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# SMART WORK IN THE EMILIA-ROMAGNA REGION

**DAVIDE DAZZI**
*IRES Emilia-Romagna*
*Bologna, Italy*
*davide.dazzi@er.cgil.it*

**Abstract**
*The Emilia-Romagna Region has developed a structured experience of smart working even before the Covid-19 outbreak through a concrete involvement of trade unions and worker representatives. Whilst most of the Public Administrations in Italy were forced to undergo the fluctuating legislative provisions issued at the national level, the Emilia-Romagna Region, thanks to its expertise, has succeeded in reacting to the challenges posed by the pandemic and continued in its organisational transformation based on an effective social dialogue approach. The development of smart working in the Emilia-Romagna Region can be divided into four phases: pilot period, regular implementation, extraordinary smart work during the pandemic, and smart work becoming a common practice after the pandemic, driven by a formalized organizational plan. Introduced as an experimental form, smart work became a common practice, with over 400 active smart-working projects. While in the pilot period only small group of employees were involved, nowadays approximately 85-90% of the regional workforce is engaged in smart work projects.*
**Keywords:** *covid-19, remote work, smart work, collective bargaining*.
**JEL Classification:** J5, M5, O33.

## 1. INTRODUCTION

The Emilia-Romagna Region is a complex organisation, divided into many services and offices mainly located in Bologna, but with some offices also in all the main cities of the region. At the end of 2022, the Emilia-Romagna Region counts about 3,700 employees including about 140 managers, 600 middle-managers (the so-called organisation positions PO) and the remaining quota of employment divided into 3 different professional profiles.

The case study is based on desk research and interviews with key stakeholders, including management and union representatives. This includes a representative from the Emilia-Romagna Regional Administration, the Head of Organisational and Digital Transformation Activities within the HR Department of the Region, a representative of the unitary union workplace structure in Emilia-Romagna, and a representative of the regional union federation of public service employees (FP-Cgil Emilia-Romagna). These interviews provide a balanced perspective on the radical transformation of work organization, particularly smart working.

## 2. REMOTE WORK IN ITALY: THE REGULATORY FRAMEWORK

What generally falls under the definition of remote work (Senatori and Spinelli, 2021) in Italy is currently regulated under three different sets of provisions (Senatori, 2021). The first refers to the notion of "telework", as established in the European Framework Agreement signed on 16 July 2002, transposed in Italy by a cross-industry agreement for the private sector signed on 9 June 2004. The second corresponds to the category of "agile work" (smart work), as designed and conceived in Law no. 81/2017. The third scheme consists of a "derogated" version of the existing legal scheme of agile work, as designed by the aforesaid 2017 Act. Whereas the first two set of provisions were introduced before the pandemic, the latter represents a first attempt to simplify the adoption of remote working solutions as a general health and safety measure during the pandemic.

In Italy, telework has a distinct regulation in the public and in private sectors. Law 191/1998 and then DPR (Decree of President of Republic) no.70/1999 regulate teleworking in the public sector and were originally aimed at modernising public administrations. The legislator intervened again with article 14 of Law no. 124/2015, entitled "Promotion of work-life balance in public administrations" (the so-called Madia Reform of the Public Administration). The reform establishes that public administrations must adopt organisational measures such as new spatial-temporal forms of work in order to support work-life balance and that at least 10% of public employees should make use of this organisational solutions within three years on a voluntary basis.

The most recent form of regulation of remote work is so-called "agile work", both in the public and private sectors (Law n. 81/2017). The definition of agile work does not only refer to remote work performance but implies a results-oriented organisational flexibility in a dynamic work environment in which "*spaces, hours and work tools are reshaped in the face of greater freedom and empowerment granted to workers*" (Chiaro, Prati and Zocca, 2015). As with telework, agile work shall be voluntary and the determination of organisational and operational issues (working and resting time, place of the working performance, control and surveillance methods, disconnection, use of ICT and digital devices) is left to the individual agile work pact among the parties, and so the employer and the single employee.

## 3. SMART WORK IN EMILIA-ROMAGNA

The development over time of smart working in the Emilia-Romagna highlights how there has been an evolution, from initial experimentation to its widespread adoption, especially accelerated by the challenges posed by the COVID-19 pandemic.

The development of smart working in Emilia-Romagna can be organised in four phases:

1. Pilot Phase (2018-2019): an initial experiment in 2018 allowed 81 regional employees to work autonomously without location or time constraints. This expanded to 145 employees to collect more data;
2. Regular Implementation (2019-2020): positive results led to formal implementation in 2019, increasing smart workers fourfold;
3. Pandemic Response (2020): due to COVID-19, smart working expanded to 68% of the regional workforce, impacting change management and work performance;
4. Post-Pandemic (2020-2022): in 2021, an Organisational Plan of Agile Work (Pola) set clear smart work objectives, leading to over 400 active projects involving around 85-90% of the regional workforce.

### 3.1 The pilot phase of smart working

In May 2018, Emilia-Romagna Region, confirming its social dialogue approach, reached an agreement with local trade unions, workplace union structures, and safety representatives to implement smart working. This agreement outlines a future scenario in which regional smart workers should be self-motivated, results-oriented professionals, not bureaucratic public employees requiring constant control.

The agreement established a bilateral project committee consisting of management and union representatives to monitor and assess various smart working activities, focusing on their impact on relationships, work planning, and contractual matters.

This shift towards smart working was influenced by changes in labor laws and a broader digital and organizational transformation initiated by the region since 2016. The transformation aimed to dematerialize office activities, promote collaboration, enhance digital infrastructure, and empower middle management.

The Emilia-Romagna Region participated in a joint project called VeLA, alongside other public administrations, to develop guidelines and tools for implementing smart working. These served as a reference for the national Council of Ministries' Organizational Plan of Agile Work in 2020.

Notably, Emilia-Romagna had a 20-year history of telework, which is more rigid in terms of working time and location compared to smart working. Telework was originally designed to support work-life balance but was not used for organizational change. In contrast, smart working was introduced with the intent to improve productivity, optimize resources, and transform work organization.

Selection of smart working candidates involved collective decision-making by upper management and employees to foster cultural acceptance and a sense of shared decision-making. Smart workers received digital equipment and a "fashionable backpack" symbolizing the transition from traditional public servants to self-managed professionals.

In line with the national legislation, smart working in Emilia-Romagna is voluntary for both employers and employees, regulated by individual agreements covering working hours, remote work logistics, device usage, remote work locations, management control, and measures for ensuring the right to disconnect.

Given the positive evaluation in terms of worker satisfaction and performance standards, the pilot period was extended for other 6 months in November 2018, involving a higher number of employees according to the availability of technological equipment. Anyway, the evaluation of smart working brought to light some strengths and weaknesses. Despite its benefits in terms of flexibility and work-life balance, smart working also posed challenges, including conciliation with part-time contracts, inconsistency in project reporting, conflicts between result-oriented smart working and traditional attendance-based control methods, and communication gaps between smart and in-office workers.

### 3.2 The regular implementation of smart working

In June 2019, following a positive evaluation, smart working was formally implemented in Emilia-Romagna. This process involved an agreement between the Region and trade unions, followed by a formal decision by the Region and the issuance of procedural guidelines.

The number of smart workers increased to 350-400 in 2019 based on technological availability, with plans to evaluate more candidates. The Region also committed to cooperate with INAIL (the nationl institute for insurance against accidents at work) for health and safety monitoring and activated a committee for smart work-related innovations.

With the aim of overcoming the critical aspects related to the communication process (among smart workers, in-office workers, middle and upper management) and teamworking as emerged in the evaluation process after the pilot period, the Emilia-Romagna Region established that the smart-work project is not referred only to a single worker but it involves a team of persons made up at least of the single employee and his/her corresponding middle and upper manager. By doing so, the Region confirms its purpose to use smart work as leverage to change work organisation and not as an individual right regarding work-life balance. For this reason, no specific eligibility criteria were introduced, with the only exception of workers with children up to 3 years old or children with disabilities (in accordance with the national law on agile work (law 81/2017). Smart work projects must outline concrete and measurable improvement objectives, such as enhanced service quality, digitalization, and work-life balance.

Procedural guidelines encouraged a shift towards flexible workspaces and highlighted the opportunity to test new forms of activity monitoring for smart workers. Monitoring focused on assessing the impact on relationships, communication, results, collaboration, digital skills, organization, and HR performance. A committee ensured equitable smart work distribution among Regional Directorates.

### 3.3 Smart working as pandemic response

Before the COVID-19 outbreak, about one-third of Emilia-Romagna Region's workforce engaged in remote work, a small part still in teleworking and a larger part in smart working. However, the pandemic drastically altered the remote work landscape.

During the first lockdown (February-May 2020) and throughout 2020, nearly the entire regional workforce, with only minor exceptions, was compelled to work remotely from home, following the national law's extraordinary agile work provision. This resulted in more than 2,200 extraordinary agile workers, constituting 68% of the regional labor force, along with around 400 teleworkers (13%) and nearly 400 ordinary smart workers (12%).

The regulatory framework for remote work was significantly simplified and amended due to the health emergency. In the public sectors, the national legislation first declared agile work as the ordinary form of work (Ministry Public Administration Directive No. 2/2020) and then defined in-office work as the prevailing form of work in public sectors (Decree of the Ministry of Public Administration 8 September 2021). Nevertheless, during the pandemic agile work has been strongly deregulated from its ordinary structure. Deregulated in its nature, as it was mainly conceived as a health measure and, furthermore, oriented to guarantee public service continuity. Deregulated also in its form, as it was mainly working from home and it could be activated unilaterally by Public Administrations (Art. 87, DL n. 18/2020, conv. by Law No. 27/2020).

The Emilia-Romagna Region made significant efforts during the pandemic to provide digital devices to home-workers, deploy digital facilitators for technical support, and offer training to combat isolation and bolster corporate identity. Prior experience with smart working proved valuable in addressing the pandemic's challenges, as many applications and tools were accessible remotely. Investments in middle management played a crucial role in preparing the organization for this sudden change.

However, the pandemic shifted the focus of remote work from an organizational strategy to a welfare measure, and even a health measure. It temporarily suspended efforts to transform the organization through smart work, and national legislation reinforced this welfare-based approach while reducing the importance of team-based work. Social distancing measures interrupted the reorganization of workspaces as well.

### 3.4 The post-pandemic smart working

In February 2021, Emilia-Romagna introduced its POLA 2021-2023 (Organisation Plan on Agile Work) in compliance with national legislation. This plan integrates regional policies and smart working goals, addressing organizational aspects, technological requirements, training measures, and monitoring tools. At the time of its approval, the Region had achieved a 65.3% adoption of remote work (telework and agile work), exceeding the minimum requirement of 60%, although not consistently across all organizational structures.

Surveys conducted in 2021 under the POLA aimed to assess the impact of smart work on job quality, work organization, performance, and working conditions. The findings revealed disparities in smart work adoption across different Regional Directorates. Smart workers reported higher satisfaction with work-life balance and organizational well-being. Positives included reduced commuting, increased autonomy, but negatives included a sense of isolation and fragmented communication among team members.

From January to October 2021, the region focused on activating smart working projects. This period showed a prevalence of extraordinary agile workers. After October 2021, a new phase emphasized strengthening the role of smart work projects and launching an application for project coordination.

The new season of regional smart work was mainly originated by a legislative provision on agile work in Public Administrations (Decree of the Ministry of Public Administration 8 September 2021): in-office work must prevail on remote work for each employee. While for most of the Public Administrations this change in the legislative perspective meant a full return back to in-office work, the consolidated experience on smart working permitted the Emilia-Romagna Region to be prepared in terms of digital competences and infrastructure, work organisation and working attitudes so as to maintain the existing smart working schemes. The only needed adjustment to the new legislative requirements was referred to the balance between remote and in-office working days: while before no limits were defined, now the number of in-office working days must be 51% of the total working days a semester. Smart work in Emilia-Romagna has never been conceived as fully remote but as hybrid solution: even before the Covid-19 outbreak, the average of remote work was about 1.5-1.8 days a week. After the end of state of emergency due to Covid-19, employees were asked to move from extraordinary to ordinary smart work: from October 2021 the number of ordinary SWers increased from about 1,400 to more than 2,000 in January 2022 and 2,700 in April 2022 while the extraordinary SWers decreased in the same period from 1,700 to about 120.

The rapid and unexpected growth of SWers forced the Emilia-Romagna Region to introduce some organisational constraints and rules of conduct to reduce the gaps in the use of smart working among the different departments. The Region has always pushed for the development of a spontaneous behavioural etiquette regarding smart working, in line with the principle that cultural revolutions need time to settle down. In front of about 85% of labour force involved in smart work projects, the Region has partially revised this approach and introduced some specific rules: those intending to smart work must give formal communication by 9 am of the same day (or within 48 hours if authorised). Differently, the decision on how to distribute the smart working days within a time frame is still up to the team: the only constraint remains the prevalence of in-office work in a semester. From the union point of view, smart work is a work arrangement based on trust and any organisational constraint risks to weaken the trust bond and makes team working more difficult to be coordinated.

Finally, in June 2022 the Emilia-Romagna Region and sectoral trade unions concluded a new agreement regulating smart work in the wake of the first renewals of the national collective agreements in the Public Administrations (and more precisely in the Public Central Function). The 2022 agreement between the Region and trade unions reinforced smart work as an ordinary work arrangement for all employees, established the role of a bilateral innovation committee for monitoring, and introduced two forms of smart working. On one side, the ordinary agile work and, on the other side, the “protected” agile work that takes over all the existing teleworkers and all those employees with specific family responsibilities or certified special needs: “protected agile workers” do not have any limitation in the use of smart working. That means that both ordinary agile workers and protected agile workers need to be activated by presenting a smart-work project. Because of that, telework will stop to exist in March 2023 in the Emilia-Romagna Region. While providing two forms of agile work, the regional social partners take a different position from the last national collective agreement in the Public Administration that makes a distinction between agile work and remote work (telework).

## 4. SMART WORK AND FUTURE CHALLENGES

With a view to adapting to the evolving nature of work and leveraging the benefits of smart working while addressing potential challenges and ensuring the well-being of employees, the Emilia-Romagna Region has outlined its future commitment to consolidating and transitioning its smart working approach in several key areas:

Organization:

- Strengthening and ensuring a consistent diffusion of task management and measurement systems for employees and teams, utilizing data generated by digital devices;
- Maintaining a balance between collecting useful digital data for performance evaluation and preserving a trust-based relationship with employees;
- Consolidating the monitoring system for the impact of smart working on performance and aligning measurement systems with the Regional Performance Plan by 2024;
- Encouraging work teams to define short-term and daily measurable objectives without rigid smart project sheets;
- Enhancing social collaboration tools and promoting a corporate code of conduct for respectful online behavior (netiquette);
- Continuously monitoring the impact of smart work on working conditions and the corporate climate through dedicated surveys and POLA plan tools;

Training:
- Focusing on leadership skills development for middle and upper management to effectively coordinate hybrid work models, emphasizing emotional intelligence, task management, team coaching, and teamwork;
- Providing training measures to address biases and cultural resistance to smart working among Regional management;
- Monitoring the development of smart attitudes through the Smart Attitude Assessment and tailoring skills development to meet specific organizational needs;

Spaces and technology:
- Developing and networking co-working spaces throughout the Emilia-Romagna region;
- Considering the potential reduction in regional premises as a side-effect of smart working to minimize rental costs;
- Continuously developing the digital workplace to facilitate hybrid work performance.

## 5. CONCLUSIONS

In our view, the Emilia-Romagna case study represents a positive example to explore for at least three different reasons. First of all, social partners have always been informed and consulted since the very beginning. Worker representatives and local trade unions have been involved since the first pilot phase. In line with a well-established tradition of social dialogue, every crucial step of implementing smart working has been taken in agreement with trade unions and worker representatives.

Secondly, from the outset, smart work has been conceived as a leverage for changing work organization and the very concept of public service organization. In contrast to its effective application in other sectors, smart work in Emilia-Romagna has never been considered solely as a measure for work-life balance. The organizational vision of smart work has consistently taken precedence over the welfare-oriented one. Even immediately after the first lockdown, all the efforts of the Emilia-Romagna Region were directed toward confirming its organizational approach to smart working, urging all employees to transition from the extraordinary form of smart work to the regular one.

Finally, in coherence with its organizational vision, the Emilia-Romagna Region regards the implementation of smart working as a systemic change that needs to be supported by a wide range of regional policies. In fact, smart work has not been seen merely as the remote execution of work but as a deeper transformation that necessitates substantial investments in digital training, digital infrastructure, a radical shift from desktop to web-based office applications, and the fostering of smart attitudes and smart workspaces.

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## References

1) Chiaro, G., Prati, G. and Zocca, M. (2015). Smart Working: dal lavoro flessibile al lavoro agile. *Sociologia del Lavoro*, 138, pp. 69-87. DOI 10.3280/SL2015-138005.
2) Senatori, I. and Spinelli C. (2021). (Re-)Regulating Remote Work in the Post-pandemic scenario: Lessons from the Italian experience. *Italian Labour Law E-Journal*, 14(1), pp. 209–260.
3) Senatori, I. (2021). Italian Industrial Relations and the Challenges of Digitalisation in *Hungarian Labour Law E-Journal* 2021/2. [online] Available at: http://www.hllj.hu [Accessed 16.05.2023].

