DOI: 10.55643/fcaptp.4.69.2026.5265

REGIONAL DIMENSION OF ECONOMIC DEVELOPMENT IN THE CONTEXT OF ARTIFICIAL INTELLIGENCE IMPLEMENTATION IN PUBLIC ADMINISTRATION

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Received: 30/06/2026
Accepted: 07/08/2026
Published: 31/08/2026

ABSTRACT

The rapid advancement of artificial intelligence technologies and their growing application across various domains of public life are driving fundamental changes in approaches to public administration. Despite the increasing scholarly attention to AI integration in government, the regional dimension of economic development in the context of AI implementation remains insufficiently studied. The purpose of this article is to identify regional features of artificial intelligence implementation in public administration systems and to assess the relationship between the level of AI readiness and the level of economic development across world regions.

The study draws on data from the Government AI Readiness Index. The methodological framework includes comparative analysis, statistical analysis, grouping method, and correlation-regression analysis applied across nine world regions: North America, Western Europe, Eastern Europe, East Asia, South and Central Asia, Middle East and North Africa, Latin America and the Caribbean, Pacific, and Sub-Saharan Africa.

The results indicate that AI implementation in public administration has resulted in differences in economic development across regions. North America demonstrated the highest level of readiness with an integral score of 81.51 points, followed by Western Europe (64.42 points) and Eastern Europe (54.31 points), all exceeding the global average of 48.17 points. Regions including Sub-Saharan Africa, the Pacific, and Latin America and the Caribbean recorded the lowest scores, reflecting limited digital infrastructure, constrained financial resources, and weaker institutional capacity. The regression analysis showed that over 90% of the variation in AI readiness across regions could be explained by GDP per capita.

The findings confirm a strong positive relationship between economic development and government AI readiness, while also indicating that institutional, regulatory, and political factors independently influence outcomes. The results provide a basis for developing differentiated national strategies for AI integration in public administration that account for regional specificities and development levels.

Keywords: artificial intelligence, public administration, economic development, digital transformation, Government AI Readiness Index, regional disparities, AI governance, digital infrastructure

JEL Classification: O33, O38, H11, H83, O57

INTRODUCTION

The rapid development of artificial intelligence technologies and their active introduction into various spheres of public life are causing the transformation of traditional approaches to public administration. At present, artificial intelligence (AI) is viewed not only as an innovative technology, but also as an important tool for ensuring the effectiveness of government bodies, improving managerial decision-making processes, optimizing the use of public resources, and improving the quality of public services. In many countries of the world, AI technologies have already become an integral part of the

digital transformation of the public sector and the formation of modern models of public governance.

The relevance of studying the regional dimension of AI implementation in public administration is conditioned by the fact that digital transformation processes are occurring unevenly in different regions of the world. Differences in levels of economic development, digital infrastructure, innovation potential, human capital, public policy and regulatory frameworks form different conditions for the implementation of AI technologies in the activities of government bodies. As a result, individual regions demonstrate different rates of development and levels of readiness to use the opportunities of AI in the public sector.

This issue takes on particular relevance in the context of intensifying global competition for technological leadership and the formation of a new architecture of digital governance. Understanding the regional characteristics of AI development is a necessary prerequisite for assessing current trends in the digital transformation of public administration (PA), identifying factors of successful implementation of innovative technologies, and determining the prospects for further development of public administration systems in the context of digitalization of the economy. In view of this, the study of regional features of AI implementation in public administration is timely and important from both scientific and practical points of view, as it allows deepening the understanding of modern processes of digitalization of the public sector and trends in the development of AI on a global scale.

LITERATURE REVIEW

The issues of AI integration in public administration have become a well-discussed topic in scientific circles due to existing differences in its implementation worldwide. Clim (Moga) et al. (2025) investigate the degree of AI adoption in German local public administrations using a proposed AI adoption index methodology. The authors highlight that there is a difference in digital innovation capacity in eastern and western Germany as well as in urban and rural environments. According to their calculations, local administrations were differentiated by such indicators as IT staff (with a weight of 30%), the degree of urbanization (25%), and participation in digital networks (20%).

