	High Level Experts Group
ICT	Information and Communication Technology
GDP	Gross Domestic Product
JRC	Joint Research Centre
ML	Machine Learning
NLP	Natural Language Processing
NPM	New Public Management
NRRP	National Recovery and Resilience Plan
PSTW	Public sector tech watch

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INTRODUCTION

The dissertation delves into the digital transformation in the public sector, in particular, it investigates the barriers and positive factors in implementing Artificial intelligence in public administration. Governments, especially in Europe, are facing existential challenges. The demographic projections picture a tremendous decline in the population, meaning that it will be increasingly difficult to sustain an ageing population (Darvas et al., 2024). Moreover, the European Union is experiencing a slow growth period which translates into a stagnating economy: in 2024 the Gross Domestic Product (GDP) has increased by only one percentage point (European Economic Forecast, 2025). In this context, the fragility of the European Union economy has been exposed by the tariffs imposed by the Trump administration, which have worsened the growth outlook by raising uncertainty (European Economic Forecast, 2025). Hence, the European Union finds itself as a squished pawn between two superpowers (the United States and China) that are constantly growing, and the main motivation lies in being a laggard in the technological race (Politico, 2024). In 2022, slightly less than 800 patents were registered in Europe, while 16000 in the United States (Il Sole 24 Ore, 2024). In 2024, only three notable AI models were developed in Europe (all from France) while fifteen in China and forty in the US. In the same year, private investments on AI account for over one hundred billion dollars in the United States, China has invested almost 10 billion dollars and major European economies, among which the United Kingdom, only 9 billion dollars (Stanford AI report, 2024). On this topic, the report of the former President of the European Central Bank and Italian Prime Minister Mario Draghi (High-Level Group on the Future of EU Capital Markets, 2024) has highlighted the non-negotiable centrality that technological innovation must have in the near future for the European Union. Indeed, the productivity gap between Europe and the United States is largely devoted to the incapacity of fully capitalizing the opportunities derived from the Internet advent (High-Level Group on the Future of EU Capital Markets, 2024). The European Court of Auditors has underlined the partial effectiveness of the European Union strategy on Artificial Intelligence, where, despite having allocated resources on the research and innovation through the Horizon Europe programme, the outcomes were not adequately monitored because of a fragmented coordination (European Court of Auditors, 2024).

Today, the opportunity carried by the AI revolution cannot be missed, and the public sector can be a protagonist in pushing further not only new technologies, but also the vision behind them which ensures transparency and trustworthiness. The process of digital transformation in the public sector has been at the centre of numerous studies, but scholars and practitioners do not agree on a shared definition. However, Mergel et al. (2019, p. 10) have conducted extensive interviews to examine what digital transformation entails, coming to the conclusion that it is constituted by a << continuous process that needs frequent adjustments >> and crucially features an << organizational change >>. In this regard, the advent of AI represents the latest frontier in pursuing innovation, but it comes with enormous challenges and requires a radical cultural and organizational change to succeed (Mainardi, 2024).

While the term artificial intelligence is not new, it has recently gained momentum in the scientific field thanks to its extraordinary developments. For the purpose of the study, the private sector is excluded, and the focus will be only on the public sector, where governments are now acting as regulators, users and providers of these technologies (Medaglia et al., 2023; OECD, 2024). The phenomenon of the public sector's digital transformation is also known as e-government, as it refers to the << capacity to transform public administration through the use of ICTs >> and to use these tools to << achieve better government >> (OECD, 2003, p. 23). According to Cho (2017) e-government is defined as the delivery of governments' functions through ICTs (information and communication technologies), with the aim of providing better, more efficient and transparent services. Due to the centrality of the technologies in this phenomenon, it has been subject of an evolution over time, with every stage characterized by technological innovations (Lachana et al., 2018; Troitino et al., 2024). Today, with the adoption of Artificial Intelligence and blockchain in the public sector, the era of e-government 3.0 (Vrabie 2023) has started. Due to the pervasive nature of these technologies and the high reliance of data, scholars and practitioners have been debating about how to govern the AI phenomenon in order to foster innovation while guaranteeing the respect of fundamental rights. Solutions are difficult to imagine, since the potentialities (both positive and negative) of AI remain hard to predict. One path to pursue has been identified by Ghosh et al. (2025) that, after an analysis of recent trends in AI governance, suggested a framework in which stakeholders are constantly

involved, public education must be prioritized to enhance trust among policymakers and citizens, transparency should be central and governments should promote cross-border cooperation.

The selection of Italy and Spain as countries of interest relies on a consolidated strand of studies, that is, comparative public administration. In particular, the focus is on what various scholars call administrative tradition (Howlett, 2002; Lampropoulou, 2018; Kullmann and Wollman 2019), which identifies similar patterns in administrative systems between different countries. With this regard, Italy and Spain are part of a subgroup of the Napoleonic administrative tradition, precisely the Southern European (Ongaro, 2009), sharing a history of strong politicization of the public administration, party patronage, strong legalism, formalism and clientelism (Kullman and Wollman, 2019). Although the literature includes these two countries in the same cluster and they are expected to perform similarly, Zeinali and Mussari (2025) have shown how Spain consistently outperforms Italy on the DESI indicators, meaning that the implementation of digital solutions in public domains follows very different outcomes. Moreover, two out of three indices about AI in government outlines an analogous pattern, where Spain is still leading the way and Italy comes later. However, the Oxford AI readiness index, which focuses on government readiness, presents an opposite picture.

Given these considerations and by adopting a qualitative approach (Corbetta, 2003), interviewees from Italy and Spain have been selected through the Public Sector Tech Watch, which represents the most advanced database on Artificial intelligence cases across the European Union (European Commission, 2024). Therefore, the following research questions are posed and the research hypotheses are tested:

RQ1: *Which are the barriers arising during the implementation of AI in public administration in Spain and Italy? Which factors are positively contributing to the implementation of AI in public administration in Italy and Spain?*

RQ2: *Which characteristics of the Southern administrative tradition are perceived as the greatest and least significant obstacles to the implementation of AI in public administration in Spain and Italy?*

After this introduction, the dissertation develops by analyzing the literature review on the administrative tradition and Artificial intelligence in the public sector, with a specific focus on public administration. The second chapter goes into detail of the administrative tradition studies and the third explains the methodology and the analytical framework used. The fourth chapter presents the results of the interviews, before turning into the last chapter with the interpretation of the results, conclusions and strengths and weaknesses of the research.

1. ARTIFICIAL INTELLIGENCE IN THE PUBLIC SECTOR: LITERATURE REVIEW

The rapid advancement of AI is reshaping numerous facets of society, and the public sector is not excluded. In the last few years, governments worldwide have increased the adoption of AI, and some are already thinking about delegating legislation writing to AI systems (Financial Times, 2025). Public administration is also called to embrace critical transformations to adapt and use the best of these new technologies. Nevertheless, the transformative potential remains largely dependent on the innovation capabilities of the public organizations, which can only be unlocked through the political will of identifying, recognizing and addressing long-standing issues which hinder every sort of innovation.

Furthermore, risks and benefits are still difficult to measure, thus making it harder for policymakers to implement AI on a large scale (OECD, 2024). The following sections will present the longstanding debate on AI definition, the status of AI in the public sector, with a special focus on the public administration. Moreover, a closer look will be taken to analyze the situation in the country of interest, Italy and Spain.

1.1 Artificial Intelligence definition

Historically, the term AI was first attributed to John McCarthy when, in 1955, he proposed a summer research project on Artificial Intelligence with other colleagues (McCarthy et al. 1955). This moment marked the beginning of the << first wave >> of AI (Sheik et al., 2023, p. 28) met by great enthusiasm among scientists. Later, doubts towards the research and capability of machines to act "intelligently" started to arise, leading to the first AI winter and initiating the AI life-cycle (Collins et al., 2021)

With the increasing of data sets, and the surge of generative AI, research in the field has proliferated, but defining AI still remains a matter of debate, with different interpretations constantly emerging (Wirtz et al., 2019; Sheik et al., 2023; Van Noordt

et al., 2023). However, the need to define AI does not only concern the theoretical debate. Practical implications are reflected in the << uncertainty >> (Nordstrom, 2021, p. 1) of adopting policies able to boost innovation while protecting citizens from the risks. Policymakers need to know what legally constitutes an AI system to prevent and mitigate potential threats to citizens (Collins et al., 2021). For this reason, on the institutional side, the AI debate has become predominant in the European Union political agenda after the Tallinn Declaration in 2017 (Van Nordt et al., 2020). In 2018, the European Commission established a group of 52 experts with the aim of addressing two deliverables, with the first one being ethical guidelines and the second a set of recommendations for policy and investments (Veale, 2019). Among the other documents published, the High level group gave a definition of Artificial Intelligence (2018) which expanded the one included in the European Commission's Communication on AI (2018). The proposed outcome was the following:

<< Artificial intelligence (AI) refers to systems designed by humans that, given a complex goal, act in the physical or digital world by perceiving their environment, interpreting the collected structured or unstructured data, reasoning on the knowledge derived from this data and deciding the best action(s) to take (according to pre-defined parameters) to achieve the given goal. AI systems can also be designed to learn to adapt their behaviour by analysing how the environment is affected by their previous actions. As a scientific discipline, AI includes several approaches and techniques, such as machine learning (of which deep learning and reinforcement learning are specific examples), machine reasoning (which includes planning, scheduling, knowledge representation and reasoning, search, and optimization), and robotics (which includes control, perception, sensors and actuators, as well as the integration of all other techniques into cyber-physical systems) >> (High Level Group on Artificial intelligence, 2018)

Subsequently, a study conducted by the Joint Research Centre (2021), identified common elements among several definitions to provide guidelines on how to recognize systems that can be considered Artificial Intelligence. Some of these features include decision-making, environmental perception, collection of data and achievements of specific goals.

On the international arena, the OECD has kept updating its definition to align with the newest developments and other countries' regulations (2024) and has proposed principles promoting AI trustworthiness and innovativeness (OECD, 2019). Nevertheless, despite the efforts of various organizations to provide clarity, achieving a

globally unified and legally binding definition remains a significant challenge. To date, the most significant step towards a formal legal definition has been taken by the European Union. The new European Union regulation on Artificial Intelligence, known as the EU AI Act, includes a specific definition of AI, marking a crucial moment in the regulation of this technology. The Act considers AI as:

<< a machine-based system that is designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments >> (Regulation - EU - 2024/1689, 2024, art. 3).

However, this interpretation has raised concerns among stakeholders due to the generic nature of the definition, especially regarding the terms "autonomous" and "infers" which may include traditional softwares (CEPS, 2025).

It is crucial to note that these definitions refer to AI subdomains usually named as weak AI (or, more precisely, narrow AI) due of the narrower scope and the lack of involvement of human cognitive capabilities (Sheik et al., 2023; Hijatalin and Sigurdason, 2024). Within this categorization, Machine learning (ML) stands out as the most common subfield in this group, followed by Natural Language Processing (NLP), automated reasoning and Computer Vision (CV), all of which heavily rely on ML (European Commission 2024).

1.2 Artificial intelligence in the public sector

The public sector has always been under the pressure of delivering efficient and effective services to citizens, and the digital transformation carries opportunities but also higher expectations (OECD, 2023; Covarrubias and Perez, 2025). Technological innovations are the main pillar for economic growth. According to the famous theory of economic growth formulated by the Nobel prize winner Robert Solow, only through technological progress is it possible to increase the income per capita in the long-run (Solow, 1956).

Hence, the concept of innovation in the public sector has sparked the interest of many. De Vries et al. (2016) carried out a thorough literature review about public sector innovation. They found out that the concept of organizational antecedents is preeminent in fostering innovation in the public sector, alongside leadership support and finances availability. Demircioglou (2023) focused on the driving factors fueling innovation in the public sector, which are predominantly efficiency, quality of government public services, and cost savings. In this regard, the ICT advent has often been erroneously considered a panacea to solve complex problems affecting the public sector (Terlizzi, 2021). Reasons are not difficult to find, since ICTs adoption allow improved cost-effectiveness, better inclusivity, and they are capable of tackling different needs at the same time (Bazurli et al., 2015). Furthermore, as underlined by Breaugh et al. (2025) digital innovation is not only considered for its efficiency, but also as a functional tool to foster public values like transparency, accountability and participation. In sum, the application of digital technologies is appealing for many scholars, like Public value theorists and proponents of New Public Management (Panagiotopoulos et al., 2019).

Nevertheless, it is evident that while the adoption of new technologies like AI progresses rapidly in the private sector, the public sector still encounters enormous obstacles in scaling up and integrating them to their full potential (Neumann et al., 2024). Trein and Vagionaki (2023, p. 588) have suggested that innovations are more difficult to implement in the public sector because policy-makers are trapped in the << Innovator's Dilemma >>. They argue that, due to the risk-averse culture, ill-structured problems, and blame avoidance, politicians rarely accept the notion that some degree of error is a fundamental precondition for success. Osborne et al. (2020) observed that the concept of risk is widely misunderstood in the public sector, translating into a poor risk management governance which often leads to a hindered implementation of innovative policies. Van Duivenboden and Thaens (2008), identified significant gaps between private and public sector in fostering an innovative climate, which is both a crucial prerequisite and a consequence of adopting new technologies. The biggest difference lies in the opposite values and morals driving the two sectors, one being economical and the other political. Indeed, private organizations strive to obtain commercial profits, while public organizations pursue maximization of public value (Fatima et al.,

2022). Similarly, MacCarthaigh et al. (2024) have concluded that in adopting AI solutions, the private sector privileges the financial side, while the public organizations are concentrated on the creation of public value, transparency, and ethics.

Casula (2023) has found out that in a multi-level policy implementation context such as the EU, where Member States are pressured to implement Research and Innovation (R&I) policies in a coordinated manner, gaps among countries still persist. By adopting an institutionalist perspective, he argues that the national context, the organizational structure of domestic administration, and the historical development path are still relevant in shaping innovation policies. On the other hand, Liarte et al. (2025) have suggested that the public sector innovation (PSI) field of study fails to acknowledge the complexity of the innovation process, which encompasses different phenomena requiring constant research. According to their view, there is a need to switch the focus to the external pressures coming from the surrounding institutional environment. Therefore, a better understanding of which factors foster an innovative culture can be crucial for creating an environment where AI adoption is seen as a real opportunity to improve public services rather than a danger for citizens (Bley et al., 2022). Furthermore, governments globally are eager to maximize the benefits of new technologies, but the approach varies consistently according to the specific context, leading to different allocations of resources, priorities and efforts. For instance, Medaglia et al. (2023) have noted that the EU has been focusing on developing human-centric AI applications, while the United States struggles with attracting skilled technical workers in the public sector.