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# HARMONIZATION OF ARTIFICIAL INTELLIGENCE RULES WITH NEW APPROACHES IN ADMINISTRATION

**MONICA AGHEORGHIESEI**
*Alexandru Ioan Cuza University of Iasi,*
*Iasi, Romania*
*agheorghiesei.monica@gmail.com*

**Abstract**
*IBM says that "Artificial Intelligence (AI) uses computers and machines to mimic the problem-solving and decision-making capabilities of humans."*
*This paper contains ideas from his current AI research and is based on its implementation and analysis of its ethical impact on society, especially in education, and presents several European concepts and initiatives.*
*Today we are talking about artificial intelligence (AI) in terms of technology development focused on industry or manufacturing goods and services, but finding artificial intelligence services in education remains difficult. That's why I suggest investigating before the benefits and limitations it has.*
*The purpose of introducing an AI code of ethics, alongside the other European rules, is to provide guidance to stakeholders when faced with decisions related to the use of artificial intelligence.*
**Keywords:** *artificial intelligence, human intelligence, AI code, administration`s skills.*
**JEL Classification:** H83.

## 1. INTRODUCTION

The new challenges of the information society demand a severe change of the rigid training canons from the university. Formats based on artificial intelligence promise a substantial improvement of education for all levels, with an unprecedented qualitative improvement offering the student a precise personalization of learning adapted to his requirements, managing to integrate the different forms of human interaction and information and communication technologies. The great challenge of the university of the new millennium is the urgent need to plan, design, develop and implement digital skills to train better professionals able to understand and develop the technological environment according to their needs, as well as to implement the universalization of a supported digital language of programs developed under artificial intelligence formats.

Human intelligence is not characterized by just one trait, but by the combination of many diverse abilities. Research in AI has mainly focused on the components of intelligence: learning, reasoning, problem solving, perception and language use.

The earliest substantial work in the field of artificial intelligence was done in the mid-20th century by the British logician and computer pioneer Alan Mathison Turing, who advocated the idea that "machines can think". Alan Turing intuited one thing rightly, no doubt: no matter how well man calculates, the computer does it better.

John McCarthy was the person who coined the term artificial intelligence for the first time in 1950, therefore he is considered the father of AI. It is a process of making computers capable of understanding, thinking and performing the same as a human being, which is achieved by inputting data used as inputs, taken as commands.

Artificial intelligence improves the ability of machines to function like humans. A variety of new technologies, such as computers, mobile phones, and other devices, have made relative contributions to artificial intelligence's prominence. Different data sets are given as input to the machine to help it perform each task. Therefore, we can say that artificial learning consists of machines embedding human intelligence by developing sets of data or algorithms.

## 2. AGREEMENTS AT EUROPEAN AND UNESCO LEVEL

The European Union, in its proposal for a regulation on artificial intelligence, suggested that its use could negatively affect fundamental rights due to its characteristics (opacity, complexity, data dependency, autonomous behavior, etc.). Similarly, the recommendations on the ethics of artificial intelligence, adopted in 2021 by UNESCO's 193 member states, are for "the impact of artificial intelligence on decision-making, employment and work, social interaction, health care and education". It emphasizes ethics, the implications of artificial intelligence in the Mass Media, Access to information, Digital divide, Consumer and personal data protection, Environment, Democracy, Rule of law, Safety and law enforcement, Freedom of expression, Privacy, Human rights, including non-discrimination and fundamental freedoms (European Commission, 2018a)

UNESCO's recommendations also draw attention to the ethical challenges arising from the possibility that artificial intelligence algorithms "reproduce and reinforce existing prejudices that may exacerbate existing forms of discrimination, prejudice and stereotypes". For all these reasons, the UNESCO agreement calls on countries to create regulatory frameworks that ensure that AI technologies serve the interests of their citizens and that humanity as a whole benefits. (UNESCO, 2021)

In this sense, Law 15/2022 on equal treatment and non-discrimination is the first regulatory approach in the Spanish region regarding the use of artificial intelligence by public authorities and companies. According to the law, government agencies should "consider standards to minimize bias, transparency and accountability, algorithms used by government agencies to be involved in decision-making, where technically feasible."

The implementation of mechanisms that allow access to human intelligence is encouraged. Government agencies and businesses also support the "ethical, trustworthy and fundamental rights" use of artificial intelligence.

The purpose of an AI code of ethics is to provide guidance to stakeholders when faced with ethical decisions related to the use of artificial intelligence. The rapid progress of artificial intelligence in recent years has led groups of experts to develop AI safeguards to protect users. One of these groups collaborated with AI researchers and developers, as well as academics from many fields, to produce 23 guidelines, now known as the Asilomar AI Principles (Stapf-Fine, Bauberger, 2018). The Asilomar AI Principles are divided into three categories: Research, Ethics and Values, and Longer-Term Issues. These principles are a clear statement of possible undesirable outcomes, followed by recommendations to prevent them (Figure 1).

| **Research**<br><br>**This subsection of the Five Principles includes AI research and development methods, and their transparency and beneficial use.** | **Ethics and values**<br><br>**This subsection of the 13 AI Principles revolves around the ethics of AI and the values instilled during its development** | **Longer-term issues**<br><br>**This subsection of the Five Principles of AI discusses the importance, risks, and potential that AI can offer in the long term.** |
|---|---|---|
| **1. Research**<br>**2. Research funds**<br>**3. Political science connection**<br>**4. Research culture**<br>**5. Avoidance of competition** | 6. Safety<br>7. Transparency of failure<br>8. Judicial transparency<br>9. Liability<br>10. Value Alignment<br>11. Human values<br>12. Personal privacy<br>13. Freedom and Privacy<br>14. Common benefit<br>15. Shared prosperity<br>16. Human control<br>17. Non-subversion<br>18. The arms race | 19. Attention to capacity<br>20. Importance<br>21. Risks<br>22. Recursive self-improvement<br>23. The common good |

Sourse: EUR-lex (2023)

**Figure 1. Asilomar AI Principles**

## 3. THE INVOLVEMENT OF THE EUROPEAN COMMISSION AND THE EUROPEAN COMMITTEE IN AI ETHICS

In April 2021, the European Commission proposed the world's first regulatory framework for AI. The proposal introduces requirements for AI systems that pose high risks to security and fundamental rights. These requirements include the use of high-quality data sets, research, information sharing, human oversight measures and robustness, security, cybersecurity and accuracy. The proposal also bans particularly dangerous applications of AI that could manipulate human behavior.

Regarding the financing methods, several sources are provided:

- The Digital Europe Program (DEP) for 2021-2027 will be the main financing engine of these activities and will regulate the establishment of a network of European digital innovation hubs;
- The Commission also recommends using the resources made available to the member states through the RRF (The Recovery and Resilience Facility) program;
- ERDF (European Regional Development Fund) will be used for the purchase of equipment, infrastructure and software in the provision of services;

The watchword is partnership: academic, private, small and large companies, public sector, suppliers and beneficiaries.

One of the main lines of action envisaged in the Commission's strategy refers to the need to develop human resources through appropriate university and postgraduate programs, but also to attract valuable researchers from other countries.

It is well known that there is a shortage of skilled workers in Europe in the fields of information technology in general and artificial intelligence in particular. This aspect has been emphasized by almost all Member States and by the Commission on various occasions.

Therefore, in Romania, concerns in this field have the following directions:

- The introduction of master's and doctorate programs, for the training of professionals who will make important contributions to research and development in this field.
- Facilitating professional training and internships through programs approved by the Commission.
- Development of new master's and doctoral programs in collaboration with research centers and private companies, according to the requirements of new technologies.
- Improving the framework conditions for researchers in the field to ensure the quality of the activity

The Committee's efforts are relevant through (European Commission, 2020):

- The Digital Education Action Plan 2021-2027 supports digital education. This will help potential research staff to complete internships in the digital field and expand participation opportunities for students and faculty, focusing on AI skills and paying particular attention to the principles of non-discrimination and gender equality.

- The Horizon Europe program finances and supports a network of Artificial Intelligence Centers of Excellence and PhD programs (within the AI Lighthouse program). The Center supports the research of options for attracting quality through close collaboration with industry and public authorities. The program allows the creation of AI modules that can be integrated into master's educational programs in other fields, as well as the development of doctoral research.

Doctoral scholarships will continue to be financed through collaborative projects

- The importance of accreditation of degrees in AI between universities and countries
- Funding as many students as possible for artificial intelligence courses and doctoral scholarships in the field

## 4. INITIATIVES BETWEEN THE EUROPEAN COMMISSION AND THE MEMBER STATES

At the end of 2020, the Commission awarded grants to four university networks, SMEs and AI Centers of Excellence to support Member States' efforts to increase the supply of vocational training in AI. Supporting internships in the digital field, expanding participation opportunities for students and teachers are part of the actions planned in the Digital Education Action Plan 2021-2027.

The network of AI Centers of Excellence is supported within the Horizon Europe Program (within the AI Flagship Programme). Among other tasks, the center will look for ways to maintain performance through close cooperation with industry and public authorities. The development of a PhD course and an artificial intelligence module that can be integrated into a Masters course outside of ICT education is also being considered.

Promotion of PhD studies, postdoctoral fellowships and joint AI staff exchange projects are found in the Marie Sklodowska Curie actions, through proposals to support the training, skills development and career development of researchers. (European Commision, 2021a)

Supporting initiatives to promote mutual recognition of higher education programs focused on artificial intelligence in the EU is another initiative of the Commission.

Ethical artificial intelligence systems, as defined by the European Commission, must comply with seven basic requirements: the human factor and human oversight, technical soundness and security, privacy and data governance, transparency, diversity, non-discrimination and equity, social welfare and ecological, responsibility.

The Human Resources Development Strategy of the European Commission is part of a joint effort by the member states to develop the field of ICT (Information and Communication Technologies), the number of experts in the ICT sector being inadequate and the training of existing and potential resources needing to be improved (European Commission, 2018b).

The main actions that the Commission can and must undertake in Romania are:

- Development and diversification of master's programs specializing in artificial intelligence.
- Increasing the number of PhD scholarships in AI fields.
- Involvement of private partners and research centers in doctoral programs (e.g. research projects).
- Development of doctorates through collaboration between partners from the same or different countries, academic, industrial and research environments.
- Pursuing and respecting the principles of non-discrimination and gender equality.
- Mutual recognition of higher education programs focused on AI.

The Commission's recommendations to the member states, according to the documents, are:

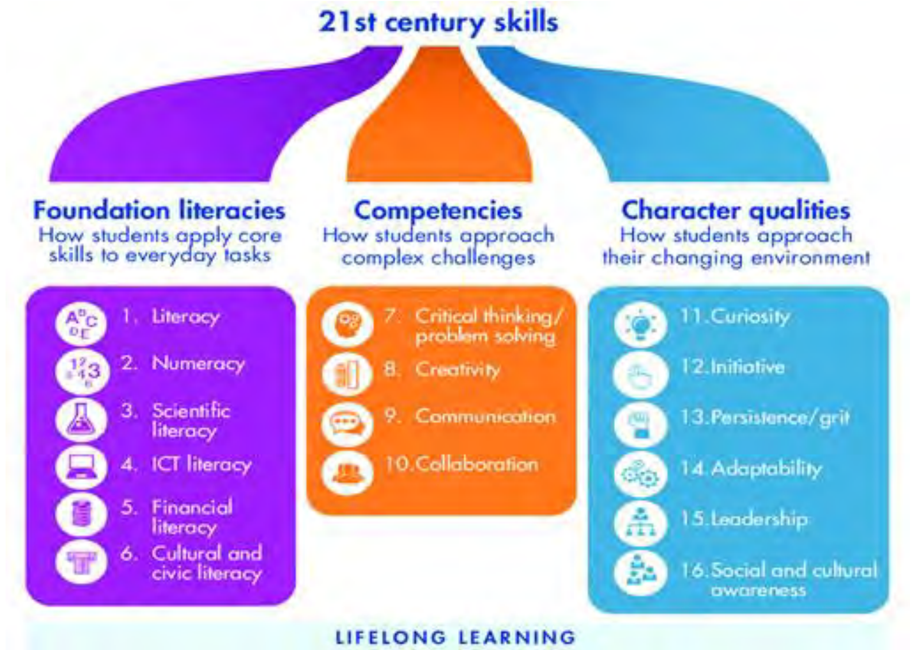
1. Using RRF funds to modernize its public sector
2. Using the "Modernization" chapter of the RRF focusing on the digitization of government and services, including justice and health systems.
3. Using RRF retraining and upskilling chapters to provide skills and new competencies to public sector officials and managers

## 5. AI SERVICES FOR PUBLIC ADMINISTRATION

A main tool is participation with projects under Horizon Europe Cluster 4 "Digital, Industry and Space", the research, development and adoption of next-generation computing and data technologies and infrastructures.

Investing in cloud and state-of-the-art technologies as part of the RRF pilot component stimulates the adoption of the National Recovery and Resilience Plan (NRRP), with Romania investing in the European data space, using resources offered through the program.

The 2018 report by NESTA (a British charity that operates the Global Fund for Innovation) offers 16 skills to pursue throughout the 21st century. These fall into the three categories as shown in Figure 2. The figure presents the list of sixteen globally recognized skills for the 21st century that should be introduced in modern education. Skills (Figure 2) are divided into three blocks: fundamental literacies (literacy, numeracy, scientific literacy, ICT literacy, financial literacy, cultural and civic literacy), skills (critical thinking/problem solving, creativity, communication, collaboration), character qualities (curiosity, initiative, persistence, adaptability, leadership, social and cultural awareness) (Soffel, 2016).




Sourse: Soffel, 2016

**Figure 2. 16 skills for the twenty-first century**

The future is based on core knowledge, skills and personality traits, in the context of new AI trends. Future possibilities were discussed and it is argued that the future of work is not only about automation, but also about environmental sustainability, urbanization, uneven development and political differences. There is a strong emphasis on interpersonal skills, higher cognitive skills and systems skills. Originality, ideas and active learning are very important. Future employees will need a wide range of knowledge, but also special skills in the field of AI. (Bakhshi et al., 2017)

In addition to the Digital Europe programme, resources such as the Connecting Europe Facility (CEF2) and EU4Health are used in the development of the European data space, for example in the field of health. Implementation measures are proposed for the transformation of public sector data into formats that can be used freely, Romania being represented by three companies: SIVECO România SA, Continental Automotive România SRL and Software Imagination & Vision SRL, which participate in the funded KYKLOS 4.0 project by the European Union. Taking into account the existing experience and the results of consultations with interested parties, Romania should respect and implement the following key principles to support the provision of data from the private sector to public sector bodies under preferential conditions for re-use (European Commission, 2021b).

- Proportionality in the use of private sector data: requests to provide private sector data under preferential conditions for re-use should be justified by a clear and demonstrable public interest;
- Purpose limitation: the use of private sector data should be clearly limited to one or more purposes that must be specified as clearly as possible in the contractual clauses establishing the collaboration between businesses and public administrations. These may include a limitation of the duration of use of the respective data;
- The principle of "do no harm": collaboration between businesses and public administrations must ensure that legitimate interests are respected, in particular the protection of trade secrets and other commercially sensitive information;
- Conditions for data re-use: collaborative data sharing agreements between businesses and public administrations should aim to be mutually beneficial, while recognizing the public interest objective by offering preferential treatment to the public sector body over other clients. This should be reflected in the level of compensation agreed, which could be linked to the public interest objective pursued;
- Transparency and participation in society: collaboration between businesses and public administrations should be transparent regarding the parties to the agreement and their objectives;
- In the field of health, an aspect that Romania should address would be the governance of health data for their secondary use. The management of health data requires a specific mechanism and cannot be governed exclusively by horizontal legislation, such as the proposed Data Management Law;
- A particularity in the health sector is that member states have limitations to maintain or introduce additional conditions regarding the processing of health, genetic or biometric data.
- Initiatives or measures that can be recommended in the case of Romania:
- Expansion of the electronic signature project in the public sector
- Expansion of automation projects in the Ministry of Finance aimed at reducing errors, work and response times, backlogs, etc.
- Using AI tools in public procurement processes
- Defining standard processes for decision-making, procurement, implementation and operation of AI applications in public administration.
- The use of AI tools in the police activity to increase its capacity for action

- Identifying data sets from the public sector, which can be made available to businesses, researchers and public authorities and which can contribute to the development of artificial intelligence
- To consider areas of application such as: tax and legal consultancy, social assistance, medical assistance, crime prevention, as well as in airport security and combating disasters and in military applications;

## 6. CONCLUSIONS

UNESCO encourages the implementation of mechanisms that allow access to human intelligence. Government agencies and businesses also support the "ethical, trustworthy and fundamental rights" use of artificial intelligence

The Commission develops quality partnerships in multiple fields, many with connections to the field of AI. Within these partnerships, the way to support small companies would be their integration into public-private partnerships. The Commission encourages Member States to support through national programs partnerships with small and medium-sized companies, including by financing their activities within partnerships with the academic environment or with the public sector in general.

