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Government AI Readiness in Europe: Economic Development, Digital Government and Administrative Accountability

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Abstract:
The use of artificial intelligence (AI) in public administration depends not only on resources and technology but also on how authority and responsibility are organised within government. This article examines how economic development, human development, government effectiveness and digital government maturity relate to the Government AI Readiness Index 2025 across 38 European countries, and complements this analysis with a documentary comparison of Estonia, Romania and Albania. The quantitative analysis combines Pearson and Spearman correlations with ordinary least squares models using HC3 robust standard errors, followed by influence diagnostics, subsample estimates and a re-estimation on a readiness score that excludes the index components drawn from the same United Nations and World Bank sources as the explanatory variables. All four indicators are positively associated with AI readiness. The E-Government Development Index shows the highest correlation ($r = 0.81$) and, together with log GDP per capita, accounts for 70% of the cross-country variation; this association persists when the overlapping components are removed ($R^2 = 0.69$). Government effectiveness is associated with readiness after controlling for income ($\beta = 0.39$, $p = 0.01$), but not once digital government is also included ($p = 0.82$). The explained variance falls to 0.46 when the five Western Balkan states are excluded and to 0.43 within the EU-27, so part of the pattern reflects the contrast between the Western Balkans and the rest of the sample. The case comparison shows that national strategies, coordination bodies and citizen-facing AI services do not by themselves establish who may authorise, override or answer for AI-supported administrative decisions. Readiness indices therefore capture enabling conditions rather than accountable AI governance. Governments should pair investment in digital government with an explicit allocation of decision rights, meaningful human oversight and identifiable administrative accountability.

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1. Introduction

Artificial intelligence (AI) offers public administrations opportunities to automate routine tasks, improve access to services and support complex decision processes. Yet its introduction also raises questions about data quality, organisational competence, transparency and the accountability of public officials. Research accordingly treats AI in government as an institutional transformation rather than a purely technological investment (Wirtz, Weyerer and Geyer, 2019; Zuiderwijk, Chen and Salem, 2021).

European governments differ considerably in the resources available for AI and in the maturity of their administrative systems. Prosperity can facilitate investment but does not guarantee effective deployment; digital capabilities and institutional arrangements may matter as much (Mergel, Edelmann and Haug, 2019; Janssen et al., 2020). Recent comparative work questions GDP-based explanations of AI readiness (Pearl et al., 2026; Amaral, Naranjo-Zolotov and Bação, 2026), links AI readiness to income, and income to internet use, across the European Union (Burlacu et al., 2025), and finds that gains in AI readiness accompany e-government development over time (Spivakovskyy et al., 2026).

This matters for ministries, municipalities and public agencies. Readiness rankings can guide policy attention, but they do not show whether procurement decisions are documented, whether a civil servant may override an algorithmic recommendation or whether an affected citizen can obtain meaningful review. An advanced digital government may deploy AI quickly without having assigned responsibility for consequential outputs, while a less resourced one may adopt narrower applications with stronger safeguards. Enabling national conditions must therefore be distinguished from the quality of governance at the point of administrative use, which national indices cannot capture.

A further difficulty is methodological. The 2025 Oxford Insights index, which broadened its question from implementing AI in public services to how far a government can harness AI for public benefit, includes the UN Online Services Index and the World Bank's Government Effectiveness score among its 69 indicators (Oxford Insights, 2026). Correlations between readiness and these measures may therefore partly reflect shared inputs, a possibility that should be tested rather than assumed away.

This article asks how economic development, human development, government effectiveness and digital government maturity relate to government AI readiness across 38 European countries, and what these indicators leave unanswered about the administrative use of AI. It makes three contributions: a harmonised cross-sectional analysis based on the 2025 index; a test of whether the association between digital government and readiness persists once components sharing sources with the explanatory variables are removed; and a documentary comparison of Estonia, Romania and Albania focused on decision rights, human oversight and administrative accountability, with reference to the EU AI Act (Regulation (EU) 2024/1689). The following sections review the literature, describe the data and models, report the results, compare the three cases and discuss policy implications.

2. Theoretical Framework and Hypotheses

Wirtz, Weyerer and Geyer (2019) discuss opportunities and barriers across public-sector functions, while Sun and Medaglia (2019) show that challenges differ by stakeholder and organisational context. Zuiderwijk, Chen and Salem (2021) call for empirical work connecting technological adoption to governance, public values and institutional change, and an OECD (2025a) review documents the promise of AI in core government functions alongside persistent constraints involving skills, legacy systems, data and coordination. Several distinctions matter when interpreting these studies. Automated assistance with information retrieval differs from applications supporting eligibility, risk assessment or enforcement, which place greater demands on evidence, transparency and review. A system's technical accuracy does not settle whether its deployment is administratively appropriate: public managers must decide when automation is justified, which decisions are reserved to qualified officials and how performance will be monitored after implementation. Cross-country readiness indicators identify broad patterns, but they reveal little about how these responsibilities are carried out in practice.

