

STRATEGIC PREPAREDNESS FOR AI ADOPTION IN ROMANIAN PUBLIC INSTITUTIONS

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Abstract

The adoption of Artificial Intelligence (AI) technologies in public institutions is increasingly seen as a critical factor in improving service delivery and organizational efficiency. However, the strategic preparedness of public institutions for implementing AI remains underexplored, particularly in the context of Romania. This paper presents a quantitative survey-based study, with respondents from Romanian public institutions, examining the level of strategic preparedness for AI adoption and the factors that influence it, through the lens of Institutional Theory and the Technology-Organization-Environment (TOE) framework. The findings reveal a significant gap between institutional digitalization strategies and actual AI implementation, with preparedness being low and fragmented. Key factors determining preparedness include the presence of a formal digital strategy and access to multiple funding sources, while human-centric factors like leadership roles and private sector experience were not statistically significant predictors of adoption. This study contributes to a broader understanding of AI adoption in the public sector by demonstrating that strategic planning and diverse funding, rather than individual human capital, are the primary drivers of meaningful change.

Keywords: Artificial Intelligence, strategic management, public management, digital transformation, AI integration.

1. Introduction

Artificial Intelligence (AI) is increasingly seen as a transformative force within public governance, promising to enhance service delivery, optimize administrative processes, and inform policymaking. However, the success of AI implementation in the public sector is contingent upon the strategic preparedness of institutions, particularly at the local government level, where capacity and contextual constraints vary widely. While AI offers substantial potential, such as cost savings and more efficient service delivery, the path to long-term adoption is fraught with complex challenges. These challenges extend beyond technical limitations and include significant ethical and governance concerns, as well as organizational barriers like bureaucratic rigidity, risk aversion, and a lack of specialized digital skills.

In the context of Romania, public administration is characterized by a centralized but administratively fragmented system, with uneven implementation of national digital transformation strategies. Strategic planning often suffers from a lack of integration between formalized documents and operational realities, a gap amplified by factors like political instability and limited strategic competencies at the leadership level. This context highlights the critical importance of strategic preparedness, which involves not just access to AI tools but the institutional readiness to plan, manage, and integrate them in a way that supports the public mission.

The primary objective of this article is to analyze the strategic preparedness of public institutions in Romania for the adoption of AI, and to identify the key factors that influence this readiness, as well as the perceived barriers associated with AI adoption.

This article is structured to provide a comprehensive analysis. Following this introduction, section two presents a review of the existing literature on AI in public administration, strategic planning, and the specific context of Romania. Section three outlines the theoretical framework, drawing on Institutional Theory and the Technology-Organization-Environment (TOE) framework. Section four details the methodology, including the survey design, data collection, and statistical analysis. Section five presents the results of the descriptive and statistical analysis. Finally, the discussion section integrates the findings with the theoretical framework to provide an interpretation of the results, and the conclusion summarizes the study's implications and limitations.

2. Literature review

2.1. Artificial Intelligence and its applications in public institutions

Artificial Intelligence (AI) has moved to the forefront of digital innovation, playing an increasingly central role in how governments and public institutions seek to improve service delivery and respond to the growing expectations of citizens in the digital age. Defined as technologies capable of simulating human intelligence, such as learning, reasoning, and understanding language, AI is already being used in areas like automated document

processing, predictive analytics, chatbots, and smart decision support systems (Russell and Norvig, 2016; Androutsopoulou *et al.*, 2019).

A recent review by Madan and Ashok (2023) shows that AI in the public sector is still in the early stages of being adopted in a structured and strategic way. Many public institutions are currently experimenting with AI, yet these efforts are often fragmented and lack a coherent strategic vision for long-term integration and institutional change. While AI offers substantial potential, such as cost savings, more efficient service delivery, personalized citizen interactions, and enhanced decision-making through predictive analytics, the path toward long-term adoption is fraught with complex challenges. These challenges extend beyond technical limitations and include significant ethical and governance concerns. Among the most pressing are issues related to fairness, transparency, data privacy, and accountability in automated decision-making processes. Moreover, institutions often face organizational barriers such as bureaucratic rigidity, risk aversion, and limited leadership engagement. The review also identifies a widespread lack of specialized digital skills and the absence of a data-driven culture as critical impediments. Additionally, infrastructure deficiencies, outdated legacy systems, and fragmented data ecosystems further complicate implementation. These factors collectively hinder the development of what the authors refer to as ‘absorptive capacity’, which can be understood as the institutional ability to recognize, assimilate, and apply new technologies meaningfully. The authors mentioned that without this capacity, pilot AI initiatives risk remaining isolated experiments with limited transformational impact.

2.2. Strategic planning and AI adoption in public institutions

Although numerous AI tools have reached a high level of technological maturity, the ability of public institutions to adopt and scale these innovations depends on more than just technology, it heavily depends upon their strategic preparedness, a multidimensional concept that reflects institutional vision, leadership commitment, and organizational capability. Strategic planning, in this context, is not only a process of setting goals and planning how to achieve them, but a dynamic and iterative process through which public organizations align internal capabilities, external pressures, and emergent technologies with their mission and value propositions.

In academic literature, strategic planning in public administration is often explored using models like Bryson’s (2011), which emphasizes the importance of involving stakeholders, setting clear goals, understanding the external environment, and measuring progress. When applied to AI, this kind of planning involves more than just experimenting with small projects, it requires institutions to build internal systems and rules that support AI, develop employee skills, and make sure AI aligns with their public mission and values. Many studies (such as Mergel, Edelman and Haug, 2019) show that institutions with clear strategies and leadership are more likely to adopt AI in meaningful ways, not just as isolated experiments.