Recovery and resilience programs can be used to modernize the public sector, both by supporting the procurement of AI-based systems and by funding digital skills development initiatives in the public sector. The focus is on digitizing government, developing skills in the public sector and supporting the acquisition of the necessary AI systems.

Participation with projects within Cluster 4 Horizon Europe "Digital, industry and space", research, development and adoption of next-generation computing and data technologies and infrastructures.

Romania will invest in the European data space with resources offered through the program, invest in cloud and next-generation technologies to stimulate cloud adoption through the National Recovery and Resilience Plan (NRRP), "Scale up" and through projects in many countries.

In addition to the Digital Europe programme, Romania will also use resources such as the Connecting Europe Facility (CEF2) and EU4Health for the European health data space. Implementation measures are proposed to transform public sector data into freely usable formats. Romania is represented by three companies: SIVECO Romania SA, Continental Automotive Romania SRL and Software Imagination & Vision SRL, which participate in the KYKLOS 4.0 project financed by the European Union.

The watchword in the acceptance and development of AI is an academic partnership - public sector - private sector - companies - suppliers - beneficiaries.

## References


1) Bakhshi, H. Downing, J.M.,Osborne, M. A., Schneider, P. (2017). *The future of skills: Employment in 2030*. Pearson. [online] Available at: https://futureskills.pearson.com/research/assets/pdfs/technical-report.pdf. [Accessed 7.01.2023].
2) EUR-lex (2023). [online] Available at: https://eur-lex.europa.eu/legal-content/RO/TXT/PDF/?uri=CELEX: 52018DC0237 &from=FR [Accessed 12.01.2023].
3) European Commission (2018b). *Artificial intelligence for Europe*. [online] Available at: https://eur-lex.europa.eu/legal-content/RO/TXT/PDF/?uri=CELEX:52018DC0237&from=EN [Accessed 22.03.2023].
4) European Commission (2018a). *Communication "Towards a Common European Data Space"*. [online] Available at: https://digital-strategy.ec.europa.eu/en/news/communication-towards-common-european-data-space [Accessed 23.01.2023].
5) European Commission. (2020). *Digital Education Action Plan*. [online] Available at: https://education.ec.europa.eu/ro/focus-topics/digital-education/action-plan [Accessed 16.06.2023].
6) European Commision. (2021a). *Supporting excellence in research and innovation.* [online] Available at: https://marie-sklodowska-curie-actions.ec.europa.eu/ [Accessed 7.01.2023].
7) European Commission. (2021). *Shaping Europe's digital future.* [online] Available at: https://digital-strategy.ec.europa.eu/ro/activities/digital-programme [Accessed 7.01.2023].
8) Law 15/2022 on equal treatment and non-discrimination, Spain
9) Soffel, J. (2016). 21st-century skills for students. *World Economic Forum*, New Vision for Education. . [online] Available at: https://www.weforum.org/agenda/2016/03/21st-century-skills-future-jobs-students/ [Accessed 7.01.2023].
10) Stapf-Fine, H., Bauberger, S. (2018). *Policy Paper on the Asilomar Principles on Artificial Intelligence.* Conference: Vereinigung Deutscher Wissenschaftler: Research Team Technology Assessment of Digitisation, [online] Available at: https://www.researchgate.net/publication/329963051_Policy_Paper_on_the_Asilomar_Principles_on_Artificial_Intelligence. [Accessed 4.03.2023].
11) UNESCO (2021). *Recommendation on the Ethics of Artificial Intelligence*. [online] Available at: https://unesdoc.unesco.org/ark:/48223/pf0000380455 [Accessed 17.05.2023].

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# FACTORS INFLUENCING LOCAL GOVERNMENTS' INVESTMENT DECISION

**FLORIN OPREA**
*Alexandru Ioan Cuza University of Iasi*
*Iasi, Romania*
*foprea@uaic.ro*

**ANDREI DASCĂLU**
*Alexandru Ioan Cuza University of Iasi*
*Iasi, Romania*
*a.dascalu85@gmail.com*

**Abstract**
*Local communities' sustainable development represents a key topic on public governments' agenda, thus raising the problem of social and economic growth determinants, which could be shaped throughout promoted public policies. In this context, public investment plays a crucial role, being considered as a main trigger of local development on medium and long term, in close connection with the quality of the associated decision-making process. Under democratic values as decentralization, local autonomy and self-government, public investment decisions are configured by local authorities while facing particular constraints or influence factors, both related to endogenous sources (e.g. administrative capacity, legal collaborative partners, competence or legal constraints) or exogenous ones (as financial market conditions, corruption, institutional arrangements, politics etc.), which are in the end affecting the quality of the adopted decisions. From this perspective, our study aims first to identify the factors potentially affecting the local governments' investment decision, to emphasize the particular transmission channels of their influence and to reveal their potential expected impact. On this base, we also aim to suggest some alternatives to counteract the negative effects of the discussed factors, as useful inputs for (new) public policies.*
**Keywords:** *Local governments, Decision, Investments, Factors, Vulnerabilities.*
**JEL Classification:** H70, E22.

## 1. FACTORS INFLUENCING LOCAL GOVERNMENTS' INVESTMENT DECISION

Generally, the concept of local public investment is treated to a lesser extent in the literature and legislative approach, and is generally included in the broader understanding of public investment. This is why we chose to analyse some important factors that extensevly apply for local governments' investment decisions like economic, financial, social, political, human and environmental factors, with endogenous and exogenous particularities. We will also discuss the connections between some of these factors and analyze their influence in certain situations. Furthermore, we will put into perspective some of the most common vulnerabilities that are connected with local governments' investment decision and see how they could affect investment projects in time, while looking for some alternatives on how to minimize the associated risks.

### 1.1. The economic factor

The economic factor could be considered as having the most important influence on the local public investment decision, affecting both tangible and intangible investments decisions. For local public investment, the economic factor involves a multitude of variables: the economic context, the level of taxation, the availability of funds and the ability to attract external financing sources, the establishment of investment expenses, etc. On one hand, the economic context, at any given moment, influences the public investment policy. On the other hand, investments reduce or prevent the negative effects of inflation and stimulate economic growth, contributing to a better economic environment on medium and long term. Investments represent the first priority for relaunching the national economy, in situations where it has been affected by various turbulences or economic crises, instead of loans that often go to consumption. Moreover, in the latest economic crises that our country went through, the decision-makers and public authorities in Romania "patented" the instrument of loans to temper the negative effects, thus resorting to reparative methods such as loans for consumption or public debt coverage at the expense of preventive ones and productive, namely public investments. This approach is counterproductive for local governments since contracting loans and using them for public investments is the best financial alternative. In support of this statement we will point out that loans – based on account criteria/local budget economy - are amongst the best sources for financing local public investments because they do not put immediate pressure on the local budget, the contracted amount is received in full, they are easy to contract because the public authorities have a high degree of trust and repayment is made over a long period of time.

With reference to the economic factor, some authors appreciate that, in the implementation of the investment policy, the institutions must not have as their primary goal the obtaining of profit, but have in mind a good correlation between the costs involved and the global benefits to be obtained, so that to consider the entire local or national community (Oprea, 2020). This doesn't mean that local authorities shouldn't look to invest in profit-making objectives, like tax-parking, cultural infrastructure that generate income through ticketing, public spaces for rent, collaboration with private sector for the development of leisure areas, while other domains like education, health, local road infrastructure or security are free to use in the benefit of all citizens.

## 1.2. The financial factor

In the dimenstion of the financial factor, inflation plays a decisive role. We often witness - relevant to our analysis - updates of technical-economic indicators for various investment projects. These changes caused by inflation can generate very important delays of projects implementation, because the procedure for updating the indicators involves a certain bureaucratic route, from recalculation, to transposition into draft decisions and their debate for approval in local or county councils, and at other times they can cause decisions that change altogether the destiny of an investment, if it is considered that some costs become unbearable.

Regarding the fiscal policy, the local public authorities must identify those measures that lead to a better collection of taxes and fees for the local budget to cover expenses, including gathering funds for public investments. Often, local authorities are in the position of introducing new taxes or cutting public spending, as an expression of local fiscal consolidation. Threre is no easy choice here, since both decisions have a negative effect on investments: the first option (introducing new taxes) discourages private investments, while the second (cutting public spending) has an important impact on public investments, since this is generally the first on the list of cuts for public spending, taking in consideration that there is a strong resistance in preserving a bloated administrative apparatus combined with an electoral-based desire to continue financing social expenditures at the previous level (in order to preserve the electoral capital). That is why local public authorities must look for efficient and stimulating ways to collect revenues for the local budget, as the good practice of some local public administrations has shown, by granting exemptions or benefits to “on time” tax-paying citizens.

In practice, local authorities do not have sufficient funds to implement large investment projects, therefore, correlated with the human factor (also explored in this section), they must have the ability to attract external financing sources. Furthermore, the establishment of investment expenses, as previously stated, depends on the level of current expenses, having advantages and disadvantages. Unlike current and unproductive spending, investment spending has the ability to generate future net benefits. Also, public investment expenditures have a multiannual feature, being included in investment plans as annexes to local budgets. Thus, even if the level of expenses for investments is lower, these expenses are staggered to ensure the necessary for financing the investments assumed by the local public administration. As a disadvantage, we point to the fact that, when a reduction in spending costs is imposed, those that will be affected first are investment spendings, which can lead to the postponement or even cancellation of some public investments. For instance, during the first quarter of 2023, to cover a deficit for budget expenses of 33.1 billion lei, Romania’s government had to cut 8.8 billion lei from European fund investment, 2.2 billion lei from The National Recovery and Resilience Program grants and 17 billion lei from The National Recovery and Resilience Program loans. In this case, the damages increase in proportion to the stage in which the project or projects affected by the cut in investment spending are. Due to some questionable legislative stipulations, this tehnique is also used on a smaller level, where local governments' are justifying investment budget cuts by invoking the phasing of ongoing projects. While this may pass the legal argument, it makes an unheathy practice that affects local public investments and generating longer times for any project implementation.

### 1.3. The social factor

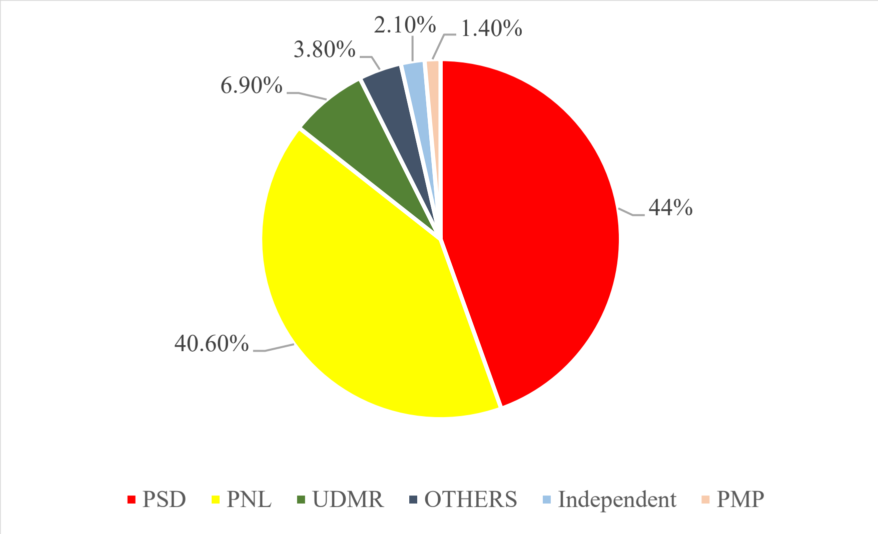
The third influencing factor for the local public investment decision that we are discussing is the social one. Customs, culture, religion or ethnicity are determining elements of the diversity that characterize modern society and local communities in particular. Each region, each larger or smaller community has different social needs, which implies different approaches from local public administrations in investment policy. Basically, a social need results from the sum of individual needs in a community, best known at the lowest level of administration. That is why some authors (Dondinelli, 2006) made connections between decentralization and the social impact of local public investments, pointing out that positive outcomes depend in part on the accuracy of local opinion about needs and priorities while other empirical tests (Faguet, 2004) demonstrated that decentralization does change patterns in local public investment, and this difference was strongest in the social services and urban development.

We can agree that every community needs utilities, roads, educational institutions, hospitals, recreational spaces, but there are particularities of social nature that influence the investment decision. A first general differentiation is made between urban and rural environments. For example, the decision to build a stadium or even an airport may be justified for the urban population, but for some rural environments, where priorities are still at the basic level, such investments would be absurd. On the other hand, we have to turn our focus to the correction of these disparities when the social factor is brought into discussion, because the responsible approach involves creating an environment that improves the education and health systems, reducing inequalities between women and men, between the rural and urban environments, respectively the promotion of a social environment where citizens feel valued and supported.

If not taken seriously by local public authorities, the social factor can have negative effects on local public finances and implicitly on local public investments. For example, in a community with a higher number of social assistance beneficiaries, the public authority is faced with decisions that may have different consequences. If the budget expenses will be overwhelmingly directed to social assistance, respectively current expenses, then investment expenses will be undersized and the social problem will deepen even more. In some cases, local public administrations prefer this state of affairs for electoral reasons (the political factor comes into discussion and will be later analyzed). On the other hand, in this scenario there is also the option of reducing social assistance spending and increasing public investment to stimulate a better standard of living, which would facilitate new jobs and boost productivity. Anyway, we need to agree that at a given level of social poverty registerd across local community, the social factor could become a crucial factor of influence when determining the level of local expenditures for investments, acting as a stiffening factor on budget spending.

### 1.4. The political factor

The political factor also acts decisively on the investment decision. Under the influence of this factor, the extent to which the project corresponds or not to the general local public development strategy, if it is imposed by a political group, if it respects or not the conditions of economic, financial and social rationality appears to be very relevant. The right way of this factor occurs when the political party or the political group in power is implementing the program with which it presented itself to the voters in order to obtain their support. On the other hand, the political factor can have serious consequences over the finances of a local community, when the investments policy is only related to satisfying the political interest of the local government, without considering and justifying the actual implications. A first example refers to the abundance of public investments that local authorities start or complete in election years. To support this statement, we point out to the fact that at the begining of 2023, Romania's government announced a record sum of 110 billion lei for public investments that also reflects in the projection of local authorities' investment programs. From this point of view, there is the risk that such investments will no longer take into account the other factors that we invoke in this part of the paper, because nothing matters anymore, in an election year, then the image of the authority that it has delivered something at this point. From another perspective, it is important to notice that the fund allocation formulas from government programs have been constantly criticized due to political algorithms. For instance, the allocation of funds from the latest national program "Anghel Saligny" for local investments appears to be relatively balanced politically, close to the results of the 2020 elections, as we see in Figure 1, based on data available in 2022.




Source: ExpertForum, 2022

**Figure 1. Proportion of allocated funds from Romania's "Anghel Saligny" national program for territorial administrative units by political representation in Parliament (2022)**

The party represented with yellow obtained 25% of the votes in 2020, while the party represented with red obtained 28.9% of the votes. There was a third political party that obtained 15% of the votes for the parliament elections but as it now representing the opposition and it does not have a strong territorial structure, it doesn't figure into the above representation. This led to larger allocations for the first two ones, and more to the green one, that had only 5.74% of the votes, but also joined the government structure. One of the disadvantages of this type of allocation is the lack of firm control over the spending of funds from these sources and the lack of sufficient transparency, supported by the fact that the allocations are granted by order of the minister, without any clarity regarding the applied algorithms. Furthermore, another disadvantage of these funding sources is subjectivity, because there is a risk that some local governments are favored over others, depending on political affiliation, thus encouraging client politics.

Summing up, the interference of political factor in fund allocations could strongly affect the public local governments' investment decisions, because national local development programs cover a large part of expenses for investment projects in the most basic community needs like roads, water and sewage systems, natural gas networks, health and school infrastructure.

## 1.5. The human factor

The human factor is given particular importance, because the investment potential of a local public authority is not always reflected by the volume of financial and material resources involved, but more often by the decision-making factor's ability to transform them into expected effects. There is always a concern about finding competent human resources in marginal communities and often, decision makers are the mirror of the community they come from: better access to education, personal development infrastructure, and better life conditions leads to better trained personnel.

It is worth pointing out that decision-making capacity is measured by the ability to create investment options in accordance with the established objectives and goals, to improve the development strategy and policies in order to enhance the effects of investments and to select investment projects that allow the rational capitalization of all material and financial resources to achieve the set objectives (Zaiț, 1987). Under these conditions, the human factor becomes particularly relevant in the investment decision-making stage. Compared to the private sector, where the decision benefits from a wide freedom, it is admitted that in the public administration, it is limited by legal criteria and political interests. The legal criteria is established by the legislative norms that guide the administrative act, while the political interests take into account the doctrine of the party or group of political parties in power at a given time. The constant invocation of these two aspects risks marginalizing the most important criteria on which the entire public administration is built, namely the public interest. It is also worth mentioning here the capacity of human resources management which should not mean the well-being of the employees but should be reflected in their contribution to the performance of the organization (Bercu, 2019).

## 1.6. The environmental factor

The environmental factor has gained increasing relevance in investment policies, both public and private. Sustainable development, international and national environmental protection policies require responsible conduct in public investment policy.