As previously mentioned, the potential of AI adoption remains largely untested, even though contributions in identifying how AI can help governments are abundant (but mainly theoretical). The constant growth can be explained with the possible enormous benefits it implies (Pini et al., 2025). According to an OECD research (2024) the main advantages the AI can bring to the public sector concern higher efficiency and productivity in policy-making, improved responsiveness, and increased accountability because of the strengthened transparency. Ruvalcaba-Gomez and Garcia-Benitez (2025) administered a survey among Mexican public officials on the benefits of adopting AI in the public sector. The findings of this research indicate that advantages

affect efficiency, precision, productivity, cost reduction on the technological side, legitimacy, collaboration, trust, decision making on the governance side. Similarly, Vasiljeva et al. (2021) carried out a survey about AI adoption among the Latvian population with results showing that the adoption is positively seen by the public thanks to the perceived competitive advantage and cost effectiveness.

However, benefits and challenges are not equally distributed by every sector in the public arena. Indeed, the breadth of studies ranging from healthcare (Sun and Medaglia, 2019; Wubineh et al., 2024; Roppelt et al., 2024), ethical governance (Ireni-Saban and Sherman, 2021), regulations and governance (Fatima et al., 2022; Van Noordt et al., 2023), public administration (Madana and Ashok, 2023; Van Noordt and Tangi, 2023) public budgeting (Fernández-Cortez and Sadiq, 2020) and many others, highlights different barriers and benefits.

Lastly, the fragmentation of the research field constitutes a significant challenge. On this matter, a comprehensive study conducted by Straub et al. (2023) has shown that the topic of Artificial intelligence in government is scattered among various disciplines, thus making it difficult for scholars to propose an exhaustive perspective. This result proves the complexity of defining artificial intelligence and to categorize all the uses that are made in the public sector, calling for constant research and empirical data.

1.3 Successful factors in implementing AI in the Public Administration

Implementation, within the context of technological solutions within the public sector, refers to the comprehensive process of putting a chosen technology into active use within a government agency or public service organization. It goes beyond simply purchasing or developing a system and encompasses all the necessary steps to ensure the technology is effectively integrated into existing workflows, adopted by users, and ultimately achieves its intended goals of improving public services or internal operations, until it becomes a routinized feature of the organization (Madana and Ahsok, 2022). Hence, it represents a step ahead of the decision of adopting a new technology, where expectations and planning meet reality with often new and

unpredicted challenges (Chen et al., 2023), and early pressure to adopt are substituted by a << congruence of technological features, organizational attributes and the wider institutional setting >> (Chandra and Feng, 2024, p. 15). Thus, implementing digital technologies requires a proficuous collaboration between internal and external stakeholders, while considering some characteristics such as the size of the organization and its IT infrastructure status (Haug et al. 2023).

Before analyzing the current challenges posed by AI in the public administration, it is crucial to understand the elements necessary to produce a successful digital transformation. Despite being primarily used in the private sector, the concept of digital transformation has been often linked to governments and policy-making in recent decades (Jonathan, 2020). In the public sector it refers to the << integration of technology to streamline processes, improve service delivery, and foster innovation >> (Interreg Europe, 2024, p. 5). It is therefore a holistic effort that targets the core of the public administration, with the main goal of offering citizens more efficient, transparent and accountable services (Chandra and Feng, 2025). In this context, the implementation of new technologies is a part of a comprehensive approach to change the organizational structure, processes, and behaviors (Imran et al., 2021). Indeed, compared to other types of technology, the adoption, integration and implementation of AI are inherently more complex. To achieve the objective of integrating AI effectively two complementary elements must coexist: organizational readiness (AI readiness) on one side, and public perception and acceptance on the other (Azzahro et al., 2025).

Organizational readiness is a multifaceted concept which refers to the presence of necessary precondition for the successful implementation of digital technologies. Siriat et al. (2024) identified four crucial elements which constitute the majority of readiness models: people, IT infrastructure, process and work environment. However, due to the aforementioned complexity, reaching the organizational and technological readiness for AI requires a multidisciplinary effort which embraces multiple aspects, from strategic alignment, resources, knowledge, to culture and data (Johnk et al., 2021). The concept of organizational readiness includes also the notion of digital readiness which Nguyen et al. (2019, p. 3) define as << the degree to which an organization is ready to digitally transform the current organization >>. In the case of AI, data represents the crucial

part of the technological side, with their storage, quality and use being the most important aspects. On the topic, Campion et al. (2022) have shown how central is the data sharing aspect, the nature of data, and what beneficial role can have a collaborative approach to tackle these challenges. Hence, achieving an optimal level of readiness therefore demands significant, sustained investment in people' skills and modern data infrastructure. This translates into robust systems for data collection, secure storage solutions, rigorous data cleansing and validation processes, seamless integration across disparate sources, and ironclad security measures. Establishing common data standards, ensuring data interoperability across agencies, and implementing robust data governance policies are the founding steps to create a reliable, high-quality data ecosystem that can effectively fuel AI applications. This also encompasses the broader IT infrastructure that supports data flow, processing, and the deployment of AI models. Nevertheless, a functional IT infrastructure is not sufficient if ethical standards are not respected, and public organizations have the duty to provide trustworthy and valuable services. With this regard, all OECD countries have signed a non-binding recommendation which sets intergovernmental standards for trustworthy AI (OECD, 2024). Although the nature of the principles included in this framework is non-binding, they have been widely adopted and used as a benchmark for policies, regulations and AI strategies by government and international organizations (Digital Policy Alert, 2024; OECD, 2024).

Another fundamental aspect in organizational readiness linked to the people involved in the process was highlighted by Van Noordt and Tangi (2023), who argued that administrators need to develop a new set of skills to leverage and create public value from AI usage. Indeed, by formulating the concept of << innovation capabilities >>, Clausen et al. (2019, p. 162) already noted that a fundamental factor to enable innovation is developing organizational capabilities that allow the capitalisation of pull and push factors coming from scientific and technological developments. Hence, due to the radical transformation that AI embodies, public organizations are required to go beyond mere technological understanding, and this holds even truer when prioritized values are different from the private sector. Mikalef and Gupta (2021) developed the concept of AI capabilities, which is strictly related to the organizational capacity of actors to exploit AI and reach the established goals. Public managers of three different

countries have been asked about which factors can foster these sets of capabilities, and the outcomes indicated that five elements are crucial: perceived financial costs, organizational innovativeness, perceived government pressures, government incentives and regulatory support (Mikalef et al., 2022). Building on this study, Mikalef et al. (2023) examined how AI capabilities affected organizational performance, finding out that while the impact on organizational change is overall positive, the organizational performance did not see any major improvements. The motivations can be traced back to the still young experience of the public sector workers in dealing with these new technologies, and also on the skepticism coming from the citizens. Possible solutions comprehend focusing on small-scale implementation which allows to tackle highly context needs and provide better assistance to citizens (Ibid.). Covarrubias and Perez (2025, p. 45) have stated that the role of the public servant should not be seen as a << mere policy executor >> anymore. Indeed, they are called to embrace the digital transformation and new technologies in a proactive manner, meaning that they have to undergo constant training, understanding and managing new systems, while always considering the ethical consequences.

On the other hand, public perception is crucial in accomplishing the objective of implementing digital solutions, in particular AI (Azzahro et al., 2025). For instance, Bellé et al. (2023) have demonstrated how central it is for governments to meet citizens' expectations in order to enhance their satisfaction, thus ultimately leading to more trust and rate of success for policies. Moreover, Longo (2024) rightly argues that successful implementation requires time, because of the necessity to demonstrate the value and build trust rather than pursue fast transformations. In the literature, the study of trust and public acceptance of AI has been at the centre of attention for many scholars. For this reason, the topic has been analyzed through various perspectives. Gesk and Layer (2022) have shown that AI acceptance rates change depending on the type of public services. When the services are general, citizens are more likely to accept AI involvement due to the low situational awareness. On the other hand, for specific services, the AI involvement causes skepticism and lack of trust, and humans are preferred (Ibid.). Similarly, Aoki (2020) has noted that chatbots acceptance depends on the function of the technology. For example, in waste management the use of chatbots is not seen as a problem, while for parental support the rate of trust is lower.

Kleizen et al. (2023) have stressed the importance of trusting the government for a positive AI adoption. As a matter of fact, trust towards AI is not enhanced with short-term strategies, but it is built on the pre-existing willingness of citizens to delegate essential activities to the government. The motivation is simple: the majority of the public still has a poor understanding of what AI encompasses, and the pre-existing conditions are fundamental in embracing new technologies. In another study, also Chen et al. (2021) have highlighted that the general public tends to accept AI services more positively when trust in government is higher.

However, it is interesting to note that results may also be paradoxical, depending on how public perception is influenced by the trade-off between concerns and usefulness. With this regard, Willems et al. (2023) conducted a survey in Austria asking participants if they were favorable in downloading an AI-driven app for public services. The results show that citizens accepted, because of the perceived positive trade-off, as the privacy paradox theory suggests (Norberg et al., 2007). In this sense, Wang et al. (2021) have shown that citizens tend to use AI public services prioritizing the expected private value, with the perceived public value being less relevant.

1.4 Barriers in implementing AI in the Public administration

Despite the exponential growth in the scholarly investigation of AI within the public sector, its practical application remains notably constrained. This substantial disparity between theoretical potential and realized implementation can be attributed to the numerous and profound obstacles faced by administrative bodies, governmental entities, international organizations, and individual bureaucrats during the adoption and subsequent effective deployment of these advanced technologies. Moreover, as Selten and Klievenik (2024, p. 1) suggest, an << inherent tension >> exists between the formality of the public sector structure and rules, and the flexibility required by digital innovations. It is also worth noting that the pervasiveness and groundbreaking changes that AI entails does not come without risks. In this regard, Valle-Cruz et al. (2024) performed a systematic review of the negative aspects of AI in government. The study

was carried out through a socio-technical perspective and identified fourteen topics, among which bias, opacity, complexity, ethics were the most prominent.

The literature review conducted by Babsek et al. (2025) on Artificial intelligence adoption in the public administration, which analyzes the 200 top-cited papers on the topic, represents a comprehensive effort to map the AI usage within the public sector. This overview shows that the vast majority of the main applications of AI in the public administration are covered by internal operations, followed by service delivery and policymaking. In line with the Public Sector Tech Watch report (2024) also in the public administration the most used AI subdomain is machine learning. A more recent paper by Tveita and Hustad (2025) has deepened the understanding about the benefits and challenges of AI in the public sector. They have found that artificial intelligence solutions are adopted to create public value, automating processes, improve efficiency and decision-making, to save cost and as a support tool. Challenges are represented by transparency, ethical issues, human resources, trust and organizational culture.

Furthermore, Genevieve (2024) has highlighted that different challenges arise according to the government level implementing the technology. For example, at micro-level, which is the closest level of bureaucracy to the citizen, official corruption, citizen-official relationship, administrators satisfaction and workload are central. At the middle level, the focus is on the organizational performance, biases, correct practices, transparency, qualified human resources and accountability. At the macro-level, concerns regard policies, laws, regulations and setting the right standards, plus the interaction with the lower level on the ladder. By adopting the same dimensional lens, Criado et al. (2024) stress the importance of analyzing the AI implementation bearing in mind the different actors, governance and obstacles involved in various layers of the public administration. With this regard, to fully grasp the << politics of AI >> (Ibid. p, 3) they broaden the macro-level by adding the geopolitical aspect, because of the AI influence on the value chain and on political relations.

Hence, from a brief overview, it is clear that the AI integration at large in the public administration presents a multifaceted array of barriers. One of the most adopted approaches in the literature is to filter these challenges through the Technology Organizational Environmental framework (TOE). The TOE is a widely used theoretical

model that explains how organizations adopt and implement digital innovations (DePietro et al., 1990). The central idea is that three contexts are fundamental when analyzing the adoption of new technologies: technology, organization and environment. The technological aspect encompasses the internal available technologies which affect the capacity of the organization to implement new solutions, but also external solutions available and reachable (DePietro et al., 1990). However, it is worth noting that in this case, findings are conflicting since innovativeness both stems from less developed firms and from firms that already have a solid technological basis (Tornatzky and Fleischer, 1990). The organizational features include internal characteristics of the observed body such as size, resources amount, top management support (Baker, 2011). The environmental context refers to external factors influencing organizations' adoption of new technologies. These factors may be general such as pressure, competition, uncertainty, and more structural, like regulatory standards and ethical pressures (Stenberg and Nilsson, 2020).

For example, Maragno et al. (2023) conducted a qualitative study to identify the constraints of implementing AI. They amended the TOE framework by adding "AI-related factors" to differentiate them from the common implementation factors. In particular, they highlighted data curation, data collection and infrastructure for the technological side; for the organizational aspect what seems to be crucial is building trust between the "machine" and the human, as well as continuous learning and training on how to exploit AI technologies. Lastly, citizens' trust and a clear regulatory framework are the important aspects. Applying the same framework but adding a time dimension to study public organizations' AI maturity, Neumann et al. (2024) found that organizational factors like strategic management, top management support are crucial, while environmental factors are less important besides trust and acceptance which are still relevant. On the technological side, skilled administrators are essential to avoid external dependencies and thus improve motivation among the staff; furthermore, it is recognized that AI should serve a purpose and give a significant competitive advantage to be adopted.