Turning to the Romanian context, public administration is characterized by a centralized but administratively fragmented system, marked by discrepancies between urban and rural capacities, and between central and local government entities. While national strategies for digital transformation and smart governance have been introduced in some cases, often in alignment with European Union funding mechanisms, their implementation remains uneven, particularly at the local level where institutional capacity and strategic continuity are often constrained.

Research (Hințea, Profiroiu and Țiclău, 2015; 2019) reveals that strategic planning within Romanian public institutions often suffers from a lack of integration between formalized documents and operational realities. These gaps are enhanced by political instability, managerial turnover, and limited strategic competencies at the leadership level. Municipalities such as Cluj-Napoca stand out as early adopters of Smart City frameworks, having the first Digital Transformation Strategy and being considered a pioneer in Romania regarding digital public services; yet even these initiatives show limited AI integration, often relying on externally driven projects, without a strong internal alignment.

In many cases, AI adoption is driven by external funding opportunities or pilot projects rather than being embedded in long-term strategic visions. The lack of dedicated digital transformation units, insufficient AI training programs, and resistance to change among public servants further hinder progress. This context highlights the need for a strategic approach to AI, one that moves beyond isolated technological solutions and engages with broader institutional logics, including digital governance capabilities, stakeholder inclusivity, and long-term value generation.

Thus, in Romania, as in other emerging digital states, the main challenge is not whether public institutions can access AI tools, but whether they are ready to plan, manage, and integrate them into their activities in a way that supports their mission and benefits the public. This article seeks to analyze how prepared public institutions are, from a strategic perspective, to adopt and integrate AI into their organizations.

2.3. Regulatory frameworks

The European Union has advanced several frameworks to regulate AI development and deployment, most notably the Ethics Guidelines for Trustworthy AI (European Commission, 2019) and the Artificial Intelligence Act, made by the European Parliament and Council and published in 2024. These instruments establish requirements for transparency, accountability, human oversight, and risk mitigation. Also, they reinforce a governance-by-design approach, emphasizing ethical considerations throughout the AI life-cycle.

In Romania, the transposition of these frameworks represents both an opportunity and a challenge. While EU funding mechanisms and legislative coherence can incentivize adoption, institutional capacity for implementation remains uneven. Romanian public institutions often demonstrate a formal compliance posture without deeper internalization

of regulatory principles. As Hințea, Profiroiu and Țiclău (2015; 2019) suggest, real strategic reform requires more than strategic documents, it necessitates organizational learning, leadership stability, and inter-institutional coordination. Hence, strategic preparedness for AI involves not only planning but the capability to mobilize resources and translate regulations into actionable frameworks.

3. Theoretical grounding

This article builds its analytical foundation on two complementary theoretical lenses: Institutional Theory and the Technology-Organization-Environment (TOE) framework, which together offer a comprehensive perspective for understanding the strategic preparedness for the adoption of AI in Romanian public administration, by accounting for both internal organizational factors and broader institutional and environmental influences.

Institutional Theory is particularly useful in explaining why organizations, especially in the public sector, often behave in ways that are not primarily driven by efficiency or innovation, but rather by their desire to conform to external norms, regulatory pressures, and culturally embedded expectations. As Scott (2001) explains, institutions consist of three pillars: regulative, normative, and cultural-cognitive, that shape how organizations perceive their environment and respond to it, thus guiding actions toward what is seen as legitimate and socially acceptable. In Romania, where public institutions are marked by a strong legacy of bureaucratic traditions and top-down governance models, institutional constraints are deeply rooted in historical administrative patterns that still influence decision-making today, even as EU integration has introduced new pressures for modernization and reform. These reforms are frequently adopted not purely because of their rational utility, but because they signal alignment with international standards or project an image of modernity and compliance with European norms.

Additionally, professionalization processes within public institutions further reinforce institutional influences, as public servants tend to operate within well-defined professional communities that emphasize specific norms, values, and technical practices, which often shape their attitudes toward digital tools and innovation. This means that the decision to adopt AI is rarely a matter of technical feasibility alone, instead, it is filtered through a professional lens where concerns about legitimacy, role boundaries, and procedural integrity play a decisive role. For instance, even when an AI-based decision-support tool is readily available, it may be delayed or rejected if it challenges established routines or is perceived to threaten professional autonomy.

While Institutional Theory provides a powerful explanation for legitimacy-driven behavior and resistance to change, it does not fully account for the material and structural conditions that enable or constrain technological adoption at the organizational level, which is precisely where the TOE framework becomes particularly useful. Developed by

Tornatzky, Fleischer and Chakrabarti (1990), the TOE framework identifies three interrelated domains that shape how technologies are adopted: the technological, organizational, and environmental contexts, each of which adds a distinct layer of analysis.

The technological context focuses on the characteristics of the innovation itself and the organization's technological readiness, including the availability, compatibility, and usability of digital systems, which are often limited in Romanian public institutions due to the persistence of fragmented infrastructures and outdated platforms. As such, the existence of advanced AI tools in the market does not guarantee their use in practice, since institutions frequently struggle with integration, data availability, and interoperability, barriers that may be technical in nature but are often amplified by organizational inertia.

The organizational context refers to internal elements such as size, complexity, decision-making structures, leadership styles, employee competencies, and the overall capacity for change, which collectively shape an institution's readiness and willingness to experiment with or scale up AI technologies. Where digital transformation is supported by strong leadership, aligned strategies, and investments in workforce development, adoption is more likely to occur in a meaningful way. However, in contexts where managerial attention is limited, staff are undertrained, or change management processes are weak, technological initiatives often remain superficial or fragmented.

The environmental context captures the influence of external forces such as political expectations, legal and regulatory frameworks, inter-organizational networks, and the availability of financial resources, all of which play an especially important role in public sector contexts, where innovation often depends on mandates or external funding, such as those provided through EU structural instruments. However, these environmental factors do not exert influence in a vacuum, as their impact is shaped by how public institutions interpret and respond to them, which is in turn influenced by their internal culture and institutional history.