Today, no public investment project is carried out without environmental impact measurement. In the global assessments of the impact on the environmental factors, due to the activities carried out within the investments, it is customary, from a technical point of view, to resort to comparative evaluation methods between the ideal state of the environment and that due to the projected anthropic activity, taking into consideration all environmental factors. Although the need for environmental protection is undeniable, it comes with multiple challenges for public investments, especially those in tourism and road infrastructure, mostly due to the unpredictability of the appearance of the effects, which involves the possible repositioning of the investment project. There have been quite a few cases in Romania when road infrastructure projects have suffered blockages caused by various environmental factors that require the protection of some animal species: bear trails that intersect with highway projects, shoals of protected fish species on the construction route of bridges etc.

Nowadays, the biggest environmental challenges are found in the development of cities and urban metropolises, and from Romania's point of view certain factors come into discussion: industrial emissions, private cars and conventional transport vehicles, household activities, burning vegetable waste, all combined with the lack of green spaces in urban areas. The European Union recommends a minimum of 26 square meters of green space, while the World Health Organization a level of 50 square meters/capita. In 2022, The National Institute of Statistics has reported that cities in Romania had only 21.3 square meters of green spaces/capita and a total of 26.639 hectares of green spaces in urban areas. Statistics reported by IQAir, one of the largest platforms in the world that stores information about pollution, are showing that lack of green spaces is directly related with high pollution, as large cities like Bucharest, Cluj, Iasi, Brasov or Craiova have high values of pollution and fewer green spaces than international recommendations. We are pointing out to these statistics because local public investments always come with the environmental challenge. For example, building roads means more pollution, building schools, hospitals or other public service structures means taking in consideration the utility works and the intensification of urban mobility that affects soil, groundwater and air quality.

As stated before, there are certain relations between some factors influencing public local governments' investment decisions. Let's take, for example, the political and economic factors. A robust economic growth mixed with a stable political environment should lead to increased public investment in infrastructure and social programs. On the other hand, political instability combined with a lesser economic growth could lead to more conservative spending on investments projects. Looking forward to relations between human factor and environmental factor we acknowledge that both contribute to sustainable development of any local community, understanting of public needs while building for future generations. Furthermore, the relation between financial factor and social factor takes in consideration the implications of investment choices to ensure that projects align with community needs, enhance public welfare, and remain financially sustainable.

## 2. VULNERABILITIES IN LOCAL PUBLIC INVESTMENT DECISION

Adapted to the level of local public investments, the decision engages human judgment in the analysis of several possibilities, methods or options for choosing one of them in order to achieve a goal, having a certain degree of autonomy based on a normative framework. The manifestation of will or determination to act involves a complex decision-making process that engages responsibility on the part of the authority to eliminate or minimize risks and errors. Some authors (Rajaram, A., et al, 2014) identify a series of vulnerabilities that can lead to the failure and inefficiency of public investments, also applicable to local ones, which we will debate further.

### 2.1. Lack of inter-institutional coordination

Most of the time, several actors are involved in the process of implementing an investment, whether they take the form of separate institutions or departments within an institution. The decision on local public investments can in turn be influenced by poor inter-institutional communication, risking being postponed or misunderstood. Thus, in the longer process of implementation, local investment projects may suffer delays that involve risks, some minor, which can be rectified, or others major, which may even lead to the loss of funding. This risk can be reduced in our opinion by the public authority or authorities involved by using modern communication mechanisms, such as digital ones, and by creating joint working groups either between institutions, when several entities are involved, or within it, between departments whose efforts converge in order to implement a public investment project and organizing progress meetings.

### 2.2. Political influence

The political decision in the public administration has a major role in the implementation of the investment plan and should not be seen as a weakness, if it emanates from the will of the majority vote of the population in a community. Political implications can represent vulnerabilities when there are deviations from the political program for which the popular vote was sought and granted.

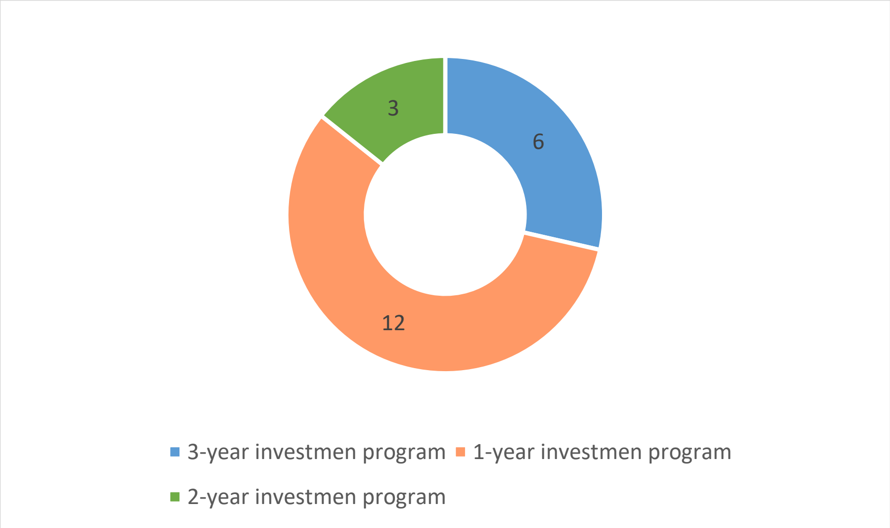
It often happens that an investment project is postponed or stopped when the interests and political vision of a new leadership at office do not resonate with the previous one. The resilience of the local public authority to vulnerabilities of a political nature is a subject that arouses public interest, most of the time from a negative perspective. In this case, vulnerability does not only emanate from the interests of some decision-makers who lead the destinies of a community, but is often caused by central influences, as government decisions regarding the financing of local public investments often depend on the mere color of a political map, as we shown in the previous section of this paper.

On the other hand, vulnerability arises from misunderstandings in local or county councils on political grounds, in the conditions where the opposition, for reasons of political gains, refuses to give credit to the local government for the investment initiative. Faced with this vulnerability, all decision-makers must bear in mind that the mission of the local public administration is to serve the citizen's interest and that the political influence exerted to the detriment of the community is harmful and will be sanctioned by the electorate at the next election.

## 2.3. The multiannual allocation problem in a weak budget system

It is generally accepted by practice that the process of financing a local public investment is, in most cases, a multi-year one, which requires the existence of a set of skills of the departments that deal with local finances, respectively the construction of the budget, in which case the method of collecting incomes, distribution of expenses and budget forecasting take on an important role. This takes us back to the relations between human factor and financial factor. In case of dysfunctions at these levels, of poor management of the annual budget, if the investment decision is not accompanied by a long-term vision and properly substantiated, the future financing of local investment projects is put at risk, which leads to the postponement or the abandonment of those that have just been initiated, respectively the degradation of the existing ones and in the process of implementation.

As it shown in Figure 2, in our study of the length of local multiannual investment programs, most local public authorities analyzed appears to have a poor forecast of funding sources for ongoing investments, which shows that local financial managers risk losing the overall vision of investment projects.




Source: Own processing after territorial administrative units' official websites

**Figure 2. The report on the time horizon of the investment programs chosen by the county councils and municipalities in the North-East region of Romania (2022)**

Referring only to the information made public through the official websites of municipalities and county councils in the North-East region, we notice that most of them use annual or multiannual programs over a period of two years, which shows that local financial managers risk losing the overall vision of investment projects. Such an approach will generate effects in the amortization plan of the projects and will have an impact on their financing sources. Accepting that the ideal length of local government programs is three years, considering the short duration of investment programs, respectively the predominance of annual investment programs, we appreciate that local public authorities aim to implement small local investment projects, which do not involve high costs and bring them immediate benefits at the expense of long-term investments

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## 2.4 Corruption

In the public sector, with reference to corruption reports, reference is made to two elements: exaggeration of the cost of public investment projects or the use of inferior materials, sometimes both (Haque and Kneller, 2008). In other words, corruption inflates the level of expenditure on investment projects, but lowers the return on future benefit. Such practices have a wasteful effect on public investment, for several reasons. Public administrations must take into account that the route of an investment project is public (voting of the preparatory documentation in local councils, publication of auction announcement, investment costs, allocations contained in annual budgets), so that public opinion will be able to have an image in relation to possible exaggerations of the cost of an investment project.

Corrupt practices lead to poor quality public investments that will require much higher maintenance costs. That being the case, any form of corruption will, at some point, be detrimental to a community's finances. This vulnerability arises as a result of the fact that external control over public investment is often carried out and the end of the project and not at the beginning or during the implementation of local public investment. A possible measure to diminish this phenomenon can be adapted according to the model of projects financed from European funds, applying the method of staged monitoring by a control/audit body throughout the process of implementing the public investment.

## 2.5 Lack of information

Some authors appreciate that *"the low profitability of public investments results from the poor selection and implementation of projects due to limited information"* (Dabla-Norris et al., 2011). Based on this statement, the decision taken on the basis of unclear indicators and distorted information, superficially related to the economic and social realities at a given moment, becomes inadmissible. Such approaches have resulted in the construction of schools in depopulated villages, sports infrastructure in aging settlements, football stadiums built in communities without teams, particularly expensive and at the expense of other necessary investments.

The decision-maker must have access to all the information relevant to the investment decision, whether it can take the form of databases, indicators, statistical data or surveys, in order to have a clear view in the evaluation for the decision he is about to take regarding the local public investment. Moreover, the fidelity of the information used as input in the decision-making process has implications in reducing the risk of an erroneous assessment, giving the decision-maker a clearer and more complete picture of the investment project.

To diminish risks involving lack of information, it is recommended that the local decision-maker respects the stages of implementation of the local public investment and listen to the opinions of the working groups involved, in order to have a complete informational package in the perspective of the local public investment decision and to avoid skipping certain steps in the process of substantiating the public local investment decision.

### 2.6 Budget limits

Most local public administrations concentrate the largest part of their local budgets in the consumption section. At the base of this phenomenon are factors such as the low level of income to the local budget (due to the lack of effective means of collecting taxes and fees and a weak local fiscal base) to which is added a stuffed organizational chart, which requires a consistent share of expenditures for salaries that the authorities tolerate for political reasons. In this situation, the allocations of the development section of local budget become, most of the time, unsatisfactory and thus limit the possibility of decision. Under these conditions, local public investments are the ones that risk suffering from the budgetary cuts, in the way that the decision-maker, in a position of constraint, can take a decision that affects the investment process. Moreover, here it becomes important to emphasize the relationships between revenues and expenses in local budgets, in the sense that one of the principles of the European Charter of Local Self-Government shows that local public authorities have the duty to diversify collection systems in order to keep up with the cost evolution exercising their powers (Cigu, 2020).

In conclusion, we admit that public investment is characterized by risk and uncertainty, as we have seen before, which is why the local public authority has the role of transforming them into hope and probability, treating with caution and pragmatism the vulnerabilities and challenges that can intervene both in the process decision-making as well as in the implementation or post-implementation process.

## 3. CONCLUSIONS

Going through these influencing factors on the public investment decision leads us to the conclusion that the success of a project depends on how the local public authority relates to them. For example, inflation, as a vector of the financial factor, has a significant impact on the technical-economic indicators, affecting the financial allocation for a public investment project, a situation in which the beneficiary is faced with decisions, either to allocate more funds, destabilizing other priorities, or to suspend the investment project. In its turn, the social factor develops a series of dilemmas for the local public administration: in a community with a high number of social aid beneficiaries, if the budget expenditures will be directed overwhelmingly to social assistance, then public investment expenditures will be undersized and the social problem will deepen even more. The political factor in the public investment decision plays a determining role, in the sense that the right approach is for the decision-maker to respect the political program for which he obtained the trust of the citizens, while the wrong approach can be when an investment project is stopped prematurely when the change of power takes place, for eminently political reasons.

Analyzing vulnerabilities in local public investment decision, we came to the conclusion that coordination between institutions or within a public institution is nothing more than an official dialogue that helps to better understand the decision and its course. Political influence often manifests itself to the detriment of the investment process, presenting the risk that a newly invested authority at the office will have a different vision than the previous one, which can lead to the suspension or cancellation of an investment project, just for political reasons. Multiannual allocation proposes that the public authority commits to funding the public investment over several years, so the decision must be based on vision and a set of skills and competencies that eliminate the likelihood that the investment will be abandoned along the way. Corruption at the administrative level is one of the most impactful vulnerabilities, in that it leads to poor quality public investments that will require much higher costs for less quality and revenue. The lack of information creates the framework in which the decision is made based on unclear indicators and distorted information, superficially related to the economic and social realities at a given moment, with serious consequences on the outcome of the public investment. Last but not least, budget limits have weight in the decision regarding public investments, in the sense in which the decision-maker, in a position of financial constraint, can take a decision that affects the investment process.

## References


1) Bercu, A. (2019). *Performance management in public administration,* Alexandru Ioan Cuza University of Iasi: Iasi, Romania.
2) Cigu, E. (2020). *European Projects Management*. Alexandru Ioan Cuza University of Iasi: Iasi, Romania.
3) Dabla-Norris, E.. Brumby, J., Kyobe, A., Mills, Z., Papageorgiou, C. (2011). *Investing in Public Investment: An Index of Public Investment Efficiency*. [online] Available at: https://www.imf.org/external/pubs/ft/wp/2011/wp1137.pdf [Accesed 02.07.2023].
4) ExpertForum. (2022). *Allocation map for Anghel Saligny national program fund.* [online] Available at: https://expertforum.ro/harta-proiecte-saligny [Accesed 10.07.2023]
5) Faguet, J. (2004). *Does decentralization increase responsiveness to local needs? Evidence from Bolivia*]. London: LSE Research Online. [online] Available at: http://eprints.lse.ac.uk/archive/00000477 Accesed 28.07.2023].
6) Haque, M., Kneller, R. (2008). *Public Investment and Growth: The Role of Corruption*. [online] Available at: http://hummedia.manchester.ac.uk/schools/soss/cgbcr/discussionpapers/dpcgbcr98.pdf [Accesed 03.07.2023].
7) IQAir. (2023). *Air quality in Romania.* [online] Available at: https://www.iqair.com/us/romania [Accesed 11.07.2023].
8) National Institute of Statistics. (2023). *Activities regarding the public utility of local interest.* [online] Available at: https://insse.ro/cms/en/content/public-utility-local-interest-0 [Accesed 11.07.2023].
9) Oprea, F. (2020). *Financial Management of the Local Authority*, Alexandru Ioan Cuza University of Iasi: Iasi, Romania.
10) Rondinelli. D. (2006). *Decentralization and Development.* International Development Governance, New York: CRC Press Taylor & Francis Group.
11) Zaiț, D. (1987). *Economic efficiency of investments*. Alexandru Ioan Cuza University of Iasi: Iasi, Romania.

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# THE ROLE OF PUBLIC INSTITUTIONS IN THE ROMANIAN HEALTHCARE SYSTEM

**DANIEL BOLDUREANU**
*Grigore T. Popa University of Medicine and Pharmacy of Iași*
*Iași, Romania*
*daniel.boldureanu@umfiasi.ro*

**MIHAELA MIHAI**
*Grigore T. Popa University of Medicine and Pharmacy of Iași*
*Iași, Romania*
*mihaela.grigoriu@umfiasi.ro*

**Abstract**
*The Romanian healthcare system is a predominantly public one, in which public institutions have the main role. The article analyses the role and organization of the main public institutions in the Romanian health system: the Ministry of Health, the Public Health District Authorities and the National Health House in terms of their roles and duties. Following the inductive and deductive analysis, it emerged that public institutions have an essential role in the Romanian health system, contributing to the provision of medical services to the insured, ensuring access to medical care, promoting public health and protecting the interests of patients and the population in general. In conclusion, the situation of the Romanian health system is a complex one: although it faces many problems such as limited resources, old infrastructure or shortage of medical personnel, it manages to provide medical services at low or free costs to all insured persons.*
**Keywords:** *health, health system, public institutions.*
**JEL Classification:** I13, H83

## 1. INTRODUCTION

Public institutions are organizations created by public authorities to perform essential functions in any society. Public institutions represent the set-up of organized structures, established for a general, public, strategic need. The public institution was established for a certain mission: governance, education, culture, health, art, religion, protection of human rights, exploration of outer space, maintenance of the quality of the environment, fight against pandemics (Marinescu, 2021, p.4).

The main areas in which there are public institutions are: public administration, education and research, health, culture, social assistance, financial. In Romania, a public institution are the main form of providing medical services to the population and is financed through the state budget and through the contributions of insured persons.

