



Școala Națională de Studii Politice și Administrative
Facultatea de Administrație Publică

THE IMPACT OF E-GOVERNMENT IN THE PUBLIC SECTOR: A CASE STUDY OF ELECTRONIC PUBLIC PROCUREMENT

- dissertation, Public Sector Management -

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Bucharest

2026

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Abstract

This paper aims to analyze how contemporary digital technologies transform traditional public sector processes, with the objective of improving the quality and performance of public services. The main focus is on public procurement and the manner in which e-government initiatives and public sector digitalization influence the acquisition of goods and services carried out by governmental institutions. Particular attention is given to the role of electronic public procurement in enhancing transparency, fairness, efficiency and accountability, as well as its potential to shape the future of public administration. Given the significant economic and social importance of public procurement, this research examines how e-government contributes to improving procurement processes through the use of advanced technologies, institutional platforms and electronic portals. By promoting the fair and efficient use of public funds, the study also addresses contemporary challenges such as sustainability and responsible public spending. The research builds on prior bachelor level work that analyzed the improvement of public services through software applications, emphasizing the importance of interoperable digital solutions in addressing persistent issues such as bureaucracy and reducing time waste for the citizens. While the earlier study adopted a broader perspective on digital public services, the present paper narrows its focus to applications specifically related to public procurement. Methodologically, the paper is structured in two main parts. The first consists of a theoretical framework developed through the analysis of specialized literature, scientific articles and relevant sources. The second part presents a practical case study focused on the implementation and impact of electronic public procurement systems in Romania, with comparative references to practices adopted in other European countries. The empirical component is based on a qualitative approach, consisting of semi-structured interviews conducted in written form with professionals involved in the field of public procurement, aiming to identify perceptions regarding the transparency, efficiency, challenges and anti-corruption potential of electronic procurement systems. The findings suggest that digitalization has contributed to improving transparency, accessibility and administrative efficiency in public procurement processes. The study contributes to the academic literature on e-government and public procurement by incorporating both institutional outcomes and social perceptions, thereby offering an original and comprehensive perspective.

Keywords: digital governance, public trust, financial management, accountability.

Introduction

In the current days, e-government constitutes a key part of public sector modernization, involving the use of digital technologies to enhance administrative efficiency, transparency and service delivery [1]. The growing reliance of digital solutions in public administration reflects the need to adapt governance structures to the demand of the changing of the rapidly evolving technological and socio-economic environment.

One of the public sector areas most affected by this transformation is public procurement, given its significant economic impact and role in the public resource allocation and representing a central function of the public sector. In Romania, public procurement accounts for approximately 9% of the Gross Domestic Product, according to the National Strategy in the field of Public Procurement for the years 2023-2027 [2]. This substantial share of public expenditure highlights the strategic importance of procurement systems and the need to ensure that public funds are managed efficiently and in accordance with the principles of fair competition, accountability and transparency.

Within the context of public procurement, the use of electronic communication tools is essential for providing ethical and efficient management in the sphere of public funds, reducing the risks of corruption and strengthening public trust. Electronic procurement systems align procurement systems with contemporary governance requirements by enabling open access to information and standardized procedures. In Romania, the

Electronic System for Public Procurement (Sistemul Electronic de Achiziții Publice - SEAP) [3] represents a good initiative in this direction, providing a centralized platform that facilitates access to procurement information for contracting authorities, economic operators and citizens. At the European level, platforms such as Tenders Electronic Daily (TED) [4] further support transparency by ensuring the publication of tender notices, awarded contracts and public procurement documentation.

Digitalization in public procurement is not merely a tool for increasing efficiency through reduced bureaucracy and lower administrative costs, but a requirement for building a transparent public administration in which accountability is embedded as an incorporated part of the digital governance systems. However, despite the clear benefits of e-government and electronic public procurement, the specialized literature also identifies several structural challenges that may limit their effectiveness. These include the digital divide, concerns related to data security and privacy, resistance to organizational change and financial and institutional costs associated with implementing and maintaining advanced digital systems [5].

Overcoming these challenges through public policies and sustained investment is important for unlocking the full potential of electronic public procurement. By addressing those limitations can digital procurement systems fully contribute to the improvement of governance performance, enhancement of public trust and accountability of the public resources, in the same time improving the quality of life of citizens.

Research questions

In order to ensure that the study examines the topic in depth and in the same time maintains a clear focus on the impact of the electronic system in the public procurement, the research is guided by a set of questions designed to investigate both the practical and the institutional implications of e-government in the public procurement process. Those questions include:

Q1: What is the perception of professionals involved in public procurement regarding the effectiveness and fairness of the process?

Q2: To what extent do electronic means of communication influence the transparency and accountability in the public sector?

Q3: How do existing challenges and limitations affect the implementation of electronic public procurement systems?

Objectives

The main objective of the paper is to analyze the impact of electronic public procurement in the society, using it as a tool for enhancing transparency, efficiency and accountability in the public sector. Derived from the main objective, the research pursues as secondary objective the examination of the role of digital technologies in transforming traditional public procurement procedures, as well as to assess the impact of electronic procurement systems on administrative efficiency and institutional transparency.

Additionally, the research aims to establish a comparative perspective by linking Romania's system to those of other countries with similar or differing electronic procurement practices, therefore providing insights into best practices and potential areas for improvement.

Research methodology

The study adopts a dual approach, combining a review of the existing literature on e-government and public procurement with a practical empirical analysis. The present study adopts a quantitative research designed to investigate the impact of electronic public procurement on efficiency, transparency and accountability in the public sector. The theoretical framework is grounded in established literature on e-government, public procurement and digital governance.

The practical component of this study involves a semi-structured interview conducted in written form with professionals involved in public procurement activities. The participants include individuals working within public institutions or organizations that interact with electronic procurement systems, particularly the SEAP platform. The collected responses are analyzed qualitatively through thematic interpretation and comparison, in order to identify recurring patterns, common perceptions, and practical insights concerning the role of electronic public procurement in the modernization of public administration.

To ensure a structured analysis, the interview questions are organized around several analytical dimensions relevant to the study of electronic public procurement. These dimensions include transparency, efficiency, accessibility, trust and integrity, as well as digital maturity. Transparency is examined through respondents' perceptions regarding access to procurement information, visibility of procedures, and the openness of electronic systems. Accessibility and communication are assessed by analyzing the ease of use of digital procurement platforms and the interaction between institutions and economic operators. Efficiency refers to perceptions regarding procedural speed, administrative simplification, and the reduction of bureaucracy through digital tools. The dimension of trust and integrity focuses on the extent to which electronic systems contribute to accountability, fair competition, and the prevention of corruption. Finally, digital maturity is evaluated through references to the use of electronic platforms, digital signatures, interoperability, and technical support within procurement processes. These analytical dimensions are inspired by internationally recognized governance and public procurement frameworks, including the OECD Public Procurement Indicators, the World Bank's Worldwide Governance Indicators (WGI) and other relevant e-government and transparency metrics.