Božić (2026), having analysed the interdisciplinary literature, comes to the conclusion that there is a significant digital divide in data skills and the institutional capacity to use digital tools for purposes in public administration. Božić highlights that AI, as a socio-technical system, risks amplifying exclusion for vulnerable groups such as migrants, people with disabilities, and rural communities if AI models are trained on biased data that reflects existing social disparities.

Sorokina et.al. (2024) evaluate the digital resilience of the economy to external and internal pressures. The calculations showed that there is a gap in household resilience in digital literacy, the availability of quality ICT technologies, and protection of personal data on digital platforms in Ukraine. For the business sector, a strong correlation between adoption of digital technologies and increased resilience was found. The government sector was found to be the most resilient to digital threats among all sectors in Ukraine.

Butt (2024), having investigated Denmark, Finland, and Sweden, found what makes the Nordic approach to digital infrastructure work so well. According to the study, it is trust – people there trust their governments, and that makes it considerably easier to bring AI into public services. The study also makes the case for aligning regulatory frameworks across countries and investing in digital infrastructure as the two most important steps toward more effective local governance.

Xu, Lee, & Goggin (2024) took a broader look at AI readiness across Asia and found that how countries regulate AI tends to reflect the regulatory habits they already had around the internet and telecoms – and that the general direction of change is toward tighter rules rather than looser ones.

Habuka (2025) investigated Japan and made an interesting observation: the country's AI governance is not really designed to protect people from risk so much as it is designed to accept certain risks as the price of staying at the front of AI development. Huang et al. (2026) compared how Europe, the United States, and Asian countries are approaching AI regulation and argued that there is no answer for all – governance frameworks need to be flexible enough to fit local realities if they are going to make technology genuinely safer and more accessible.

Kosterit (2026) compared the AI Acts of South Korea and Japan and found differences in policymaking. Japan keeps regulation light so as not to slow innovation down, while South Korea's 2026 Framework Act takes a more interventionist line – targeting high-risk applications specifically and backing that up with actual financial penalties for non-compliance.

Vatamanu & Tofan (2025) highlight that the transition to AI-enhanced public administration has positive effects in resource allocation, reducing administrative burdens, and improving policy implementation, but also negative effects as AI can

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introduce challenges in data privacy, algorithmic bias, and ethical concerns. The OECD report (2025) states that AI helps governments automate public services, improve decision-making, detect fraud, and enrich civil servants' work and learning; however, the negative effects of AI in public administration can be harmful decisions of AI as a result of corrupted data; lack of transparency; and reduced citizens' trust.

Shkuropadska et al. (2025) note that the ability of the financial system to adapt to shocks directly depends on the level of digital transformation and the effectiveness of managerial decisions. The results of the work demonstrate that digital technologies, including AI, can increase financial resilience through improved risk forecasting, resource management, and the speed of decision-making.

Dei (2025) focuses on the specific competencies required for municipal employees to effectively interact with automated systems, identifying popular types of AI already being used in local governance. The author emphasizes that the transition to intelligent algorithms is necessary to ensure the openness and transparency of interactions between authorities and their local communities.

Fenning (2026) draws on 101 case studies from the UK to illustrate that the maturity of AI usage in public administration varies significantly across local councils, with positive feedback in large language models for transcription and customer-facing chatbots. The author finds that while the results are mixed, the greatest improvements are currently seen in organizational efficiency and direct service delivery to customers.

Shkuropadska & Lebedeva (2025) consider the resilience of the public administration system as a key element of the ability of states to withstand external shocks and internal transformations. The results of the study show significant differentiation in resilience levels among countries of the region, where Ukraine demonstrates an average level, conditioned by progress in digitalization but weaker institutional foundations.

Lagutin et al. (2020) analyze the role of the institutional environment in shaping the resilience of the national economy. It is shown that institutional capacity serves as a key factor in the uneven nature of digital transformation and regional differences in the use of AI technologies.

Gonçalves et al. (2025) investigate the role of metropolitan institutions in crisis governance in the case of the Lisbon Metropolitan Area in the COVID-19 pandemic. The study has shown that the responses to critical situations were adaptive rather than transformational, highlighting the need to include regional urban institutions more fully into the EU-level crisis governance frameworks.