## 2. PUBLIC HEALTH SYSTEM IN ROMANIA

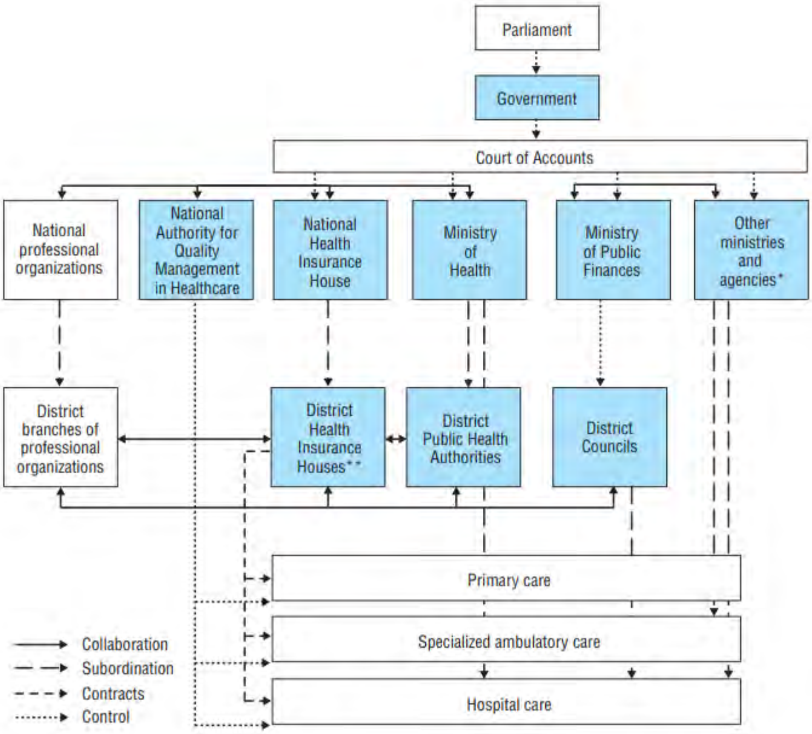
Efforts are being made in Romania, at present to assess the level of satisfaction of the population regarding the health services. At European level, several countries with powerful public Health systems and above average life expectancy are struggling in different stages with diverse issues-migration, social, cultural, financial inequity and so on. Romania, despite the fact that progress has been made in the last few years, appears not to insure a satisfactory public health system, neither for patients, nor for the employees as the expected reform is rather slow-paced.

The Romanian health system is a public system in which the provision of medical services is mainly ensured by the public system through the Ministry of Health and the other medical units subordinated to it. The financing of the health system is ensured by the compulsory contributions to the health insurance, paid by all employees and employers. According to the latest available statistical data, approximately 75-80 % of the total expenditures of the Romanian health system were covered from the state budget, with the remaining 15%-20% coming from private funding or co-payments (OCDE, 2019, 2021).

Any health system consists of all resources for health promotion, prophylaxis, medical care, including health organizations and their relations (Purcărea, 2007).

The main institutions at the national level are: the Ministry of Health, the National Health Insurance House (NHIH) and the professional organizations. The parliament has a key position in the policy process, representing the legislative power and controlling the activities of the government. The Ministry of Public Finances oversees the financial resources raised for and spent on health care and plays a key role in decisions on health sector reforms when they involve changes in public finances. The Court of Accounts controls the formation, administration and utilization of state financial resources in the public sector. The Ministry of Transport, Ministry of National Defense, Ministry of Internal Affairs, and the Ministry of Justice and the Romanian Intelligence Agency also play a role in the health system by operating their own parallel health systems as well as through intersectoral cooperation (Vlădescu 2016, p.47).

The Romanian health system is organized as follows:




Source: Vlădescu, 2016, p.47

**Figure 1. Organization of the health system in Romania**

## 2.1 Ministry of Health

The Ministry of Health has a leading role in coordinating the Romanian health system. According to the current legislation, the responsibilities of the Ministry of Health within the Romanian public health system are as follows (Ministry of Health, 2023):

- developing and implementing policies on health strategies and programs in the field of population health at national, regional and local level;

- assessing and monitoring the health of the population, ensuring measures for its constant improvement;

- the regulation and authorisation of all public or private institutions in the health system, including public health offices, clinics and centres. It also establishes criteria and standards for the provision of medical services;

- planning and redistributing health resources through the management and allocation of the public health budget, distribution of medical staff and medical equipment to ensure equitable access to health services throughout the country;

- collaboration with other national public institutions and international organizations to successfully develop and implement policies and projects in the field of health;

- implements health reforms and investments within Romania's National Recovery and Resilience Plan.

In order to carry out its activity, the Ministry of Health may request information from the central and local public administration authorities, from other public institutions and private persons with activity in the field of health.

## 2.2 Public Health Departments

At the territorial level, the Ministry of Health is represented in each county by the Public Health Departments, public institutions with their own legal personality under the prefect's authority. The main responsibilities of the Public Health Departments are (Public Health Departments Bucharest, 2023):

- assessment of the health status of the population in the assigned territory, identification of the main public health problems and priority allocation of resources to the interventions with the highest efficiency in improving the health status of the population;
- evaluation of the control strategies selected in the light of the progress made in improving the health status of the population;
- the organisation, control and financing of national health programmes taking place in the territory of the establishment;
- providing specialized personnel with all the structures of the territorial sanitary system;
- coordination of the ambulance service, medical assistance in case of calamities, disasters and special situations (e.g. pandemics).

The Public Health Departments have a leading role in ensuring the public health in the country and work closely with the other public institutions, local authorities, hospitals, family doctors or other non-governmental organizations to promote and protect the health of the population.

## 2.3 National Health Insurance House

The reorganization of the health services within the health reform imposed the emergence of the National Health Insurance House as an autonomous public institution. According to the Law on Social Health Insurance – Law 145/1997, the National Health Insurance House is a public, autonomous institution of national interest, with legal personality, whose main object of activity is to ensure the unitary and coordinated functioning of the social health insurance system in Romania. Its mission is to achieve a modern and efficient health insurance system, permanently put at the service of the public interest and the insured, which has the role of improving the health of the population (Law 145/1997).

The main role of National Health Insurance House is to ensure the access of the population to quality medical services through compulsory health insurance. Thus, it manages the Single National Fund for Social Health Insurance, which is fed by the contributions paid by employers and employees.

The obligations of the National Health Insurance House are as follows (National Health Insurance House, 2023):

- ensuring the logistics of the unitary and coordinated functioning of the social health insurance system;

- monitoring the collection and efficient use of the financial resources from the Fund;

- the use of adequate media to represent, inform and support the interests of the insured persons they represent;

- covering the health services needs of individuals, within the limits of the available funds.

Synthesizing, the National Health Insurance House attributions within the health system in Romania are:

- management under the law of the Single National Fund for Social Health Insurance (FNUASS);

- contracting the medical services offered to patients by the medical service providers (hospitals, clinics, family doctors, etc.);

- establishing the medical services covered by the compulsory health insurance as well as the regular updating and review of this package;

- granting and controlling the health card, which is the proof of the health insurance of a number of persons and facilitates access to the medical services offered;

- insurance and approval of medical documents necessary for the provision of medical services (referral tickets, medical prescriptions, etc.) and their control;

- the monitoring and control of expenditure in the health system to ensure the efficient use of resources.

## 3. CONCLUSIONS

In the Romanian health system, public institutions have a leading role in providing medical services to citizens and in managing human, material and financial resources. The situation of the Health System in Romania is a complex one, although it faces many problems such as limited resources, old infrastructure or shortage of medical personnel manages to provide medical services at low or free costs to all insured persons.

### References


1) Law 145/1997 on The Romanian Social Health Insurance Law. Official Gazette no. 178/31 July 1997.
2) Marinescu, G. (2021). *Management general și managementul instituțiilor publice*, Gr. T. Popa Publishing House: Iasi, Romania.
3) Ministry of Health (2023). [online] Available at: https://oldsite.ms.ro/wp-content/uploads/2022/07/Ordin-1756-29.06.2022-Regulamentul-de-organizare-si-functionare.pdf [Accessed 16.05.2023].
4) National Health Insurance House (2023). [online] Available at: https://cnas.ro/informatii-generale/ [Accessed 17.05.2023].
5) Public Health Departments Bucharest (2023). [online] Available at: https://dspb.ro/informatii-dsp/ [Accessed 17.05.2023].
6) OCDE/European Observatory on Health Systems and Policies (2019). *România: Profilul de țară din 2019 în ceea ce privește sănătatea*, State of Health in the EU,

OECD Publishing, Paris/European Observatory on Health Systems and Policies, Bruxelles
7) OCDE/European Observatory on Health Systems and Policies (2021). *România: Profilul de țară din 2021 în ceea ce privește sănătatea*, State of Health in the EU, OECD Publishing, Paris/ European Observatory on Health Systems and Policies, Bruxelles.
8) Purcărea, V. L. (2007). *Managementul sistemului informațional spitalicesc*. Editura Universitară Carol Davila Publishing House: Bucharest, Romania.
9) Vlădescu, C., Scîntee, S.G., Olsavszky, V., Hernández-Quevedo, C., Sagan, A. (2016). *Romania: health system review*. In: *Health System Reviews. Health Systems in Transition* (18/4). World Health Organization, on behalf of the European Observatory on Health Systems and Policies, Copenhagen, Denmark, pp. 1-170.

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# OUT-OF-OFFICE WORK – TWO CASE STUDIES IN POLAND

**DOMINIK OWCZAREK**
*Institute of Public Affairs*
*Warsaw, Poland*
*dominik.owczarek@isp.org.pl*

**MACIEJ PAŃKÓW**
*Institute of Public Affairs*
*Warsaw, Poland*
*maciej.pankow@isp.org.pl*

**Abstract**
*The article presents results of an in-depth qualitative case studies on out-of-office work in Poland: remote working in a large bank and an ICT-based mobile work in an electricity company.*
*The former case relates to the implementation of remote working in a large universal bank that is part of a transnational financial institution in response to the restrictions arising from the COVID-19 pandemic. Previously, the use of remote working among workers not performing ICT based mobile work was very limited and managers were reluctant to allow it on a large scale even for highly skilled employees. The pandemic forced a radical change in the management model, with the eventual introduction of hybrid working (done from home on selected days of the week) in 2022, after recognising its significant benefits. These were felt by both the employed and the employing parties. However, the role of trade unions in implementation of remote work was limited.*
*In the case of the second company, ICT-based mobile work has been introduced in 2016 and successively developed in the following years, allows electricians servicing power grid in the field to communicate and work fully remotely. In the year of the COVID-19 pandemic outbreak, this model was facilitated and extended to more electricians. Company management reported a significant increase in productivity and control over the electricity network, as well as an improvement in the quality of service provided to end customers (i.e. a reduction in power outages). Electricians highlighted greater flexibility in organising tasks and working hours, resulting in increased job satisfaction. However, the process of implementing mobile working has caused some tensions with management, in addition, some employees have found it difficult to acquire new skills and adapt to new technologies. In parallel to the development of ICT-based mobile working, a self-employment model is being introduced among electricians, which has implications for collective labour relations.*
**Keywords:** *covid-19, remote work, ICT-based mobile work, collective bargaining*
**JEL Classification:** J5, M5, 033

## 1. INTRODUCTION

This article analyses two case studies encompassing organisations that have implemented various forms of out-of-office work in Poland. These are: a private universal bank with foreign capital that has implemented the possibility to work from home during the COVID-19 pandemic and developed it for a significant part of its staff after the pandemic, and an electricity, partially state-owned company that applied ICT-based mobile work model among electricians servicing power grid in the field. The first case is an example of an unintended change forced by the Covid-19 pandemic, while in the second case ICT-based mobile work was a long-term, planned change resulting from the modernisation of the enterprise. The analysis was based on desk research covering mainly publicly available sources of information about companies and on individual in-depth interviews carried out in 2022. In the case of both organisations, they were conducted with representatives of both the employing party and the trade unions present in the company. The discussion of case studies is preceded by a concise analysis of the regulatory framework for remote work, which has undergone far-reaching changes in Poland in recent years, resulting from a sudden increase in performing professional tasks from home as a result of epidemic restrictions.

The study has been carried out under the project entitled "Improving expertise in the field of industrial relations: Industrial Relations for Smart-Workers in Smart Cities" (VS/2021/0200) co-funded by the European Commission.

## 2. THE REGULATORY FRAMEWORK

### 2.1 Remote working in Poland

The regulation of the rules under which remote working is conducted in Poland is largely a consequence of the COVID-19 pandemic. The amendment to the Labour Code, which introduces the concept of remote working into this legislation, came into force in spring 2023 (Journal of Laws 2023 item 240). It is the result of lengthy legislative work undertaken due to the significant increase in the number of working from home caused by the epidemic restrictions introduced in early spring 2020.

Previously, however, there were already regulations allowing people to conduct out-of-office work. Firstly, a relatively comprehensive chapter on teleworking was introduced to the Labour Code as early as in 2007 (Journal of Laws of 2007, No. 181, item 1288). In the spirit of the 2002 European social partners' framework agreement on telework, it contained detailed provisions regulating the path to the introduction of this form of work for a given employee, the categories of workforce with a preference to telework on the employee's request, specifying the obligations of both parties (including the health and safety sphere) and protecting against discrimination. The antidiscriminatory means were provided both for the employees who refused to telework and for those teleworking: the regulations guaranteed the latter equal access to the employer's resources and necessary information in the workplace as well as opportunities for training and promotion.

The problem with the aforementioned provisions was that they never began to be applied on a large scale. Teleworkers employed on the basis of the relevant chapter of the Labour Code constituted a narrow margin of employees in Poland – for example, in 2017, there were about 18 thousand teleworkers, against more than 15 million working in the country (Owczarek 2022: 30). The likely reason for this were the extensive and detailed regulations, especially in the sphere of occupational health and safety (ibid). Particularly troublesome was the obligation to determine whether the premises used by the employee provide sufficiently safe conditions, even before the teleworking starts. At the same time, on the basis of general labour law provisions, it was possible to employ workers in the formula of remote work (home office) with the omission of regulations on teleworking, which – in the conditions of the employee labour market – was applied to some extent. Employers, by offering the possibility of (partially) out-of-office work, encouraged or retained the most valuable employees with rare skills in this way. It was therefore a form of non-wage benefit. In 2017, 4.5% of employees usually worked from home, while 9.1% sometimes did (source: Eurostat database, Labour Force Survey).

The outbreak of the pandemic in early 2020 changed this situation significantly. Overnight, a significant proportion of employees in various sectors, insofar as the nature of their tasks allowed, were directed to work from home. The legal basis was introduced by a special temporary law (so called "Anti-COVID Act") providing measures to limit the spread of the coronavirus (Journal of Laws 2020, item 374). A very laconic provision (only slightly specified in subsequent amendments) introduced the possibility for employers to direct employees to work from home. Any additional regulation, e.g. in the health and safety sphere, was missing – the issue of liability for accidents at work was vague to say the least. As the epidemic restrictions eased, the number of people working from home gradually declined - from an average of 18% in 2020 to just over 12% in 2022 (working from home both usually or sometimes, source: Eurostat, LFS data). However, it is to be expected that a certain group of workers will continue to work away from their employer's premises, and this will be more popular form of performing tasks than before the pandemic. Therefore, the need for legislation to finally sort out the rules for remote workers still existed.

The amendment to the Labour Code, which came into force in spring 2023, unifies the existing body of Polish legislation in the analysed area, introducing a new chapter on remote work in place of the previous one addressing telework. An employer will still be entitled to direct an employee to work remotely in exceptional circumstances, but – in the spirit of the 2007 legislation – this will also be possible at the employee's request. In order to start working remotely, a declaration by the employee that they have the conditions in their home to ensure that the work can be performed safely will be sufficient. In addition to the existing possibility of reimbursement when using one's own equipment and raw materials, the employee will also be reimbursed for electricity and telecommunications fees. Provisions which, previously applying for telework, obliged the employer to negotiate specific issues related to its use with the company's trade union organisation have been made more specific: a list of issues to be negotiated has now been introduced. In summary, the new provisions on remote work in the Labour Code are even more detailed than the former ones regulating telework, but some important simplifications have been introduced (this concerns, especially, the mentioned statement on meeting H&S conditions by the employee), along with some provisions attractive to employees. This gives reason to anticipate that they will be applied on a wider scale.

### 2.2 ICT-based mobile work in Poland

There is no specific regulation addressing the ICT-based mobile work in the country. General regulations apply.

## 3. "POST-COVID" REMOTE REVOLUTION IN A BIG BANK

The first case study analysed the process of implementing remote working in a large universal bank with around 10 thousand employees across Poland. This is a financial institution established back at the turn of 1980s and 1990s, then privatised. In its history, it has undergone quite significant transformations and changed foreign ownership. This has resulted in a fairly significant diversity of staff. Among the employees (their number has been declining quite significantly in recent years as a result of further restructuring measures and mass redundancies), there are people with strongly varying tenure. The effect of these generational differences also results in a different willingness to work remotely. Employees are based in two main segments of the company, dividing into two relatively equal groups: the local branches, serving customers locally, and the head office, based in several large cities, providing services such as e-banking (along with services supporting it, e.g. cyber security) and providing support for the local branches.

### 3.1 The process of introducing remote work in the company

Prior to the outbreak of the Covid-19 pandemic, remote working, if one does not count ICT-based mobile work, which, due to the nature of their duties, was performed by specific groups of employees (IT service technicians, premium customer advisors, etc.) was practically not used by the bank. Managers, an important segment of the employment structure, were characterised by a rather far-reaching conservatism with regard to this issue. The opportunity to work from home was offered as a non-salary benefit to a very narrow extent even to highly qualified employees – we are talking about, for example, one day per month. Admittedly, the introduction of a “flexi-working” policy was considered, but clearly the authorities and management of the institution were not enthusiastic about the idea, and it did not materialise before the beginning of the pandemic. This one, in turn, brought an abrupt change: almost overnight, the vast majority of head office employees were directed to work from home. The situation looked different for staff at local branches, where such a shift was not possible. A sanitary regime was introduced there, and employees particularly at risk from the effects of infection (elderly, with chronic illnesses) were directed to work on remote customer acquisition.