By combining Institutional Theory with the TOE framework, this article offers a broader understanding of what shapes public institutions' ability to adopt AI, arguing that AI adoption is not just a technical or cost-based decision, but it depends on how prepared institutions are (strategically, organizationally, and institutionally) to manage such a change. This approach helps explain why some public institutions are ready to take advantage of AI, while others remain cautious or only adopt it on the surface.

4. Methodology

This study adopts a quantitative survey-based design to evaluate the level of preparedness of Romanian public institutions for AI adoption. The choice of a survey methodology was motivated by the need to collect standardized, comparable data across a diverse set of institutions. While the research is exploratory in nature, it also follows a hypothesis-driven approach, grounded in the Technology-Organization-Environment (TOE) framework

and Institutional Theory, which together provide a robust conceptual lens for analyzing the institutional, organizational, and environmental drivers of AI adoption.

The survey was designed to capture both the organizational context of digital transformation and the perceptions of employees directly involved in these processes. The questionnaire has two main sections. The first section was focused on AI and digitalization related questions (11 items). These items assessed the current level of digitalization, the existence of formal strategies (e.g., digital transformation or Smart City), the perceived importance of AI, self-reported knowledge and use of AI, with usage scenarios, institutional openness to technological innovation, funding strategies, and perceived barriers to AI adoption. The second section was comprised of 7 items regarding respondent characteristics and included demographic and professional variables, such as tenure in the organization, prior experience in the private sector, department of activity, leadership or non-leadership position, and the size of the institution (measured by the number of employees).

Where appropriate, items were measured using Likert-type scales to capture the degree of agreement, importance, or perceived preparedness. Multiple-choice questions were used for funding sources and barriers to AI adoption, each option being treated as a distinct variable in the analysis phase.

The survey was distributed online to employees of Romanian public institutions, with a purposive focus on those who hold direct responsibility for digital transformation within their organizations. A total of 124 valid responses were collected, during March and April 2025, ensuring that the dataset reflects informed perspectives on institutional strategies and practices related to digital transformation and AI adoption.

The collected data was processed and analyzed using IBM SPSS Statistics. Data cleaning involved the recoding of several variables to ensure consistency and interpretability. For multiple-answer questions, each response option was coded as a separate binary variable. Additionally, some categorical variables were merged into broader categories to allow for meaningful statistical testing.

The study is guided by the following hypotheses, derived from the TOE framework and Institutional Theory:

- H1:** The presence of a formal digital transformation or Smart City strategy significantly increases the likelihood that AI is strategically prioritized.
- H2:** Employees' self-reported AI knowledge positively correlates with perceived institutional openness toward AI adoption.
- H3:** Institutions planning to access EU funds are more likely to report current or planned AI implementation.
- H4:** Employees in leadership or strategic roles are more likely to report AI as a strategic priority than those in executional roles.
- H5:** Employees with prior experience in the private sector are more likely to use AI tools.
- H6:** Institutions with higher organizational tenure (older workforce) are less likely to adopt AI.

H7: Institutions relying on national or EU funds report more perceived barriers than those relying on internal funds.

H8a: Institutions that rely on multiple funding sources report a higher level of AI strategic priority than those relying on a single source.

H8b: Institutions that report multiple funding sources are more likely to report AI use than those relying on a single funding source.

To test these hypotheses, both descriptive and inferential statistical analyses were performed. Descriptive statistics were used to provide an overview of respondents' profiles and institutional characteristics. Inferential analyses, including correlation tests and cross-tabulations with chi-square tests, were conducted to explore the relationships between institutional features, respondents' characteristics, and AI adoption indicators. Where appropriate, regression models were considered to evaluate the predictive power of independent variables on AI strategic prioritization and adoption outcomes.

The survey items were designed based on an extensive literature review on digital transformation and AI adoption in the public sector, as well as the TOE and Institutional Theory frameworks. This ensured that the constructs measured were aligned with established dimensions of technology adoption. The hypotheses were operationalized through multiple indicators (e.g., 'strategic priority of AI' measured through both direct self-report and presence of strategies). Convergent validity was supported by cross-checking theoretically related items.

4.1. Respondents' characteristics

The majority of respondents are employed in large institutions with over 500 employees (48.8%) and are in execution-level positions (73.6%). A smaller portion of the sample works in institutions with fewer than 50 employees (16%) and holds management roles (24.6%). This demographic profile indicates the survey primarily captures the perspective of the general workforce in larger public organizations.

Looking at the tenure in the institutions, the results indicate a significant difference between overall institutional tenure and tenure in current roles. While nearly half of the respondents (43.2%) have been with their institution for over 10 years, suggesting a very stable workforce, a greater proportion of respondents (32%) have been in their current position for less than three years. This shows that, while employees are committed to their organizations in the long term, there is frequent internal movement, with many individuals transitioning into new roles, likely through promotions or departmental shifts.

Additionally, a substantial majority, 68.8% of respondents, reported having prior experience in the private sector, while only 31.2% have worked exclusively in the public sector. This high proportion of individuals with cross-sector experience is an important demographic feature of the sample, suggesting that the results provided may be influenced by a professional background shaped by private-sector practices.

4.2. Limitations and biases

Several potential sources of bias need to be considered when interpreting the findings of this study. First, self-reporting bias may have influenced the results, as the survey relied on respondents' perceptions, which do not always fully align with institutional realities or objective performance measures. Second, selection bias could be present, given that the survey specifically targeted employees responsible for digital transformation within their organizations. While this group is highly relevant for the research objectives, it may not capture the perspectives of other staff categories, such as administrative or operational personnel, whose attitudes might also affect AI adoption processes.