Beyond the TOE structure, other influential works have provided valid categorizations. For instance, Wirtz et al. (2018) identified four broad families of challenges that hinder
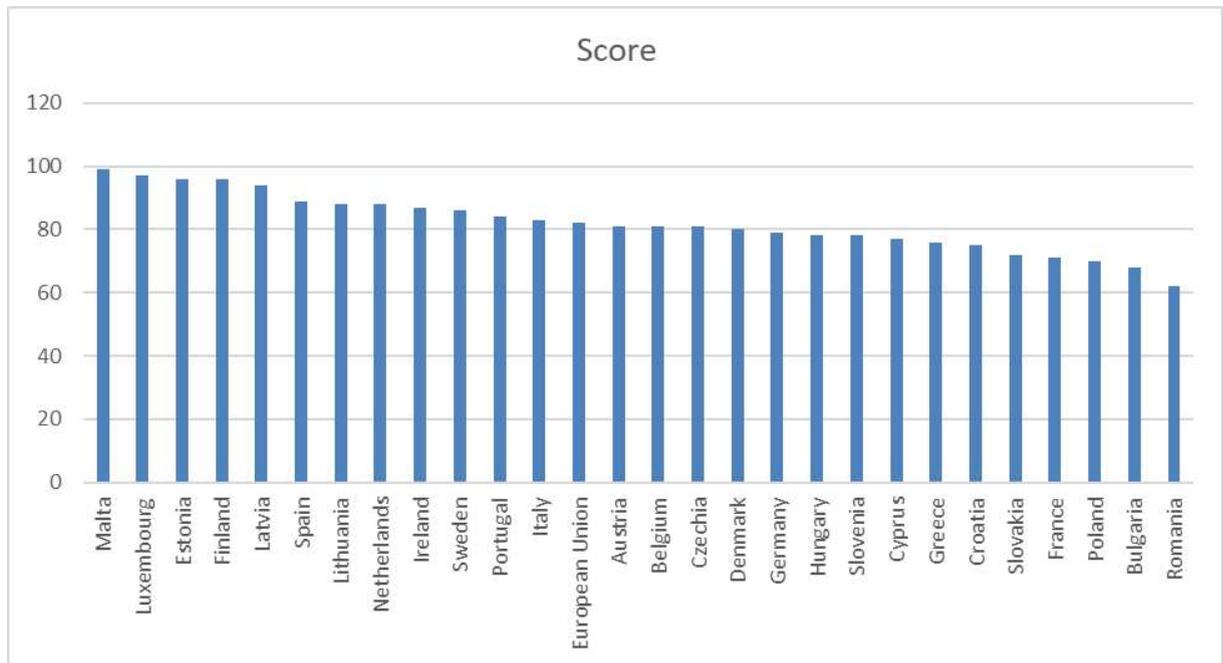
AI adoption and implementation: legal, ethical, societal, technological. Legal challenges encompass a new type of governance for autonomous and intelligent systems, a strong focus on guaranteeing privacy and safety, plus a clear accountability framework for decisions made by AI. The ethical aspect includes human oversight over AI, biases and fairness. Societal barriers are represented by the possibility of humans´substitution by intelligent systems, trust and acceptance from citizens. Technological challenges concern technical specialization and expertise, systems´safety, data quality and integration, and financial feasibility. Building on this framework, Tangi et al. (2022) conducted interviews to further illuminate the practical challenges public organizations face. First of all, they noticed that implementation difficulties are case-specific, meaning that they depend on the needs and goals. The results reinforced the centrality of societal challenges embodied by trust and acceptance by citizens, and stressed the necessity for new organizational approaches and adaptive structures to effectively integrate AI into existing bureaucratic processes.

Furthermore, as discussed before, current geopolitical tensions bring new challenges and concerns. Studying the Polish public administration, Wlodyka (2024) has highlighted the importance of security in implementing AI solutions. The vast amount of information and data can be a perfect target for external intruders, a risk that has become dangerously real after Russia's invasion of Ukraine (Cyber Peace Institute, 2024). For this reason, to mitigate the risks, it is essential to foster basic knowledge and skills for both providers and users, in order to minimize the risks of cyber intrusions (Althibyani, and Al-Zahrani, 2023).

1.5 Artificial Intelligence in the Spanish public sector

In the last two decades, Spain has remarkably demonstrated enormous progress in innovating the public sector and the public administration. Spain is rapidly closing the gap with the frontrunner of innovation in the European Union in digital public services for citizens (Fig.1).

Fig. 1: Digital public services for citizens

Source: Own elaboration based on data from European Commission (2025).

The latest state of art about Spain advancements in achieving the Digital Decade 2030 goals, has shown that Spain is at the forefront of fiber connectivity, infrastructures, 5G, and the number of ICT specialist is steadily improving as well as the percentage of people with basic and advanced digital skills (Spain Strategic Roadmap, 2024).

The fertile ground for improving the public sector's services traces back to the end of the dictatorship and in particular a few years later, in 1992, when the << First Plan for the Modernization and Improvement of the State Administration >> (Munoz-Canavate and Hipola, 2011, p. 85). On the topic, Secchi et al. (2024) have further analyzed Spain's digital transition history in the first decade of the 21st century with the Info XXI plan, followed by initiatives like "Espana.es" and several important laws such as the 59/2003 which accredited full validity to the Electronic Identity Card and the 11/2007, that granted citizens' digital contact points with authorities and led to the ICTs adoption at large (Ruano De la Fuente, 2014). The law 11/2007 represented a pivotal point in perceiving the need to conceive a more flexible administration, more efficient

and closer to citizens (Munoz-Canavate and Hipola, 2011). Due to the Covid-19 pandemic, the Spanish government has accelerated the adoption of digital technologies through the Digital Spain Agenda 2026 strategy. Along with the green transition, the Digital Spain Agenda is a key pillar for the Spanish National Recovery and Resilience Plan (Espana Digital, 2025). The roadmap aims to ensure better and safer infrastructures, AI systems, reducing the digital divide, improving public administration services, and promoting digital skills (Ibid.). One of the eleven components of the Digital Spain Agenda is the Public Administration Digitisation Plan, which has the broader goal of fostering simpler, more agile and efficient public services, with a strong focus on data protection and accessibility (Digital Public Administration factsheet, 2023).

In parallel, to stimulate the uptake of Artificial Intelligence in the public sector, Spain has enacted a comprehensive strategy in 2020. The overarching goals of the strategy touch all the important socio-technical aspects where AI can make the difference. For the public administration, the centrality of improving digital skills for administrators has been recognized, along with the promotion of missions based on AI and the creation of an innovative laboratory to develop new applications called GobTechLab (Enia, National artificial intelligence strategy, 2024). In a recent research, by analyzing several case studies at all administrative levels, the think tank Esade Centre for Economic Policy (2025) has examined how AI has been improving public sector's performances in Spain. Results show that in education, for instance, teachers could free up from six to eight hours per week and use this time to focus on individualized attention by adopting AI solutions. An AI implemented at national level called Red.es, used to simplify public procurement, has reduced time for verifying documents by 80% (Esade, 2025). Moreover, the use of chatbots has been crucial to boost tourist experience thanks to real-time translation, while also enabling citizens' support and assistance 24/7 over more than 30 public services.

1.6 Artificial Intelligence in the Italian public sector

The digitization of public administration in Italy became central in the 90s, where it started to appear in the political agenda as an effort to modernize the bureaucratic system (Natalini, 2006). Indeed, during the Ciampi government, the effort to innovate the public administration was seen as one of the solutions to overcome public discontent after the clean-hand scandal of 1992 (Ongaro and Valotti, 2008). In 1993, an important administrative reform path was promoted by Sabino Cassese, an esteemed professor of administrative law, who had been appointed minister of the public administration (Di Mascio et al., 2025). This period constituted a shift from the past, and a necessity to embrace a paradigm of innovation. Furthermore, the need to meet criteria imposed by the Maastricht treaty and from the European Community represented a push for optimizing an inefficient bureaucratic system (Mele, 2010).

Although Mele (2010) argued that there was a continuity and a political centrality over the innovation policies begun under the Ciampi government, other research showed an enormous implementation gap of these reforms, mainly explained as a result of the administrative tradition influence (Ongaro and Valotti, 2008). Moreover, Acocella and Di Martino (2022, p. 95) have stated that the << fenomeni di detecnicizzazione (detechnicization phenomena) >> in the public administration have resulted in a chronic scarcity of technical skills in public administration, consequently resulting in a fragile groundwork for the digital transformation. Hence, cultural obstacles, political instability and the financial crisis of the first decade of the 21st century, led to fragmented initiatives which were deemed insufficient by the European Commission (Di Giulio and Vecchi, 2022). A uniform approach was only taken in 2016 (Martines, 2019), with the aim of reorganizing the digitalization of the public administration. Among the most important interventions were the creation of a digital identity (SPID) and the obligation to accept digital payments for all the public administrations (Martines, 2019; Di Giulio and Vecchi, 2022).

However, even today Italy´s potential remains unexpressed, and the country still struggles to adequately implement digital services for citizens (Fig.1). The latest report from the European Union on the status of digital decade achievement has shown that Italy underperforms in a series of indicators, such as number of ICT specialists,

infrastructures, AI uptake for enterprises, and above all, basic digital skills (European Commission, 2024). Hence, despite having committed a vast amount of resources from the NRRP to digital transformation, Italy's efforts are insufficient. For instance, the efforts to introduce technical upskilling of the administrators, and to hire new figures graduated (or expert) in technical matters, fall in a short-term strategy of mere compliance with the NRRP goals (Acocella and Di Martino, 2022). With this regard, Di Mascio et al. (2022) have analyzed the implementation of NRRP measures during Draghi's government, and found out that due to political instability, and high uncertainty in various sectors, long-term measures were sidelined in favor of reducing other short-term measures' implementation gap. Furthermore, La Bella and Santoro (2025) have argued that the major obstacles in implementing e-government solutions in Italy are the lack of basic digital skills, ageing workforce, precarious contracts in the public administration.

Concerning Artificial Intelligence, Italy has enacted a 3 year strategy aimed at leveraging AI for the country's development, with a specific focus on transforming the public administration (Agenzia per l'Italia Digitale, 2024). The goals are aligned with the National Recovery and Resilience Plan (NRRP) and the Digital Decade 2030 (Interoperable Europe, 2024). The transformative value of AI has been widely recognized, in particular for enhancing efficiency, transparency, and the quality of public services. In line with the European Union strategy, the focus is on implementing human-centric solutions that can guarantee the respect of ethical aspects (Presidenza del Consiglio dei Ministri, Dipartimento per la Trasformazione Digitale, 2024). On the other hand, the strategy is well aware of the potential risks, like ethical dilemmas, transparency, accountability, public value and public trust, which are aligned with the literature on the topic.

2. ADMINISTRATIVE TRADITIONS

Administrative tradition is an established approach in comparative public policy studies that is used to identify similarities and differences between various types of public bureaucracy. Peters defines administrative traditions as an << historically based set of values, structure and relationships with other institutions that defines the nature of appropriate public administration within a society >> (Peters, 2021, p. 23). This notion can be considered as part of a neo-institutionalism approach, sharing the basic idea that cultural rules, norms, symbols and historical development have an enormous influence in shaping future policy choices (Howlett, 2002). Hence, through the categorization of the various characteristics is it possible to understand what guides or hinders policy reforms in each country (Peters, 2001). Knill (1998) has demonstrated how administrative tradition hampers or facilitates the adoption of European regulations. Lampropoulou (2018) has used this theoretical framework to analyze the response of Southern European countries to the 2008 Eurozone crisis, finding out that the political and economical shock did not translate into policy shifts but rather into a reinforced path dependence cycle. This outcome perfectly reflects the << path-dependency >> nature of the Napoleonic tradition (Mahoney, 2000, p. 509). Hence, as Jugl (2025) correctly mentions, the administrative tradition concept serves as a way of categorizing countries by their administrative features and then explaining this categorization through historical lenses.

In this regard, Kuhlmann and Wollmann (2019) have developed a theoretical framework which deepens the understanding of administrative tradition (Fig.2). Focusing on Europe, they identify five different clusters of traditions: the Napoleonic, Nordic, Anglo-Saxon, Continental, Central and Eastern European. The Napoleonic one contains a sub-cluster, the Southern European, which includes Italy, Spain, Greece and Portugal, and it is characterized by the centrality of the principle of legality, a strong centralized government and a powerful bureaucracy. The Southern European is quite similar but it presents a high level of politicization and clientelism (Cooper, 2021). The Continental country group which is formed by Austria, Germany and Switzerland also displays a legalistic orientation (Rechstaat) with a higher degree of decentralization, leading with a distributed power over the different bureaucratic layers. The Nordic

family is distinguished by a strong emphasis on transparency, trust, consensus-building, and a relatively less hierarchical administrative culture. There is often a close relationship between the state and civil society, and public administration is seen as serving the collective good with a high degree of public participation. Examples include Sweden, Denmark, and Norway. The United Kingdom, the United States and Commonwealth countries constitute the Anglo-Saxon model which is characterized by a strong emphasis on common law, pragmatism, a less formalized legalistic approach to administration, and a tradition of local self-governance. Public servants are often seen as generalists, and there is a greater focus on results and managerial flexibility. Lastly, the Central and Eastern European cluster is influenced by the soviet heritage, which is more prevalent in some countries and less in others. This means that some present a centralized administrative structure, while others a more decentralized structure and more powers to local administrations.

Fig. 2: Administrative profile of European countries

Administrative Profile/ Group of Countries	Administrative tradition	Administrative structure
Continental European Napoleonic (F, I; GR, E, BE)	Rule of law (Rechtsstaat), legalism Southern European subgroup: clientelism, party patronage, politicization	Unitary-centralized; weak local government (decentralization in F, I, E since 1980/90s)
Continental European federal (D, A, CH)	Rule of law (Rechtsstaat), legalism Switzerland: weaker separation of state and society; weaker public service, legalism	Federal-decentralized; strong local government
Nordic (S, N, DK, FIN, NL)	Rule of law (Rechtsstaat) culture, transparency/contact culture; accessibility of administration for citizenship	Unitary-decentralized; strong local government/ civic self-organization
Anglo-Saxon (UK/England)	Public interest culture, pragmatism	Unitary-centralized, strong (since 1980 weakened) local government
Central Eastern European (H, PL, CZ)	Socialist cadre administration ('Stalinist' legacy); since the system change re-establishment of pre-communist (rule of law) traditions	Unitary-decentralized; strong local government (recentralization since 2011 in H)
Southern Eastern European (BG, RO)	Socialist cadre administration ('Stalinist' legacy); since the system change re-establishment of pre-communist (rule of law) traditions	Unitary-centralized; weak local government

Source: Own elaboration based on data from Kuhlmann and Wolmann (2019).

By using this theoretical lens, Kullman and Wollmann suggested that various forces and events reshape reform trajectories and policy choices. However, the historical, legal, and social characteristics that constitute the administrative tradition remain well-rooted and tend to change only superficially. Hence, the underlying idea behind the administrative tradition concept is the importance of context when analyzing a country's policies, bureaucracy, administrative reforms (Polverari et al. 2024) With this regard, a vast literature linking administrative tradition and reform has stressed the essential role played by the historical trajectory of countries, which of course, have a national path-dependence logic, but may be included in a bigger framework by identifying analogous similarities (Peters, 2021). In a few words, some would simply argue that << history matters >> (Pierson 2000, p. 252). On this topic, Ongaro (2008) has successfully shown that the persistence of the Napoleonic tradition is one of the reasons for the implementation gap of reforms in Italy.

2.1 Administrative tradition and digital transformation

The adoption and implementation of digital policies, especially artificial intelligence, require an in-depth understanding of the historical, social, and economical characteristics of the area of interest. As Lips (2024, p.13) argued, digital transformation << does not happen in a vacuum >>, meaning that technologies are deeply entrenched with the organizational scenario where they are adopted. This holds even truer when the subject of interest is Artificial intelligence, which brings a << systemic transformation >> (Lips, 2024, p.18) in the heart of the public sector, requiring a new governance approach, new regulations and a new relationship with citizens/users. Hence, the revolutionary shift carried by AI may not be successful when the prerequisites for welcoming such changes are not present (Van Noordt and Tangi, 2023).