### 3.2 Impact of implementing remote work on working conditions

The whole change, although abrupt and captive of problems, was eventually, in the opinion of both the employer's representative and one of the representative trade unions existing in the company, a success. Admittedly, the employees initially struggled with a number of inconveniences, which included both problems of a psychosocial nature, resulting from isolation in lockdown conditions, as well as some technical difficulties due to temporary shortages of equipment and – especially – software, and resulting from the need to implement a new working model. The trade unions tried to support the workers during this difficult period, although their actions were mainly interventionist (e.g. a request to complete workplace equipment if the company has overlooked something). The interviews also indicated possible difficulties due to specific housing conditions or the presence of household members (especially during the school closure period, inconveniences were experienced by teleworkers with children). Over time, however, workers largely recognised that working from home had more advantages than disadvantages, such as elimination of commuting which significantly increased the time resources available for household and caring duties or recreation, or having more autonomy in planning their tasks. Employees appreciated the opportunity to work in comfortable, self-arranged conditions in accordance with their preferences at home. They are more rested and their job satisfaction and motivation have increased. According to the internal opinion surveys conducted, in the initial period employees declared a desire to work from home two days a week, while in the later phase they expected only one day of office work or to eliminate it altogether. The most important inconveniences of remote working identified in the interviews include expanding working hours and blurring the boundaries between work and private life. Some employees, forced to perform various domestic activities during work (e.g. related to childcare), feel obliged to compensate for these interruptions by working outside typical hours. In addition, according to the trade union representative, there was a lack of training for employees at the beginning to facilitate the entire transition which worsened the stress and increased the aforementioned inconveniences resulting from the epidemic situation.

### 3.3 Managerial perspective and the emergence of a new work model

Training was, however, addressed to managers, who had to learn how to manage their teams remotely and rely more on the control of results rather than the workflow itself. However, it turned out that there was no drop in productivity (in the opinion of managers, it even improved, although benchmarks based on objective indicators were not used) and the change in model allowed the employer to make significant savings in terms of office space rental costs, utilities and media. A noteworthy consequence of the introduction of remote working has been the possibility of employing specialists with rare qualifications who live at a considerable distance from the company's headquarters. This is all the more important as they are located in large cities, which have a difficult labour market from the employer's perspective: there is a small supply of high-level professionals and they have high salary expectations.

The study was conducted in late 2022, before introducing the above-mentioned amendment to the Labour Code. However, it seems that a certain new model of work, very different from what had been the practice of managing workers before the pandemic, was already crystallising. First of all, as a result of the cessation of the pandemic, there was a partial return to work. Tools were prepared to allow managers, together with their teams, to estimate the proportion of days worked in the office and from home so as to carry out tasks as efficiently as possible (usually two or three days of work from home per week were foreseen). Among other things, the team in the course of the workshop created a matrix of tasks, divided into those that require presence in the office, those that can be done from home but with a deterioration in quality, and those that can be done from home just as well and effectively as in the office. A certain informal code of conduct for managers (the so-called “golden rules”) was introduced, which, among other things, introduced the principle of respecting employees' time outside statutory working hours (however, no agreement was signed with the unions to formally establish the right to disconnect; the degree to which the “golden rules” are respected, as assessed by the trade union representative, varies among managers). As a result of the limitation of office space, hot desk solutions are used (along with an application to reserve desks as well as parking spaces). The trade unions tried to negotiate reimbursement of utilities to employees (previously the bank had only provided reimbursement for some equipment costs in December 2020), although this matter was eventually settled in the Labour Code, as mentioned above.

The transition to hybrid working also presents some challenges. The employer representative mentioned an unexpected drop in employee productivity on office days. This is due to “catching up” with colleagues and meeting up with them which is an important part of the organisational culture, not just down to exchanging gossip, but also valuable business information and experiences. Remote working also requires specific employee skills: it is not only about digital skills, but also the ability to organise one's own work and self-discipline. Communication via email or chat is also a challenge: it is less direct, sometimes requiring waiting for a reply, and depersonalised. Initially, there were cases of misunderstandings among the employees when someone misinterpreted a message received, attributing to the sender the intention to urge or offend the addressee. In the opinion of the employer's representative, online video meetings were organised too often – in many cases, current issues could be resolved during a quick exchange of emails.

### 3.4 The role of social dialogue in the transition to hybrid work

The role of the trade union side in the introduction of remote and then hybrid working has been limited, mainly boiling down, as already mentioned, to interventions in individual cases and efforts to increase the scope of reimbursement for employees. The trade unions in the company are recognised, but do not have a very strong position. A company collective agreement has never been concluded. The unions have focused in recent years, with variable success, on negotiating the terms of collective redundancies – the issue of remote working, although important in their opinion, has not been at the top of their list of priorities.

## 4. ICT-BASED MOBILE WORK IN AN ENECTRICITY COMPANY

The subject of the study is the work model and practices of electricians servicing the power grid using ICT for remote communication and mobile work in the field.

Digital solutions that allow electricians to communicate remotely and work in the field without having to return to the company base were introduced as a pilot in 2016 and have been developing in the following years. In the year of the COVID-19 pandemic outbreak, this model has been facilitated and extended to larger number of electricians. Currently - in 2023 - a more advanced system has been introduced to combine information provided remotely by electricians with an electronic customer service system. This shows that the system is still evolving and has not yet reached its final form.

The working model is that each electrician is equipped with a special tablet connected to the Internet with applications installed to monitor and report on all activities at work. The electricians receive information about orders in electronic form involving the rectification of faults or other activity involving the servicing of the electricity network. This notification provides basic information about the type of fault, its location and other key messages. Electricians can take the announced orders or not, arrange them throughout the day thus organising their working time and the number of orders each day. They can also report on the situation on site, the repairs carried out and communicate with the central office if necessary. Thanks to this solution, electricians do not have to visit the company's headquarters or report on the activities carried out using paper documentation. The vast majority of electricians are self-employed and bill the distribution company on a business to business basis.

### 4.1 Management perspective and organisation of ICT-based mobile work

The introduction of ICT technology into the work of electricians was an initiative of the company's management as a response to recent modernisation processes in the electricity sector in Poland and in Europe. The main motivations behind this initiative on the company's side were the need to move to fully digital network monitoring and servicing, as well as to facilitate the management of electricians' work. The idea was to standardise and to structure the management of the power grid. An important aspect of this process was to reduce time taken to repair faults through the flexible arrangement of servicing by electricians during the day, as well as billing electricians for their work.

The interviewee, representing the company, listed a number of benefits of introducing ICT tools that enable electricians to work fully remotely in the field. At the forefront of these benefits is a long-term reduction in both power grid monitoring and maintenance costs, as well as labour costs. In the latter case, savings are achieved by electricians being able to carry out more repairs during the day. Prior to the introduction of the digital system, around 100,000 cards per year were used, so the benefit is a reduction in the use of natural resources. Another benefit of introducing this digital solution is increased productivity, reducing repair times. In effect, customers also experience the benefit of increased service quality resulting from a clear reduction in the length of power outages. In terms of managing a team of electricians, the company representative also highlighted the benefit of providing constant contact with workers via an app on a tablet. This makes the resolution of potential problems and also the coordination of tasks much smoother than before the introduction of the IT system. Employer expressed very high level of satisfaction from introducing IC based mobile work – even exceeding original expectations.

It is noteworthy that in the initial phase of running the mobile work, one manager pushed for a high pace of implementation, which was met with a lot of dissatisfaction from a large part of the electricians. Pushing for change led to mental exhaustion and a feeling of being unneeded by some workers. Informed of the workers' dissatisfaction, the trade unions reported the matter to the company's management, who decided to remove the manager from her position and introduce a more realist pace of change adapted to the workers' adaptability.

## 4.2 Impact of ICT-based mobile work on working conditions

Both workers and company representatives observe the positive impact of the digitalisation of the power grid and the introduction of mobile work on working conditions in general.

Among the biggest benefits for workers are the increased flexibility of working hours and the arrangement of tasks during the day. These elements contribute to greater worker autonomy. Electricians can accept a repair call in the area to which they are assigned and then schedule it in such a way that they can be reached successively, economising the route and travel costs. Depending on their needs, the number of assignments per day can vary, allowing electricians to shorten or extend their working day according to their preferences. In between assignments, workers can take a break to carry out their personal duties if they plan their assignments accordingly. An important benefit for workers is also the replacement of paper documentation with electronic reporting that takes place in real time. As a result, workers do not have to return to the company's base every day, hand over documentation and account for them. In addition, electricians declare their framework working hours, outside of which orders are not sent to them (the prototype of the right to disconnect). However, if a situation arises where there are more orders compared to the electricians' availability, orders outside the designated framework working hours are placed. Such excess orders are priced higher. In practice, however, this situation rarely occurs. In an interview, the employee representative felt that this flexible arrangement improves the balance between life and work.

Due to the increased flexibility in working time arrangements and time savings, the union representative estimates that the intensity of work as well as stress has decreased. At the same time, employee productivity has increased. On the other hand, the routine nature of work and its systematisation has increased, which is due to the need to adapt to the standards of procedures that are defined by the digital system.

The vast majority of electricians are self-employed, with only a small proportion working under an employment contract. In this way, the working time regulations under the Labour Code do not apply and management of working time remains fully with the self-employed. In practice, out of a group of 800 electricians, there are people with different preferences in this respect. The vast majority work full-time, but there is also a proportion of electricians, e.g. retired, who only incidentally or to a small extent take on assignments to supplement their income while retirement. There are usually slightly more electricians assigned to an area than the demand for servicing the power grid would suggest. In this way, the company copes with the problem of refusals when distributing orders. The risk of this solution is that, at a critical moment, the self-employed may collectively refuse to carry out any orders, which could lead to power cuts.

Despite the huge scale of the use of self-employment and the risks to workers and the company that it entails, both workers and employer representatives said that job stability and job security were high. The introduction of digital systems has not changed this situation. Similarly - digitalisation and the introduction of ICT managed mobile working has not affected wages according to the union and company representative.

Still, not all electricians have agreed to mobile working using ICT tools and are functioning in paper mode. These are individuals who have had difficulty learning how to use a tablet and digital applications. However, this is a small group of workers.

### 4.3 Impact of COVID-19 on organising work and working conditions

The impact of the COVID-19 pandemic was a shock to the energy sector as well, with companies and workers having to adjust to the sanitation regime and new work organisation from day to day. The introduction of a mobile working system using ICT tools even before the COVID-19 pandemic ensured that the work of electricians was not overly burdened. Had this not happened, it would have been a major challenge to maintain the sanitation regime during paper reporting, which would have required electricians to be present at the company's base every day. According to a company representative, the introduction of mobile working and remote reporting saved the company from grid servicing bottlenecks and the threat to critical infrastructure. The introduction of ICT solutions played a key role in this process. According to the company's representative, the 'stress test' resulting from the COVID-19 pandemic verified positively the digitalisation of power grid monitoring and mobile electricians introduced.

### 4.4 Role of social partners in implementing ICT-based mobile work

The initiative to introduce mobile work supported by ICT tools was taken and implemented by the employer in the most common top-down model in Poland. The digitalisation plans were not consulted with trade unions, other forms of employee representation present in the company, or directly with workers. Digitalisation issues are not subject to collective agreements or collective bargaining. Trade unions take on a reactive role in such a model, which is expressed in communicating to the employer the voices of discontent related to various elements or stages of the implementation of mobile working. The demands for improvement in this area, however, were cosmetic changes and did not concern the very idea of the system, workers participation was reduced to a minimum.

According to the trade unions, the introduction of mobile work using ICT tools has not affected in any way the access to trade unions and collective bargaining, as well as on the access to information, consultation and participation rights.

## 5. CONCLUSIONS

In the case of the bank, the truly revolutionary nature of the changes forced by the Covid-19 pandemic is noteworthy. In a very short time, the workforce management model has completely changed. Managers who were previously reluctant to introduce remote work quickly appreciated the benefits it can bring to the company and found out that performing it did not result in a decline in employee productivity.

The process of implementing the change was not free from difficulties and stress experienced by employees (which was further aggravated by the epidemic situation and lockdown), which is not surprising due to its highly rapid nature. However, both employees and managers managed to adapt to the new reality, although the role of social dialogue in this process was relatively small. The general weakness of trade unions in Poland (which is manifested, among other things, by the low level of unionisation of Polish employees, low coverage by collective agreements and the lack of agreements concluded at the sectoral level – cf. ETUI), despite the fact that in the analysed company they cover a relatively large number of employees, is also demonstrated in this case. It is the employer who initiates change, and unions play a reactive role. Their interests are limited to the most basic issues in the area of working conditions (in this case this includes also company restructuring activities and the resulting collective layoff programmes), while new phenomena, such as the introduction of remote work, go beyond the sphere of priorities. However, it should be noted that the unions supported employees during the transition period and tried to include the issue of compensating the costs of remote work for employees on the agenda of dialogue within the company.

The introduction of mobile work using ICT tools by the electricity company in a top-down model is viewed positively by both the company itself and trade union representatives. The multiple benefits include both the management of electricians' work and the improvement of working conditions. On the management side, these include financial savings, increased labour productivity and smoother work organisation, increased information on the state of the power grid, including failures, which is available in real time, and reduced power outages. Electricians, on the other hand, appreciate the flexible working time arrangement schemes and the reduced work intensity, the greater transparency of wage settlements, more information about tasks, as well as greater safety at their workplace.

Among the main challenges was the problem of equipping all electricians with the digital competences necessary to work in a digitised environment. Concerns were raised about the threat of excessive control of electricians, including their geo-location and personal data, which arose especially during the first period of implementation of ICT solutions. The challenge now is to fully adapt the way electricians work to the procedural standards defined by the new system. The form of employment of electricians - self-employment - exacerbates the fragmentation of work, but according to the trade unions this does not affect job stability and job security.

The introduction of mobile work has allowed the COVID-19 pandemic, which, by its very nature, allows people to work at a social distance, to pass smoothly. Apart from the introduction of general sanitary regime rules, other changes in the organisation of mobile work were not needed. On the contrary, the pandemic period only accelerated the development of the mobile work model.

Trade unions were not consulted on the introduction of mobile work, but only made some postulates during the implementation phase. The level of worker participation in this process was low. The unions have played an important role in adapting the pace of ongoing digitalisation to the adaptability of electricians.

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**References**

1) Act of 24 August 2007 amending the Act - Labour Code and certain other acts (Journal of Laws of 2007, No. 181, item 1288).
2) Act of 2 March 2020 on specific solutions related to the prevention, prevention and control of COVID-19, other infectious diseases and emergencies caused by them (Journal of Laws 2020, item 374).
3) Act of 1 December 2022 amending the Act - Labour Code and certain other acts (Journal of Laws 2023, item 240).
4) ETUI (undated). *National Industrial Relations – Poland*. [online] Available at: www.worker-participation.eu/national-industrial-relations/countries/poland [Accessed 27.09.2023].
5) Owczarek, D. (2022). *Out-of-office work in Poland. Facts, Regulations and Social Partners' Perspectives*. Institute of Public Affairs, Warsaw.

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# INNOVATION AND DIGITAL TRANSFORMATION IN LOCAL COMMUNITIES

**ELENA CIGU RUSU**
*Alexandru Ioan Cuza University of Iași*
*Iași, Romania*
*elena.chelaru@uaic.ro*

**DENIS HYAMS-SSEKASI**
*University of Bolton*
*Bolton, UK*
*dh4@bolton.ac.uk*

**MIHAELA ONOFREI**
*Alexandru Ioan Cuza University of Iasi*
*Iasi, Romania*
*onofrei@uaic.ro*

**ANCA FLORENTINA VATAMANU**
*Alexandru Ioan Cuza University of Iasi*
*Iasi, Romania*
*anca.vatamanu@uaic.ro*

**ANA-MARIA BERCU**
*Alexandru Ioan Cuza University of Iasi*
*Iasi, Romania*
*bercu@uaic.ro*

**Abstract**
*The use of technology is inevitable in a society of knowledge, being implemented including at the level of local governments where has the potential to improve interactions between local authorities and citizens through the simplification of procedures, as well as contributing to open local government. The innovation and digital transformation of government means the further modernisation of public administration, seamless cross-border mobility and enhanced digital interactions. The paper aim is to show that local governments operate in an increasingly open and receptive manner by using innovation and an increasing number of digital tools that facilitate the development of local communities and the improvement of living standards.*

**Keywords:** *information technology, local community, innovation, local government.*
**JEL Classification:** H70, O36.

## 1. INTRODUCTION

Local communities are complex, with a population that is increasing rapidly and with the needs constantly evolving. In this context, digitization and connectivity is necessary, and data is emerging as the new and indispensable raw material for understanding what is happening within a local community. The most important thing is the fact that any local community should have a responsive mentality, shifting from “public service” to “services to the public” based on the improvement of their services (Lazard, 2020). Data sharing speeds up the decision-making process of local governments, allow more democratic processes in shaping public policy, improves mobility and living conditions, and optimizes the services offered to citizens.