AIMS AND OBJECTIVES

The aim of the article is to identify the regional features of AI implementation in public administration systems and to assess the relationship between the level of readiness for the use of AI technologies and the level of economic development of world regions.

To achieve the goal, the following tasks were solved:

1. Countries were grouped by region, and the average values of the Government AI Readiness Index were determined.
2. The level of economic development of the world's regions was analyzed based on the GDP per capita indicator.
3. A regional assessment of the correlation between the GDP per capita indicator and the Government AI Readiness Index was carried out.
4. The variation of the Government AI Readiness Index values within individual regions of the world was assessed.
5. Regional features of the relationship between the level of readiness for the use of artificial intelligence technologies in public administration and the level of economic development of regions of the world were determined.
6. Conclusions were formulated regarding the role of the implementation of artificial intelligence in public administration as a factor in the economic development of regions.

METHODS

The methodological basis of the article is a set of general scientific and special methods that ensure the study of regional features of AI implementation in public administration. The following methods were used in the research process: analysis and synthesis – for the generalization of theoretical approaches to AI implementation in public administration; comparative

analysis – for the comparison of levels of readiness for AI implementation between world regions; statistical analysis – for the processing of Government AI Readiness Index data and GDP per capita; the grouping method – for the formation of regional sets of countries; correlation-regression analysis – for the assessment of the dependence between the level of economic development and readiness for AI implementation.

The information base of the study consists of data from the Government AI Readiness Index developed by Oxford Insights, as well as gross domestic product per capita indicators (GDP per capita) formed on the basis of International Monetary Fund data. The regional analysis was carried out in accordance with the international classification of world regions, which includes the following groups of countries: North America (NA), Latin America and the Caribbean (LAC), Western Europe (WEU), Eastern Europe (EEU), East Asia (EA), South and Central Asia (SCA), Pacific (PAC), Middle East and North Africa (MENA), Sub-Saharan Africa (SSA).

For the purpose of assessing the relationship between the level of economic development and readiness for AI implementation, correlation-regression analysis was applied:

$$AI_i = \alpha + \beta \cdot GDPpc_i + \varepsilon_i \quad (1)$$

where: AI_i *– the value of the Government AI Readiness Index;* X *– gross domestic product per capita;* α *– the constant term of the model;* β *– the regression coefficient;* ε *– the random error.*

The model parameters are estimated using the ordinary least squares method. The quality of the model is determined using the coefficient of determination R^2, which allows assessing the degree of dependence between GDP per capita and the Government AI Readiness Index in a regional context. For the purpose of a generalized assessment of the level of readiness for AI implementation on a global scale, the study determines the global average value of the Government AI Readiness Index. The calculation is performed as the arithmetic mean of the index values for the studied world regions:

$$AI_{global} = \frac{1}{n}\sum_{i=1}^{n} A\,I_{region_i} \quad (2)$$

where AI_{region_i} *– is the index value for the corresponding region,* n *– is the number of regions.*

The obtained value is used as a baseline reference for comparing the level of readiness for AI implementation between world regions and identifying their deviations from the global average level.

Additionally, within each region, leading countries are identified by their Government AI Readiness Index value, which allows identifying the most successful practices of AI implementation in public administration and determining the factors behind their achievement. The application of the described methodological approach provides the possibility of systematic analysis of regional disparities, identification of development patterns, and the formation of scientifically grounded conclusions regarding the influence of economic development on the level of readiness for the implementation of AI technologies.

RESULTS

The Government AI Readiness Index (GAIRI) is an international indicator that assesses the capacity of states and regions to develop, implement, and effectively use AI technologies in the public administration system. The index reflects not only the technological level of a country, but also the institutional, regulatory and socio-economic prerequisites for the digital transformation of the public sector. Its key objective is to measure the readiness of governments to integrate AI solutions into public administration processes, including the provision of public services, managerial decision-making, the development of digital infrastructure and the formation of relevant policy. The Government AI Readiness Index has a composite structure and consists of six interrelated sub-indices that reflect different dimensions of the digital capacity of world regions: Policy Capacity, AI Infrastructure, Public Sector Adoption, Development & Diffusion, Resilience (Table 1).