Gesierich (2024) has underlined the cruciality of adapting co-production ways in innovation policies according to the administrative tradition of reference. By highlighting this aspect, the author stresses that due to contextual and historical

differences, strategies should change to reach the objective. In this specific case, the countries analyzed were Spain and Norway, the first one belonging to the Napoleonic tradition and the other to the Nordic administrative tradition. It was shown that Spain, due to a formal and legalistic tradition, is more likely to implement innovations thanks to citizens' initiatives, because the public sector lacks managerial autonomy and incentives. On the other hand, Norwegian public authorities do not need input from citizens to innovate, due to high trust and an egalitarian tradition. Similarly, Wenzelburger et al. (2022) have highlighted that people's acceptance of algorithmic decisions varies greatly according to the context. For this reason, as highlighted before, focusing only on technical aspects may prove insufficient to adopt efficiently new technologies. This is especially true if it is kept in mind that the goals of the public sector when adopting these solutions are to create public value, enhance transparency and reduce biases. As observed in the previous chapter, those outcomes cannot be reached when the trust from citizens is lacking. In this regard, a crucial role is also played by the closeness of the administrators enforcing digital policies. Several studies have demonstrated that local public servants implementing AI and other digital solutions are more likely to receive trust from citizens, resulting in wider acceptance, and ultimately in successful implementation (Wenzelburger 2022). Schiff et al. (2023) have discovered that citizens tend to prefer local sheriffs in using AI for policing scopes rather than the federal government, showing that the problem lies in who is implementing the technology rather than the nature of the technology itself. Meijer et al. (2021) by comparing similar emerging predictive policing tools in Berlin and Amsterdam have pointed out that a different manner of implementing algorithmic decisions is directly linked to the administrative culture. Indeed, the Berlin police application resulted in a rigid standardization, with a great focus on bureaucracy and hierarchical implementation, while the Amsterdam police was characterized by more professional autonomy, and individual judgment. These results underline the criticality of the institutional context in which these new technologies are embedded. AI has the potential to revolutionize public service delivery, but its success heavily depends on the right socio-cultural preconditions and not only on technical aspects. For this reason, it may be correct to consider AI as a (potent) amplifier of existing processes, meaning that, if difficulties are persistent, AI will highlight them, if there are well-functioning

practices AI will contribute to their enhancement (Longo, 2024). Yigitcanlar et al. (2022) noted that skilled public managers are aware that AI is not miraculous, it is just a powerful ICT and it is wrong to expect marvelous developments especially if the right preconditions are not met and major obstacles overcome. Newman et al. (2022) have argued that AI is not undermining the bureaucratic apparatus, it is rather reinforcing it.

2.2 Italy's administrative tradition

The constitution of the Italian public administration is relatively recent compared to the other European countries. Moreover, Italy has a peculiar history due to various influences with different administrative cultures, like the Napoleonic tradition and the Rechtsstaat (Kickert, 2011). Nevertheless, the newly formed Kingdom of Italy largely adopted the administrative model of the Kingdom of Sardinia-Piedmont, which itself was heavily inspired by the Napoleonic tradition of centralized, legal-rational bureaucracy. This choice laid the foundation for a highly centralized administrative system, characterized by a formalistic legal approach, a strong emphasis on hierarchy, and a clear separation between public and private law. The advent of fascism strengthened the state's pervasive role and the hierarchical nature of the bureaucracy, albeit often through authoritarian and clientelistic means. However, Cassese (1993) notes that despite Italy sharing the legalistic tradition and strong centralization with France, it lacks a systematic education system able to produce an *elite* of bureaucrats. Nevertheless, thanks to the Bassanini reform of 1997 and the constitutional amendment of 2001, a process of devolution started, which slowly but steadily eroded the state centralization of powers (Ongaro, 2011). Pivotal in the decentralization process is the constitutional reform of 2001, which amended the title five of the constitution by granting more power and autonomy to the regions. Major reforms included the introduction of the principle of subsidiarity, greater control over tax revenues, and residual powers to the regions leaving the state with exclusive powers mainly (Masala, 2019). As a matter of fact, regions and local governments were granted much more legislative powers and functional responsibilities (Kuhlmann and Wollman, 2019).

Another distinctive trait of the Italian public administration is the high level of politicization. Cooper (2021) has investigated the degree of politicization across the various administrative traditions, and Italy stands out as the country within the Napoleonic cluster with the highest degree, which reinforce Cassese's hypothesis that public administration is a << social buffer >> (Cassese, 1993, p. 315) rather than an apparatus that provides efficient services to citizens. Hence, as Kuhlmann and Wollman suggest, bureaucratic changes are slowly integrated and usually filtered through the lens of the existing administrative tradition. With this regard, Capano (2003, p. 795) , already after few years from the reform waves of the 90s, stressed the << discretionary nature of the interpretation >> of implementing administrative reforms inspired by the New Public Management, in line with the path dependency nature of the Italian public administration, which is able to reinvent itself without structural changes. Similarly, years later, Tomo (2019) argued that Italy cherry-picked the New Public Management (NPM) reforms, without revolutionizing its bureaucratic nature and thus reinforcing its legalistic tradition.

In conclusion, the Italian administrative tradition is a rich mix of historical legacies, legal principles, and socio-political dynamics. While sharing commonalities with the Napoleonic model (particularly its legalistic and hierarchical nature) it is uniquely characterized by the enduring tension between formal rules and informal practices, the pervasive influence of clientelism, and the complex interplay between central and regional authorities. The ongoing process of digital transformation represents a more recent and potentially revolutionary force, aiming to simplify administrative procedures, enhance transparency, and improve service delivery. Yet, the success of these initiatives hinges on overcoming the inertia of traditional practices and fostering a more citizen-centric administrative culture, a goal which seems to be incredibly difficult to achieve especially at local government level. As La Bella and Santoro (2024) noted, the uptake of e-government policies has been significantly hampered by structural factors that are predominant in the Italian public administration. For example, the low levels of ICT skills and the high average age of civil servants represent enormous barriers for adopting new technologies.

2.3 Spain's administrative tradition

Historically, the Spanish administrative tradition has been profoundly shaped by the legacy of a strong, centralized state. The Bourbon reforms of the 18th century, inspired by the French model, laid the groundwork for a highly centralized and rationalized bureaucracy, replacing the more fragmented administrative structures of the Habsburg era. According to Alba and Navarro (2011) three elements of the Napoleonic tradition were kept: centralism in a unified state, uniformity and prevalence of the legal principles, and professional civil service. The Francoist dictatorship (1939-1975) further reinforced centralism, control, and a particular public service ethos characterized by obedience and loyalty to the regime (Parrado, 2021). This era solidified the image of a powerful, often distant, and somewhat opaque state administration (Boix Palop, 2020).

The transition to democracy in the late 1970s marked a pivotal moment, opening the path for a new constitutional order that fundamentally reshaped the administrative landscape, most notably through the creation of the Autonomous Communities. The phenomenon of the Estado de las Autonomías (State of Autonomies), a unique model of territorial decentralization that grants significant legislative and executive powers to the Autonomous Communities, has created a peculiar multi-layer system where different layers of government interact. This decentralization process, while being a radical departure from historical centralism, had to contend with deeply ingrained administrative practices and a long-standing culture of state authority. Nonetheless, as noted by Parrado (2021) the delegation of power to local and regional authorities has pushed Spain away from the Napoleonic tradition towards a quasi-federal system with a pluralistic nature. In Cooper's work (2021), Spain figures as the less politicized country within the Southern European cluster, corroborating the hypothesis that Spain is becoming a peculiar outsider in this group. Concerning the digital transition, Secchi et al. (2024) highlight that decentralization and the role of mid-level bureaucrats are crucial to foster the adoption of ICT solutions, along with clear legal foundations due to the nature of Spanish administrative tradition.

3. ANALYTICAL FRAMEWORK AND METHODOLOGY

The present chapter outlines the analytical framework and the methodology used to address the research questions and test the research hypotheses. Moreover, the research design is presented, along with the analytical framework used. Subsequently, the rationale behind the case selection and the data collection methods employed are introduced.

3.1 Analytical framework: The TOE model

As mentioned several times in this work, AI implementation is rarely considered a mere technological process. Instead, scholars tend to emphasize the holistic nature of the introduction of AI into organizations, both public and private ones. Due to the AI capacity of greatly affecting the societal, organizational, and technological aspect, the TOE framework developed by Tornatzky and Fleischer (1990) has been already used in several works to investigate AI implementation barriers in the public sector (Maragno et al., 2023; Pechtor and Basl, 2023; Neumann et al. 2024). As already clearly explained in Section 1.4, the TOE model was introduced as a framework for explaining factors shaping adoption and implementation of technological innovations within organizations and by adopting an organizational view. Thanks to its flexibility, it has been employed to study several technological innovations in different sectors (Pumplun et al. 2019). By categorising the factors under the three aforementioned contexts, it is possible to gain a holistic view of the elements hindering or facilitating the adoption or implementation of new technologies. Hence, the motivation behind the choice of the TOE stems from the idea that digital government successes or failures do not solely rely on technological capacity, but also on societal, institutional and environmental factors (Gil-Garcia and Zuniga, 2020). Furthermore, the extensive use of this model has demonstrated its great adaptability, and the possibility to expand its potential and use it as a useful starting point for further analysis (Pumplun et al. 2019; Ohmonov and Ahn, 2025), and its generic nature allows for comparison across different countries (Maragno et al., 2023), while also shedding light on barriers and enablers (Ibid.) In this regard, no study has applied the TOE model in combination with administrative tradition variables and has attempted to find causal relationships between the historical

and cultural characteristics (administrative tradition) and empirical data (TOE framework).

3.2 Research design

The comparative case study methodology is a powerful and sophisticated mode of inquiry, particularly in the field of public administration research. This approach is not merely about describing two separate situations but about systematically developing and analyzing cases to uncover key administrative phenomena within their natural contexts. By examining multiple situations within a common conceptual framework, the research can identify unique and common experiences, as well as the patterning of variables and relationships across cases. This ability to look for regularities and patterns across different contexts allows for a greater level of generalization than a single case study can provide. A core advantage of the CCS approach is its ability to manage complexity. The methodology embraces the principle of << multiple causality >> (Agranoff and Radin, 1991, p. 205), which posits that the same outcomes might be generated by different causal configurations and that social systems are not reducible to simple variables. The observation that Italy and Spain, despite sharing similar administrative model cases, exhibit contradictory performances on different AI readiness indexes is a prime example of the complexity of such social phenomenon. The research is designed to address this apparent paradox by systematically tracing the elements of evidence from concepts to conclusions. This approach allows for the identification of hypothetical underlying mechanisms that may help explain the observed discrepancy.

To conduct a cross-country analysis, the researcher, when selecting multiple cases, must follow rigorous procedures which consist of several essential steps. First of all, the selection of cases is theoretically grounded, and as mentioned above, the choice is based on the administrative tradition framework, an established strand of studies in comparative public administration. Secondly, as can be observed in Section 3.3, a careful case selection is made. The third main step concerns data collection, which can involve field studies, document analysis or interviews. Due to the exploratory nature of

this study, a qualitative approach was selected as the most suitable method to investigate the challenges in the Spanish and Italian public administration. Semi-structured interviews were chosen because of the flexibility they provide (Xu Jianbing, 2024), deemed a fundamental feature when analyzing an emergent topic as in this case. In this regard, insights and results from the interviews will be examined through thematic analysis, which allows the identification and interpretation of themes and patterns (Naeem et al., 2023).

The fourth phase consists in tracing evidence (Agranoff and Radin, 1991). For this purpose, thematic analysis represents a consolidated framework in qualitative research, used by many scholars across various disciplines, such as social sciences, psychology, education, healthcare (Ahmed et al., 2025). The foundational work is attributed to Braun and Clarke (2006) who systematized in a rigorous way the concept of thematic analysis, by also providing guidelines for researchers. According to their famous paper, thematic analysis consists of a six-stage procedure, where the researcher needs to first familiarize with the data by reading them several times and starting to search for patterns and meanings through an iterative process. At this point, it is important that the researcher avoids personal bias, beliefs, by adopting a reflexive position (Ahmed et al., 2025). In the second phase, the researcher identifies meaningful codes and organizes them into groups (Braun and Clarke, 2006). The aim of this operation is to extract useful pieces of data that usually is represented by a chunk of texts or images (Creswell, J.W and Creswell, J. 2023). The third stage marks a perspective broadening, where the researcher looks for themes that combine the various codes in order to start the formation or testing of theories and constructs (Braun and Clarke, 2006). The fourth phase is an ulterior zoom out, where themes are reviewed, their connection with codes and other themes is revised with the ultimate goal of precisely refining them, ensuring that weak or redundant themes are excluded (Ahmed et al., 2025). In the second-last phase, the researcher defines and names the themes. This part can be considered the ultimate refinement of the themes, where their validity towards the overall research questions and data is checked. Lastly, there is the production of the report where the conceptual work is demonstrated by the data and themes identified (Naeem et al., 2023). The appropriate results should consist of a << compelling

narrative >> (Ahmed et al., 2025, p. 5) where data are not merely presented but also interpreted and justified according to an analytical framework.

Subsequently a deductive analysis will be used to develop theoretical constructs and provide empirical evidence, as suggested by Eisenhardt and Grabener (2007). Combined with thematic analysis, this approach allows the researcher to apply the selected theoretical framework when coding the data, in order to create and identify constructs which are validated by the existence of pre-existing theories (Naeem et al., 2023).

The semi-structure nature of the questions and the qualitative approach is useful to gain an in-depth understanding of the phenomenon, and allows to investigate, with sufficient space for the interviewees to elaborate their answers, the barriers and the positive factors to implementing AI projects in the Italian and Spanish public administration. In this regard, the objective of the first research question is trying to understand, through a comprehensive overview, what is impeding AI to succeed in the public sector in this precise moment of time, contributing to the need of collecting empirical evidence about AI potentialities and thus constituting a bridge between theory and practice (Neumann, 2024).

With this regard, the first research question is:

RQ: Which are the barriers arising during the implementation of AI in public administration in Spain and Italy? Which factors are positively contributing to the implementation of AI in public administration in Italy and Spain?

On the one hand, the analysis of the positive factors provide real-world examples of the perceived benefits of artificial intelligence systems, contributing to better understanding which are the perceived potentialities among the various public administrations. On the other hand, by highlighting the barriers, other empirical evidence has been collected about failure points which are hindering the growth, scalability and exploitation of new technologies (Alsheiabni et al. 2023). The synthesis of both aspects gives an overall comprehension of the AI phenomenon, underscoring both positive and negative factors. The second research question, by operationalizing

the characteristics associated to the Napoleonic and Southern European administrative tradition, aims at exploring, in a more specific way, which aspects are impacting more the AI implementation in the public administration in both Italy and Spain. Hence, the second research questions is structured as follows:

RQ: *Which characteristics of the Southern administrative tradition are perceived as the greatest and least significant obstacles to the implementation of AI in public administration in Spain and Italy?*

In this way, the current situation is linked to the historical elements which are preeminent in the administrative tradition literature, providing a new basis with operationalized characteristics of the administrative tradition to analyze their role in the uptake and implementation of AI in public administration, which, to the best of my knowledge, has not been investigated yet in this manner. This constitutes the last step where narrative development and generalization take place. Hence, the comparative structure of the thesis allows the examination of similarities and differences among two countries belonging to the same administrative tradition, while also trying to hypothesize causal relationships by connecting administrative tradition factors (that represent the cultural and historical aspect) with current barriers to implementing AI in public administration.