1. Theoretical framework

This chapter establishes the theoretical framework of the research concerning the impact of e-government in the public sector, with a focus on electronic public procurement. It introduces the key concepts underlying the analysis, including public administration, digital governance and public procurement. The chapter examines the evolution of public administration in the context of digitalization, explores the concept of e-government and

discusses public procurement as a tool for implementing public policies and ensuring the efficient use of public resources.

1.1. Public administration evolution

Public administration represents one of the fundamental pillars of the modern state, as it ensured the realization of the general interest through specific institutional structures and legal mechanisms. It encompasses the totality of public authorities, institutions and bodies that operate under political authority to organize and enforce the implementation of the law [6]. In this way, the public administration facilitates the involvement of the state in the social, economical and political spheres.

In the Romanian specialized literature, Cezar Manda defines public administration in two ways: formally, as the set of public authorities and institutions and materially, as the activity of organizing and implementing the execution of the law [7]. From this perspective, public administration represents the instrument through which the executive branch carries out its functions in a continuous and organized manner. It ensures that laws and public policies are effectively implemented within a clear legal and institutional framework [7]. The principles of good administration—such as legality, non-discrimination, proportionality, impartiality, and access to information—form the foundation of a transparent, accountable, and citizen-oriented public administration, requiring public institutions to act within their legal competences, make objective and lawful decisions in the public interest, and ensure that citizens have access to information regarding administrative actions and procedures [8].

Looking through the past, the administrative system in Romania developed under a strong French influence, especially during the nineteenth century [9]. This model of influence emphasized a clear chain of authority, strong central control and a well-defined structure of public institutions, thus at the time Romania had adopted many elements of the centralized and hierarchical administrative model inspired by that tradition. As highlighted in the scientific community, including in the works of Dragoş Dincă, the Romanian administration did not simply copy the Western models, but instead it combined institutional ideas borrowed from Western Europe with adaptations shaped by Romania's own political and social realities [9]. Because of the local context of the country and the cultural background, the administrative capacity and historical circumstances differed from those of the countries that originally developed those models.

As a result, the Romanian administrative systems evolved as a mixture of external influence and national particularities. On one hand, it maintained a strict and formal organizational structure, based on hierarchy and legal rules, and on the other hand its development was often influenced by political instability and repeated governmental changes [9].

Throughout the twentieth century, public administration has gone through several stages of transformation. In its early modern form, it was strongly influenced by the classical bureaucratic model, inspired by the Weberian theory, with a clear structure of hierarchy,

formal procedures, stability and predictability [10]. However, over time, this traditional bureaucratic system began to face criticism for being too rigid and slow and as a response, the New Public Management emerged. This approach borrowed principles from the private sector and promoted greater efficiency and flexibility, introducing concepts such as performance management and results-oriented management [10].

From a systemic perspective, public administration should be understood as part of a larger system, as it exists in constant interaction with other major subsystems, such as political, economical, legal and social ones [11]. Decisions taken within public administration are influenced by political priorities, economic conditions, legal constraints and social expectations and problems. At the same time, administrative actions also affect these areas, creating a relationship of mutual dependence. External factors, including globalization and supranational regulations also play an important role in developing the context of public administration [11]. In the context of European integration, Romania's public administration has undergone significant reforms aimed at improving institutional efficiency, professionalizing the civil service, and increasing transparency in decision-making, strengthening public trust and accountability [11].

Today, public administration is moving into a new phase of development, shaped by the digital era. The expansion of digitalization is influencing how public institutions are structured and how they operate and interact with society. The transformation reshapes the relationship between the state and the citizens by promoting greater transparency, accountability and openness [10]. Digital platforms make public information more accessible, allow for clearer tracking of administrative actions and create new opportunities for civic participation through consultations, feedback mechanisms and collaborative initiatives.

In Romania, the general legal framework for public administration is currently regulated by the Emergency Ordinance no. 57 of 2019 regarding the Romanian Administrative Code, issued by the Government of Romania, which unifies the regulations concerning both central and local public administration, the civil services, the legal regime of administrative acts and the administrative liability [12]. The adoption of the Administrative Code is an important step in consolidating and modernizing the legal framework of public administration, providing a base for developing administrative capacity.

At present, governance is undergoing a significant transformation, combining the traditional model with a top-down manner and a participatory approach that emphasizes collaboration and dialogue. As Săvulescu and Antonovici underline, the digitalization of public administration depends on a clear strategy that defines the vision and objectives, a strong public-private partnership and an active collaboration among all stakeholders involved [13].

1.2. Digitalization and e-government

Digitalization has become a major factor shaping modern public administration. As Baltac explains, e-government represents an important transformation in how public

authorities function, requiring changes in organizational structures, administrative processes and institutional culture. [5]. By integrating digital technologies, public institutions can modernize traditional practices and improve the delivery of public services. This transformation not only replaces paper-based procedures with digital systems but also introduces integrated platforms and automated processes that increase efficiency, speed, and accessibility [5]. Furthermore, the use of digital technologies facilitates real-time communication between authorities and the public, improving transparency and accountability of public institutions.

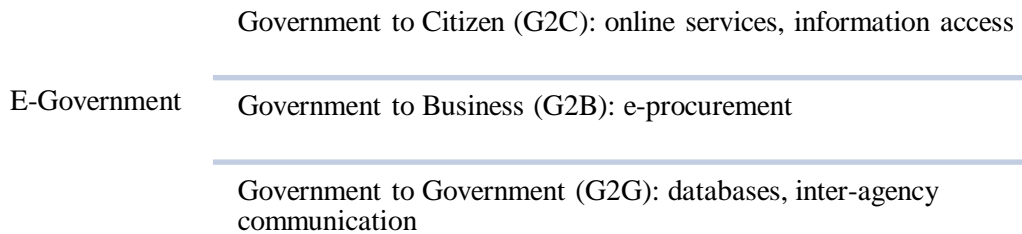


Fig. 1. Dimensions of e-governement

Source: Cătălin Vrabie [14]

E-government encompasses three significant dimensions based on the stakeholders involved. Those dimensions are Government to Citizen (G2C), Government to Business (G2B) and Government to Government (G2G). The first one focuses on how the citizens interact with the public administration by accessing services and information. Government to Business refers to the way the private sector and the enterprises interact with the state institutions. This includes electronic public procurement, tax paying by online means, ease access to information. The last dimension, Government to Government, refers to the interaction between different authorities or institutions of the public sector, the communication between them and the accessible databases [14].