In addition to potential biases, several methodological limitations must be acknowledged. First, the use of purposive, non-probabilistic sampling constrains the generalizability of the findings beyond the participating institutions. While the sample provides valuable insights into the preparedness of Romanian public institutions for AI adoption, it cannot be assumed to represent the broader public sector in a statistically generalizable manner. Second, the cross-sectional design of the study captures institutional perceptions and practices at a single point in time. This prevents the assessment of longitudinal dynamics, such as evolving digital strategies or changes in attitudes toward AI adoption. Third, the heterogeneity of institutions included in the study poses analytical challenges. Public institutions vary widely in terms of size, resources, and mandate, and such diversity may influence adoption patterns in ways not fully captured by the current design. Finally, there are measurement limitations related to the operationalization of certain constructs. For example, the concept of 'institutional openness' was assessed through a limited set of survey items, which may not fully reflect its multidimensional nature. These limitations suggest caution in interpreting the findings and underscore the need for future research employing complementary methodologies and broader datasets.

5. Results

5.1. Descriptive analysis

When asked about the general level of digitalization within their institution, the results show that the majority of institutions are concentrated at basic digitalization levels, with 29% primarily relying on paper and 33.9% having only partially digitized their processes. While nearly a third (32.3%) have implemented digital document management systems, the progression to more advanced stages is minimal, only 3.2% use AI ad hoc, and a mere 1.6% have systematically integrated it. This distribution suggests that while many institutions are undergoing digitalization, their efforts are largely focused on basic efficiency improvements rather than on leveraging cutting-edge technologies. The low percentages for levels 4 and 5 highlight a significant divide, with advanced AI adoption remaining a rarity rather than the norm.

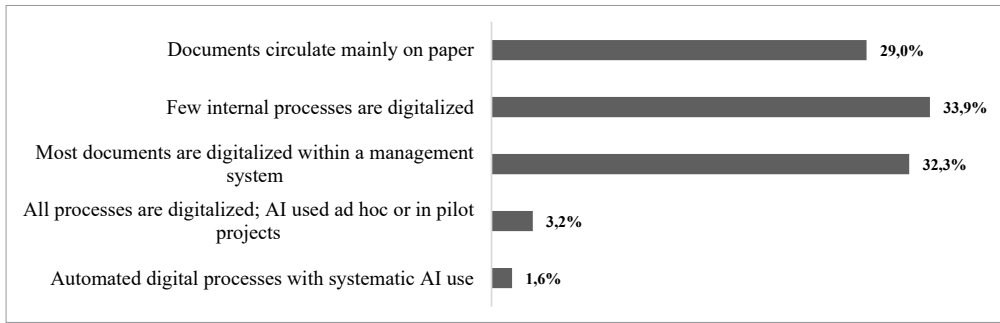


Figure 1: Level of digitalization within respondents' institutions

Source: Own research

This cautious approach to advanced digitalization is further reflected in the strategic prioritization of AI. The second pie chart shows that a substantial 42.7% of institutions do not even mention AI in their strategies, and another 27.4% view it as merely a potentially useful tool without formal integration. This means nearly 70% of respondents have not yet recognized AI as a strategic focus. Although 53.2% of the institutions comprised in the data set have a formal digitalization or Smart City strategy in place, the strategic role of AI remains marginal for most. Only 12.1% consider it an important strategic element, and a small 7.3% have made it a clear strategic priority. This significant gap between general digitalization efforts and formal AI prioritization indicates that institutions may still be grappling with the foundational aspects of digital transformation before they can systematically explore and implement more sophisticated technologies.

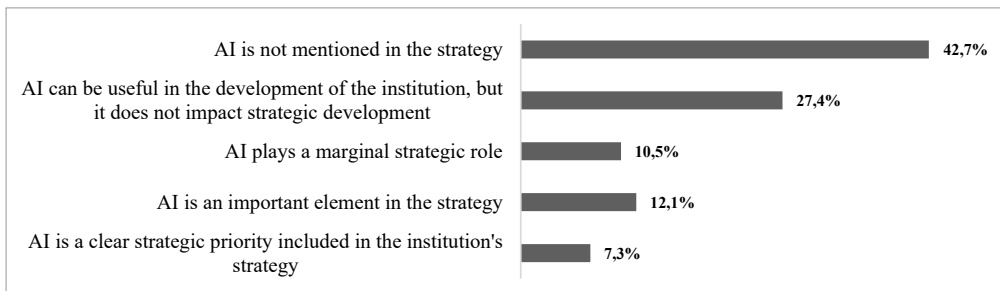


Figure 2: AI integration within the institutions' strategies

Source: Own research

Regarding the level of openness towards AI, the results reveal that the largest group, comprising 37.1% of respondents, expresses interest in AI but feels a need for more information before proceeding, which indicates a significant segment of potential adopters who are not yet confident enough to move forward. This is followed by a quarter of respondents (25%) who hold a positive attitude and are actively exploring AI solutions, while a much smaller group (7.3%) is already actively engaged in implementing AI.

On the other end of the spectrum, 10.5% of respondents do not consider AI implementation useful, indicating resistance or a lack of perceived relevance. Additionally, 20.2% are hesitant but aware of AI’s potential, acknowledging its benefits without actively pursuing it. Overall, the data shows that, while there is a significant portion of institutions that are open to or actively pursuing AI, the majority remain either cautious, hesitant, or resistant.