Digital transformation is particularly relevant because AI applications depend on interoperability, reliable data, electronic services and administrative experience with new technologies. Mergel, Edelmann and Haug (2019) describe digital transformation as organisational change rather than service digitisation, Janssen et al. (2020) emphasise data governance for trustworthy AI, and van Noordt and Misuraca (2022) document diverse AI uses across the European public sector. E-government maturity is nevertheless not synonymous with AI capability: digital service availability may develop faster than the governance arrangements required for automated processes. The usual measure, the UN E-Government Development Index (EGDI), also averages online services with telecommunications infrastructure and human capital, so it captures broader digital development rather than administrative digitalisation alone (United Nations, 2024). The relationship may also run in both directions, since within-country gains in AI readiness accompany improvements in e-government development (Spivakovskyy et al., 2026).

Economic and human development provide resources and skills, while government effectiveness may facilitate policy implementation and the coordination of technological investment. Comparative studies find that governance and digital capacity are associated with readiness and that European national profiles are heterogeneous (Pearl et al., 2026; Amaral, Naranjo-Zolotov and Bação, 2026). These conditions are themselves interrelated, and the indicators used to capture them measure different things: HDI combines health, education and income outcomes; Government Effectiveness aggregates perception-based sources on public-service quality and policy implementation (World Bank, 2026b); EGDI measures e-government development; and the Oxford Insights index assesses a government's wider capacity to harness AI. A strong correlation between them may reflect genuine co-development, shared national conditions or common inputs to the composite measures. This study therefore treats them as comparative proxies rather than observations of administrative routines, and also examines whether government effectiveness and digital government maturity retain separate associations with readiness when considered together.

The literature on algorithmic accountability adds a dimension that composite readiness measures cannot capture. Busuioc (2021) highlights the difficulty of scrutinising automated public decisions, Green (2022) questions whether nominal human supervision provides meaningful control, and Nzobonimpa and Savard (2023) distinguish readiness

from responsible AI governance. Formal authority, staff competence, the ability to contest outcomes and clearly assigned responsibility remain central public-management questions. Regulation (EU) 2024/1689 translates several of them into obligations for high-risk systems: human oversight (Article 14), the assignment of oversight by deployers to competent and authorised persons (Article 26), fundamental-rights impact assessments by public bodies (Article 27) and a right to explanation for affected persons (Article 86). Compliance with these requirements should not, however, be confused with demonstrated administrative performance (European Parliament and Council, 2024).

Four hypotheses follow:

H1: Higher socio-economic development is positively associated with government AI readiness.

H2: Government effectiveness is positively associated with government AI readiness after accounting for economic development.

H3: Digital government maturity is positively associated with government AI readiness after accounting for economic development.

H4: The association between digital government maturity and government AI readiness persists when the index components that share sources with the explanatory variables are excluded.

The hypotheses concern statistical associations. The three country cases are used to interpret, not to test, how decision rights, human oversight and accountability are organised behind these national differences.

3. Data and Methodology

The study combines a cross-sectional analysis of 38 European countries with a documentary comparison of three national cases. The sample comprises the 27 EU Member States, the EFTA states and the United Kingdom, and the candidate countries whose accession process was active in 2025: Albania, Bosnia and Herzegovina, Moldova, Montenegro, North Macedonia, Serbia and Ukraine. Liechtenstein is excluded because 2025 GDP data are unavailable, and Georgia and Türkiye because the European Commission (2025b) considered their accession processes to be at a standstill. The sample therefore covers the EU together with its closest European partners and active accession candidates. Because it is purposive rather than random, significance tests are read as diagnostics of the observed relationships rather than as grounds for generalisation. A robustness check adds the seven further states of the wider European region with complete data (Andorra, Armenia, Azerbaijan, Belarus, Georgia, Russia and Türkiye).

The dependent variable is the Government AI Readiness Index 2025 (Oxford Insights, 2025), scored from 0 to 100. The 2025 edition aggregates 69 indicators into 14 dimensions and six weighted pillars and assesses how far a government can harness AI for public benefit, including as buyer, enabler and regulator of AI across the economy, rather than public-sector deployment alone (Oxford Insights, 2026). The explanatory variables are GDP per capita at purchasing power parity in constant 2021 international dollars for 2025 (World Bank, 2026a), entered in logarithms to reduce positive skew; the Human Development Index for 2023 (UNDP, 2025); the 2025 Government Effectiveness score on a 0-100 scale, which aggregates perception-based sources (World Bank, 2026b); and the E-Government Development Index (EGDI) for 2024, which averages online services, telecommunications infrastructure and human capital on a 0-1 scale (United Nations, 2024). The five datasets were merged by ISO3 code after harmonising country names, with no missing values. Because reference years differ, the data form a

comparative snapshot rather than a time series.