The integration of digital technologies into public administration brings numerous advantages that change the way governments operate and interact with citizens. One of the key benefits is improved transparency, as digital platforms allow for easier public access to information and clearer visibility into administrative decisions. Efficiency is also significantly increased, as routine processes can be automated, paperwork can be minimized and the service delivery accelerated, this allowing citizens to access public services remotely at any time. Accessibility is another benefit of the digitalization of public administration, and beyond this, it encourages greater citizen involvement in governance and supports environmental sustainability by reducing reliance on physical resources [5].

Regarding the efficiency of administrative services, e-government plays a key role in increasing transparency both within the public administration and in its interaction with society. It allows information and processes to be consolidated and unified into an interconnected system. This way, digitalization facilitates easier and more convenient access to public services. The availability and effectiveness of services increasingly

depend on well-developed information systems, such as digital document management platforms and integrated IT infrastructures [15].

However, transitioning to a digitally driven administration presents multiple challenges, such as unequal access to technology, because of the vulnerable population, especially the eldest, rural residents or low-income groups, that face barriers that limit their participation. Security and privacy risks are also prone to happen, with sensitive data potentially exposed to cyberattacks or unauthorized use [5]. The fast pace of technological development requires ongoing updates, staff training and institutional adaptation, which can strain both financial and human resources. Another problem would be resistance to organizational change, gaps in digital skills among employees and also citizens. Additionally, technical interoperability issues between institutions may disrupt the benefits of the use of digital technologies in public administration [5].

The digitalization of public administration and the development of e-government represent a major transformation in how public institutions operate and deliver services. By using digital tools such as online platforms and electronic document systems, administrations can simplify procedures, reduce paper-based processes and provide faster and more efficient services to citizens. At the same time, digitalization improves transparency and accountability by giving citizens easier access to information and government activities. It also supports sustainability by reducing travel, limiting paper use, and encouraging more efficient resource management within public institutions.

Despite its clear advantages, the transition to digital governance is accompanied by substantial challenges. The digital divide remains a significant barrier, limiting access for vulnerable populations, including rural communities, the elderly, and low-income groups. Cybersecurity and data privacy concerns are increasingly critical, requiring robust protective measures and risk management strategies. Furthermore, rapid technological evolution demands continuous adaptation, investment in infrastructure and ongoing training for public sector employees. Resistance to organizational change, limited digital literacy and interoperability issues between legacy systems can slow the adoption of e-government initiatives and reduce their overall effectiveness.

Addressing these challenges requires coordinated strategies that combine technological innovation with institutional reforms, human resource development, and stakeholder engagement. Public administration must foster a culture that embraces change, prioritizes citizen needs and integrates performance evaluation and continuous improvement into the digitalization process. In this context, digitalization and e-government emerge not merely as technical or procedural innovations, but as strategic instruments capable of reshaping governance itself by enhancing administrative efficiency, promoting participatory decision-making and ultimately supporting the development of a modern, transparent, accountable and sustainable state.

1.3. Public procurement

According to Law no. 98 of 2016 regarding public procurement, public procurement is defined as the acquisition of works, goods and services through a public procurement contract. As the main parts of the contract, the law talks about one or more contracting authorities and economic operators [16].

Public procurement constitutes a fundamental component of the administrative system, closely intertwined with the organization, efficiency and effectiveness of public administration. It is part of the Government to Business (G2B) component of e-government and it reflects the dynamic interaction between the public sector and private actors, and indirectly the third sector as it entails the collaboration of contracting authorities and economic operators to achieve public policy objectives.

As Dumitrică notes, the main goal of public procurement is to help public authorities achieve their objectives by acquiring works, goods, or services from economic operators. Therefore any procurement procedure must be based on a clearly identified need within central or local administration, aligned with managerial and strategic goals at the decision-making level. In this sense, procurement is not an isolated administrative task, but rather a functional instrument for the implementation of public policies and the delivery of public services [17]. The interdisciplinary nature of public procurement arises from the complexity and diversity of requirements set by contracting authorities, aimed at identifying the most suitable solutions to meet the general interest. Procurement procedures are conducted by both central and local administrative institutions, as well as by all entities legally recognized as contracting authorities. From an administrative perspective, the primary focus lies in the rational and efficient organization of resources made available to contracting authorities to ensure the successful achievement of their objectives [17].

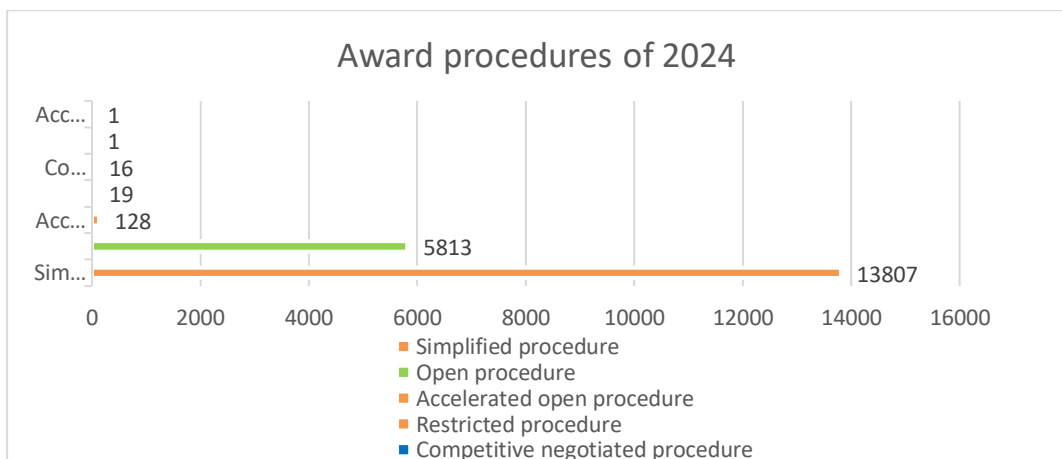


Fig. 2. Number of public procurement procedures awarded in 2024 by procedure type

Source: ANAP- monitoring indicators of the efficiency of public procurement procedures finalized through contract award in 2024 [18]

The main award procedures, as shown in Fig.2., include the open procedure and the restricted procedure, which are the most commonly used due to their high level of

transparency and competition. In addition, more flexible procedures such as the competitive negotiated procedure and the competitive dialogue are applied in projects where requirements cannot be fully defined from the outset. The legislation also provides for the innovation partnership, designed to foster the development of innovative solutions, as well as the negotiated procedure without prior publication, which is used only in exceptional cases. Furthermore, contracting authorities may organize design contests or apply specific award procedures for social and other particular services.