3.3 Definition of the sample

The present study employs a purposive sampling methodology, a form of non-probability sampling, useful to construct a relevant sample of AI projects in the public sector. Unlike probability sampling, which aims for statistical generalizability to a larger population, purposive sampling is chosen here to select cases that are rich in information and directly relevant to the research questions concerning the barriers to implement AI projects in public administration (Guest et al. 2006). In this case, the definition of the sample is determined by a selection of cases from the Public Sector Tech Watch (PSTW) observatory, created by the European Commission and co-managed by the Joint Research Centre (JRC), which consists in a repository of cases

of emerging technologies in the European public sector (Veneziano and Gerli, 2025). This database is an official and authoritative source, providing a curated collection of real-world cases of emerging technologies, including AI, within public administrations across Europe (European Commission, 2024). The PSTW aims to monitor, analyze, and disseminate information on these projects, making it a highly credible and strategic data source for this study. The cases included in this database represent a wide array of applications, from process automation and fraud detection to citizen engagement and data-driven policy making, offering a comprehensive view of the European landscape. However, due to the voluntary nature of the submission of the cases in the PSTW database, it is not possible to consider it an exhaustive source. For this reason, snowball sampling has been used to amplify the number of possible cases and to identify others which have not yet been included in the database. Furthermore, this snowballing technique was also considered useful to increase the likelihood of receiving a positive response due to direct contacts provided by other interviewees.

The case selection focuses exclusively on projects from Italy and Spain, reflecting the comparative design of this thesis. To reinforce this approach, regions were chosen based on their differing positions in the European Innovation Scoreboard (2025). This strategy allows the study to capture a broad spectrum of enablers and challenges associated with varying innovation capacities. It also highlights both commonalities and divergences across contexts, while laying the groundwork for future research avenues that extend beyond the scope of this thesis. Following this rationale, the selected cases (Catalonia, Castilla-La Mancha, Emilia-Romagna, Sicily, and Puglia) represent a spectrum from strong innovators like Catalonia and Emilia-Romagna to moderate and emerging innovators like Puglia, Sicily, and Castilla-La Mancha, ensuring a comprehensive analysis of AI implementation barriers across heterogeneous institutional and innovation environments. Moreover, the choice of focusing on implemented projects relies on the assumption that many AI solutions in the public sector start to face serious challenges in the phase subsequent to the adoption, due to lack of structural fundings, in-house capabilities, technical expertise and infrastructure (Van Noordt and Tangi, 2023). For each chosen project, interviewees were selected on the basis of their active role in the implementation process, mainly aiming at including technical leaders because, as Criado and De-Zarate Alcarazo (2022) have stressed, the

essential role played by these professionals in fostering innovation in a bureaucratic apparatus. Although this was not always possible, eleven out of twelve interviewees covered technical roles such as Chief Technical Officer (CIO), Head of the digital transition or innovation of the administrative body, Chief Data Officer or IT analyst.

3.4 Data collection

Building upon this sampling strategy, data collection was executed in two distinct but complementary phases. The initial phase involved the extraction of metadata from the PSTW website. For each of the identified AI projects that met the purposive sampling criteria, key information was meticulously compiled into a dedicated data matrix. This included the project's title, a brief description of its function and objective, the responsible public administration, the level of the public administration where the project took place, the status of the project, the web pages and possible contacts. At this point, after a careful and in-depth research, responsibles or contact points were identified and contacted through e-mail systems, social media (LinkedIn mainly) or by compiling forms of the respective administration. Consequently, a second phase concerned the snowball sampling, which, as mentioned above, served to broaden the research and quicken the process by having direct contacts with plausible candidates. Usually this was made by asking the interviewees, at the end of each interview, a contact of their knowledge whom could have been suitable for the research. The complementarity of these two techniques allowed a more precise strategy of identifying the right people involved in the implementation of AI projects in the public administration of both countries, while also guaranteeing a comprehensive and multi-layered perspective on the chosen cases. When approaching plausible candidates, the email or the message specified the goal of the research, how much time the interview would take (about thirty minutes) and ensured transparency, privacy and total anonymity according to the General Data Protection Regulation. At the beginning of each interview an oral consent form was read to the interviewees and all of them expressed their consent. For the interviews conducted via email, interviewees were granted privacy of data by informing them how the research would have treated the information, ensuring complete confidentiality and anonymity according to the General

Data Protection Regulation. Six out of twelve interviews were conducted through online tools, such as Zoom and Microsoft teams. For the remaining ones, the methodological choice was to perform the interviews via e-mail due to several reasons. The main one was the language barrier, since interviewees from Spain did not have a proficient level of English. Secondly, the asynchronous nature of e-mail communication was instrumental in overcoming the significant access barriers presented by the research participants. Public officials and senior civil servants, particularly those at the national and regional levels, have extremely demanding schedules that make coordinating a fixed-time interview logistically challenging. Moreover, in August, both in Italy and Spain, many workers, also in the public sector, are on holiday. Thus, e-mail interviews provide a flexible, non-intrusive alternative that respects their limited time and enables them to participate at their convenience. This flexibility was crucial in securing the cooperation of a purposive sample of high-level participants who would likely have been unavailable for a synchronous interview. Thirdly, this method facilitated the collection of richer and more deliberate data. Unlike the spontaneity of a real-time conversation, the asynchronous format of e-mail interviews allows participants time to reflect on the questions, formulate their thoughts, and compose detailed, well-considered responses. This is particularly valuable for a topic as complex as AI implementation in public administration, which involves nuanced technical, policy, and legal considerations. The time for reflection enabled interviewees to provide carefully crafted narratives, often drawing on specific examples and internal knowledge that may not have been immediately accessible in a live interview setting. Furthermore, research by Bowden and Galindo-Gonzalez (2015) suggests that the written medium can reduce the power imbalance between the researcher and the interviewee, potentially leading to more candid and less guarded responses. Before each interview, explanations on the objective of the research were provided to the participants. This was particularly useful to make them focus mainly on the implementation phase, because due to the semi-structured nature of the interviews the risk was that the answers could have digressed over other topics or different phases, like the adoption phase. At the same time, I tried to avoid any behaviour or words that could have influenced the responses, although sometimes I deemed a follow-up

interesting and functional for the purpose of the research or I asked for further clarifications.

The interviews with Italian civil servants were held in Italian and later translated in English by me. Half of the interviews with Spanish civil servants were undertaken in English, hence the problem of translating from Spanish was not present. In the other three interviews, which were carried out via e-mail, the language used was Spanish and translation were made (both for questions and answers) through online tools, taking all necessary precautions to safeguard sensitive information and maintain confidentiality by omitting identifying information and keeping everything under anonymity. The subsequent phase was the manual transcription of the interviews' content, which were analyzed and coded by following the TOE analytical framework.

At the end of this process, a number of twelve interviews (six per country) were administered between the 1st August 2025 and the 3rd of September 2025. Furthermore, all layers of administrative level were touched. Indeed, the sample was further broken down by administrative level: two interviews were conducted with officials from the local level, three from the regional level, and one from the national level in each country. Thanks to this wide coverage, it has been possible to gain a better understanding of how barriers unfold over different tiers. Moreover, the consistency in the distribution of interviewees across both countries is a key methodological strength, enabling a robust comparative analysis of how a shared administrative tradition influences AI implementation. Plus, interviewees of both countries came from different regions, ensuring further generalization. However, it is worth reminding that, due to the qualitative nature of the research, it is not possible to deem these results generalizable.

This chapter outlined the analytical framework, the methodology of the research, the research design along with the cases selection. Furthermore, the data collection was displayed, where it was shown how interviews were performed and to whom they were administered. The next chapter will cover the analysis of the results with the interpretation of data.

4. DATA ANALYSIS AND RESULTS

This chapter serves as the core of this thesis, presenting and analysing the empirical findings from a qualitative study on the barriers to implementing artificial intelligence in the public administrations of Spain and Italy. The primary objective is to present the findings from the twelve semi-structured interviews in an objective and structured manner, setting the stage for a comprehensive discussion and interpretation in the subsequent chapter. As mentioned before, the analytical framework is constituted by the Technology-Organization-Environment (TOE), a renowned theoretical lens for understanding technology adoption and implementation at the organizational level. By applying this framework, the study systematically examines the complex interplay of technological, organizational, and environmental forces that shape the decisions and challenges of AI implementation in the public sector.

The chapter begins by detailing the specific methodological approach used for the data analysis, a deductive thematic analysis, and justifies its appropriateness for the research questions and data type. Following this, the substantive findings are presented in three distinct sections, each corresponding to a core context of the TOE framework: the Technological context, the Organizational context, and the Environmental context. Within each section, a detailed analysis of key barriers is provided, supported by direct evidence from the interview transcripts. Additionally, further analysis will concern the role of characteristics usually linked to the Southern European tradition and the Napoleonic tradition which have been ranked by how much they are perceived to hinder AI implementation by the interviewees. Lastly, the chapter concludes with a comparative, cross-case analysis of the findings from Spain and Italy, highlighting the similarities and differences in the challenges faced by both countries. To provide context for the findings, a summary of the study's interview participants is presented in the following table. Table 1 provides an anonymized overview of the twelve participants, demonstrating the diversity of roles and administrative levels within the sample and confirming the purposive nature of the participant selection, without revealing any significant information that may lead to their recognition.

Table 1: Participants' role overview.

Country	Administrative level	Role	Date	Mode
Spain	Local	Chief Information Officer	13 August 2025	Written interview (email)
Italy	Local	Head of Informational systems and Head of Digital transition	18 August 2025	Zoom, Recorded
Italy	Local	IT analyst and Head of Digital transition	1 August 2025	Zoom, Recorded
Spain	Regional	Head of Digital Planning	2 September 2025	Written interview (email)
Italy	Regional	Head of Data Integration	2 September 2025	Zoom, Recorded
Spain	Local	Coordinator of Social and Technological Innovation	11 August 2025	Written interview (email)
Italy	Regional	Head of Digital Innovation	3 September 2025	Written interview (email)
Spain	Regional	Chief and Data Officer AI	19 August 2025	Zoom, Recorded
Spain	National	Deputy Director for innovation	28 August 2025	Written interview (email)
Italy	National	Director General of Digital Organization	21 August 2025	Zoom, Recorded
Spain	Regional	Senior Civil Servant Digital Transformation	3 September 2025	Written interview (email)
Italy	Regional	Civil servant	1 August 2025	Zoom, Recorded

		Regional Digital Transition Department		

Source: own elaboration

4.1 Thematic Analysis and Coding process

As outlined in the previous chapter, the qualitative data from the semi-structured interviews were analyzed using a deductive thematic analysis. This method was selected for its suitability for exploring subjective information, such as participants' experiences, views, and opinions, which is precisely the type of data collected through open-ended interviews. Thematic analysis is a methodical process that allows for the identification, analysis, and reporting of patterns, or themes, within a dataset, providing a deep and nuanced understanding of the content. The deductive approach, in particular, was deemed appropriate because the research is grounded in a pre-existing theoretical framework, that is, the TOE model. This approach allowed the study to investigate whether the collected data confirms or challenges the preconceived themes and ideas established by the TOE framework, while remaining flexible enough to identify new, emergent patterns. For instance, insights from the interviews have shown a centrality of data, which does not figure in the classical TOE model by Tornatzky and Fleischer (1990), but was included in the technological aspect in the work of Maragno et al. (2023) thanks to the aforementioned flexibility.

The coding process has followed Braun and Clarke's (2006) guidelines and the codes emerged from the interviews are presented in Table 2.

Table 2: Codebook of themes and frequency.

TOE model	Barriers	Frequency	Positive factors	Frequency
Technology	Data quality	5/12	Cost savings	3/12
	Data governance	5/12	Potential benefits	3/12
	Interoperability	4/12	Reduced workload	2/12
	Infrastructural Connectivity	1/12		
Organizational	Lack of competences	5/12	Political support	4/12
	Resistance to change	4/12	European funding	4/12
	Lack of funding	3/12	Re-qualifications of workers	3/12
	Lack of political support	2/12		
	Fear of job loss	2/12		

Environmental	Privacy compliance	4/12	Clear governance on data and ethics	4/12
	Visibility	3/12		
	Lack of trust by citizens	2/12		

Source: own elaboration

The coding process has consisted in familiarizing with raw data, reading all of the interview transcript at least twice resulting in a full immersion with the interview transcripts. Furthermore, this approach enabled a deep comprehension of participants' perspectives and allowed to capture nuances that were not entirely clear from a first read. The subsequent step has been starting to generate codes, based on their relevance to the research questions and categorizing them under the TOE framework. The final aim was to move from a set of granular codes to broader themes that could form a coherent narrative. It is important to acknowledge that using a deductive approach, guided by the TOE framework, carries a potential for a type of bias in which a researcher may be tempted to force the data into the pre-existing categories. To counter this, a systematic and meticulous approach to code the themes emerged in the interviews was employed, remaining open to what the data revealed rather than imposing a pre-defined interpretation. This ensured that the findings are grounded in the data and that the analytical process is both transparent and trustworthy.

4.2 Technological barriers

The analysis of the interviews reveals a set of significant barriers to AI implementation that are directly related to the intrinsic characteristics of the technology itself. These barriers are not merely technical in nature; their existence creates a complex causal chain that directly influences legal, ethical, and organizational challenges. In line with the findings of Maragno et al. (2023) the centrality of data is confirmed here. The findings from both Spain and Italy consistently pointed to the critical need for high-quality, unbiased, and standardized data. A lack of robust data capacity and clear governance frameworks was identified as a major challenge. The Italian AI strategy, for example, explicitly highlights the need for good-quality data that is as free from bias as possible, as well as the need to ensure equal access to open data. Without standardized, high-quality data, the effectiveness and fairness of AI systems are compromised, leading to a host of downstream ethical issues. Indeed, almost all of the interviewees, eight out of twelve, have mentioned obstacles related to data. As interviewee P3 noted << the complicated part is not using AI solutions, rather the data on the quality of data on which is implemented >>. Hence, quality of data is crucial in order to overcome bias and hallucination, and because as interviewee P9 argued << everybody talks about AI, but nobody thinks about data. Without data, AI does not exist >> and further raised a fundamental point about data governance by saying that << if you do not have data governance, you lack the basics. This is the foundation for everything >>. Usually, the notion of data quality has been paired with the interoperability of these resources because << data are stored in various ways, through different tools and sometimes kept by a single individual, and thus, not always shared >> (Interviewee P3). The vast majority of technological barriers are data related, and only one interviewee shed light on another aspect, which is granting adequate access to technical infrastructure in rural areas (Interviewee P5),

What is strikingly evident from the interviews and the answers about data is that this obstacle never comes alone, meaning that it is always deeply interconnected to transversal problems. They are foundational issues that directly generate new legal, ethical, and organizational challenges. As a matter of fact, the quality of data is always linked to the necessity of providing better services for citizens, along with the need of

avoiding biases and errors. Interviewee P10, due to the delicate nature of data that his body is working with, acknowledges that << we need to be careful about the reliability of these systems. An error rate of 5% sometimes may mean that we have to check fifty thousand files by hand out of one million to avoid the mistakes made by the system >>. This is also connected to an often overlooked problem, the lack of juridical competences in the public administration able to manage the newly formed issues around data privacy and data management, which has been underscored by interviewee P1. The link with organizational and environmental factors is utterly crucial, fostering the assumption about the holistic nature of changes that AI encompasses.