Pearson and Spearman correlations describe the bivariate patterns, and Williams' test compares dependent correlations (Steiger, 1980). Ordinary least squares models then take the general form:

$$AI_Readiness_i = \alpha + \beta_1 \ln(GDP_PPP_i) + \gamma' Z_i + \varepsilon_i$$

Four OLS regression specifications are estimated, following the general equation above. Model 1 serves as the baseline specification, with Z_i empty, and includes only the logarithm of GDP per capita (PPP) as an explanatory variable, capturing the association between economic development and Government AI Readiness. Model 2 extends the baseline specification by including the E-Government Development Index (EGDI) in Z_i, assessing whether digital government maturity is associated with AI readiness after controlling for economic development. Model 3 replaces EGDI with Government Effectiveness, examining whether institutional effectiveness is associated with AI readiness independently of economic development. Finally, Model 4 includes both EGDI and Government Effectiveness in Z_i, testing whether these indicators retain separate associations with AI readiness when considered simultaneously. The Human Development Index (HDI) is included in the correlation analysis to assess the relationship between human development and AI readiness, but is excluded from the multivariate regressions. This decision reflects both conceptual overlap with the other development indicators and its strong correlations ($r = 0.89$) with log GDP per capita and Government Effectiveness, which could complicate the interpretation of individual regression coefficients due to multicollinearity. All four models are estimated using ordinary least squares (OLS) with HC3 heteroscedasticity-consistent standard errors. The corresponding p-values are calculated using the t distribution with n-k degrees of freedom, providing a more conservative approach to statistical inference in a relatively small sample. Model performance is compared using R^2, adjusted R^2, the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC). Higher R^2 and adjusted R^2 values indicate greater explanatory power, while lower AIC and BIC values indicate a more favourable balance between model fit and complexity. The estimated coefficients and model comparison statistics are reported in Table 3.

To test H4, the models are re-estimated on a purged readiness score. Two Oxford Insights dimensions contain indicators drawn from the same sources as the explanatory variables: e-Government delivery (weight 7.5%), which includes the UN Online Services Index, and Societal transition (5%), which includes the World Bank Government Effectiveness indicator (Oxford Insights, 2026). The published weights reproduce the total scores to within 0.01 points. Because the index dataset reports scores at dimension level, both dimensions are removed in full and the remainder is rescaled to 0–100:

$$AI^*_i = (AI_i - 0.075 \cdot EGD_i - 0.05 \cdot ST_i) / 0.875$$

This is conservative, since it also removes the other indicators of these dimensions.

Diagnostics include variance inflation factors, residual plots, the Breusch–Pagan and Shapiro–Wilk tests, Cook's distance and leverage. Robustness checks re-estimate the models after excluding each country in turn, the most influential observations (Iceland, Ukraine, Bosnia and Herzegovina, Ireland and Luxembourg), the five Western Balkan states and all non-EU states, and on the extended sample of 45 countries; Model 2 is also estimated with the Online Services Index in place of EGDI. The analysis was carried out in Python (pandas, NumPy, SciPy and statsmodels).

The documentary comparison covers Estonia, Romania and Albania. Estonia and Romania have similar GDP per capita but readiness scores 12.8 points apart, while

Albania has a higher EGDI than Romania but lower readiness; the three also occupy different positions relative to the predictions of Model 2. Sources comprise national strategies, legal acts, official communications and assessments by the OECD and the European Commission. They are examined along four dimensions (strategic and institutional coordination, administrative capacity, decision rights and human oversight, and transparency and accountability), distinguishing implemented arrangements from announced goals and draft instruments.

The design identifies associations, not causal effects, and national indicators cannot observe decision rights or oversight within individual organisations; these limits are discussed in the conclusions.

4. Empirical Results

Table 1 summarises the five indicators. Government AI readiness ranges from 35.67 to 80.81 points (mean 62.74, standard deviation 11.22), so national preparedness differs substantially even within a comparatively developed European sample. GDP per capita is positively skewed (skewness 1.33, reduced to -0.23 after log transformation), which supports its use in logarithmic form.

Table 1. Descriptive Statistics of the Main Research Variables

Variable	N	Mean	Median	Std. Dev.	Minimum	Maximum
Government AI Readiness (2025)	38	62.739	64.420	11.217	35.670	80.810
GDP per capita, PPP (2025)	38	52,823	49,192	25,578	16,155	131,338
Human Development Index (2023)	38	0.901	0.914	0.054	0.779	0.972
Government Effectiveness (2025)	38	72.571	74.100	13.961	40.147	92.814
E-Government Development Index (2024)	38	0.865	0.875	0.078	0.633	0.985

Source: Authors' calculations based on Oxford Insights (2025), World Bank (2026a, 2026b), UNDP (2025) and United Nations (2024).