A defining feature of the Romanian procurement system, closely connected to the principles of e-government, is the mandatory use of the national electronic platforms SICAP and SEAP (Electronic Public Procurement System). Through these platforms, procurement procedures are conducted electronically, which increases transparency by providing public access to tender documents, participation notices, award decisions, and deadlines. The digital format also improves traceability, limits discretionary administrative practices, and strengthens monitoring and audit processes. From the perspective of e-government, this system reflects the transition from traditional administrative procedures to digitalized procurement processes, making public procurement one of the most developed examples of digital governance within the Romanian public sector [19].

The modernization of EU procurement rules, through the update of Directives 2004/18/EC and 2004/17/EC and the adoption of Directive 2014/24/EU, aims to increase efficiency, enhance legal certainty and align with EU case law. These rules govern contracts for works, supplies or services, while excluding grants and general authorization schemes, ensuring predictability and uniform application across Member States [19]. Public procurement is guided by key principles: non-discrimination and equal treatment to ensure fair competition, mutual recognition of EU-issued goods and standards, transparency through open access to procedures and awards, proportionality to align requirements with actual needs, and accountability to guarantee professionalism and impartiality throughout the process [2].

In addition, in order to foster environmentally responsible procurement practices, Romania adopted Law no. 69/2016 on Green Public Procurement [20]. This law sets out minimum environmental protection requirements for specific categories of products and services included in tender specifications. From the perspective of e-government, these legislative and procedural developments highlight that public procurement is more than a financial or administrative mechanism. It functions as a strategic policy instrument that promotes digital governance, sustainability, transparency and institutional modernization.

The shift toward electronic public procurement represents a fundamental transformation in the way public authorities manage resources, interact with economic operators and deliver public services. Electronic systems, such as national e-procurement platforms, enable real-time access to information, standardized procedures and automated tracking of contracts, fostering both efficiency and fairness in the allocation of public funds [17]. At the strategic level, electronic public procurement supports the achievement of broader policy goals, such as economic development, innovation, social inclusion and

environmental sustainability. It strengthens trust between citizens, businesses and public authorities and creates a more open and participatory governance framework [17]. Moreover, e-procurement enhances inclusivity and competition, this way it allows a broader range of suppliers, including small and medium-sized enterprises, to participate in public tenders under equal conditions. The digitalization of procurement not only reduces administrative costs and processing times but also contributes to sustainable practices by minimizing paper usage and facilitating green procurement initiatives.

2. Digitalisation and electronic public procurement

The second chapter of the paper explores the role of digitalization in transforming public procurement systems. The chapter begins with an overview of the public procurement system in Romania, highlighting its institutional framework and practical examples of current use with also looking over the implementation of electronic tools in procurement procedures. This is followed by a comparative perspective on public procurement practices in other countries, aiming to identify common trends, best practices and differences in the adoption of digital solutions. Finally, the chapter examines the main advantages and challenges associated with e-procurement, to provide an understanding of how digitalization influences public procurement and sets the foundation for future development.

The research is connected to several Sustainable Development Goals (SDGs), most notably SDG16 (Peace, Justice and strong institutions), as it explores the role of electronic public procurement in transparency, accountability and integrity within public administration. The study aligns with the objectives of SDG 8 (Decent work and Economic growth) and SDG 9 (Industry, Innovation and Infrastructure) by showing how e-procurement fosters fair competition, innovation and digital transformation in the public sector. In addition, it is relevant to SDG 12 (Responsible consumption and Production), demonstrating the importance of efficient and sustainable management of public resources.

2.1. Public procurement in the European Union

In recent years, public procurement in the European Union has been increasingly shaped by digitalisation, mostly through the development of electronic public procurement. As part of broader GovTech initiatives, public authorities have adopted digital tools and platforms meant to improve the efficiency and transparency of procurement processes [21]. Within the European Union public procurement system, there are various ways in which digitalisation and technology support and improve the processes. One example is the use of eForms, which are standardized electronic templates designed to facilitate the publication of procurement notices. These tools help ensure consistency and accuracy by structuring essential information such as contract type, value and deadlines [22].

Another important digital instrument is eCertis, an EU electronic tool that supports all the actors involved in the public procurement processes, so both the contracting authorities and the economic operators, to understand and compare various documentation required for public procurements across the European Union countries [22]. The efficiency of

eCertis relies on the integration with national data systems [22], ensuring reliable and automated verification of the required information by increasing the clarity of national rules and supporting the cross-border participation to reduce administrative obstacles.

Therefore, using digital solutions like eCertis and eForms, the European countries align with the principles of the 2030 Agenda for Sustainable Development [23], reflected in the increasing the transparency, accountability and integrity in public procurement systems, as it is expected to contribute to reducing corruption risks, increasing trust in procurement processes. The growing demand for transparency from citizens and stakeholders places continuous pressure on public institutions to improve those systems, “since trust in government and the public sector is related to society’s assessment of the credibility, fairness, competence and transparency of political institutions” [24].

The desired approach of the European Union towards a more sustainable and transparent procurement process would be the fully integrated “cradle-to-grave” transaction system, where the management of the entire lifecycle of public contracts, from planning to execution, monitoring and evaluation is exclusively digital [22]. This approach started being implemented in countries like Ukraine and North Macedonia, allowing the automation of routine tasks.

In Italy, the MEAT criterion (the Most Economically Advantageous Tender) is widely applied, particularly in construction and infrastructure projects. Decision-making is often supported by advanced methods such as the Analytic Hierarchy Process (AHP) and hybrid multi-criteria decision analysis (MCDA) techniques, reflecting a structured and analytical approach to procurement evaluation [25]. Electronic public procurement is supported by a well-structured institutional framework. The system is overseen by National Anti-Corruption Authority (ANAC), which ensures transparency, legality, and integrity in procurement procedures [26]. At the operational level, the Public Procurement Rationalisation Programme is implemented by Consip under the Ministry of Economy and Finance, providing digital solutions for contracting authorities. Its main operational platform, *Acquisti in Rete PA* [27], serves as the digital gateway connecting public institutions with economic operators, facilitating efficient, transparent and competitive procurement processes.