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Table 1. Government AI Readiness Index of macro-regions of the world in 2025. Note: low level (1–25 points), moderate level (26–50 points), sufficient level (51–75 points), high level (76–100 points). *(Source: compiled by the authors according to Oxford Insights (2025))*

Pillar of Government AI Readiness Index	Global	NA	WEU	EEU	EA	MENA	SCA	LAC	PAC	SSA
Policy Capacity (weight 10%)	49.82	92.5	69.8	60.3	52.1	52.2	46.8	31.2	19.9	23.6
AI Infrastructure (weight 25%)	49.84	82.0	60.3	52.4	50.9	47.4	42.0	40.7	41.7	31.2
Governance (weight 15%)	55.64	79.7	80.5	70.1	57.2	53.7	52.0	45.9	20.1	41.6
Public Sector Adoption (weight 15%)	53.67	85.7	70.3	69.1	55.6	47.5	51.2	41.8	30.9	30.9
Development & Diffusion (weight 25%)	38.19	78.6	52.2	36.4	42.1	37.1	30.4	20.1	27.1	19.7
Resilience (weight 10%)	47.84	72.9	66.9	52.1	49.3	39.8	38.7	37.4	42.0	31.5
Total	48.17	81.51	64.42	54.31	50.32	45.51	42.12	35.2	31.05	29.12
Rank	-	1	2	3	4	5	6	7	8	9

The Policy Capacity sub-index characterizes the institutional and strategic ability of the state to form policy in the field of artificial intelligence. It covers the availability of national AI strategies, the level of coordination of government bodies, funding of digital initiatives, and participation in international cooperation. In fact, this block reflects the extent to which the state is capable of planning and managing AI development at the level of state policy. In 2025, the global value of the Policy Capacity indicator was 49.82 points, which indicates a moderate level. At the same time, the regions that had values below the global average were South and Central Asia, Latin America and the Caribbean, the Pacific, and Sub-Saharan Africa, which characterizes the existence of a significant gap between different parts of the world. A high level of political capacity in the field of AI development is found only in North America, which is due to the high level of institutional capacity, strategic planning, and state support for the development of AI technologies. At the same time, the regions of Western Europe, Eastern Europe, East Asia, and the Middle East and North Africa are characterized by a sufficient level, which is explained by the existence of formed prerequisites for the further development of state policy in the field of artificial intelligence.

After assessing the political capacity in the field of artificial intelligence, it is appropriate to move to the analysis of their technological capacity, since the effectiveness of the implementation of the relevant policy largely depends on the availability of an adequate infrastructural base. *The AI Infrastructure sub-index* reflects the technological basis for the implementation of artificial intelligence. It includes the level of development of digital infrastructure, data availability, internet connection quality, computing capacity, and technical resources necessary for the functioning of AI systems. This indicator is one of the key components of GAIRI, since without adequate infrastructure, the implementation of AI is limited. In 2025, the global value of the AI Infrastructure indicator was 49.84 points, which indicates a moderate level. The regions that had values below the global average were the Middle East and North Africa, South and Central Asia, Latin America and the Caribbean, the Pacific, and Sub-Saharan Africa. A high value of this indicator is characteristic only of North America, while Western Europe, Eastern Europe, and East Asia were characterized by a sufficient level. At the same time, further development of AI is impossible without effective Governance, which determines the mechanisms of regulation, coordination and control of the use of AI in the public sector.

The Governance sub-index assesses the quality of the regulatory environment and institutional management of AI. It covers ethical standards for the use of artificial intelligence, legal regulation, personal data protection, as well as control and accountability mechanisms. This block determines the extent to which the state uses AI technologies safely and responsibly. In 2025, the global value of the Governance indicator was 55.64 points, which indicates a sufficient level. The regions that had values below the global average were the Middle East and North Africa, South and Central Asia, Latin America and the Caribbean, the Pacific, and Sub-Saharan Africa. A high value of this indicator was characteristic of North America and Western Europe, while Eastern Europe and East Asia were characterized by a sufficient level. On the basis of the formed policy, infrastructure, and management system, the practical Public Sector Adoption of AI takes place.