All four indicators are positively correlated with AI readiness (Table 2). EGDI shows the strongest linear association ($r = 0.81$), followed by HDI (0.73), Government Effectiveness (0.69) and log GDP per capita (0.66); rank correlations are similar ($\rho = 0.70$-0.73). The confidence intervals overlap, however, and the correlation for EGDI is not significantly larger than those for HDI (Williams' $t = 1.09$, $p = 0.28$) or Government Effectiveness ($t = 1.57$, $p = 0.13$). The explanatory indicators are also closely interrelated: HDI correlates at 0.89 with both Government Effectiveness and log GDP, Government Effectiveness at 0.87 with log GDP, and EGDI at 0.70 with Government Effectiveness.

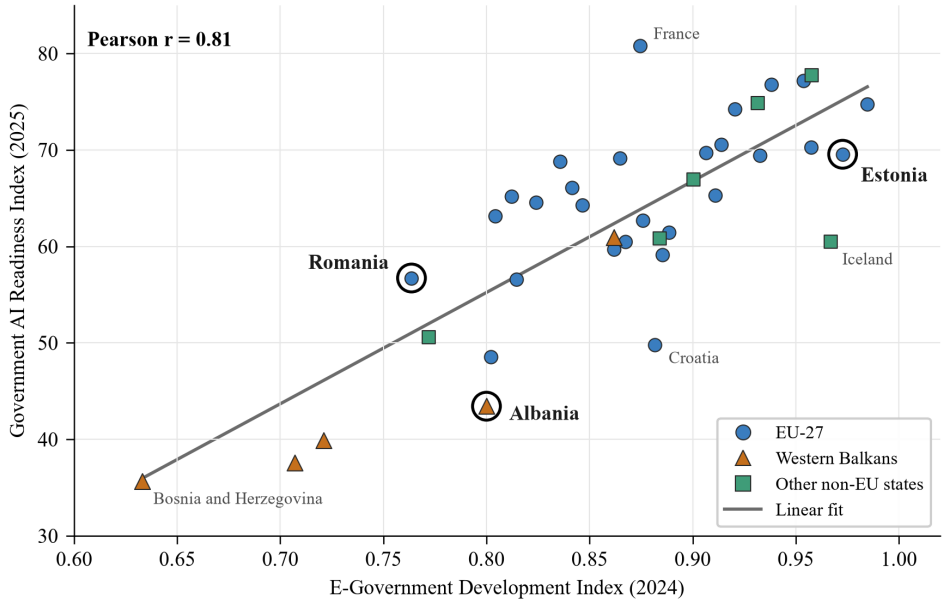
Table 2. Correlations Between Government AI Readiness and Selected Indicators

Explanatory variable	Pearson's r	95% CI for r	Spearman's ρ
GDP per capita, PPP (2025)	0.547	0.275 – 0.738	0.697
Log GDP per capita, PPP (2025)	0.656	0.425 – 0.806	0.697
Human Development Index (2023)	0.728	0.533 – 0.850	0.719
Government Effectiveness (2025)	0.688	0.473 – 0.826	0.718
E-Government Development Index (2024)	0.806	0.656 – 0.895	0.728

Notes: N = 38. All coefficients are significant at p < 0.001. Confidence intervals are based on Fisher's z transformation. Spearman's ρ is identical for GDP and log GDP because the transformation preserves ranks.
Source: Authors' calculations based on the harmonised European dataset.

Figure 1 shows the relationship with EGDI and the position of the Western Balkan states at the lower end of both scales.

Figure 1. E-Government Development and Government AI Readiness in 38 European Countries



Note: The line shows the bivariate OLS fit. Labelled cases are the three countries compared in Section 5 and observations discussed in the text.
Source: Authors' calculations based on Oxford Insights (2025) and United Nations (2024).

Table 3 reports the four regression models. Log GDP per capita alone accounts for 43% of the variation in readiness (Model 1). Adding EGDI raises R^2 to 0.70 and yields the lowest AIC and BIC among the four specifications (Model 2).