The positive technological factors are also deeply interrelated with the other contexts here considered. Indeed, one civil servant noted that their organization was able to overcome the data governance problem because his region was able to implement a data management program, hence a proactive approach towards this topic has provided a good legal basis to use data adequately without encountering risks, and by posing clear limitations. Another positive aspect, recognized by civil servants of both countries, is the capacity of reducing procedures by a significant amount of time. As a matter of fact, several interviewees argued that << procedures that once took weeks, can be done in a day or two >> (Interviewee P4), thus << saving professionals a lot of time >> (Interviewee P10).

At this point, it is worth noting that while challenges and barriers are extremely tangible, benefits and advantages seem to be somehow far to be achieved. Indeed, this may be attributed to the nature of the public administration, conservative and willing to minimize risks. As the OECD (2024) report underlines, implementation of AI projects is still in its early stages, meaning that advantages are not fully grasped while challenges always arise in the first steps. This observation is also supported by the approach of numerous interviewees, who are implementing AI in an extremely careful way. For instance, Interviewee P3 highlighted that << at this moment, there are not established measurements to calculate the benefits of AI in a clear way, hence, we are taking a very cautious approach, experimenting with very specific and minor pilots >>. Similarly, Interviewee P2 when talking about the transformation of pilots into integrated projects in the administrative loop, said: << The University is helping us

with the benefits assessment, because right now, in order to purchase the service we have to understand if this brings a return on the investment >>.

4.3 Organizational barriers

The research findings indicate that AI implementation is significantly impeded by a set of internal, organizational barriers. These issues are deeply rooted in the culture, structure, and human capital of public administrations in both Spain and Italy.

A prominent theme identified across the interviews is the significant lack of skills and digital literacy among civil servants and managers. Official Italian reports acknowledge that digital skills and expertise are required by Public Administration employees to successfully implement AI projects and create value. The Italian AI strategy, for instance, emphasizes the state's responsibility to reshape the education system and encourage lifelong learning to ensure civil servants are properly trained. Without a skilled and motivated workforce, the effective integration of AI solutions is impossible. For this reason, three interviewees (Interviewee P1, Interviewee P3, Interviewee P5) highlighted the importance of Article 4 of the AI act, which invites deployers and providers of AI solutions to take measures to foster AI literacy among staff and users. Indeed, as interviewee P1 pointed out << we are considering making training (on technical matters) obligatory thanks to Article 4 of the AI act >>.

Together with data quality, the lack of training and competences is the most mentioned obstacle in both countries.

Related to this skills gap is the widespread organizational culture and resistance to change. The findings reveal that deeply ingrained cultural norms and traditional leadership styles pose major barriers to implementation of AI projects. This resistance is frequently rooted in a fear of job displacement and a concern that the human role in decision-making will be diminished. This was clearly expressed by one participant (P2): << there is an underlying fear towards AI, there is the fear that your job is going to be less important and in the end you will be replaced by the press of a button >>. Similarly, P10 said << the cultural change of handling the exception is not in the DNA

of the users. In its DNA is the management of "normality", not the exception. This is a paradigm shift that is difficult to manage >>

On the other hand, as several participants expressed, AI serves also as an enabler for civil servants who may << avoid doing the same repetitive activities, which are also annoying and [..] broaden his range of work >> (Interviewee P4). A deeper examination of this resistance may mean that it is not merely an irrational opposition to new technology but is, in many cases, a rational response to a lack of preparation and a high degree of uncertainty. For this reason, many of the interviewees are planning to form staff over technical and organizational issues. Interviewee P5, who argued that the cultural obstacle is the most burdensome to overcome said << we have implemented a fundamental approach, which is, to actively foster an AI culture (within the organization) so everybody could be aware of the benefits [..] and we had to show them how AI represents an advantage for everyone >>. Again, Interviewee P3 said:

 << not everyone is formed on these topics, for this reason we have created a series of training courses of various level, from the basics to more specialized ones, also because even the most well-trained need to constantly update their knowledge >>

Especially in Italy, even at the local level this has been recognized as crucial, as Interviewee P4 noted << these are complex processes which cannot be trivialized because it is not just pressing a button, it is a process that needs to be governed. You need to learn how to treat data and privacy >>.

A common obstacle for Italy and Spain, is the lack of top management support, which usually involves the political sphere. It is essential that policymakers are able to catch the opportunity to invest in these technologies, which is possible even by following a cautious approach. Moreover, this need is clearly perceived at a lower administrative level, as pointed out by several interviewees. Indeed, both Interviewees from local government in Spain (Interviewee P6, Interviewee P7) stressed the importance of political support, which, along with the support of the technical team was << extremely crucial >> (Interviewee P7). Analogously, both Italian municipalities underscored the same aspect by saying that << you need to make the administration understand how potent they are (AI solutions) >> (Interviewee P4) and Interviewee P2 argued that <<

the pilot was successful because it was a very specific project, and more importantly, it was welcomed by all the administrators and by the political level >>. Hence, the presence of this kind of support is vital for the adoption and implementation of AI systems. This is also because it is linked to another issue which is common in lower tiers of government, that is, the lack of funding. For this reason, the need to have political support stems also from the necessity of finding the political willingness of allocating resources to these projects. On this topic, the role played by European funds is non-negligible, since many of the pilots or implemented projects which have been funded by the European Union would not have been funded otherwise. Thus, on the one hand a barrier is constituted by the lack of funding (especially at local level) and on the other hand, a positive factor is the European Union funds such as Cohesion policy funds and Next Generation EU funds. This was clearly stated in the interviews from municipalities: for instance, Interviewee P2 said that << we were able to overcome inaction through the opportunity to conduct pilots thanks to two European initiatives and this allowed us to not burden the financial budget >> . Interviewee P4 stated that << what I try to do also in my job as a responsible of the digital transition, is to give value to the funds we receive from the European Union by trying to create the best solutions possible >>. Further, also Interviewee P6 evidenced the same issue, and, interestingly, Interviewee P5 argued that thanks to the NRRP it was possible, in Italy, << to create an adequate digital infrastructure for proceeding with the digitalization of all services >>.

To sum up, barriers in the organizational context are principally related to the lack of competences, cultural and organizational change, lack of political support, and lack of funding. Positive factors are instead represented by staff training, funding opportunities coming from the European Union initiatives, political support, better allocation of resources and people and reduced workload. Furthermore, these findings highlight a direct correlation between the identified barriers and the proposed positive factors for AI implementation, underscoring that civil servants are acutely aware of the situation and of the solutions needed to overcome the challenges. This may suggest that the issues do not constitute a matter of ignorance but of systemic and institutional challenges. Hence, this mirroring effect highlights that the pathway to successful AI implementation in public administration is not a mystery to those on the front lines.

Therefore, the necessary actions to take in order to succeed need to involve everybody, from the politicians to policymakers and stakeholders.

4.4 Environmental barriers

Beyond the internal characteristics of public administration, the research reveals a series of external barriers stemming from the broader environment in which these organizations operate. These external factors are not passive but are active forces that shape the technological and organizational contexts.

The most significant barrier identified in both countries relates to the regulatory and legal aspect, in particular with regards to privacy and data compliance. This is a transversal challenge and it is comprehensible that constitutes a concern for almost every participant of the study. When private information is at the centre, it is the duty of the civil servant to respect and protect them. Interviewee P7 argued that the very first barrier was << the urgent need to set-up a non-intrusive capacity control system >>. For Interviewee P3 << privacy compliance and the fact that personal data can be used and are subject to strict limitations, this is something that we are very careful about >>. Curiously, more in Spain than in Italy, the legal uncertainty often linked to the regulatory aspect seems to be hindering more AI implementation. Interviewee P9 noted:

<< We are lucky, because in our administration we have a clear strategy on data. In this strategy, on the AI uptake the ethical aspect is fundamental. Because often, technicians overlook this aspect before starting a project. You need to be clear on this point, even though regulations, like the AI act, already exist >>

Although Italian administrators reported concerns about the regulatory aspect and all of them mentioned that they follow a cautious approach, the legal uncertainty was not regarded as a major obstacle. Only at the local level, the uncertainty seemed to worry more administrators as Interviewee P4 said:

<< I observe a delay about serious implementation of AI in the public administration, I see some pilots here and there, but everything is still in progress. Think about guidelines about AI in the public administration, there are no clear boundaries within which we can work >>

Similarly, Interviewee P2 argued that << AI is a new topic, normative rules are still not entirely clear, we hope for the future >>. The national civil servant (Interviewee P5) pointed out that thanks to the heterogeneity of his team, they were capable of:

<< starting very early with AI. From 2017, we have been closely following all the regulations, from the EU white book, Agid (Agenzia Italiana per il Digitale) white book, EU AI act and all the documents about this topic. We are moving ahead of schedule to fulfill all the planned activities >>

Finally, the interviews also brought up the issue of public trust and visibility. The success of AI implementation is dependent on citizens' trust in their administration. The Italian AI strategy highlights the need to promote the understanding of AI and to bridge the gap between research, industry, and society to build this trust. A lack of trust can become a significant barrier to the effective integration of AI solutions. A good implementation is reflected in the positive feedback provided by citizens. Interviewee P4 rightly mentioned that << to deliver a good service, we need to think as citizens and users first, later as administrators >>. To do so, an interesting element (often overlooked) that was raised by several interviewees and which is intertwined with citizen's trust, is represented by the lack of public visibility of AI projects and related initiatives. By lack of visibility, the interviewees who raised this point meant the essential role of disseminating these initiatives among the population. Adopting forms of participatory governance and collecting feedback on the projects of the public administration can be pivotal to enhance citizens' political trust (Ardanaz et al., 2023). On this matter, according to Interviewee P9 << sponsoring what we do is essential >> , and another participant (Interviewee P2) even more clearly underlined:

<< We all know that a problem of public administration is visibility, because if you don't show the citizens what you are doing, it is perceived as less valuable, even though it is crucial for the functioning of our body. This (the project) was a good example to show, hence we showed it and it was very well welcomed by the people >>

4.5 Administrative tradition characteristics: from operationalization to empirical evidence

To adequately address the second research question, the characteristics associated with the Napoleonic and Southern European administrative tradition were operationally defined. During the interviews, participants received a concise explanation of the terms, and later were asked to rank these characteristics on a five point Likert Scale, where 1 meant that this characteristic was not an obstacle, and 5 meant that this characteristic represented a significant obstacle. If the characteristic was considered to be not present, participants could have said "not applicable". Furthermore, each interviewee was asked to elaborate on the rankings, thus providing further insights about their perspective about the historical and cultural elements that are hindering AI implementation in public administrations. To analyze the perceptions of administrative traditions as barriers, the median was chosen as the primary measure of central tendency for the Likert scale data. As noted by Sullivan and Artino (2013) and Harpe (2015), Likert scales produce ordinal data, where the values represent a ranked order but the distance between points is not necessarily uniform. Consequently, applying parametric measures like the mean, which assumes equal intervals, would be inappropriate and could lead to misinterpretation. Instead, the median was employed as a non-parametric measure, providing a more robust and accurate representation of the central value and the typical perception among interviewees.

Hence, the goal of this part of the research is to provide empirical evidence about administrative tradition and how civil servants perceive it (if they do) as an obstacle to AI implementation in their administration. While the literature on public administration traditions, particularly the Southern European model, provides a valuable theoretical foundation, it lacks the specificity required to directly measure and rank the perceived impact of these traditions on a complex, modern challenge like AI. The idea was to transform an abstract concept into measurable variables, in order to understand the specific nature of the obstacles and how these link to the other barriers identified in the previous questions. To the best of my knowledge, no study has employed the concept of administrative tradition in this way.

The first term, often associated with the Napoleonic and Southern European administrative tradition, is formalism. The reason why this element is particularly present in this tradition lies in the fact that all the countries have experienced an authoritarian regime, and it has played the role of counterbalancing political interference (Kickert, 2011). Moreover, it reflects the education of the vast majority of civil servants, who are trained in administrative law. Indeed, as Moynihan (2025, p. 367) argues, formalism is better defined as << how bureaucracy conditions its members to focus on process rather than outcomes >>. I operationalized this concept by describing formalism as the " strict adherence to procedure and rules".

The second aspect, often paired with formalism, is legalism. By legalism, Sotiropoulos (2007, p. 415) means: << the tendency to view things through the lens of provisions of law and to address all new problems by resorting to the passage of new legislation or amendments to an existing one >>. The focus is on the strong legalistic approach which encompasses a centrality of the law over administrative performance or citizens' feedback. This concept has been operationally defined as "emphasis on legal frameworks and detailed regulations".

The third element is centralization. The centralized conception of the state is a clear heritage of the countries in the Southern European tradition. Nowadays, this is still evident in times of crisis, where the central control of the State over the bureaucratic apparatus (Lampropolou, 2018). Nevertheless, as shown in the previous chapters, a process of decentralization has involved both Italy and Spain, eroding this core historical feature. In Spain, the shift happened after the democratization of the country in the late 70s, when the central government started to recognize more powers to local governments and the seventeen *Comunidades Autónomas* were formed (Alba and Navarro, 2011). Coupled with the joining of the European Union, this process enabled Spain to move towards a more managerialist approach, although the financial aspect is still highly centralized (Secchi et al., 2024). The process of decentralization in Italy has already been discussed in Section 2.2. Today, the push for independence from Spanish regions (Basque and Catalonia above all), the devolution in Italy, has led scholars like Peters (2021) to argue that now more than ever, this aspect is under severe pressure. Nevertheless, since government centralization figures as a core feature of the Southern

administrative tradition (Kuhlmann and Wollman, 2019), I operationally defined it as "power concentrated at higher levels of government", in order to verify whether this element is still perceived, is still present or it has been profoundly eroded even in countries belonging to the Napoleonic tradition and Southern European subgroup.