Similarly, Spain prioritizes the use of MEAT, while also integrating environmental and social criteria into procurement decisions. Methods such as TOPSIS and combined MCDA approaches are increasingly used to support more comprehensive and balanced evaluations [25]. The public procurement is supported by a highly developed digital infrastructure, particularly through the Public Sector Procurement Platform, which provides extensive open data on contracting authorities and procurement procedures. The platform publishes datasets on tenders, buyer profiles and contracts, including information aggregated from Autonomous Communities with their own systems. These datasets are available in open and machine-readable formats, enhancing transparency and accessibility, and to further facilitate data use, the Subdirector General for the Coordination of Electronic Procurement has developed tools such as OpenPLACSP, which enable users to process and analyze procurement data efficiently [28].

In France, public procurement is gradually evolving toward multi-criteria evaluation models, with growing attention to sustainability and more structured decision-making processes, particularly in public works and large-scale projects [25].

Copenhagen, the capital of Denmark, is a city recognized for its leadership in smart city initiatives. Here, public procurement is increasingly based on a challenge-driven approach, where authorities focus on addressing specific urban issues, such as traffic congestion, waste management and energy efficiency, rather than defining rigid technical specifications [29]. This model encourages innovation by allowing companies, including startups and technology providers, to propose tailored solutions. Furthermore, the use of pilot projects and “living labs” enables the testing of new technologies in real-life conditions, reducing risks and supporting more informed decision-making [29]. Collaboration is also strengthened through long-term partnerships and open data initiatives, which enhance transparency and stimulate innovation.

In Eastern European countries such as Lithuania, Croatia and Serbia, there is a growing adoption of multi-criteria approaches [25]. This trend reflects both alignment with EU regulatory frameworks and ongoing efforts to improve transparency, efficiency and competitiveness in public procurement processes.

As part of the broader European reform of the public sector, Romania has made significant progress in the digitalisation of public administration, which also supports the development of electronic public procurement systems. Romanian e-government has evolved from basic information provision (e-Government 1.0) to more interactive and transactional services (e-Government 2.0), with most municipalities now offering digital services such as online tax payments and electronic petitions [30]. A key milestone in this process was the launch of the national online payment platform ghiseul.ro [31] in 2011, which has grown substantially in terms of users and transactions, reflecting increased citizen engagement with digital public services.

Further institutional development was marked by the establishment of the Authority for the Digitalization of Romania in 2020, aimed at accelerating the transition toward efficient, transparent, and secure e-services, including those relevant for public procurement. In line with EU requirements, Romania also implemented a National Electronic System through the e-guvernare portal, contributing to the integration of digital services under the Single Digital Gateway framework.

Despite these advancements, Romania continues to face challenges in digital adoption. According to the Digital Decade Country Report (2023) [32], only 24% of internet users engage with e-government services, compared to the EU average of 74%. These limitations, related to usability, transparency, data security and user support, also affect the performance and perception of electronic public procurement systems.

In Romania, procurement practices are aligned with Directive 2014/24/EU on public procurement and Directive 2014/25/EU on procurement by utilities entities, emphasizing

the MEAT criterion. However, the practical application of advanced MCDA techniques remains relatively limited, partly due to challenges related to data availability and system maturity. Currently, the Romanian electronic public procurement system, known as SEAP (Electronic Public Procurement System), is a web-based platform operated by the Authority for the Digitalization of Romania [33]. It enables the full digital management of procurement procedures, including the publication of tender notices, submission of bids, evaluation processes and contract awarding. The system is mandatory for all public procurement procedures, regardless of contract value, and aims to increase transparency, efficiency and competition while reducing administrative burdens and improving data quality for evidence-based policymaking.

From a practical perspective, insights from procurement professionals [34] indicate that while public procurement is generally well-established, awareness among economic operators is uneven. Larger companies with higher turnover are more actively engaged in SEAP, whereas small economic operators are often less familiar with the system. Nevertheless, SEAP is widely regarded as a transparent and accessible platform that ensures equal treatment of participants and functions as a digital marketplace for public contracts. Operators are mainly motivated by business expansion opportunities and increased turnover, highlighting the platform's economic relevance. At the same time, practitioners emphasize the importance of proper documentation and compliance with procedural requirements. Accurate completion of procurement documents (such as the European Single Procurement Document – ESPD/DUAE) and adherence to deadlines and clarification requests are considered essential for the proper functioning of the system [34].

Overall, Romania also uses complementary platforms such as the electronic invoicing system e-Factura [35], which standardizes fiscal reporting and helps reduce tax evasion. In addition, platforms such as ConectX [36] and the electronic Single Point of Contact (PCUe) [37] facilitate communication between citizens, businesses, and public authorities, enabling online access to administrative procedures, documents, and information. The ROeID [38] system provides a secure digital identity system that enables authentication across multiple public platforms. Within this broader digital ecosystem, the Electronic Public Procurement System (SEAP), plays a central role in ensuring transparency and efficiency in public procurement by enabling fully electronic procurement procedures. Together, these systems illustrate Romania's ongoing efforts to modernize public administration through digital tools that enhance accessibility and also reduce bureaucracy.

Therefore, public procurement within the European Union has undergone transformation through digitalization and the adoption of electronic public procurement systems. Across Member States, e-procurement tools and platforms have contributed to improving transparency, efficiency, and accessibility, while also supporting data-driven decision-making and cross-border participation. However, the level of implementation and innovation varies considerably between countries, reflecting differences in institutional capacity, digital maturity, and strategic priorities. Building on this overview, the following section examines in more detail the main advantages and challenges associated

with electronic public procurement, highlighting both its benefits for public administration and the limitations that may affect its full effectiveness in practice.

2.2. Advantages of e-procurement

Electronic public procurement offers a set of advantages that contribute to the modernization of public administration and the improvement of procurement processes. It replaces traditional paper-based procedures with digital platforms so this way it enhances efficiency, reduces administrative costs and shortens procurement timelines. It also increases transparency and accessibility by ensuring wider dissemination of procurement opportunities and standardized access to information for all economic operators. In addition, the use of digital tools supports better data management and monitoring, enabling more informed and evidence-based decision-making.