The Public Sector Adoption sub-index measures the level of actual implementation of AI in the activities of the public sector. It includes the use of AI in the field of e-governance, the provision of administrative services, the automation of management processes, and the digitalization of state institutions. A high value of this component indicates the practical integration of AI into public administration. In 2025, the global value of the Public Sector Adoption indicator was 53.67

points, which indicates a sufficient level. The regions that had values below the global average were the Middle East and North Africa, South and Central Asia, Latin America and the Caribbean, the Pacific, and Sub-Saharan Africa. A high value of this indicator is characteristic only of North America, while Western Europe, Eastern Europe, and East Asia were characterized by a sufficient level. However, the implementation of technologies in itself is not sufficient without the existence of a developed innovation ecosystem, which is why the Development & Diffusion indicator is important.

The Development & Diffusion sub-index characterizes the development of the AI ecosystem in a country and region. It covers the level of innovation activity, the development of AI business, investments in research and development, human capital, and the spread of technologies in the private sector. This block reflects the ability not only to use but also to create AI solutions. In 2025, the global value of the Development & Diffusion indicator was 38.19 points, which indicates a moderate level. The regions that had values below the global average were Eastern Europe, the Middle East and North Africa, South and Central Asia, Latin America and the Caribbean, the Pacific, and Sub-Saharan Africa. A high level of this indicator was observed only in the North America region, while Western Europe was characterized by a sufficient level, and East Asia by a moderate level. The final element of the comprehensive assessment is the Resilience indicator.

The Resilience sub-index assesses the ability of the state to adapt to the challenges and risks associated with the implementation of artificial intelligence. It includes cybersecurity, the resilience of digital infrastructure, the ability to respond to technological and social threats, as well as the overall stability of the governance system in the context of digital transformation. In 2025, the global value of the Resilience indicator was 47.84 points, which indicates a moderate level. The regions that had values below the global average were the Middle East and North Africa, South and Central Asia, Latin America and the Caribbean, the Pacific, and Sub-Saharan Africa. The group of regions with a sufficient level of the indicator included North America, Western Europe and Eastern Europe, while East Asia was characterized by a moderate level.

Based on the results of the regional analysis in 2025, North America demonstrated the highest level of readiness for the implementation of AI in public administration, having an integral indicator of 81.51 points. The global average value of the index was 48.17 points. In addition to North America, values above the global average were characteristic of the regions of Western Europe, Eastern Europe and East Asia. In contrast, the regions of the Middle East and North Africa, South and Central Asia, Latin America and the Caribbean, Pacific and Sub-Saharan Africa demonstrated results below the global average value of the index.

For a more objective assessment of the obtained results, it is appropriate to take into account the level of economic development of the studied regions, in particular through the analysis of gross domestic product indicators. In this context, the use of correlation-regression analysis makes it possible to establish the presence and strength of the relationship between the level of economic development of a region and its readiness for the implementation of AI technologies in the public administration system (Figure 1).