Table 3. OLS Regression Results: Government AI Readiness

Variable / Statistic	Model 1	Model 2	Model 3	Model 4
Constant	−102.798*	−87.903***	−25.416	−93.782*
	(44.086)	(18.506)	(45.659)	(37.183)
Log GDP per capita, PPP	15.375***	6.604**	5.576	7.226
	(4.060)	(1.978)	(4.670)	(3.653)
EGDI	—	91.943***	—	93.586***
		(13.753)		(17.472)
Government Effectiveness	—	—	0.387*	−0.031
			(0.143)	(0.138)
Observations	38	38	38	38
R^2	0.4300	0.7027	0.4878	0.7030
Adjusted R^2	0.4141	0.6857	0.4586	0.6768
AIC	273.193	250.454	271.126	252.419
BIC	276.468	255.367	276.038	258.969

*Notes: Dependent variable: Government AI Readiness Index (2025). HC3 heteroscedasticity-consistent standard errors in parentheses; p-values from the t distribution with n-k degrees of freedom. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.*
Source: Authors' calculations based on the harmonised European dataset.

Both predictors remain significant: at a given income level, an EGDI higher by 0.1 is associated with a readiness score about 9.2 points higher. In Model 3, Government Effectiveness is positively associated with readiness ($\beta = 0.39$, $p = 0.010$), while log GDP loses significance; fit improves only modestly over Model 1 ($R^2 = 0.49$). These results support H1–H3. When both indicators are entered together (Model 4), EGDI keeps a similar coefficient (93.6, $p < 0.001$), whereas the coefficient of Government Effectiveness falls to −0.03 ($p = 0.82$) and R^2 is unchanged (0.703). Government Effectiveness therefore adds no information about readiness beyond income and EGDI in this sample.

Table 4 assesses the stability of these results. When the two Oxford Insights dimensions that share sources with the explanatory variables are removed, the Model 2 estimates are virtually unchanged (EGDI $\beta = 99.5$, $R^2 = 0.69$), supporting H4; Government Effectiveness also remains significant in Model 3 and insignificant in Model 4. Replacing EGDI with the Online Services Index gives a similar fit ($R^2 = 0.68$). In Model 2, EGDI remains significant in every subsample and in all 38 leave-one-out estimations (coefficient range 87.1–98.7), but the share of variance explained depends on sample composition: it falls to 0.46 without the Western Balkans and to 0.43 within the EU-27, where log GDP is no longer significant. Part of the overall pattern therefore reflects the contrast between the Western Balkan states and the rest of the sample. Within the EU-27, Model 4 cannot separate Government Effectiveness from EGDI ($p = 0.051$ and $p = 0.146$). The Government Effectiveness coefficient in Model 3 weakens to the margin of significance when Ireland and Luxembourg, the two income outliers, are excluded ($p = 0.051$), but

remains significant in every leave-one-out estimation.

Table 4. Robustness of the Regression Results

Specification	N	Model 2			Model 3	Model 4	
		Log GDP	EGDI	R^2	GE	GE	EGDI
Full sample	38	6.60**	91.94***	0.703	0.387*	−0.031	93.59***
Purged readiness score (H4)	38	7.12**	99.46***	0.687	0.380*	−0.084	103.95***
Online Services Index instead of EGDI	38	10.75***	52.24***[a]	0.679	0.387*	0.105	49.72***[a]
Excluding Iceland	37	6.60**	98.74***	0.748	0.399**	−0.046	101.21***
Excluding Ireland and Luxembourg	36	8.42*	86.15***	0.706	0.294	−0.070	89.56***
Excluding high-leverage cases	34	10.85**	76.19***	0.660	0.290	−0.009	76.75**
Excluding Western Balkans	33	5.46**	69.42***	0.464	0.407**	0.164	57.56*
EU-27 only	27	6.47	71.57***	0.432	0.518***	0.304	42.03
Extended sample	45	7.70**	99.76***	0.713	0.378*	0.122	94.51***
Leave-one-out range[b]	37	5.77 to 7.56	87.1 to 98.7	—	0.318 to 0.446	−0.088 to 0.023	86.9 to 101.2

*Notes: OLS coefficients with HC3 standard errors; p-values from the t distribution. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$. The purged readiness score excludes the e-Government delivery and Societal transition dimensions (Section 3). High-leverage cases: Bosnia and Herzegovina, Ireland, Luxembourg and Ukraine. Western Balkans: Albania, Bosnia and Herzegovina, Montenegro, North Macedonia and Serbia. The extended sample adds Andorra, Armenia, Azerbaijan, Belarus, Georgia, Russia and Türkiye. [a] Coefficient of the Online Services Index. [b] Range across 38 estimations, each omitting one country; all estimates are significant at $p < 0.05$ except Government Effectiveness in Model 4 ($p \geq 0.54$ in every estimation).*
Source: Authors' calculations based on the harmonised European dataset and, for the extended sample, the same sources.