The fourth element, which characterizes the Southern European tradition from the Napoleonic tradition (hence excluding France from the picture) is clientelism. Clientelism is defined as << unequal, hierarchical, personalized and reciprocal exchange of favours between two individuals, a patron and a client >> (Kickert, 2011, p. 812), which translates into << administrative decisions being exchanged for votes >> (Ibid.) in the political context. Sotiroplous (2004) stressed that these countries have suffered clientelism as a form of hiring practice in the public administration at every level. At the lower level this was connected to the fact that parties used jobs in exchange for political votes (Cassese, 1993), and this was reflected in the large number of personnel in the public administration (Cassese, 1993; Sotiropolous 2004). The procedure was similar at the top, especially in Spain, where the party affiliation was crucial to secure the highest spots at the ministries (Kickert, 2011). Similarly, Cooper (2021, p. 555) has talked about << politicization >> meaning, more broadly, the intrusion of political interests into the administrative systems, which should be perceived as independent from political decision. From this overview, I operationally defined clientelism as "patronage and personal relationship influencing decisions".

The last element is bureaucratization. Although this term does not directly figure in the administrative tradition literature, I decided to include it in order to investigate how civil servants perceive bureaucracy within their administration. The main reason is that the legalistic tradition which constitutes a clear heritage of the Napoleonic and Southern European tradition (Kuhlmann and Wollman, 2019) is often associated with a perception of the bureaucracy as a traditional or classical one, which usually refers to the conception elaborated by Weber (Pollit and Bouckaert, 2017). Indeed, it is widely recognized that the terms bureaucracy and bureaucratization have a negative connotation (Kattel et al., 2022), and the crusade against *red tape* is just the tip of the iceberg. By some people, bureaucracy is perceived as a cage, where hierarchy prevails over merit, inefficiency is the mark, law comes before citizens' need and there is a lack

of transparency (Harmel, 2014; Pollit and Bouckaert, 2017; Newman et al., 2022). However, this view does not represent everybody, instead, many others argue that a bureaucratic model is fundamental for the respect of the rules and the protection of citizens' rights, and inefficiencies and delays are just balances and checks that the public sector must respect (Kettl, 2008; Turtz, 2025). Hence, the main goal of operationalizing this aspect comes from the intention to discover which interpretation is spread among civil servants in both countries, how bureaucratic norms and structures are perceived in their administrations. On this topic, Tomo (2019) investigated whether the bureaucratic model still persisted after the NPM reforms in Italy. Results showed that at higher levels of government, performance-oriented bureaucracy gained considerable space, while local government still suffered a classical conception of bureaucracy (Tomo, 2019). Hence, I operationally defined bureaucratization as << complex procedures and hierarchical structures >>. Table 3 shows the results from the interviews.

Table 3: Administrative tradition characteristics' votes.

	Formalism	Legalism	Centralization	Clientelism	Bureaucratization

Italy					
IT1	3	3	4	NA	5
IT2	2	4	2	NA	3
IT3	4	4	1	NA	5
IT4	4	3	3	NA	2
IT5	1	1	4	NA	2
IT6	5	5	3	NA	5
Median	3,5	3,5	3	NA	4
Spain					
ES1	4	5	2	NA	4
ES2	1	4	2	NA	4
ES3	4	4	2	NA	2
ES4	4	3	1	NA	2
ES5	5	5	1	NA	3
ES6	4	4	2	NA	4
Median	4	4	2	NA	3,5

Source: own elaboration

5. INTERPRETATION OF THE FINDINGS AND CONCLUSIONS

While the previous chapter has outlined the empirical findings, this chapter goes further by interpreting their meaning and implications. Drawing on the TOE framework and the literature on Southern European administrative traditions, it examines how technological, organizational, and institutional factors interact to shape AI implementation in the public sectors of Spain and Italy. The deductive thematic analysis revealed that the barriers to AI implementation in the Spanish and Italian public administrations are multi-faceted and deeply interconnected. The findings were systematically presented across the three core contexts of the TOE model: Technological, Organizational, and Environmental.

Concerning the technological aspect, the analysis reveals that the main challenges are data-related. Data quality, data governance and interoperability stand out as prominent and common factors for both countries in equal entities. The Organizational context revealed that a lack of skills, a culture of resistance to change, and a lack of managerial support are key internal impediments. However, when breaking down these results by country, resistance to change is more present in Italy (three out of six) than in Spain (one out of six). For Spanish civil servants (three out of six), lack of founding and financial resources constitutes a major challenge, while in Italy this has been slightly mentioned by one interviewee only. Common obstacles for both countries are lack of competences and technical figures along with lack of political support and fear of losing the job. Finally, the environmental context underscored the critical role of external factors, particularly the current legal and regulatory vacuum and the pressing ethical concerns surrounding accountability and bias. Another aspect raised by three interviewees is identified in the need for administration to enhance the visibility of AI projects in public administrations, in order to gain trust by citizens.

Part of the semi-structured interviews has deepened the knowledge about the positive factors which are instead fostering AI implementation. On the technological side, main positive factors are linked to potential benefits, cost savings opportunities and reduced workload for civil servants. About the organizational context, political and institutional support plays a pivotal role, evidence that has been supported by Di Giulio and Vecchi

(2023) who highlighted the positive role of political commitment in digital initiatives in the Italian Public sector. Analogously, also Gesierich (2024) underlined the crucial role of senior management support in fostering innovation, and already demonstrated that Spain was lacking this characteristic. Whenever lack of funds or financial resources was mentioned, a solution that has often come up in the interviews was the presence of European funds, which have been essential in promoting initiatives and pilots. These findings are in line with the work of Mehri (2021, 2022) who showed that positive factors in implementing AI in the public sector are constituted by high quality of data, top management support and adequate resources. Another positive factor was the opportunity to requalify civil servants who usually perform repetitive tasks. This aspect is consistent with the work of Mainardi (2024) who found out, through a survey administered to civil servants, that AI helps them reduce annoying tasks and free more time for creative activities. On this point, Interviewee P1 clearly argued that:

 << through AI we can reduce the workload for workers who perform repetitive tasks [..] so they can use this freed time to add value to their work, by performing other activities with higher added value >>

Finally, to overcome challenges related to environmental aspects, the perceived solution is to have a clear legal framework covering everything from ethics to data. Again, Mehri (2022) has demonstrated that a critical success factor to AI implementation is the pursuit of a clear strategy on data, and this was evident in interviewee P8 who noted that:

 << in my region we are very lucky to have a clear strategy on data [..] However, for the future (in Spain) we need to clarify the legal situation on data, if we want to make the best use of them>>.

Hence, based on this evidence the first main finding of this study is that:

Conclusion 1: Data quality, internal resistance to change, lack of competences and privacy compliance are the main barriers to AI implementation in public administrations in Italy and Spain. Positive factors are represented by political support, European funding opportunities, potential benefits and clear strategy on data and ethics.

In addition to the themes that have emerged and categorized under the TOE model, the insights gleaned from the operationalization of the administrative tradition characteristics form the backbone of the thesis. A key finding, for example, is the distinction between Spain's emphasis on legalism and Italy's on bureaucratization as primary obstacles. This difference, revealed by the ranking data, shows that even within a shared administrative tradition, the practical challenges of AI implementation can diverge. In Spain, the barrier appears to be the strict legal framework itself, demanding explicit, time-consuming authorizations for data governance and algorithmic use. In Italy, the issue is not just the law, but the cumbersome, inefficient application of it by the bureaucratic machinery, which hinders data quality, promotes resistance to change, and stifles the development of internal competencies. On the other hand, these observations are strengthened by looking at the ranking in the opposite manner. Indeed, civil servants from both countries do not consider centralization a relevant obstacle, and this may be due to the fact that decentralization has been largely interiorized and does not constitute a real challenge. On the contrary, more coordination has even been welcomed by interviewees. The lower ranking of formalism compared to other characteristics in Italy further underscores the distinction between abstract principles and lived experience. This reinforces the conclusion that the problem does not lie in the formal existence of rules, rather in their defensive and inefficient application. Likewise, in Spain, where legalism was ranked as the primary obstacle, bureaucratization was seen as a lesser issue. This is because the problem is not the administrative process itself, but the lack of clear and modern legal frameworks that even an efficient bureaucracy could not overcome.

The thesis partially supports the findings of Tomo (2019) by showing that the conception of the bureaucratic model as the traditional, hierarchical, and rigid one is still vivid in Italian middle administrative level and Spanish lower level of governments (and in some regions, too), while upper tiers are more open to managerialist approaches and a different conception of their role. An explanation of the coexistence of both the traditional bureaucratic approach and the managerialist one can be found in ascribing Italy (and Spain also) as a Neo-Weberian state model (Ongaro and Nasi, 2023). In this regard, results have shown the centrality of the administrative law but also a clearer orientation towards meeting citizens' needs, where processes are

still important but results and citizens' satisfaction are gaining ground. On this point, for instance, Interviewee P5 clearly stated that:

<< we are a body with a bureaucratic nature, but we have been (positively) influenced by other cultures, more innovative and agile [..] we do not think anymore about the mere presence in the office, we think more about the results and the quality of the service we offer, which we monitor constantly >>

In Spain, the legalistic underpinnings prove resilient, while in Italy, the slow-to-change bureaucratic culture itself acts as the main point of friction. Thus, the operationalization of these concepts provides a nuanced, data-driven framework for understanding how historical administrative traditions continue to shape and constrain the future of public sector innovation. Furthermore, by looking at the evidence provided at the country level, it is possible to observe that the main challenge for Italian administrations is embodied by the internal resistance to change. The connection with the bureaucratic nature of the Italian public administration is a logical one. Hierarchical and rigid structures are less prone to innovate (Di Mascio et al., 2025), and especially when talking about digital transformation, a key requirement is the flexibility of the public sector, which needs to adapt and be able to transform constantly (Gong et al., 2020). On the other hand, main concerns for Spanish civil servants are data governance issues, lack of funding and privacy compliance. Legalism is considered the factor impeding AI implementation. Building on this evidence the following conclusion is made:

Conclusion 2: In Spain, the characteristic of the Southern European administrative tradition most hindering AI implementation is legalism, while in Italy is bureaucratization. On the contrary, formalism is considered a less significant obstacle in Italy, while in Spain bureaucratization does not constitute a remarkable challenge. For both countries, centralization is not perceived as a relevant obstacle.

This result, in connection with the barriers identified through the TOE model may reveal that a fragmented and unclear legal framework is an enormous obstacle to overcome. This is evident if we take as an example Interviewee P12, who clearly said:

<< In Spain, the development of Artificial Intelligence in public administrations is still in its infancy, hampered by a limited and inadequate regulatory framework, a lack of centralization in

data management, as well as a lack of adequate resources and overly bureaucratic ways of providing them >>

The evidence from the thesis reinforces the findings of Tangi et al. (2022) who suggested that ethical, legal and trustworthiness factors are the biggest challenges in AI implementation. Hence, the reason why Italy performs slightly better than Spain may be a clearer legal framework and centralized coordination. In light of these results, the following conclusion, which links the first and second research questions, is made:

Conclusion 3: Higher levels of administrative decentralization in Spain amplify the negative effects of legalism on AI implementation, whereas Italy's relatively more centralized coordination mitigates some of the procedural obstacles caused by bureaucratization.

5.1 Strengths and limitations of the study

This research makes several contributions to the understanding of AI implementation in public administrations within the context of Southern European administrative traditions. One of its main strengths lies in its theory-driven and deductive approach, combining the Technological-Organisational-Environmental (TOE) framework with the literature on Southern European administrative traditions. This integration enabled a systematic categorization of barriers and enablers while situating them within the historical and cultural dynamics of Spain and Italy, while also drawing conclusions about causal links. Another strength is the comparative cross-country design, which provides valuable insights into how two countries sharing a similar administrative heritage can face divergent institutional constraints. Moreover, the thesis contributes empirical evidence based on semi-structured interviews with civil servants across multiple administrative levels, an area where existing studies remain scarce. Finally, the combination of theoretical frameworks and practitioners' perspectives enhances the practical relevance of the findings, making them useful for both scholars and policymakers.

Nevertheless, several limitations must be acknowledged. First, due to the qualitative nature of the study, the sample size is relatively small, and the findings rely on the perceptions of a limited number of civil servants, which constrains the generalizability of the results. Second, the use of qualitative and self-reported data introduces potential response bias and limits the ability to establish causal relationships. For instance, the clientelism aspect, which is crucial in the Southern administrative tradition, has proven particularly difficult to test, because all of the participants have answered "not applicable" for their administration. On this point, Ongaro and Valotti (2008) noted clientelism is hard to define and to measure and a motivation may lie in what is called the << social desirability bias >> (Corbetta, 2003, p. 134). Social desirability bias is a common bias which recurs in social research, mainly attributed to the tendency of answering according to << socially desirable responses >> (Grimm, 2010, p. 1) over delicate issues like politics, religion, drug use (Ibid.). Finally, as AI policies, regulations, and technologies evolve rapidly, the findings represent a snapshot in time and may require updating as institutional frameworks mature.

Building on these findings, future research could adopt a mixed-methods approach to strengthen external validity by combining qualitative interviews with quantitative analyses based on AI readiness indexes, e-government metrics, or large-scale surveys. Comparative studies could also be extended to include other countries with similar administrative traditions, such as Portugal or Greece, to reinforce the understanding of how historical institutional features shape AI implementation, or comparison among countries from different administrative traditions could unveil new insights. Furthermore, future research should explore regional differences within Spain and Italy more systematically, as innovative regions with clearer governance frameworks may follow very different implementation paths compared to less advanced areas. Finally, investigating the interaction between legal frameworks, bureaucratic structures, and managerial practices over time would provide valuable insights into how institutional reforms can facilitate public sector innovation

5.2 Conclusions

The aim of this study was to investigate the barriers and positive factors in implementing AI in public administration in two countries which share a similar administrative tradition. The first chapter delved into the definition of Artificial Intelligence, its increasing role in public administration in Italy and Spain, along with a literature review of challenges and successful factors in implementing AI in the public sector. The second chapter deepened the understanding of the administrative tradition concept, and in the third one, the analytical framework and methodology were discussed. The fourth chapter presented and interpreted results from the semi-structured interviews. The main motivation behind this choice was to advance the comprehension of the shaping factors in a similar context, in order to discover what is really hindering AI implementation by broadening the spectrum and including two countries belonging to the same administrative tradition. E-government literature shows how Spain has become a frontrunner in digital innovation in Europe in recent years, with Italy still lagging behind. However, the only index on AI in governments sees Italy performing better than Spain (Oxford AI Readiness Index, 2024).

Based on this analysis, the following research questions and conclusion can be formulated:

RQ1: *What are the barriers arising during the implementation of AI in public administration in Spain and Italy? Which factors are positively contributing to the implementation of AI in public administration in Italy and Spain?*

Conclusion 1: Data quality, internal resistance to change, lack of competencies and privacy compliance are the main barriers to AI implementation in public administrations in Italy and Spain. Positive factors are represented by political support, European funding opportunities, potential benefits and a clear strategy on data and ethics.