Citizens are demanding access to data and information based on transparency principle regarding the local budget and how local governments spend their tax money. The efficiency of local governance is conditioned by the direct collaboration between authorities and citizens. Data is an important instrument to measure and evaluate the effectiveness of existing services and to take quick action to improve public facilities. Digitalisation is transforming public services to be more efficient, more effective, and more transparent (Choi, 2016; Cordella and Tempini, 2015; Lindgren et al., 2019; Ranerup and Henriksen, 2019; Wihlborg, Larsson, and Hedstrom, 2016; Wirtz et al., 2019; Yildiz, 2007, Anderson, Hallin, and Ivory, 2022). Adopting an intelligent and innovative approach by local governments to serve local communities will lead to good public services and businesses will not suffer anymore because of inefficiency, functional silos, and lack of communication of local institutions. Digitalization with data sharing can provide personalized public services for business and individual.

At the same time, data sharing has advantages of working as a team, sharing between the various departments improves the efficiency of the staff, reshaping the work of civil servants or public administrators (Buffat, 2015; Cordella and Tempini, 2015; Petrakaki, 2018; Wirtz, Weyerer, and Geyer, 2019, Anderson, Hallin, and Ivory, 2022).

The digital transformation is creating a bridge between local governments, on the one hand, and experts, businesses, and innovators, on the other hand. Data sharing creates opportunities for innovations, breaks down barriers and serves as an outstanding tool for development and innovation (Lazard, 2020). Using the information communication technology (ICT) is accomplished the electronic government (e-government) system and a green economy (Ullah et al., 2022).

The paper aim is to show that local governments operate in an increasingly open and receptive manner by using innovation and an increasing number of digital tools that facilitate the development of local communities and the improvement of living standards.

## 2. PRACTICAL APPROACH OF DIGITALIZATION

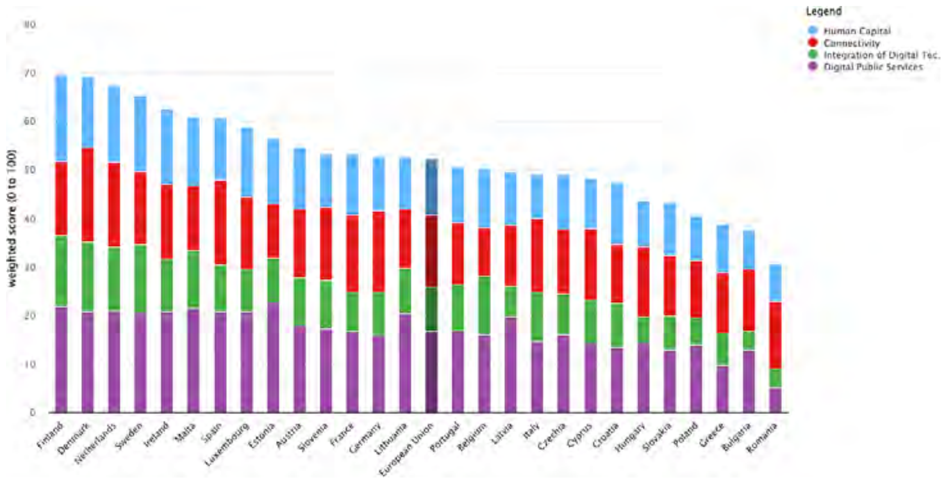
In Europe, the knowledge society is developing more and more, and a special field is the Internet through which the public administration and taxpayers communicate for the performance of their activities, respectively the fulfillment of duties (public services) and not only that. The new economy is built around the Internet and Europe's position largely depends on its content and use. In this sense, in its evolution, Europe initially developed the e-Europe Action Plan (established by Decision 98/253/EC/30.03.1998) for the promotion of the information society that has the following key objectives: i) involvement in the information age and online connection of all citizens, companies and administrations; ii) creating a computer-educated Europe with a managerial culture ready to finance and develop new ideas.

The EU considers that there are two drivers of digital government, respectively:

i) digital public services that are seen very important to achieving the digital single market by allowing people to access services, goods and data reliably and quickly across borders. In this context, the e-Government Action Plan 2016–2020 was conceived as part of the Digital Single Market Strategy.
ii) concerns about European digital sovereignty, especially around emerging technologies.

2030 Digital Compass communicated by European Commission identifies digitalisation of public services as one of four landmark points in the EU’s digital decade and sets targets to achieve them. The 2030 policy programme adopted in September 2021 defines digital targets first introduced in the Digital Compass for member states, as well as a governance framework for achieving these goals. More than €150 billion targeting various programmes, including the Recovery and Resilience Facility, has been set aside by the EU for the purposes of digitalisation, a large part of which will be spent on digital government at national and local level (Large and Barasa, 2022). Covid-19 has also accelerated experience with data-driven policy and decision-making with digital technology.

The European Commission has monitored Member States’ progress on digital and published annual Digital Economy and Society Index (DESI) reports and the 2021 DESI scores can be seen in Figure 1.

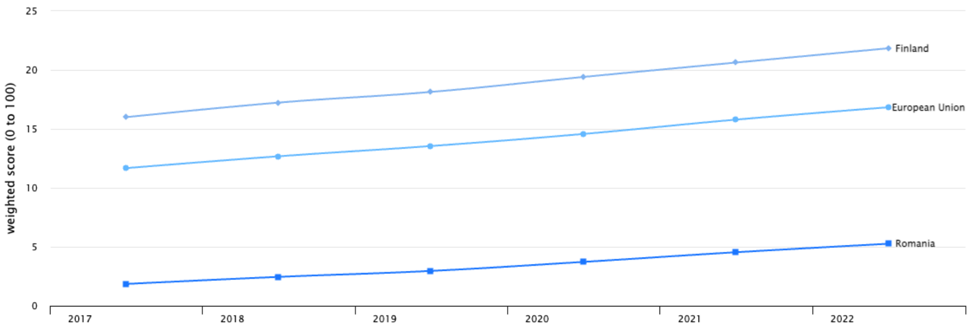



Source: European Commission, 2022

**Figure 1. Digital Economy and Society Index, by Main Dimensions of the DESI, in 2021**

According to Figure 1, the best positioned is Finland from the perspective of the index score, followed by Denmark, the Netherlands and Sweden. The lowest DESI level is recorded in Romania. Strictly from the perspective of Digital Public Services, Estonia ranks the highest DESI score, and Romania the lowest. The gap is significant for Romania compared with the level of DESI in the other countries of the European Union. Italy, Poland and Greece improved their DESI scores substantially over the last years based on the implementation of sustained investments financed by European Union funds with a reinforced political focus on digital technology (European Commission, 2022).

The DESI 2021 results shows that while most of the Member States are making progress in their digital transformation, the adoption of key digital technologies by businesses, such as artificial intelligence and big data remains low, also among the EU frontrunners (European Commission, 2022). In this sense, we can observe the evolution of the two countries with the highest DESI score (Finland) and with the lowest score (Romania), and as well as the average of the European Union in Figure 2.




Source: European Commission, 2022

**Figure 2. Digital Economy and Society Index (DESI) 2021, by Digital Public Services**

The gap between the two countries (Finland vs Romania) is very pronounced and reflects the colossal difference in the evolution of the implementation of digital technologies. Of course, progress has been made by Romania, but this gap is kept as a perfect parallel, which means that each of the countries is evolving, but each at its own level. Compared to the average of the European Union, we can see that this gap is accentuated in the case of Romania, but smaller in the case of Finland. Thus, we can conclude that most of the EU states have made significant progress in the digital transformation, rooting the EU media as close as possible to the best performing state, Finland.

## 3. E-GOVERNMENT AL THE LOCAL LEVEL

Local governments and public institutions are the ones that interact directly with citizens and, thus, are challenged to use digital technologies for a variety of purposes, such as dissemination of public information based on their plans and objectives, daily operations, and public services offerings. Digital platforms can be used for paying taxes and fees, can facilitate communication and consultation, enabling a wide range of stakeholders to interact with and participate in local governance and contribute to decision-making either directly or indirectly.

Using digital technologies helps local governments streamline operations and reduce their administrative burden, facilitate remote interaction and promote transparency with the public, generate more efficient internal communication and collaboration, increase overall efficiency in a way that is friendly to the environment, and mitigate corruption (United Nations, 2020, 2022).

United Nations (2020) developed Local Online Services Index (LOSI) based on 80 indicators relating to four criteria: technology, content provision, services provision, and participation and engagement (Table 1).

## Table 1. Local Online Services Index (LOSI)

| Technology | Content provision | Services provision | Participation and engagement |
|---|---|---|---|
| - Mobile device accessibility,<br>- Browser compatibility,<br>- Ease of portal finding,<br>- Internal search mechanism,<br>- Navigability,<br>- Portal loading speed,<br>- Foreign language support,<br>- Internal advanced search mechanism,<br>- Customization of displays features,<br>- Alignment with accessibility standards,<br>- Alignment with display standards,<br>- Alignment with markup validation standards | - Names and contacts of heads of department<br>- Contact details<br>- Information about provided services<br>- Municipality information<br>- Health information<br>- Education information<br>- Environmental information<br>- Organization structure<br>- Sports and culture information<br>- Links for government agencies<br>- Social welfare information<br>- Budget-related information<br>- Procurement announcements<br>- Open data provision<br>- Evidence of portal content update<br>- Facilitation of free internet access<br>- Evidence of smart cities initiatives<br>- Privacy policy<br>- Statistical data and studies<br>- Online user support<br>- Procurement results<br>- Open data policy<br>- Open data metadata<br>- Information on online services use | - Portal authentication,<br>- Online fees payment,<br>- Municipality responsiveness e-mail,<br>- Online vacancies,<br>- e-Procurement service,<br>- Personal data accessibility,<br>- Online building permit,<br>- Quality of e-mail response,<br>- Daily of e-mail response,<br>- Report of any form of discrimination,<br>- Personal data updating,<br>- e-Payment,<br>- Police online declaration,<br>- Online business license,<br>- Online environment-related permit,<br>- Address change notification,<br>- Online birth certificate,<br>- Online marriage certificate,<br>- Online death certificate,<br>- Online residentship,<br>- Online vehicle registration,<br>- Online drivers license,<br>- Online land title registration. | - Social networking features<br>- Feedback/complaint submission<br>- Online deliberation processes<br>- Information on the public meeting of the municipality council<br>- Reporting of occurrence in public spaces<br>- Participatory land use plan<br>- Announcement of upcoming e-participation activities<br>- Participatory budgeting<br>- Feedback about consultation processes<br>- Real time communication<br>- e-Voting |

| Technology | Content provision | Services provision | Participation and engagement |
|---|---|---|---|
| | - Third parties partnership information<br>- Evidence of emerging technologies use | | |

Source: United Nations (2020)

According to United Nations (2020), LOSI indicators were applied over 100 cities in 2020 based on geographical location and population distribution, respectively 29 in Asia, 32 in Africa, 21 in Europe, 16 in the Americas, and 2 in Oceania. The results show a good position of Europe, which has the highest proportion of leading cities as a share of the regional total. European cities also dominate in Participation and engagement. Regarding technology, leading cities in Europe are Madrid and London (Rank 2). In content provision the highest-ranked cities are Madrid, Paris, and London (Rank 1). Madrid is the highest-ranked city (Rank 1) on Services provision and Participation and engagement. On the last subcategory (Participation and engagement) another leading city with Rank 1 is also Paris. However, Madrid has been ranked first in content provision, services provision, and participation and engagement and second in the technology category; London ranks high in content provision, where it is tied for the top spot, and in technology, where it ranks second, and it has lower performance in the services provision category, where it ranks nineteenth, and in the participation and engagement category, where it ranks fifteenth; Paris ranks tenth in technology and eighth in services provision, but ranks first in participation and engagement; Lisbon does not rank very high in terms of technology and content provision, but it is on the top four in the participation and engagement category.

## 4. CONCLUSION

The member states of the European Union follow an intense digitization program at the level of local governments established by European Strategies and Decisions of the competent institutions, of course with different developments depending on the economic status of each of them. However, we cannot fail to notice that innovation and digital development at the level of local governments involve a series of challenges that they must face, in general, and that can be barriers to slowdown them (from digital development), such as: inadequate information and communication technology infrastructure, weak bandwidth, low Internet speed, threats to privacy and security, the lack of skilled workers and managing bureaucratic processes, and the digital divide that arises from broad socioeconomic inequalities.

## References


1) Andersson, C., Hallin, A., Ivory, C. (2022). Unpacking the digitalisation of public services: Configuring work during automation in local government. *Government Information Quarterly* 39 (2022) 101662, https://doi.org/10.1016/j.giq.2021.101662.
2) Buffat, A. (2015). Street-Level Bureaucracy and E-Government. *Public Management Review,* 17(1), pp. 149–161. https://doi.org/10.1080/14719037.2013.771699.
3) Choi, I. (2016). *Digital era governance: IT corporations, the state, and e-Government*. Taylor & Francis.
4) Cordella, A., Tempini, N. (2015). E-government and organizational change: Reappraising the role of ICT and bureaucracy in public service delivery. *Government Information Quarterly,* 32(3), pp. 279–286.
5) European Commission (2022). *Digital Economy and Society Index (DESI) 2022*. [online] Available at: https://digital-agenda-data.eu/charts/desi-components#chart={%22indicator%22:%22desi%22,%22breakdown-group%22:%22desi%22,%22unit-measure%22:%22pc_desi%22,%22time-period%22:%222022%22}. [Accessed 5.01.2023].
6) Large, O., Barasa, H. (2022). *Digital Government in Europe: In Pursuit of Cross-Border Functionality*. Tony Blair Institute for Global Change. [online] Available at: https://institute.global/policy/digital-government-europe-pursuit-cross-border-functionality [Accessed 7.01.2023].
7) Lazard, J.-M. (2020). *Communities at the Heart of the Digital Transformation*. [online] Available at: https://www.opendatasoft.com/en/blog/communities-at-the-heart-of-the-digital-transformation/ [Accessed 7.01.2023].
8) Lindgren, I., Madsen, C.Ø., Hofmann, S., Melin, U. (2019). Close encounters of the digital kind: A research agenda for the digitalization of public services. *Government Information Quarterly,* 36(3), pp. 427–436.
9) Petrakaki, D. (2018). Re-locating accountability through technology: From bureaucratic to electronic ways of governing public sector work. *International Journal of Public Sector Management,* 31(1), pp. 31–45.
10) Ranerup, A., Henriksen, H. Z. (2019). Value positions viewed through the lens of automated decision-making: The case of social services. *Government Information Quarterly,* 36(4), 101377.
11) Ullah, A., Pinglu, C., Ullah, S, Hussain Qaisar, Z, Qian, N. (2022). The dynamic nexus of E-Government, and sustainable development: Moderating role of multi-dimensional regional integration index in Belt and Road partner countries. *Technology in Society*, 68 (2022) 101903. https://doi.org/10.1016/j.techsoc.2022.101903
12) United Nations (2020). *United Nations e-Government Survey 2020. Digital Government in the Decade of Action for Sustainable Development.* United Nations: New York. [online] Available at: https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20Survey%20(Full%20Report).pdf [Accessed 9.01.2023].

13) United Nations (2022). e-Government at Local Level. [online] Available at: https://publicadministration.un.org/egovkb/en-us/About/E-Government-at-Local-Level [Accessed 3.01.2023].
14) Yildiz, M. (2007). E-government research: Reviewing the literature, limitations, and ways forward. *Government Information Quarterly,* 24(3), pp. 646–665.
15) Wihlborg, E., Larsson, H., Hedstrom, K. (2016). "The computer says no!"–A case study on automated decision-making in public authorities. In *Paper presented at the 2016 49th Hawaii International Conference on System Sciences (HICSS)*.
16) Wirtz, B. W., Weyerer, J. C., Geyer, C. (2019). Artificial Intelligence and the Public Sector—Applications and Challenges. *International Journal of Public Administration,* 42(7), pp. 596–615.

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# SMART CITIES IN EUROPE. A FOCUS ON ROMANIA

**MIHAELA IZMAN**
*Alexandru Ioan Cuza University of Iasi*
*Iasi, Romania*
*manmihaela29@gmail.com*

**Abstract**
*This article explores the evolution of urban settlements throughout history and highlights the crucial role they play as engines of economic, cultural and technological development. The positive link between urbanization and economic growth is outlined, but also the negative aspects related to urbanization that have a global impact. The focus is on the concept of "smart" cities that integrate digital technology into infrastructure and services, with the aim of improving the quality of life of citizens and contributing to a more sustainable future. The article focuses on the analysis of examples of "smart" cities in Europe and offers a series of suggestions for the implementation of this concept in Romania. In the end, I conclude that if Romania were to follow the example of "smart" cities in Europe and implement similar strategic plans, the country could reach a higher level of (socio-economic) development and modernization, becoming a prominent participant among "smart" cities in Europe.*
**Keywords:** *Smart city, Europe, Digitization, Economy*
**JEL Classification**: H70, O18, O52, R11, R58

## 1. INTRODUCTION

Since ancient times, urban settlements have represented a superior form of organization of mankind, being a new step in the organization of human collectivities. They appeared in key locations, helping merchants to move around and sell their merchandise (fabrics, medicine, or gems). Today, cities are the main centers of economic, cultural, scientific, technological and educational development and growth. Economic growth and urbanization have a positive and strong link representing the best hope for increased opportunities, providing efficiency benefits, resulting in remarkable gains in productivity and competitiveness. Since urbanization also left its mark with numerous negative aspects and problems at the global level, with the Information Technology and Communications Revolution there was the opportunity to solve them. In the last 10 years, cities have become much more digital, improving both the standard of living of society and the environment.