Diagnostics do not indicate heteroscedasticity in Model 2 (Breusch–Pagan LM = 0.05, p = 0.98), and its residuals are consistent with normality (Shapiro–Wilk p = 0.43). Variance inflation factors are low in Model 2 (1.51) and moderate in Model 4 (at most 5.28). Iceland has the largest Cook's distance in Model 2 (0.14, above the 4/n threshold of 0.105), while Bosnia and Herzegovina, Ukraine, Luxembourg and Ireland have high leverage; excluding them does not change the direction or significance of the Model 2 coefficients (Table 4).

Relative to the predictions of Model 2, Romania scores 4.3 points above its expected value, Estonia 2.2 points below and Albania 8.5 points below. Section 5 examines the institutional arrangements behind these positions.

5. Comparative Institutional Analysis: Estonia, Romania and Albania

This section examines what the national indicators leave unanswered in the three cases selected in Section 3. Table 5 places them within the statistical results, using the Model 2 predictions and the Oxford Insights pillar scores, and Table 6 summarises the documentary evidence along the four analytical dimensions. The comparison distinguishes arrangements in force from strategies, announcements and draft instruments.

It is illustrative: it cannot establish why the countries differ, but it shows which administrative questions the scores do not answer.

Table 5. Quantitative Profile of the Three Cases

Indicator	Estonia	Romania	Albania
GDP per capita, PPP (2025)	41,604	40,846	22,724
Government Effectiveness (2025)	83.04	59.94	61.98
EGDI (2024)	0.973	0.764	0.800
Government AI Readiness (2025)	69.56	56.73	43.44
Predicted readiness, Model 2	71.78	52.43	51.90
Residual, Model 2	−2.22	+4.30	−8.46
Oxford Insights pillars and dimensions (score and rank)			
Policy Capacity (10%)	96.0 (3)	84.0 (13)	23.0 (36)
AI Infrastructure (25%)	54.3 (26)	55.2 (24)	51.2 (34)
Governance (15%)	90.0 (9)	71.7 (30)	51.7 (36)
Public Sector Adoption (15%)	99.6 (1)	55.7 (35)	69.0 (29)
Government digital policy (7.5%)	99.4 (1)	28.4 (35)	51.0 (29)
e-Government delivery (7.5%)	99.9 (2)	82.9 (33)	86.9 (24)
Development and Diffusion (25%)	46.0 (19)	38.1 (28)	24.4 (36)
Resilience (10%)	64.4 (17)	59.0 (26)	41.6 (36)

Notes: Ranks among the 38 sample countries in parentheses (1 = highest). Percentages give the weight of each pillar or dimension in the overall index. Predicted values and residuals are from Model 2 (Table 3).
Source: Authors' calculations based on Oxford Insights (2025), World Bank (2026a, 2026b) and United Nations (2024).

The three countries occupy different positions relative to Model 2. Estonia's readiness score is close to the value predicted from its income and EGDI (2.2 points below). It ranks first in the sample on Public Sector Adoption but 26th on AI Infrastructure and 19th on Development and Diffusion, the pillars that capture computing capacity and the wider AI economy. Romania scores 4.3 points above its prediction, a position consistent with its comparatively strong Policy Capacity (13th), whereas it ranks 35th on Public Sector Adoption and scores 28.4 out of 100 on government digital policy. Albania lies 8.5 points below its prediction: its e-government delivery score exceeds Romania's, but it ranks 36th on Policy Capacity, Governance and Development and Diffusion. For Romania and Albania, the distance between digital service provision and overall readiness therefore lies in policy and governance components rather than in online services.

Estonia's AI agenda builds on an established digital administration. The Kratt Strategy of 2019 and the White Paper on Data and Artificial Intelligence 2024–2030 link AI to interoperable digital services, with central coordination and implementation by individual public authorities (OECD, 2026a). Bürokratt, an AI-supported virtual assistant for access to public services, illustrates this model: when automated assistance is insufficient, users are directed to human customer-service staff (Estonian Information System Authority, n.d.). Such escalation preserves human contact in citizen-facing

services, but it is not evidence that consequential administrative decisions are subject to effective oversight. Like most Member States, Estonia had not adopted a national law implementing the AI Act by spring 2026 (Cullen International, 2026), and the obligations for stand-alone high-risk systems apply only from 2 December 2027 (European Parliament and Council, 2026). Estonia's governance challenge is therefore to keep oversight consistent as AI adoption spreads across many authorities.