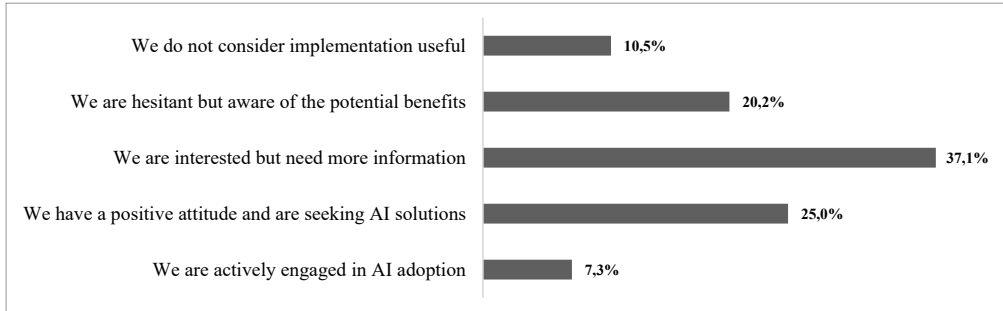


Figure 3: Level of openness towards AI

Source: Own research

The assessment of AI understanding shows that while most respondents have a basic grasp of the technology, with 53.2% recognizing its potential use in their institutions, deeper expertise is scarce. Only 18.5% report advanced knowledge, and a mere 4% consider themselves experts. This superficial level of understanding contrasts sharply with the very small segment (2.5%) that has no knowledge at all, suggesting that the primary challenge is not a complete lack of awareness, but rather the need to transition from passive recognition to a more profound, practical comprehension.

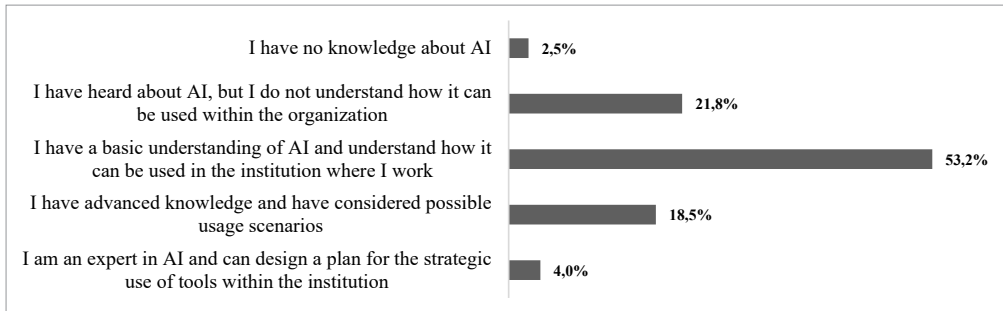


Figure 4: Level of understanding of AI

Source: Own research

This knowledge gap is directly reflected in the low rates of AI adoption. Almost half of the surveyed institutions (49.2%), and another 30.6%. Formal, institution-wide implementation is exceedingly rare, with only 14.5% using AI in pilot projects, 3% for widespread use, and a tiny 2.7% having fully integrated it into their processes. The most common AI

applications are limited to basic tasks like text generation (43.5%) and statistical data analysis (24.2%), while more advanced functions like process automation (16.9%) are far less common. This pattern confirms that AI adoption is still in its nascent stages and is largely experimental, lacking the strategic prioritization and leadership support needed to move beyond ad-hoc usage and into formal, institutional-level implementation.

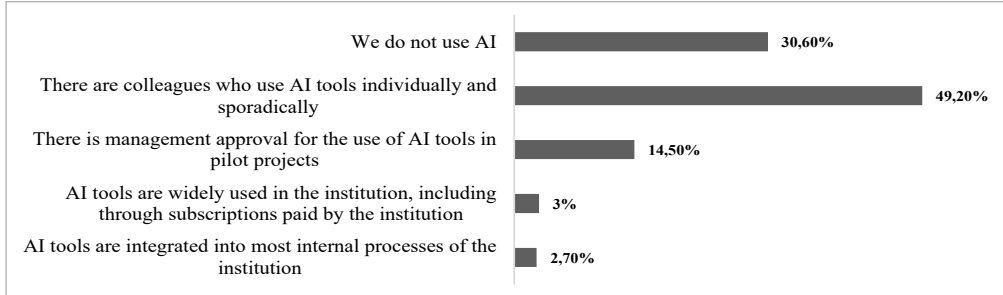


Figure 5: Level of AI usage

Source: Own research

The most significant perceived barriers to AI adoption are overwhelmingly human and skill-based, with ‘resistance to change’ and ‘lack of internal skills’ being the most cited obstacles, by 70 and 69 respondents, respectively. This is followed by a notable concern for ‘data security issues’ (56 respondents). Legal barriers, both national (32) and European (12), are perceived as less significant, while ‘financial issues’ (4) are viewed as the least common barrier. This indicates that the primary hurdles for AI integration are not fiscal, but rather internal, cultural, and related to technical expertise.

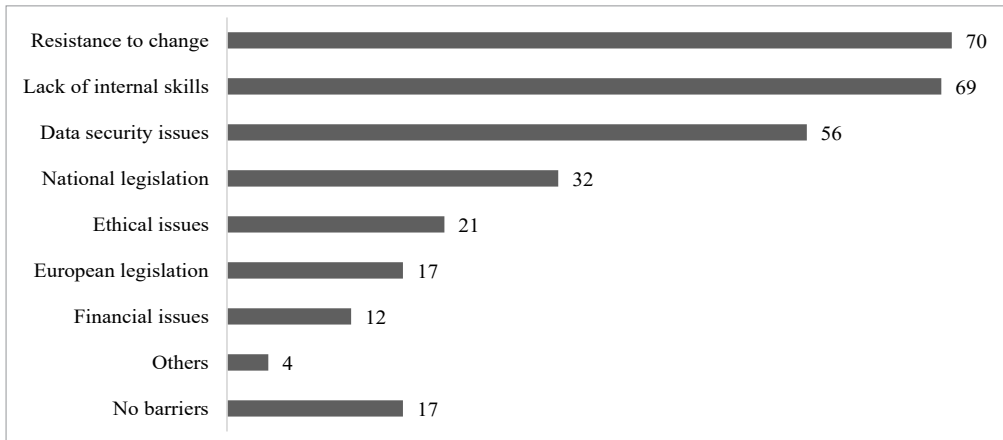


Figure 6: Barriers regarding AI implementation within the respondents' institutions

Source: Own research

In terms of funding, the data shows a strong reliance on external sources. The most frequently cited funding mechanism is ‘European funds’, selected by 73 respondents. This contrasts with a much smaller number of respondents who rely on ‘national funds’ and ‘institutional budgets’, both cited by 29 respondents. Additionally, ‘public-private partnerships’ were mentioned by 17 respondents, while a notable 32 respondents indicating they do not even consider AI implementation. This funding structure suggests that digitalization efforts are heavily dependent on grant-based, project-specific financing rather than being driven by consistent, internally funded strategic priorities.