"Smart" cities represents cities that integrate digital technologies into networks, services and infrastructure. It aims to improve the quality of life for its citizens and ensure a better future for current and future generations. In this context, I propose that in this limited scientific article I emphasize the importance of these "smart" cities, analyze the most important cities smart from Europe concluding with a series of suggestions and recommendations for Romania. Since these represent a component of our future, I consider it necessary to approach this topic both at the European and national level, in order to identify the level of digitization (and not only) that Romanian cities currently have and guide them in future development strategies.

## 2. BRIEF ANALYSIS OF SPECIALIZED LITERATURE

Analyzing the specialized literature, we encountered several notions, regarding the concept of "smart" city. Harrison *et al.* (2010), stated in one of IBM corporate documents, that the term "smart city" represents an interconnected, digitized and instrumented city. The term *instrumentability* refers to the ability to directly transmit the real world with the help of sensors, digital devices or appliances. Yovanof and Hazapis, mentioned in 2009 that the notion of "smart city" arises at the intersection of societal knowledge with the digital city. Another perspective, from the point of view of education, Winters (2011) mentions the fact that a smart city represents a center of higher education with well-educated people and skilled workforce. Smart cities act as magnets for people and creative workers, allowing a virtuous circle to be created, making them smarter.

Consequently, a smart city has multiple opportunities to exploit its human potential and creatively promote the living environment (Partridge, 2004). The concept has evolved over time, from author to author, today the explanatory dictionary defining the concept of city smart as an area in the urban environment, which is developed and creates sustainable economic growth, integrating, technologies and systems in an efficient and secure way, in order to improve the impact on the environment and increase the quality of life of the inhabitants.

## 3. ANALYSIS OF THE DISTINCTIVE FEATURES OF SMART CITIES IN EUROPE

Annually, in Europe, the ranking of countries captures increases and improvements in innovation performance, so that from 2015 to 2022, the EU improved its position against its global competitors, ranking after Australia, Canada, China, South Korea and the United States, the latter of which continues to be the most innovative country in the world. According to the DESI2022 report, Finland ranks first among the 27 EU member states in digitalization and innovation (see Fig. 1). It is a leader in the provision of commercial services, continuing to implement its digital development strategies through the digital progress program, Digivisio 2030 and the current strategy on artificial intelligence.

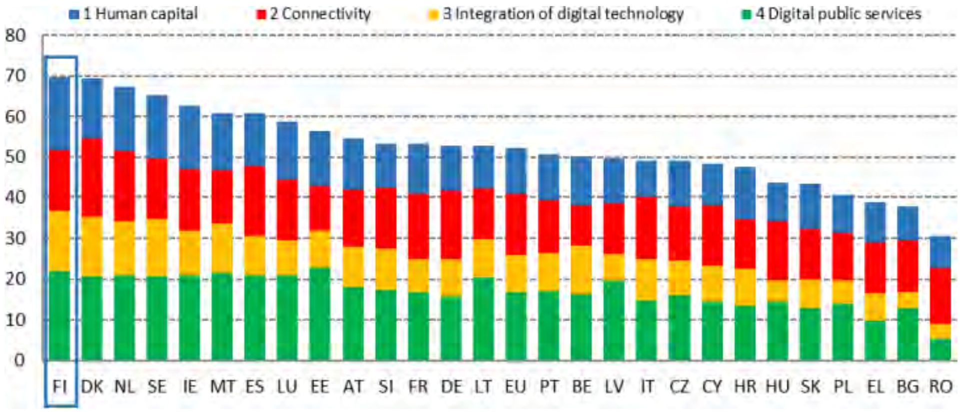


**Figure 1. The Digital Economy and Society Index (DESI) at the level of 2022**
Source: https://digital-strategy.ec.europa.eu/ro/policies/desi

If at the national level, Finland occupied a leading place, according to the study carried out by Futureiot "Global Smart Cities 2022", this was not only due to a specific city, in the top 3 ranking the cities of Copenhagen, Amsterdam and London (see Tab. 1). These cities have the best results in successfully implemented projects, taking major steps in sustainability projects based on smart technology.

**Table 1. Classification of cities smart globally 2022**

| Rank | Town | Pct. | Rank | Town | Pct. |
|---|---|---|---|---|---|
| 1 | Copenhagen | 81.5 | 16 | Berlin | 68.2 |
| 2 | Amsterdam | 74.6 | 17 | Hong Kong | 68.0 |
| 3 | Beijing | 73.7 | 18 | Dubai | 63.8 |
| 4 | London | 73.6 | 19 | Madrid | 63.2 |
| 4 | Seoul | 73.6 | 20 | Tokyo | 63.0 |
| 6 | New York | 73.3 | 21 | Rome | 61.2 |
| 7 | Sydney | 72.6 | 22 | Auckland | 60.1 |
| 8 | Singapore | 71.4 | 2. 3 | Kuala Lumpur | 58.2 |
| 9 | Washington | 71.2 | 24 | São Paulo | 50.7 |
| 10 | Paris | 70.2 | 25 | Bangkok | 49.1 |
| 11 | Toronto | 70.1 | 26 | Buenos Aires | 45.1 |
| 11 | Zurich | 70.1 | 27 | Jakarta | 43.5 |
| 13 | Barcelona | 69.7 | 28 | Mexico City | 42.6 |
| 14 | Frankfurt | 69.1 | 29 | New Delhi | 40.3 |
| 15 | Dallas | 68.7 | 30 | Manila | 39.1 |

Source: https://futureiot.tech/

**Copenhagen** ranked in the top of the smartest cities due to the implementation of strategic initiatives such as digital invoicing, reduced energy consumption and non-renewable sources, being installed over 60,000 $m^2$ of solar panels and the buildings are reorganized considering the reduction of energy consumption. Copenhagen has digitized building heating and cooling systems to reduce emissions and environmental costs. The city is equipped with smart bikes, equipped with sensors that notify cyclists and the authorities about the traffic situation and air quality in real time (it has one of the most efficient air quality systems). At the same time, the city is also known and awarded for its waste management which is based on sensors and centralized data. In 2021, over 1,200 businesses benefited from the program led by Danish Business Authority in collaboration with Danish Business Hubs, who provided maturity analyzes to SMEs, and guided them in further digitization.

**Amsterdam** has tried for almost nine years to become a smart city, using numerous information technologies, implementing more than 170 "smart city" projects. Among the main digitization measures were the inclusion of smart street lighting with lamp brightness adjustment according to pedestrian traffic and applications that allow residents to rent their parking spaces. This city has become outstanding at the European level by creating homes with smart energy meters, air and water purification projects, limiting noise and also reducing pollution through initiatives dedicated to citizens. The Dutch Coalition for Artificial Intelligence and the Smart Industry Program aim to make Amsterdam a leader in digital, innovative and high-tech expertise. The city annually participates in various projects at European or even worldwide level in which it submits its portfolio of projects for which it allocates millions of euros.

**London**, ranked third in the smart cities category in 2022, has stood out for years with high-performance 5G connectivity, having the most towers in the entire city, ensuring full fiber optic coverage. London also has public lampposts equipped with a collection of sensors and charging points for electric vehicles. Another strength for London is the presence of more than 46,000 technology companies based in this city, generating an income of more than £44 billion, and increasing employment in the digital sector. It is also home to one of the largest natural hubs for artificial intelligence with over 750 providers. Another benefit for which London was ranked among the smartest cities are the many ecologically certified buildings (the largest number at European or American city level), which include nature through roofs, living walls and saddle access to outdoor green space. By the year 2020, the city was equipped with over 5,000 charging points, turning London petrol stations into electric vehicle hubs (Shell company). In recent years, the city has an innovative system to optimize traffic flow and reduce congestion through smart traffic lights, camera networks and sensors that monitor traffic by providing data to the system.

## 4. GOOD PRACTICES FOR ROMANIA

Romania is constantly trying to develop solutions and innovations in the field of automation, autonomous learning and artificial intelligence. It is known for its strong technological capabilities and potential, developing a growing community of entrepreneurs and tech talent.

### 4.1. Smart cities in Romania

Romania's digital systems have made rapid progress in recent years, contributing to the long-term development of the national economy. According to the SmartCities2022 report carried out by Vegacom, the City of Cluj Napoca was classified in the top of the smartest cities in the ranking of 144 cities.

**Table 2.Top 10 cities with completed projects in the "Smart city" area (June 2022)**

| No. Town | Completed projects |
|---|---|
| 1. Cluj-Napoca | 56 |
| 2. Iasi | 39 |
| 3. Alba Iulia | 31 |
| 4. Bucharest | 23 |
| 5. Bucharest Sec. 4 | 21 |
| 6. Craiova | 14 |
| 7. Braşov | 12 |
| 8. Avrig | 12 |
| 9. Hârşova | 12 |
| 10. Sibiu | 12 |

Source: https://vegacomp.ro/wpr/wp-content/uploads/2022/07/radiografia-smart-city_2022.07.14.pdf

As we note in Table 2, Cluj Napoca registers the most projects in 2022smart completed, followed by Iași with 56 projects and Bucharest with 54 projects. All these successfully completed projects aimed to implement healthy economic activities, which reduce the negative impact on the environment, contribute to improving the quality of life of the inhabitants through the use of intelligent systems.

According to Table 3, we note that the number of implemented projects is increasing, during the analyzed period (from 247 in 2018 to 564 in 2022) and a beautiful competition is highlighted, beneficial both for the inhabitants and for the national economy. The increase in the number of projects has come about due to government encouragement and support, offering tax breaks and funding opportunities. According to the ANIS association, in the last five years, the share of the IT&C industry has increased to a volume of 13.6 billion euros, i.e. 6.2% of

Romania's GDP, thus causing a large increase in the demand for specialists on the market.

**Table 3. Dynamics of smart city ranking (2018-2022)**

| Town | 2018 | | 2019 | | 2020 | | 2021 | | 2022 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **R** | **P** | **R** | **P** | **R** | **P** | **R** | **P** | **R** | **P** |
| Cluj-Napoca | 4 | 18 | 5 | 16 | 2 | 54 | 2 | 58 | 1 | 63 |
| Iasi | | | ***4*** | ***18*** | ***4*** | ***19*** | ***3*** | ***56*** | ***2*** | ***56*** |
| Bucharest | 6 | 13 | 3 | 19 | 11 | 11 | 4 | 39 | 3 | 54 |
| Alba Iulia | 1 | 103 | 1 | 103 | 1 | 106 | 1 | 106 | 4 | 49 |
| Bucharest (4) | | | | | 5 | 18 | 5 | 35 | 4 | 35 |
| Sibiu | 8 | 11 | 6 | 13 | 7 | 16 | 7 | 27 | 4 | 35 |
| Oradea | 3 | 19 | 7 | 13 | 6 | 17 | 8 | 26 | 5 | 26 |
| Timisoara | | | | | 3 | 26 | 8 | 26 | 5 | 26 |
| Arad | 8 | 11 | 4 | 18 | 4 | 19 | 6 | 29 | 6 | 25 |
| Braşov | 8 | 11 | 2 | 20 | 5 | 18 | 9 | 18 | 10 | 18 |
| Piatra Neamt | 7 | 12 | 8 | 11 | 8 | 15 | 10 | 15 | 12 | 15 |

*Note*: R – Rank; P - Number of projects

Source: developed by the author based on the SmartCities2022 classification report

Although Romanian cities continue to carry out various projects for the development of the community and the environment, numerous challenges persist that prevent them from being in greater numbers and benefiting from recognition and appreciation at the European level. Among the great challenges they encounter are: the adaptation of technology among the elderly; attracting investments for small and medium-sized companies; the presence of well-qualified workforce; the presence of unpredictable economic factors; insufficient measures by the state.

### 4.2. Case study: Iasi

As we note in Table 3, the city of Iași has been continuously developing in recent years, ranking second in 2022, with 56 projects. Transforming the city into a real one smart city has led to many challenges, but everything is possible when you have well- defined objectives, a strong team and a well-defined goal that will generate improvements in the conditions of the inhabitants. Among the many projects through which Iașul has stood out recently are:

1. The "Digital Transformation for Entrepreneurs" Conference on March 23, 2023, which aimed at proposing innovative solutions for SMEs and public institutions in the production and health sectors;

2. "Digitalization of Public Services" organized on 19-20 May 2023 by the Ministry of Research, Innovation and Digitization in collaboration with the Electronic Government Agency of the Republic of Moldova. The project includes the creation of the first hackathon, launching the great challenge to leave a mark in Romania's digital transformation.

3. "Smart City Caravan", organized since 2017 by the Romanian Association under the patronage of the Ministry of Energy, being the only program to promote Smart City solutions and projects in Romania until 2020.

4. "Palas Campus", project that includes the construction of the largest office building in country, based on the principles of sustainability and minimal impact on the environment. It includes office spaces, over 4,500 square meters of green spaces (parks, relaxation areas), shopping areas, bike lanes, electric car parking and charging stations and over 1,200 photovoltaic panels;

5. The "Regional Operational" program through which Iasi gradually obtained over 119 means electric transport (50 trams and 65 buses);

6. "Iasi after the blocks is our city", project established in 2022, which had the right aim to restore 4.5 ha of green spaces, create pedestrian walkways, rehabilitate road traffic, modernize children's playgrounds, arrange parking lots and install platforms for waste.

7. "Green Map" - provides for the installation of 22 sensors capable of monitoring the level of pollution, air pressure, temperature, humidity and carbon dioxide levels.

8. "yeParking" - park-sharing application that includes several hundred parking spaces from the city of Iași, with the aim of making the most of the existing parking lots.

The city of Iași has registered real progress in recent years, thanks to the development of smart projects, residents benefit from numerous facilities such as: paying taxes online; digital document management; energy efficient buildings; smart meters; smart thermostats; video surveillance with automatic image processing capability; own secure IT system; mobile applications for public transport; digital information screens in buses and information boards in stations with real-time information transmission; Science and technology park "Tehnopolis" and many other useful benefits that develop and create the concept of smart and digitized city every day.

## 5. CONCLUSIONS

After analyzing smart cities in Europe, we noticed high levels of development and growth in the field of technologies. European cities are real examples for Romania, from which we have a lot to learn. Among the suggestions and recommendations for the authorities and citizens of Iasi, in order to achieve a smart city, one could consider: creating more partnerships with non-governmental organizations; improving the quality of the services offered by the local public administration through digital solutions (creating pedestrian crossings smart, intelligent management of green spaces); creation of platforms to attract investments both internally and externally; developing the concept of "smart citizens in a smart city" through the creation of innovative centers and civic imagination; creating applications to encourage recycling and waste collection; increasing energy efficiency (by installing more solar panels, photovoltaics, heat pumps); the creation of buildings with green walls and roofs and the mandatory presence of green spaces nearby.

If Romanian cities would continue to increase the number and quality/scale of projects in the area smart city, to take the European examples and implement such strategic plans, I believe that this country will reach a very high level, in the long term, maybe even in the top 10 European smart cities.

## References

1) Bercu, A. (2019). *Performance management in public administration,* Alexandru Ioan Cuza University of Iasi: Iasi, Romania.
2) Harrison, C., et al. (2010). Foundation for Smarter Cities. IBM Journal of Research and Development.
3) Partridge, H. (2004). Developing a Human Perspective on the Digital Divide in the Smart City.
4) Ursache, I.-M., & Apostoaie, C.-M. (2023). Smart Cities in Romania: An Overview.
5) Vita, A., Borruso, G., & D'Onza, G. (Year unavailable). Smart Cities: Definitions, Dimensions, Performances, and Initiatives. Journal of Urban Technology.
6) Winters, J. V. (2011). Why Smart Cities Grow? Who Moves and Who Stays. Journal of Regional Science.
7) Yovanof, G. S., & Hazapis, G. N. (2009). A Roadmap for Intelligent Cities. În S. K. Katsikas, M. López-Sánchez, & J. Lopez (Eds.), Emerging Free and Open Source Software Practices (pp. 99-108). Springer.
8) https://digital-strategy.ec.europa.eu/ro/library/digital-economy-and-society-index-desi-2022
9) https://digital-strategy.ec.europa.eu/ro/policies/desi
10) https://futureiot.tech/
11) https://iasismartcity.ro/
12) http://www.spiasi.ro/spatiiverzi.php
13) https://www.primaria-iasi.ro/
14) https://vegacomp.ro/prima-radiografie-smart-county-din-romania-101-de- proiecte-in-27-de-judete/