Romania adopted its National Artificial Intelligence Strategy 2024–2027 by Government Decision No. 832/2024 (Government of Romania, 2024). Implementation is coordinated by an interministerial commission of representatives of 34 central public institutions, which monitors the action plan while each institution implements the measures in its own field (OECD.AI, 2026). Leadership of the commission is passing from the former Ministry of Research, Innovation and Digitalisation to the newly established Ministry of Economy, Digitalisation, Entrepreneurship and Tourism (OECD, 2025b). This architecture assigns policy responsibilities but not operational accountability for individual systems. Supervision under the AI Act shows a similar gap. A government memorandum of 12 March 2026 designated ANCOM as market surveillance authority and single point of contact, the Authority for the Digitalisation of Romania as notifying authority, and sectoral authorities for financial, biometric, migration and justice-related systems (Government of Romania, 2026). Because a memorandum confers no enforcement powers, ANCOM stated in July 2026 that breaches could be sanctioned only after a national implementing law, then still in preparation, entered into force (ANCOM, 2026). Romania's position above the model prediction thus rests on strategic commitments, while the arrangements that would turn them into supervised administrative practice remain incomplete.

Albania has expanded e-Albania services through a centralised model in which the National Agency for Information Society (AKSHI), under the Prime Minister's Office, coordinates government information systems (European Commission, 2025a; OECD, 2026b). A draft National AI Strategy 2025–2030 and a draft Law on Artificial Intelligence modelled on the EU AI Act were opened for public consultation in August 2025 and May 2026, but neither had been adopted by August 2026 (National Agency for Information Society, 2025, 2026; Balkan Insight, 2026). Diella, the e-Albania virtual assistant, was presented in September 2025 as a Minister of State for Artificial Intelligence with a role in public procurement (Council of Ministers of Albania, 2025), and its latest version completes service requests from spoken commands (Council of Ministers of Albania, 2026). In a decision adopted on 8 October 2026 and published on 9 November 2026, the Constitutional Court rejected an opposition request to annul the related provisions of the presidential decrees on grounds of jurisdiction and standing. It found that the decrees did not make Diella a member of the Council of Ministers, that Diella is an AI platform rather than a natural person with legal capacity, and that the provisions placed responsibility on the Prime Minister, while stating that the use of AI cannot alter the constitutional and legal order or replace public powers, responsibilities and accountability (Constitutional Court of the Republic of Albania, 2026). According to the Public Procurement Agency, procurement legislation now provides a basis for using AI in tendering, but experts consider it insufficient as a framework for oversight (Balkan Insight, 2026). As a non-member, Albania is bound by the AI Act only through the alignment expected in accession, and in September 2026 its Parliament was examining the ratification of the Council of Europe Framework Convention on Artificial Intelligence (RTSH, 2026). Albania thus illustrates the distinction between interface and authority: a visible AI service

has preceded a legal framework that allocates responsibility for its outputs.

Across the three cases, the national indicators capture strategies, digital services and coordination structures, but not the arrangements that determine who may authorise, override or answer for an AI-supported decision. In Estonia, these arrangements are distributed across agencies; in Romania, they are assigned on paper but not yet enforceable; in Albania, an AI interface has gained political visibility before a legal framework has been adopted. The cases do not show that weaker oversight produces lower readiness scores, or the reverse. They show that readiness and accountable deployment can diverge in different directions, which is why the two require separate assessment.

Table 6. Comparative Institutional Characteristics of Government AI Governance

Dimension	Estonia	Romania	Albania
Strategic and institutional coordination	Kratt Strategy (2019); Data and AI White Paper 2024–2030; central coordination, implementation by individual authorities	National AI Strategy 2024–2027; interministerial commission of 34 central institutions; coordinating ministry reorganised in 2025	Digital Agenda 2022–2026; draft AI strategy (2025) not adopted; centralised coordination through AKSHI
Administrative capacity	First in the sample on Public Sector Adoption; weaker AI infrastructure and AI sector scores	35th on Public Sector Adoption; government digital policy 28.4/100 despite strong policy commitments	Strong e-service delivery (e-Albania); 36th on Policy Capacity and Governance
Decision rights and human oversight	Bürokratt escalates to human staff; AI Act high-risk obligations from December 2027	AI Act applies; competent authorities designated by memorandum (March 2026); implementing law pending (August 2026)	AI interface presented as a minister; Constitutional Court: AI cannot transfer public powers or accountability. Court (2026): Diella is not a member of the government and responsibility rests with the Prime Minister
Transparency and accountability	No national AI Act implementing law by spring 2026; accountability rests with deploying authorities	Sanctions not enforceable until the national law enters into force	Procurement law allows AI use; draft AI law not adopted; responsibility for AI outputs not set out in a dedicated act
Main governance issue	Keeping oversight consistent as adoption spreads across agencies	Turning strategic commitments into enforceable supervision	Separating the AI interface from legally allocated authority

Source: Authors' synthesis based on the documents cited in this section; administrative capacity rows draw on Oxford Insights (2025). The last row gives analytical interpretations of the documentary evidence, not measured scores.