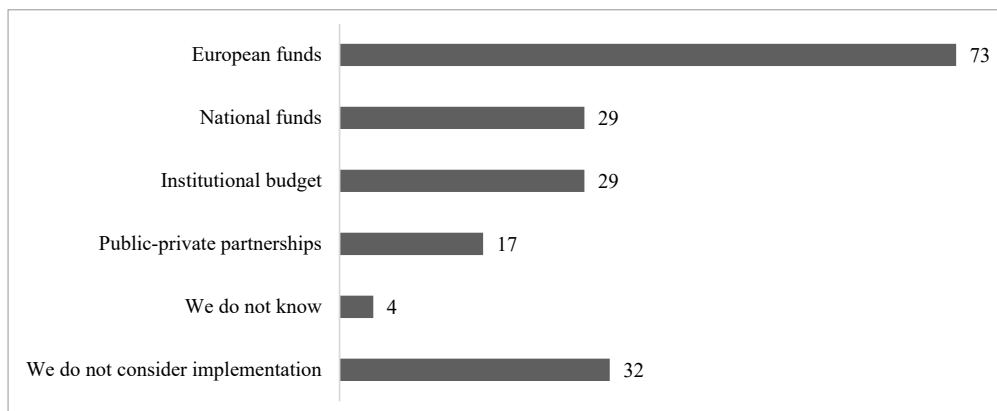


Figure 7: Funding sources used or in plan of use for AI implementation within the respondents' institutions

Source: Own research

It is worth noting that, for both barriers and funding source, respondents could select multiple choices. For these two questions, in the hypothesis testing phase, each choice was transformed into a binary variable.

5.2. Hypotheses testing

5.2.1. Strategic perspective

The analysis begins by looking at the role of strategic planning on AI readiness. We proposed in H1 that having a formal digital transformation or Smart City strategy is not just a bureaucratic formality, but a strong predictor of whether AI is prioritized. To test this, we used an independent samples t-test, which was chosen to compare the average scores of two distinct groups: those with a formal strategy and those without one. The dependent variable was the self-reported extent to which AI is a strategic priority, measured on a scale, while the independent variable was a binary categorization of whether a digital transformation or Smart City strategy was present. The analysis showed a clear and statistically significant difference ($t(119.846) = 5.899, p < 0.001$). Institutions with a formal strategy reported a prioritization score nearly double that of institutions without one ($M = 2.70$

vs. $M = 1.50$). The large effect size ($d = 1.147$) confirms the idea that AI adoption does not happen by accident, it requires the clear signal of a formal plan. This finding sets the baseline for the study, meaning that without a roadmap, prioritization of AI is unlikely.

5.2.2. *The human capital paradox*

Moving from the organization to the individual, the analysis tried to separate *who* the employee is from *what* the employee knows. We suggested in H2 that self-reported AI knowledge would link to how open the institution is to AI. Using Pearson's correlation analysis, we found a significant, positive relationship ($r = 0.276, p = 0.002$). This suggests that technical knowledge helps lower the perceived barriers to adoption. However, a key finding appears when we compare this to demographic details. Contrary to the assumption that senior roles or private sector backgrounds drive innovation, our data contradicts the importance of professional status. In testing H4, H5 and H6 we used t-tests and ANOVA to check the influence of management roles, private sector experience, and years of service. Surprisingly, none of these factors produced statistically significant differences. For instance, while managers reported higher prioritization than other staff ($M = 2.38$ vs $M = 2.05$), the difference was not significant ($p = 0.275$), and years of service had no impact on openness ($p = 0.466$). This builds on the argument that institutional AI readiness is driven by skill (or knowledge), not by job title or seniority. The lack of significance here is not a failure, but rather it reveals that personal background is a poor predictor of digital culture compared to actual digital knowledge.

5.2.3. *The relevance of financial resources*

While human capital provides the ability, financial resources provide the capacity. The final part of the analysis looked at how funding shapes AI adoption, showing a trade-off between having resources and dealing with administrative rules. We first tested the impact of intent versus reality. H3 suggested that simply planning to use EU funds would signal implementation, yet the results showed no significant difference ($p = 0.299$), meaning that good intentions alone are not enough.

In contrast, having diverse funding sources proved to be a powerful, although complex driver. Testing H8a and H8b, we compared institutions relying on single-source (internal) funding against those using multiple sources (national/EU and internal). The tests confirmed that having diverse funding significantly increases both AI tool usage ($p = 0.014$) and strategic priority ($p = 0.006$). However, this financial advantage comes at a cost, as shown by H7. The analysis ($F(2,121) = 4.744, p = 0.010$) showed that institutions with mixed funding sources report significantly higher barriers ($M = 2.26$) than those using only internal funds ($M = 1.60$). This creates the idea that, while external funding is necessary to grow AI usage, it also introduces administrative difficulties that institutions must manage.