The literature highlights numerous advantages associated with the adoption of ICT and electronic public procurement systems. These include increased efficiency in purchasing processes, leading to reduced transaction costs and improved supplier identification and negotiation. E-procurement also enables the automation of workflows, facilitating better integration and information sharing across the organization and the supply chain, while supporting order processing, monitoring, and control of procurement activities [39]. Furthermore, authors such as Ronchi et al. [40] identify strategic, transactional and informational benefits, while other studies emphasize value creation, improved information flow, and the development of open and competitive markets. A key advantage is increased transparency, as procurement platforms provide free and easy access to tender documentation and ensure equal treatment of economic operators. This transparency contributes to building trust in public institutions and plays an important role in reducing corruption risks.

Moreover, e-procurement systems support organizational learning by creating a structured “organizational memory” and improving policy development. They also simplify administrative processes through digitalisation, leading to more efficient working methods and reduced bureaucracy. Additional benefits include improved information management in terms of reliability and security, as well as cost reductions achieved through electronic submission and evaluation of tenders. Finally, the development of digital procurement platforms fosters competition not only among suppliers but also among platform providers, encouraging continuous innovation and improvement of system functionalities [39].

Digital tools enable faster and more cost-effective procurement processes, facilitate better interaction with suppliers, and support the automation and monitoring of procurement activities. In addition, e-procurement enhances access to information and promotes fair competition by allowing a wider range of economic operators, including SMEs, to participate in public tenders. At the same time, digitalisation contributes to increased transparency and accountability in public spending, helping to reduce corruption risks and ensure better alignment with market conditions. It also simplifies administrative procedures through dematerialisation, reduces bureaucracy, and improves information management. E-procurement systems support data-driven policymaking, enhance

traceability through digital audit trails, and facilitate cross-border participation within the EU, contributing to more standardized and efficient procurement practices [41].

In the context of public procurement, AI tools can improve procedural performance by supporting data analysis, risk detection, and more informed decision-making, thereby increasing the overall effectiveness of procurement systems [42]. At the same time, AI introduces important legal and ethical considerations, particularly regarding transparency, accountability, fairness, and the protection of fundamental rights. Within this framework, public procurement plays a dual role, acting both as a mechanism for acquiring AI-based solutions and as a regulatory instrument that can influence their design and implementation. As a result, procurement processes become essential in ensuring that AI systems comply with key principles such as non-discrimination, transparency, and reliability, while also supporting democratic oversight in digitally driven public sector operations.

2.3. Electronic procurement challenges

From another point of view, the combination of high-value contracts and the close interaction between public authorities and private companies makes procurement systems particularly vulnerable to corruption. According to Transparency International [43], participation of foreign companies in public procurement can create opportunities for corruption, although it may also generate tangible benefits for public administration and economic development. Corruption can occur at any stage of the procurement cycle. In the pre-tender phase, foreign companies may attempt to influence specifications to align with their strengths. As shown in the Corruption Perceptions Index published by Transparency International, Romania scored 45 out of 100 in 2025, ranking 70th out of 182 countries, which indicates a moderate level of perceived corruption and places it below the average of many EU Member States. As highlighted in the literature (Neamțu & Dragoș) [44], corruption in public procurement is considered a systemic issue in Romania and other Central and Eastern European countries, with key risks including conflicts of interest, political influence, and weak enforcement of legal frameworks. Rather than a lack of legislation, the main challenges are linked to implementation deficits. In this context, public procurement emerges as a particularly vulnerable area due to high financial stakes and close public–private interaction, making transparency and accountability essential.

According to Mavidis and Folinis [45], in the context of electronic public procurement, the TOE framework (Technology-Organisation-Environment) is particularly useful for identifying barriers. The implementation of electronic public procurement systems faces several technological challenges that can limit their effectiveness. In some cases, existing systems do not fully meet the operational needs of public authorities and may be perceived as complex or difficult to use, which can reduce supplier participation. Additional barriers include issues related to electronic signatures, like high costs, lack of interoperability, legal constraints and limited technical support. Cybersecurity concerns, including the protection of confidentiality or integrity, also remain relevant, alongside challenges related to IT infrastructure and interoperability between systems [45].

At the organizational level, significant obstacles are related to institutional culture and internal processes. Public administrations often face difficulties in adapting traditional bureaucratic structures to more flexible digital workflows, particularly due to limited collaboration between departments and resistance to change among employees [45]. Weak leadership engagement, insufficient funding and a lack of skilled personnel further stop the implementation. In addition, the absence of strong pilot projects, combined with fragmented business processes and inconsistent coordination between stakeholders, can reduce the overall efficiency of e-procurement systems. Concerns over data protection, internal restructuring needs and differing interests among stakeholders also contribute to implementation challenges [45].

From an environmental perspective, external factors also influence the effectiveness of electronic procurement systems. These include economic constraints, political influence and varying levels of institutional support for digital transformation. Corruption and weak governance structures can further limit the benefits of e-procurement, while regulatory complexity and mandatory legal frameworks may reduce flexibility. Social and structural factors, such as population size, and education levels also play an important role. Although small and medium-sized enterprises (SMEs) can benefit from increased access to procurement opportunities and reduced administrative burdens, their participation is often constrained by limited access to information and digital capabilities [45]. From a practical perspective, suppliers, especially small and medium-sized enterprises (SMEs), may face difficulties due to high initial costs, the need for specialized software, and limited technical expertise [46].

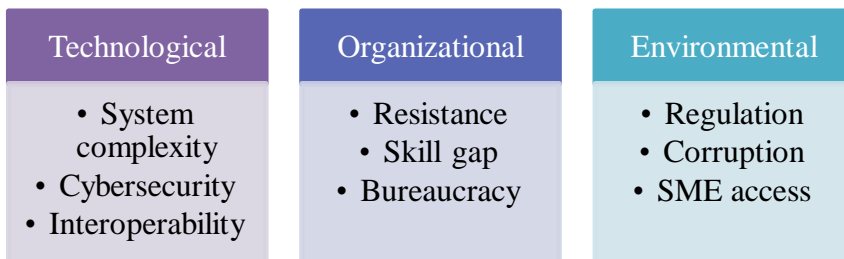


Fig. 3. TOE model for e-procurement barriers
 Source: own adaptation after Madavis and Folinas [45]

As a relatively recent development, the lack of standardized models and benchmarks can hinder effective adoption, particularly for organizations with limited experience. Key barriers include technological and infrastructure constraints, insufficient legislative support, and organizational limitations such as resource availability and management capacity [46]. External factors, such as market conditions, government policies and rapid technological change also influence implementation and are often beyond the control of individual organizations.

Concerns related to system security, usability, and reliability further affect adoption rates. In addition, inadequate digital infrastructure, such as limited broadband access and

inconsistencies in legal frameworks can restrict the effective use of e-procurement systems. The lack of interoperability and standardization between different platforms may also lead to fragmented systems that cannot easily communicate with one another [46], reducing overall efficiency.