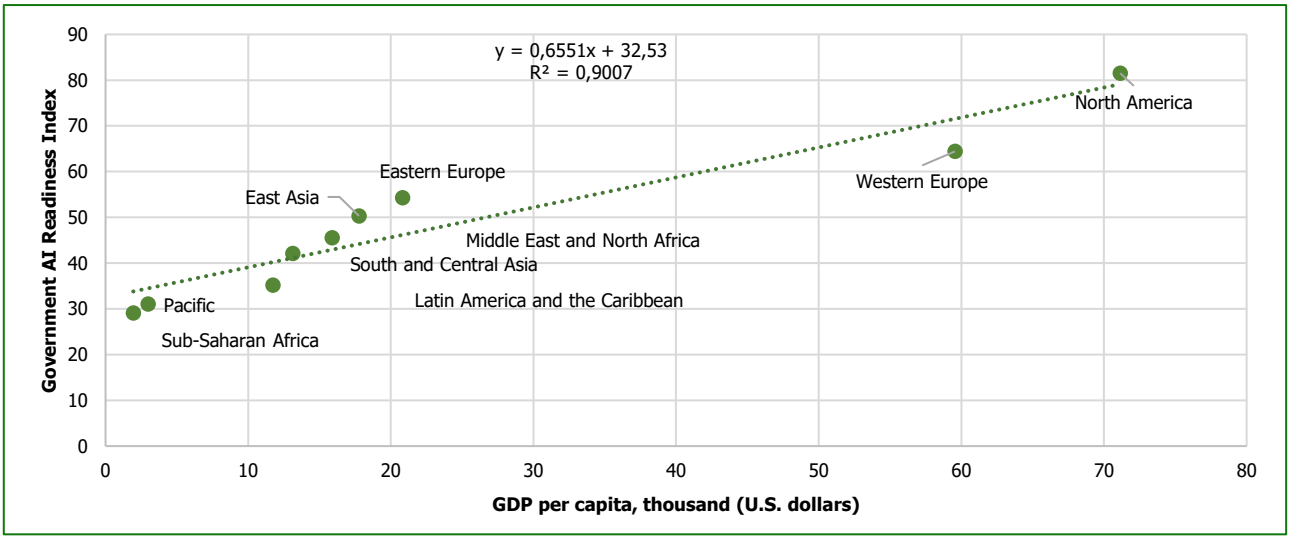

Figure 1. Regional assessment of correlation between GDP per capita and Government AI Readiness Index. *(Source: compiled by the authors according to International Monetary Fund (2026))*

The obtained regression equation y = 0.6551x + 32.53 indicates that an increase in gross domestic product per capita by USD 1 thousand leads to an increase in the Government AI Readiness Index by an average of 0.66 points. The value of the coefficient of determination R^2 = 0.9007 indicates that over 90% of the variation in the studied index is explained by

DOI: 10.55643/fcaptp.4.69.2026.5265

changes in GDP per capita, which confirms the significant role of economic development in shaping the capacity of a region for the implementation of AI technologies. At the same time, the obtained results indicate that economic development is not the only factor in the formation of AI readiness, since part of the variation in the indicator is conditioned by institutional, technological, and political factors that determine the effectiveness of the digital transformation of public administration.

It should be noted that within each region there is a significant differentiation of countries by Government AI Readiness Index values, which necessitates a separate analysis of leading countries and countries that demonstrate lower levels of readiness for the implementation of artificial intelligence. Such an analytical model will allow identifying intra-regional disparities and problem areas of each of the regions (Table 2).

Table 2. Analytical model of intra-regional disparities of Government AI Readiness Index in 2025. *(Source: compiled by the authors according to Oxford Insights (2025))*

Criteria	NA	WEU	EEU	EA	MENA	SCA	LAC	PAC	SSA
Government AI Readiness Index (points)	81.51	64.42	54.31	50.32	45.51	42.12	35.2	31.05	29.12
Number of countries in the region	2	24	20	18	20	17	33	13	49
Share of countries above the regional average level (%)	50.0	62.5	60.0	55.55	45.0	52.9	42.42	23.1	40.8
Share of countries below the regional average level (%)	50.0	37.5	40.0	44.45	55.0	47.1	57.58	76.9	59.2
Maximum index value (points)	88.36	80.81	69.56	76.89	71.57	66.55	69.55	75.73	53.94
Minimum index value (points)	74.66	35.89	32.47	18.39	14.48	15.72	14.94	18.92	12.12
Coefficient of variation (%)	8.40	19.74	20.48	40.5	36.47	31.82	41.91	54.9	40.89

The coefficient of variation (CV) was used as a measure of relative variability (Snedecor & Cochran, 1989). The lower its value, the more homogeneous the studied objects are and the better the mean value characterizes the population. High values of the coefficient of variation indicate significant differentiation between the objects of study. In the context of the analysis of the Government AI Readiness Index, the coefficient of variation allows assessing the level of heterogeneity of countries within a given region in terms of readiness for the implementation of AI in public administration.

$$CV = \frac{\sigma}{\bar{x}} \times 100\% \quad (3)$$

where: CV – coefficient of variation, %; σ – standard deviation, which characterizes the degree of dispersion of indicator values around the mean; $\bar{x}$ – mean value of the indicator.