Table 1: Hypotheses testing results

Hypothesis	Independent variable (Predictor)	Dependent variable (Outcome)	Statistic test	p-value	Effect size	Results
H1	Digital/Smart City Strategy	AI strategic priority	$t(119.846) = 5.899$	<0.001	$d = 1.147$ (Large)	Supported
H2	Employee AI knowledge	Institutional openness	$r = 0.276$	0.002	$r^2 = 0.076$ (Weak)	Supported
H3	Plan for EU funds	AI tool use	$t(122) = -1.042$	0.299	$d = -0.187$ (Negligible)	Rejected
H4	Job role (management vs. executive)	AI strategic priority	$t(46.511) = -1.105$	0.275	$d = -0.249$ (Negligible)	Rejected
H5	Private sector experience	AI tool use	$t(122) = -0.617$	0.538	$d = -0.120$ (Negligible)	Rejected
H6	Organizational tenure	Institutional openness	$F(3, 120) = 0.856$	0.466	$n^2 = 0.021$ (Small)	Rejected
H7	Funding source type	Perceived barriers	$F(2, 121) = 4.744$	0.010	$n^2 = 0.073$ (Medium)	Supported
H8a	Funding diversity	AI tool use	$t(120) = -2.515$	0.014	$d = -0.562$ (Medium)	Supported
H8b	Funding diversity	AI strategic priority	$t(120) = -2.822$	0.006	$d = -0.631$ (Medium)	Supported

Source: Own research

6. Discussions

The research found that the level of strategic preparedness for AI adoption in Romanian public institutions is currently low and fragmented. While 53.2% of institutions have a formal digitalization strategy, AI's role remains marginal for most, with nearly 70% of respondents reporting that AI is either not mentioned in their strategies or is seen as a potentially useful but non-integrated tool. This lack of strategic prioritization is reflected in the low rates of implementation, as almost one third of the surveyed institutions (30.6%) report no use of AI whatsoever. When AI is used, it is typically for basic, sporadic tasks like text generation and statistical analysis, indicating an experimental, rather than a systemic, approach to adoption.

The study also identified several key factors that determine strategic preparedness. The presence of a formal digital strategy (H1) and the reliance on multiple funding sources (H8a, H8b) are significant predictors of a higher strategic prioritization of AI and its actual use. Conversely, the study found that factors often assumed to be drivers of change, such as access to EU funds alone (H3) or the presence of employees in leadership roles (H4) or with prior private sector experience (H5), were not statistically significant predictors of higher AI adoption or prioritization. This suggests that adoption is primarily driven by formal institutional and financial planning, while individual human factors are less impactful in overcoming systemic barriers.

The descriptive findings reveal a significant gap between the ambition for digital transformation and the current state of AI adoption in Romanian public institutions. While a substantial majority of institutions (53.2%) have a formal digitalization or Smart City strategy, the strategic role of AI remains marginal for most. The data shows that nearly 70% of respondents indicate that AI is either not mentioned in their strategies (42.7%) or is viewed as a potentially useful but non-integrated tool (27.4%). This low level of strategic prioritization is mirrored by an equally low rate of actual implementation; almost one third of the surveyed institutions report no use of AI whatsoever (30.6%). When AI is used, it is often sporadic and individual (49.2%) and confined to basic tasks like text generation and statistical analysis, underscoring the nascent and experimental nature of current efforts. These findings align with the observations of Madan and Ashok (2023), who note that AI adoption in the public sector is still in its early stages and often lacks a coherent, long-term strategic vision.

The hypothesis testing provides a more nuanced picture of the specific drivers and inhibitors of this adoption. We found that the presence of a formal digital strategy and, more importantly, the reliance on multiple funding sources (both internal and external) are significant predictors of a higher strategic prioritization of AI and its actual use. In contrast, there was no statistically significant evidence that accessing EU funds alone, having employees in strategic leadership roles, or a workforce with prior private sector experience leads to higher AI adoption or prioritization. Similarly, workforce tenure was not a significant factor.

The study's results are best understood by applying the core theories of the Technology-Organization-Environment (TOE) framework and Institutional Theory. The findings suggest that AI adoption in Romanian public institutions is not primarily driven by internal, organizational-level readiness, but rather by external, environmental pressures and institutional logics.

The strong support for H1 confirms the central role of the organizational context within the TOE framework. The presence of a formal digital or Smart City strategy is a critical antecedent for strategic AI prioritization, which is not merely a bureaucratic formality, but it is a foundational step that establishes a clear vision, allocates resources, and signals a commitment to technological change, aligning with the literature on strategic planning (Bryson, 2011; Mergel, Edelman and Haug, 2019).

However, the most telling findings relate to the environmental context. The study reveals that the source and diversity of funding are more significant predictors of AI adoption than many internal, human-centric factors. The support for H8a and H8b demonstrates that institutions with access to multiple funding sources, specifically a combination of internal and external funds, are significantly more likely to prioritize and use AI. This finding is particularly revealing when contrasted with the lack of support for H3. The data indicates that simply planning to access EU funds does not, in itself, guarantee AI implementation. The mere existence of a plan for an external grant may lead to superficial or

exploratory projects that fail to scale. Conversely, when external funding is coupled with an internal financial commitment, it reflects a deeper institutional buy-in. The external funds provide the necessary capital, but the internal funds demonstrate a genuine strategic priority that is not merely project-driven or contingent on external grants.

The support for H7, that institutions relying on external funds report more perceived barriers than those with only internal funds, is a crucial and counterintuitive finding. At first glance, one might assume that more funding would reduce obstacles. However, this paradox can be explained by both the TOE framework's environmental context and Institutional Theory. External funding, particularly from the EU, comes with a new set of administrative complexities, rigorous reporting standards, stringent data management protocols, and accountability requirements. These external pressures act as a stress test on the institution's existing capabilities. They expose latent weaknesses that might otherwise go unnoticed, such as a lack of internal skills, inadequate data infrastructure, or bureaucratic inertia, which are then reported as barriers. Thus, external funding does not create the barriers but rather makes them more salient, confirming the literature's claim that a 'formal compliance posture without deeper internalization' is common in Romania (Hințea, Profiroiu and Țiclău, 2015; 2019).