Therefore, even if e-procurement offers clear benefits for public sector modernization, its success depends on addressing these structural, technical and human-related challenges. Effective implementation therefore requires technological investment and also institutional reform, capacity building and strong governance frameworks.

3. Case Study: electronic public procurement in Romania

3.1. Research design and interview structure

This chapter presents the practical component of the research, focused on the analysis of electronic public procurement in Romania through a qualitative approach. The purpose of the case study is to explore how stakeholders involved in public procurement perceive digitalisation, as well as its impact on efficiency, transparency and corruption prevention in the public procurement system, with particular attention to the use of the Electronic Public Procurement System (SEAP).

In order to obtain practical and experience-based perspectives, the research relies on semi-structured interviews conducted in written form with professionals involved in public procurement activities. This approach was selected because it allows for a deeper exploration of participants' experiences and perceptions, offering insights that cannot easily be captured through quantitative methods. The use of qualitative interviews makes it possible to understand how the system functions in practice from the perspective of those who use it directly. Data collection was conducted through an online questionnaire distributed via Google Forms, complemented by email communication, where additional clarification was required.

The sample consists of six respondents who are directly or indirectly involved in public procurement activities. These include procurement experts, administrative staff from central and local government institutions and a decision-maker at municipal level (mayor). This diversity of roles was intentionally selected to ensure a broader and more balanced perspective on how the system is perceived across different institutional levels.

An important aspect of the research design is the anonymity of respondents. All participants provided responses anonymously, without any personal identification, in order to encourage honest feedback and reduce potential bias. It is particularly relevant in studies involving public institutions, where respondents may otherwise feel constrained in expressing critical opinions. The interview structure was organised around five main thematic areas. The first section explored respondents' roles within the public procurement process, in order to establish their level of involvement. The second focused on perceptions of digitalisation and the use of the SEAP platform, particularly its impact on daily professional activities. The third section examined the perceived advantages of electronic procurement systems, especially in terms of transparency and efficiency, while the next addressed challenges and limitations encountered in using the platform,

including technical issues, usability concerns and adaptation difficulties. The last section focused on possible improvements to the current system, allowing respondents to provide practical recommendations based on their experience.

3.2. Perspectives on electronic public procurement

Overall, the responses indicate a predominantly positive perception of the platform SEAP, which is generally viewed as an essential digital tool that has improved the efficiency, transparency and organisation of public procurement processes. Respondents frequently emphasised that the platform has standardised procedures and significantly reduced the need for manual or paper-based operations.

One of the key themes emerging from the responses is the improvement in transparency. Several participants highlighted that digitalisation allows public access to procurement information, documentation and results. As one respondent noted, SEAP “ensures transparency in public procurement,” while another mentioned that information and documents can now be “tracked more easily in the electronic system.” The statements reflect a shared perception that digitalisation has strengthened accountability within the procurement process.

Another recurring aspect is the simplification and efficiency of work processes. Respondents described SEAP as a system that has “facilitated work”, “made procurement faster,” and “improved evaluation processes.” In practical terms, this suggests that the platform has contributed to reducing administrative workload and improving workflow coordination among different institutional actors.

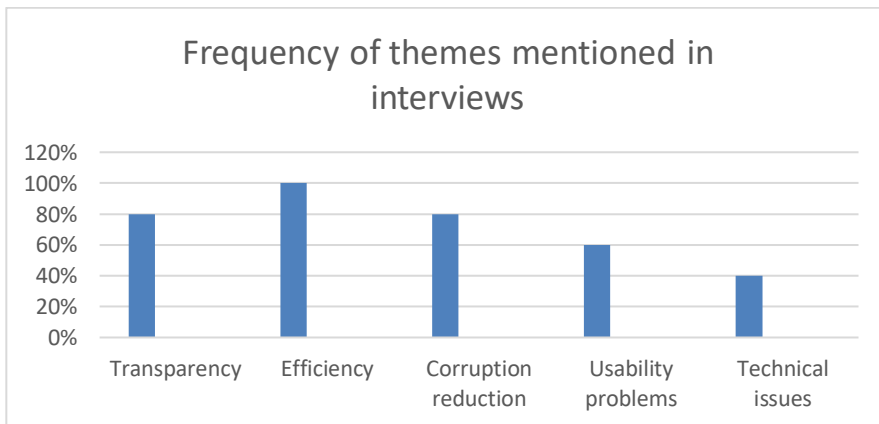


Fig. 4. Frequency of themes mentioned in interviews
Source: author's own elaboration based on interview responses

A further important insight is the perception of coordination between institutional roles. One respondent described their role as collaborating with the procurement department when requesting necessary goods or services, such as software or consumables. This highlights the interconnected nature of procurement processes and the role of SEAP as a central coordination platform.

Despite the largely positive evaluations, some responses also indirectly suggest variability in user experience. While most participants reported smooth use of the system, the differences in phrasing and detail indicate that familiarity with the platform may influence how efficiently it is perceived to function in practice.

3.3. Advantages and limitations identified

The analysis of the interview responses highlights some advantages associated with the use of electronic public procurement in Romania. These advantages are mainly related to transparency, efficiency and the overall modernisation of administrative procedures. A first major advantage identified by respondents is the significant increase in transparency. Participants consistently emphasised that digitalisation allows for easier access to procurement-related information, including documentation, procedures, and results. This openness contributes to improved accountability and reduces the opacity traditionally associated with public procurement processes.

A second important advantage is the improvement in operational efficiency. Respondents described the system as one that makes procurement processes faster, more structured and easier to manage. Tasks that previously required manual processing are now conducted online, which reduces administrative burden and shortens processing time. In addition, SEAP was perceived as a tool that standardises procedures, contributing to greater consistency across institutions.

Another advantage frequently mentioned is the reduction of direct human interaction in procurement procedures. This aspect is closely linked to the perceived reduction of corruption risks. By limiting face-to-face contact between stakeholders and ensuring that procedures are conducted within a controlled digital environment, the system increases traceability and reduces opportunities for discretionary decision-making. Respondents highlighted the broader impact of digitalisation on administrative modernisation. The transition to electronic processes has reduced the need for physical documentation and improved access to centralized information.

Despite the positive perceptions, the interview responses also reveal several challenges and limitations associated with the use of SEAP. These issues are primarily related to technical difficulties, usability concerns, and organisational adaptation. One of the main challenges identified is the complexity of the system's interface and procedures. Some respondents indicated that certain sections of the platform are difficult to navigate, and that procurement procedures can be complicated, especially for less experienced users. This suggests that usability remains a significant barrier to full efficiency.