6. Discussion and Policy Implications

The results support a multidimensional view of government AI readiness, with three qualifications. First, the association between digital government maturity and readiness is not an artefact of shared indicators, since it persists when the index components drawn from UN and World Bank sources are removed. Because EGDI also contains human capital and telecommunications infrastructure, however, it should be read as broad digital development rather than administrative digitalisation alone, and the relationship may run in both directions (Spivakovskyy et al., 2026). Second, Government Effectiveness adds no information once EGDI is considered, so the data do not reveal an institutional-quality

pathway separate from digital development; within the EU-27, the two cannot be distinguished. Third, much of the explained variance reflects the gap between the Western Balkan states and the rest of the sample. Among EU Member States, income and digital government account for less than half of the differences, leaving room for policy choices and institutional factors that national indices measure poorly. National scores are therefore starting points for administrative diagnosis: they cannot show whether a ministry lacks data specialists, has fragmented procurement responsibilities or is uncertain about its legal authority.

The country comparison also shows why readiness rankings should not be taken as proxies for accountability. Three requirements follow. First, decision rights must be explicit: public bodies should determine which officials may approve, procure, deploy and discontinue an AI system, and when its outputs may be disregarded. Second, human oversight must be operational rather than nominal, since an official without the information, time, competence or authority to question an output cannot exercise meaningful control (Green, 2022). Third, accountability must remain identifiable throughout the system's life cycle, from procurement and data governance to monitoring and the review of individual decisions (Busuioc, 2021). The AI Act gives these requirements legal form for high-risk systems: deployers must assign oversight to persons with the necessary competence, training and authority (Article 26), public bodies must assess the impact on fundamental rights before deployment (Article 27), and affected persons may obtain an explanation of decisions (Article 86) (European Parliament and Council, 2024). Under Regulation (EU) 2026/1744, the obligations for stand-alone high-risk systems apply from 2 December 2027, leaving a limited period to build the corresponding administrative capacity (European Parliament and Council, 2026). Compliance will not by itself ensure sound public management, and many administrative uses of AI, such as citizen-facing assistants, carry only transparency obligations.

Three policy implications follow. First, governments should link AI plans to investment in data quality, interoperability, service processes and staff competence rather than to index rankings. Second, each institution using AI should designate the officials responsible for authorising, procuring, deploying, monitoring and discontinuing systems, and record these assignments. Third, oversight should be resourced: officials need the information, authority and time to assess automated recommendations and intervene in consequential cases, with proportionate procedures for low-risk assistance and stronger safeguards where AI affects benefits, sanctions or other individual outcomes.

For Romania, the immediate priorities are to adopt the implementing law, give the designated authorities enforcement powers and translate the national strategy into public-sector AI policy, the dimension on which it scores lowest. For Estonia, the task is to keep oversight consistent as AI spreads across agencies. For Albania, adopting the draft AI law and aligning it with the AI Act would provide the legal allocation of responsibility that its visible AI services currently lack. These implications derive from documentary comparison and are not demonstrated effects of specific interventions.

Conclusions

This study combined a cross-sectional analysis of 38 European countries with an institutional comparison of Estonia, Romania and Albania. GDP per capita, HDI, Government Effectiveness and EGDI are all positively associated with Government AI Readiness 2025. A model combining log GDP per capita and EGDI accounts for 70% of cross-country variation, and the association with EGDI persists when the index

components that share sources with the explanatory variables are removed. The results provide support for the four hypotheses, although the evidence concerning Government Effectiveness requires qualification. Its positive association with AI readiness remains statistically significant after controlling for economic development (Model 3), but not when digital government maturity is also included (Model 4). Furthermore, the explanatory power of income and digital government falls below half within the EU-27.

The institutional comparison shows what these associations leave out. Estonia's readiness reflects mature public-sector adoption; Romania's position above the model prediction rests on strategic commitments not yet matched by enforceable supervision; and Albania has deployed a highly visible AI service before adopting a legal framework that allocates responsibility for it. Readiness indices therefore measure enabling conditions rather than accountable AI governance, and the allocation of decision rights, meaningful human oversight and identifiable responsibility require separate assessment.

The study contributes to public administration research by testing whether a widely used readiness index overlaps with the indicators used to explain it, and by linking cross-country patterns to the legal and organisational arrangements that govern the use of AI, including the obligations of Regulation (EU) 2024/1689.

Its limitations are those of a cross-sectional design with different reference years, a purposive sample, composite indicators and national-level measures. The direction of the relationship between digital government and readiness cannot be established, and the institutional comparison relies on documents rather than observation of administrative practice. Future research should use longitudinal data, indicator-level index components and organisation-level case studies, including interviews and procedural records, to examine how public authorities exercise oversight in AI-supported decisions as the AI Act's high-risk obligations take effect. Responsible AI in government requires technological and administrative capability together with identifiable human authority and accountability.

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The authors contributed equally to this work.

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