The most profound insights of this study lie in the statistically insignificant findings related to internal, human-centric factors. The lack of support for H4, H5, and H6 points to a deeper, systemic issue rooted in institutional culture and history, as described by Institutional Theory. The descriptive data clearly identifies 'Resistance to change' and 'Lack of internal skills' as the primary barriers, yet the hypothesis tests show that neither leadership roles nor prior private-sector experience have a statistically significant effect on adoption. This is a fundamental paradox.

This finding suggests that individual agency and expertise, while valuable, are not strong enough to overcome the deeply entrenched institutional forces at play. In a context marked by a stable, long-tenured workforce (43.2% with over 10 years of tenure) and a legacy of top-down governance models, the individual experiences or competencies of a few do not create a statistically significant ripple effect. The 'cultural-cognitive pillar' of Institutional Theory (Scott, 2001) appears to be dominant here, where the attitudes and behaviors are shaped not by rational choice or skill, but by culturally embedded norms and historical administrative patterns. This is a critical departure from technology adoption models that prioritize individual champions or managerial will.

The combination of these findings points to a fundamental lack of 'absorptive capacity', which represents the institutional ability to recognize, assimilate, and apply new technologies meaningfully. The most cited barriers, 'resistance to change' and 'lack of internal skills', are not just problems, they are symptoms of a systemic inability to learn and adapt. Without a widespread, institution-wide program to build these skills and address cultural resistance, AI initiatives will remain fragmented, ad-hoc, and will likely fail to move beyond pilot projects, as the descriptive data already indicates. This places the study's

findings directly in conversation with a key concern raised in the literature (see Madan and Ashok, 2023).

Table 2: Summary of key findings

Key finding	Data support	Theoretical link	Broader implication
Low rates of AI strategic prioritization and adoption.	42.7% do not mention AI in strategy; 30.6% have no AI use.	Institutional Theory; TOE Framework (Organizational Context)	AI adoption is a low-level priority, indicating a focus on foundational digital processes over advanced innovation.
The most cited barriers are human-centric: ‘resistance to change’ and ‘lack of skills’.	70 respondents cited ‘resistance to change’; 69 cited ‘lack of internal skills’.	Institutional Theory (Cultural-Cognitive Pillar and Normative Pillar)	The primary challenge is systemic and cultural, not merely technical or financial, pointing to a crisis of absorptive capacity.
Leadership roles and private sector experience do not significantly predict higher AI use or prioritization.	H4 and H5 were not statistically supported.	Institutional Theory (Regulative and Cultural Pillars)	Individual agency is not strong enough to overcome deeply entrenched institutional forces and systemic inertia.
Institutions relying on external funds report more perceived barriers.	H7 was statistically supported.	Institutional Theory (Regulative Pillar); TOE Framework (Environmental Context)	External funding acts as a stress test, revealing pre-existing institutional weaknesses such as skills gaps and administrative complexity.
Institutions with multiple funding sources show higher AI strategic prioritization and use.	H8a and H8b were statistically supported.	TOE Framework (Organizational & Environmental Contexts)	True strategic commitment is signaled by a combination of internal and external funding, not external grants alone.

Source: Own research

7. Conclusions and limitations

The findings of this study offer several critical implications for policymakers and public managers in Romania. The current approach to AI adoption, which appears to be driven by external funding and formal, often symbolic, strategic documents, is insufficient for achieving meaningful and sustainable digital transformation.

To move beyond the current state of fragmented, ad-hoc pilot projects, policymakers must shift from a ‘legitimacy-driven’ model of reform to a ‘value-driven’ model. The data indicates that institutions are currently adopting AI to signal compliance with EU standards, but this formal posture is not leading to deep, internalized change. A more effective approach would be to design and implement strategies that focus on generating internal efficiencies and citizen-centric benefits. This requires more than just providing funding, it necessitates tying funds to tangible, long-term capacity-building and strategic integration.

The study provides compelling evidence that the most significant barriers are human and cultural, not financial or legal. Therefore, any effective national strategy for AI must

prioritize comprehensive, mandatory training programs for public servants at all levels, from leadership to execution. These programs must not only teach technical skills but also address the underlying cultural resistance to change. Overcoming this inertia requires fostering an institutional culture that rewards experimentation, accepts risk, and embraces a data-driven mindset. Public managers must be empowered to lead from the front, serving as catalysts for change rather than being constrained by the institutional inertia of their organizations.

Regarding the limitations of the study, the first limitation is that the use of purposive, non-probabilistic sampling constrains the generalizability of the findings beyond the participating institutions. While the survey captured the perspectives of key individuals, it may not fully represent the broader public sector workforce, and the high proportion of respondents with private sector experience may present a more optimistic view of AI adoption than is the norm. Additionally, the cross-sectional design captures a single moment in time, precluding an analysis of evolving strategies or attitudes.

To address such limitations, future research should consider a longitudinal study to track how institutions' strategic priorities and adoption levels change over time, and whether formal strategies or funding mechanisms lead to sustained, long-term AI integration. A qualitative study using in-depth interviews or focus groups with public managers and employees could explore the root causes of resistance to change and the nuances of how institutional norms and professional roles shape attitudes toward AI. Furthermore, a quantitative study with a broader, more representative sample of public servants, including those in non-strategic or administrative roles, would provide a better understanding of the systemic barriers to AI adoption and test for selection bias. Finally, a comparative case study of a municipality or agency that has successfully moved from pilot projects to institution-wide AI integration could identify the specific organizational and leadership factors that enabled this transition.

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