Technical issues were also mentioned, although not in a dominant way. These include occasional problems with internet connectivity or platform performance, as well as periods when the system may operate more slowly. While not constant, such issues can affect workflow efficiency and create delays in procurement processes. Another limitation concerns the frequent updates and system changes. While updates are generally intended to improve functionality, they also require users to continuously adapt to new

features and procedures. This can lead to temporary inefficiencies and a learning curve for administrative staff.

Additionally, respondents pointed out the need for training and adaptation of personnel. The effectiveness of the system depends heavily on user familiarity and experience. In institutions where staff are less trained or less experienced with digital tools, the system may be perceived as more difficult to use.

In summary, the main advantages, as well as challenges and limitations identified in the study include:

Table 1. Advantages and limitations identified

Advantages	Challenges and limitations
Increased transparency of procurement procedures	Complex and sometimes non-intuitive interface
Greater efficiency and reduced processing time	Complicated procurement procedures
Standardisation of administrative workflows	Frequent system updates requiring adaptations
Reduced direct interaction between actors	Need for continuous user training and digital skills development
Improved traceability and accountability	Occasional technical or connectivity issues

Source: Author's own elaboration based on interview responses

3.4. Discussion and comparative perspective

The final section of the case study integrates the findings from the previous subsections and places them within a broader analytical framework. The aim is to provide a balanced discussion of how electronic public procurement operates in Romania through the platform SEAP, highlighting both its strengths and remaining structural limitations.

Overall, the results indicate that SEAP plays a central role in modernising public procurement processes. Across all respondents, there is a clear consensus that digitalisation has improved transparency, efficiency and administrative organisation. The platform is perceived as a key instrument for reducing paperwork and standardising procedures, while increasing the traceability of procurement decisions.

From a comparative perspective, the Romanian experience reflects developments seen in other European Union member states, where e-procurement systems have become a standard governance tool. Similar to other national platforms, SEAP contributes to the centralisation of procurement procedures and the creation of a unified digital environment for public sector transactions. In this regard, Romania is broadly aligned with EU-level objectives regarding transparency and digital governance. However, compared to more advanced digital procurement ecosystems in some Western European countries, certain limitations remain evident. Based on the interview responses, usability issues and system complexity are still relevant challenges. While the platform ensures formal compliance and transparency, the user experience is not always optimised, particularly for less experienced users. This suggests that Romania's system is functionally effective but still developing in terms of user-centred design and operational simplicity.

Another important comparative observation concerns the balance between transparency and practical efficiency. Although SEAP significantly enhances transparency and reduces direct interaction between stakeholders, thereby lowering corruption risks, it may also introduce procedural rigidity. In some cases, strict digital workflows and frequent system updates can slow down operational processes or require additional adaptation time from users.

The findings also suggest that the effectiveness of SEAP depends not only on the technological infrastructure but also on human and organisational factors. Training, digital literacy and institutional experience play a crucial role in determining how efficiently the system is used in practice. This highlights a broader governance issue: digital transformation is not solely a technological process, but also an organisational and cultural one.

The World Governance Indicators (WGI) [47] provide a useful way to compare the interview findings with broader governance standards. In WGI, countries are scored from about -2.5 (weak governance) to +2.5 (strong governance) across different dimensions. In terms of Government Effectiveness (WGI: 0.5–1.5 range for better-performing EU states), interviewees generally described SEAP as improving efficiency and structuring procurement processes, although issues like delays and usability problems still reduce its effectiveness in practice. For Control of Corruption (WGI: often around 0.5–1.0 in EU contexts), respondents highlighted that SEAP increases transparency and traceability, which helps limit corruption risks, but they also mentioned that some risks remain during evaluation and decision-making stages. Regarding Regulatory Quality (WGI: typically 0.8–1.5 in EU countries), experts noted that SEAP is aligned with EU procurement rules and standard procedures, but its complexity and bureaucracy sometimes make implementation more difficult. Overall, the interview findings suggest that SEAP supports these governance dimensions in practice, but not at the maximum levels implied by the strongest WGI scores.

Data gathered from the interviews offer significant perspectives regarding the primary inquiries of this investigation. A majority of subjects perceived digitalized public purchasing as superior in efficacy and equity compared to conventional methods, attributing this shift largely to procedural uniformity and the enhanced availability of relevant documentation. The most prominent advantages associated with SEAP were identified as transparency and accountability; interviewees underscored the platform's capacity to facilitate greater procedural clarity, auditability and openness to external oversight. Several persistent obstacles to the execution of e-procurement were highlighted, specifically administrative intricacies, technological malfunctions and the requirement for ongoing alignment with evolving legal frameworks. On the whole, the empirical evidence corroborates the thesis articulated in the abstract, suggesting that while the transition to digital systems has augmented transparency, availability and operational performance, certain deficiencies remain that must be addressed to optimize the utility of electronic public tender frameworks.

In conclusion, the analysis shows that Romania, through SEAP, has made significant progress in aligning with European standards of electronic public procurement. The system is effective in promoting transparency and efficiency and it represents a strong foundation for digital governance. Nevertheless, improvements in usability, user support and system flexibility are necessary in order to reach the level of optimisation observed in more mature digital procurement systems.

Conclusions

Electronic public procurement has become an increasingly important instrument for improving transparency, efficiency and accountability in public administration. The analysis of Romania's Electronic Public Procurement System (SEAP) suggests that digitalization has contributed to greater accessibility of procurement information, improved traceability of procedures and also could increased standardization of procurement practices.

The findings obtained through expert interviews indicate that transparency and access to information are among the most significant benefits associated with SEAP. At the same time, respondents identified several challenges, among those including procedural complexity and administrative burdens that may affect the overall effectiveness of the system. Although digitalization has reduced certain risks associated with traditional procurement procedures, it has not entirely eliminated operational and institutional constraints.

The comparison with governance frameworks, particularly the World Governance Indicators, highlights the contribution of SEAP to dimensions such as government effectiveness, control of corruption and regulatory quality. However, the results also suggest that achieving the full benefits of electronic procurement depends on technological solutions and on the continuous improvement of administrative processes and institutional capacity too.

Overall, the evidence indicates that SEAP represents an important step in the modernization of public procurement in Romania. While significant progress has been achieved in promoting transparency and accountability, further efforts are required to simplify procedures, enhance system functionality and ensure a more efficient procurement process for all stakeholders.

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