On this point, findings are in line with previous works in the literature. For example, Mahusin et al. (2024) identified five challenges in implementing AI in the Malaysian

public sector, which are represented by a lack of AI talents, transparency, data quality, and public mistrust. Campion et al. (2022) have underlined the centrality of the data aspect, which is pivotal for reaching the technological readiness necessary to change but needs to consider carefully the ethical standard. Mergel et al. (2024) already mentioned as common challenges ethical concerns, data privacy, and costs. In the same work, the authors called for broadening research on the topic by tackling the issue from a wider perspective (Ibid.). This study aims to fulfill this task, by offering a holistic overview of different AI projects implemented in two countries. Indeed, by taking into account both positive and negative factors in AI implementation in the public sector, it tries to picture a broader snapshot of the current scenario in Italy and Spain.

RQ2: *Which characteristics of the Southern administrative tradition are perceived as the greatest and least significant obstacles to the implementation of AI in public administration in Spain and Italy?*

Conclusion 2: In Spain, the characteristic of the Southern European administrative tradition most hindering AI implementation is legalism, while in Italy is bureaucratisation.

Conclusion 3: Higher levels of administrative decentralisation in Spain amplify the negative effects of legalism on AI implementation, whereas Italy's relatively more centralised coordination mitigates some of the procedural obstacles caused by bureaucratisation.

From the research outcomes, the inferior performance of Spain compared to Italy in the adoption and implementation of AI within the public sector may be explained by the lower clarity of Spain's legal and regulatory frameworks on AI and by its highly decentralised governance structure (Jugl, 2025), which may hinder coordination, standardisation, and effective policy deployment.

Furthermore, this explanation may be supported by the fact that the bureaucratic nature of the public administration does not constitute a problem, while its defensive interpretation is, and for this reason, Italy may be more penalised (Daugherty and Corse, 1995). Nevertheless, this may be supported by the work of Mergel et al. (2019) who

argued that digital transformation processes require a change in the bureaucratic culture, a change that may be happening in Italy. On the other hand, the legal uncertainty is much more difficult to overcome, and this is supported by one of the few studies on AI implementation in the public sector, where trustworthiness problems, linked with ethics and AI regulations, are the central challenge for the development of any AI project (Tangi et al., 2022).

Therefore, it may be useful to break down the results by the specific context. Civil servants from the region in Spain that are considered more innovative according to the European Regional Scoreboard (European Commission, 2025) have attributed a lower value to legalism, while regions less innovative or municipalities have attributed a higher value. In Italy, higher values for bureaucratisation have been attributed by civil servants in middle levels of government, while upper and lower tiers do not consider it a relevant obstacle. This result partially supports the findings of Tomo (2019), who argues that Italian public administrators have a mixed way to perceive bureaucracy: some of them still have a traditional conception of bureaucracy, while at higher administrative and lower levels, a managerial approach is taking place. This particular evolution can be explained through the Neo-Weberian model, according to which NPM features can coexist with a traditional conception of bureaucracy (Ongaro and Nasi, 2023).

To sum up, the main barriers to AI implementation are represented by a series of factors: from the technological side, data quality, data governance and interoperability stand out, for the organisational factors, internal resistance to change, lack of funding and lack of internal competences prevail. Environmental challenges are constituted by privacy compliance and visibility. Positive factors are represented by time and cost savings, reduced workload, European funding opportunities and clear data and ethical strategies. Italian civil servants perceive a defensive approach to bureaucracy as a major obstacle in their administration, while Spanish civil servants believe that an excessive emphasis on the legal aspect is hindering AI implementation. Centralization does not represent an issue for both countries (even though sometimes more coordination has been welcomed by the interviewees). On the contrary, Italian civil servants do not perceive formalism as a relevant obstacle, and Spanish civil servants do not consider bureaucratization a significant challenge. This indicates that these factors

are not barriers per se, but rather the institutional and cultural context in which the most significant challenges operate, with the practical pain points being legal ambiguity in Spain and procedural inefficiency in Italy.

To conclude, it is worth reminding that AI implementation in public administration is still in its infancy, and many of the projects are pilots or proof of concept. However, empirical findings are necessary for policymakers and stakeholders to acknowledge the perspective of civil servants and administrators who work daily on AI in public administration, also due to the scarcity of empirical findings on the topic (Maragno et al., 2023; Mergel et al., 2024). While results are not generalizable, this research has shed light on possible historical and cultural causes that are hindering AI implementation, laying the foundation for future research that can include quantitative approaches.

Annexes

Annex I

POLICY ON PERSONAL DATA PROCESSING [Art.13 of EU Regulation 2016/679 - General Data Protection regulation]

This policy is provided pursuant to art. 13 of EU Regulation 2016/679 (General Regulation on Data Protection, "EU Regulation"), in relation to personal data of which the University of Padova (the "University"), in its capacity as Data Controller, acquires during activity of scientific research developed within the thesis project " Administrative tradition and barriers to AI implementation in the public administration: a case study from Italy and Spain" of the Department of Political, Juridical and International Sciences (SPGI) of the University of Padova.

Personal data is processed fairly, lawfully and transparently, as well as in a manner that safeguards the privacy and rights of all data subjects, as per what specified below.

TITLE: "Administrative tradition and barriers to AI implementation in the public administration: a case study from Italy and Spain"

DATA CONTROLLER: *Department of Political, Juridical and International Sciences (SPGI) - University of Padova via del Santo* n. 28, Padova, +39 049 827 4202 *dipartimento.spgi@unipd.it*.

SCIENTIFIC COORDINATOR: Giovanni Francesco Mosca

PRIVACY INFORMATION:
1. *Data protection officer*
2. *Sources and types of data*
3. *Purposes for data processing*
4. *How data is processed*
5. *Legal basis of the processing and type of provision*
6. *Audio and images*
7. *Data recipients*
8. *Data storage*
9. *Rights of the data subject*
10. *Exercising one's rights*
11. *Changes to the policy*

1.   Data protection officer

The Data Controller has its own Data-protection officer, who is appointed pursuant to Article 37 of the EU Regulation. The Data-protection officer may be contacted at privacy@unipd.it

2.   Sources and types of data

The personal data provided directly by the interested party can be:

a) Common data. Personal data, identification and contact data (e-mail, telephone contacts);

b) Sensitive data. Data relating to gender, ethnic group, religious beliefs, sexual orientation, political opinions, health status;

c) Data relating to preferences. Opinions relating to specific topics such as politics, migration, the use of technology;

d) Other data. Data relating to the use of technology, lifestyle habits, specific experiences of racism, homophobia, or misogyny, other life episodes.

3.   Purposes for data processing

Data is processed exclusively for carrying out all the activities related to the institutional, dissemination and public interest activities of the University. In particular, data is processed for the research purposes connected with the *"Administrative tradition and barriers to AI implementation in the public administration: a case study from Italy and Spain"*.
The following are the specific research objectives:
1) To investigate the barriers and positive factors to AI implementation in Spain and Italy
2) To investigate the characteristics of the Southern administrative tradition perceived as the greatest and least significant obstacle to AI implementation in Spain and Italy

4.   How data is processed

The data is collected through semi-structured interviews with interested parties carried out by interviewers. The University takes appropriate organizational and technical measures to protect the personal data in its possession, through appropriate security measures to ensure the confidentiality and security of personal data, in particular against loss, theft, and unauthorized use, disclosure or modification of personal data. The Data Controller does not resort to automated decision-making processes relating to the rights of the data subject on the basis of personal data, including profiling, in compliance with the safeguards provided for in art. 22 of the EU Regulation. The data will be collected through audio recording (or video-recording in case of video-conference). The processing of data is carried out in such a way as to guarantee maximum security and confidentiality and can be implemented using manual, IT and online tools suitable for storing, managing and transmitting them. The personal data collected are processed by manual coding an application installed by the university technicians on the institutional and private pc protected by a password and assigned to the project manager and the project staff. The institutional and private pc are accessible only by staff member. The transcribed interviews are shared with interviewers through the university's sharing system based on the Google Drive suite, protected by the passwords of the individual interviewer and staff member. The data gathered during the interviews will not be disseminated. In the event that the interview or parts of it should prove to be of particular interest, such as to justify its dissemination for the purpose of disseminating the results of the study, it will be published without any identification reference of the interested party, with indication only of the role covered by the interviewed, in order to guarantee anonymity.

5. Legal basis of the processing and type of provision

Legal basis of the processing is the execution of public interest tasks of research, teaching and the so-called "third mission", of the University as defined by law, by the Statute and by internal regulations (pursuant to art. 6, par. 1, lett. f) of EU Regulation).
For special categories of personal data the legal basis of the processing is based on your explicit consent (pursuant to art. 9, par. 2, lett. a) of the EU Regulation).
Since participation in the research is on a voluntary basis you are not formally obliged to provide data. On the other hand, if you wish to participate in the research, the processing of your personal data is indispensable; if you refuse to provide such data, you will not be able to take part in the research.

6. Audio and images

By participating in the project "Administrative tradition and barriers to AI implementation in the public administration: a case study from Italy and Spain", the participant expressly authorizes the University of Padova and the Department of Political, Juridical and International Sciences (SPGI) to use the audio (or video in the case of video-interviews) recorded during their own participation in the interviews " Administrative tradition and barriers to AI implementation in the public administration: a case study from Italy and Spain ", on the university computers. By signing the release, the participant grants all rights to use the audio as described above. This transfer is expressly intended free of charge.

7. Data recipients

The data may be communicated, exclusively for the purposes indicated in point 3, to University staff, students involved in the research and to collaborators, including self-employed ones, who provide support for the implementation and management of the activities envisaged by the research project.
The collected data are not normally transferred to countries outside the European Union. In any case, the University ensures compliance with the safety rules for the protection of the privacy of the data subjects.

8. Data storage

Personal data are therefore kept for the entire period necessary to achieve the research purposes indicated in point 3. Personal data may be kept even beyond the period necessary to achieve the purposes for which they were collected or subsequently processed, in compliance to art. 5, § 1 lett. e) of the EU Regulation.

9. Rights of the data subject

The following rights are granted to the data subject:

a)   right to access their personal data (art. 15 of the EU Regulation);

b)   right to amend or complete their data (art. 16 of the EU Regulation);

c)   right of cancellation (right to be forgotten), pursuant to art. 17 of the EU Regulation;

d)   right to limit data processing under the conditions set out in Article 18 of the EU Regulation;

e)   right to data portability, as provided for by art. 20 of the EU Regulation;

f)   right to object to the processing of their data in any moment (art. 21 of the EU Regulation);

g)   right to lodge a complaint with Italy's supervisory watchdog (Garante per la protezione dei dati personali).

The interested party can withdraw consent to the processing of their personal data at any time.

Any withdrawal of consent by the interested parties does not invalidate the legal basis for the processing of personal data collected for the research purposes indicated in point 3. In this case, no further personal data of the interested party will be collected, without prejudice to use of any data already collected to determine, without altering them, the results of the research or those that, originally or following processing, are not attributable to an identified or identifiable person.

10.   Exercising one's rights

In order to exercise their rights, the data subject may contact the Data Controller by writing to this certified e-mail address amministrazione.centrale@pec.unipd.it or to the following e-mail address: dipartimento.spgi@unipd.it, urp@unipd.it. Alternatively, the data subject may write to: University of Padova, via VIII Febbraio 2, Padova.

The Controller shall respond within one month of the request, although this may be extended by up to three months should the request be particularly complicated.

11.   Changes to the policy

Any amendments and additions to this policy are published in the privacy section of the department website at https://www.spgi.unipd.it/privacy-policy

Annex 2 - List of Questions used during the interviews

1.   Could you please briefly introduce yourself and describe your role within the public administration?

2.   We're here to discuss the implementation of digital solutions, particularly AI, in the public sector. What are your initial thoughts on the current state of AI in public administration in [Spain/Italy]?

3.   What are the main barriers you have faced in implementing [name of the project] in your public administration?

4.   My thesis investigates the influence of 'administrative tradition' on AI implementation. While you may not be familiar with the academic concept, administrative tradition refers to the deeply ingrained patterns, norms, and practices that shape how public administrations operate within a specific country or region. For example, some traditions might emphasize strict adherence to rules, while others prioritize flexibility or client relationships.

With that in mind, I'd like to get your perspective on some characteristics often associated with the Southern European administrative tradition of which Italy/Spain are part of. On a scale of 1 to 5, where 1 means 'not at all an obstacle' and 5 means 'a significant obstacle' in your experience, how would you vote the following aspects within your public administration:

-       Formalism (strict adherence to procedures and rules)
-       Legalism (emphasis on legal frameworks and detailed regulations)
-       Centralization (power concentrated at higher levels of government)
-       Clientelism (patronage and personal relationships influencing decisions)
-       Bureaucratization (complex hierarchical structures and processes)

Could you please elaborate on your rankings, particularly for the characteristics you rated as very high or very low? What examples or experiences led you to these ratings?

5.   Looking ahead, what do you believe is the most crucial step that public administrations in [Spain/Italy] need to take to overcome these barriers and successfully leverage AI?

Annex 3 - List of Interviewees

Country	Administrative level	Role	Date	Mode
Spain	Local	Chief Information Officer	13 August 2025	Written interview (email)
Italy	Local	Head of Informational systems and Head of Digital transition	18 August 2025	Zoom, Recorded
Italy	Local	IT analyst and Head of Digital transition	1 August 2025	Zoom, Recorded
Spain	Regional	Head of Digital Planning	2 September 2025	Written interview (email)
Italy	Regional	Head of Data Integration	2 September 2025	Zoom, Recorded
Spain	Local	Coordinator of Social and Technological Innovation	11 August 2025	Written interview (email)
Italy	Regional	Head of Digital Innovation	3 September 2025	Written interview (email)
Spain	Regional	Chief and Data Officer AI	19 August 2025	Zoom, Recorded
Spain	National	Deputy Director for innovation	28 August 2025	Written interview (email)
Italy	National	Director General of Digital Organization	21 August 2025	Zoom, Recorded

Spain	Regional	Senior Civil Servant Digital Transformation	3 September 2025	Written interview (email)
Italy	Regional	Civil servant Regional Digital Transition Department	1 August 2025	Zoom, Recorded

Annex 4 - Codebook of themes and frequency

TOE model	Barriers	Frequency	Positive factors	Frequency
Technology	Data quality	5/12	Cost savings	3/12
	Data governance	5/12	Potential benefits	3/12
	Interoperability	4/12	Reduced workload	2/12
	Infrastructural Connectivity	1/12		
Organizational	Lack of competences	5/12	Political support	4/12
	Resistance to change	4/12	European funding	4/12
	Lack of funding	3/12	Re-qualifications of workers	3/12
	Lack of political support	2/12		
	Fear of job loss	2/12		

Environmental	Privacy compliance	4/12	Clear governance on data and ethics	4/12
	Visibility	3/12		
	Lack of trust by citizens	2/12		

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