According to commonly used empirical guidelines, CV values below 10% indicate low variability, values between 10% and 20% indicate moderate variability, and values between 20% and 33% indicate substantial variability Abdi, H., (2022).

The coefficient of variation for North America (8.40%) indicates sufficient homogeneity of the region in terms of readiness for the implementation of AI (Figure 2). North America region, which consists of only two countries, is characterized by the rapid development of innovative ecosystems in the field of artificial intelligence. A particular role in this process is played by the United States of America, where leading technology companies and advanced AI research laboratories are concentrated (Accuracy, 2019).

Silicon Valley remains the global center of innovation, providing a concentration of high-technology business, venture capital, and research potential. In addition, the US government actively regards AI as an important instrument for strengthening the geopolitical influence of the state. In 2025, the United States ranked 1st in the world in terms of the Government AI Readiness Index (88.36 points).

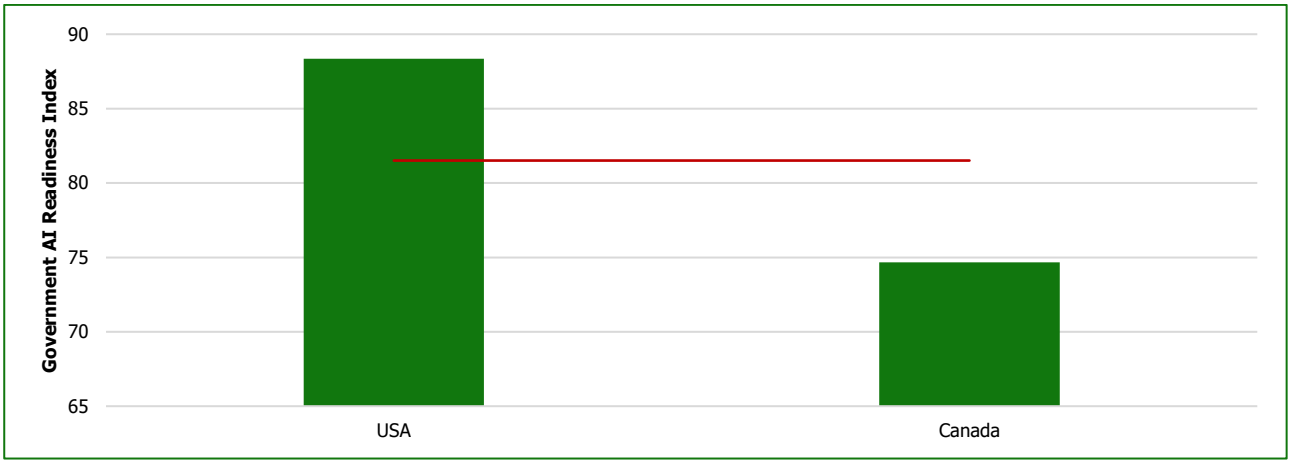

Figure 2. Government AI Readiness Index in North America in 2025. Note: The red horizontal line here and onward represents an average indicator value in the region. *(Source: compiled by the authors according to Oxford Insights (2025))*

Canada is also an important player in the development of AI in the region. The country was among the first in the world to launch a national AI development strategy — the Pan-Canadian AI Strategy, adopted in 2017 (ISED, 2026). Canada continues to invest significant resources in the training of specialists, the development of digital infrastructure and the support of the innovation ecosystem in the field of artificial intelligence. In 2025, Canada ranked 12th in the world in terms of the Government AI Readiness Index (74.66 points).

The coefficient of variation for Western Europe (19.74%) indicates moderate intra-regional differentiation of countries by Government AI Readiness Index level (Figure 3). Accordingly, this means that the region is relatively homogeneous; however, notable differences exist between countries, in particular between highly developed digital economies (France, the United Kingdom, the Netherlands) and countries with lower indicators (Liechtenstein, Monaco, San Marino).

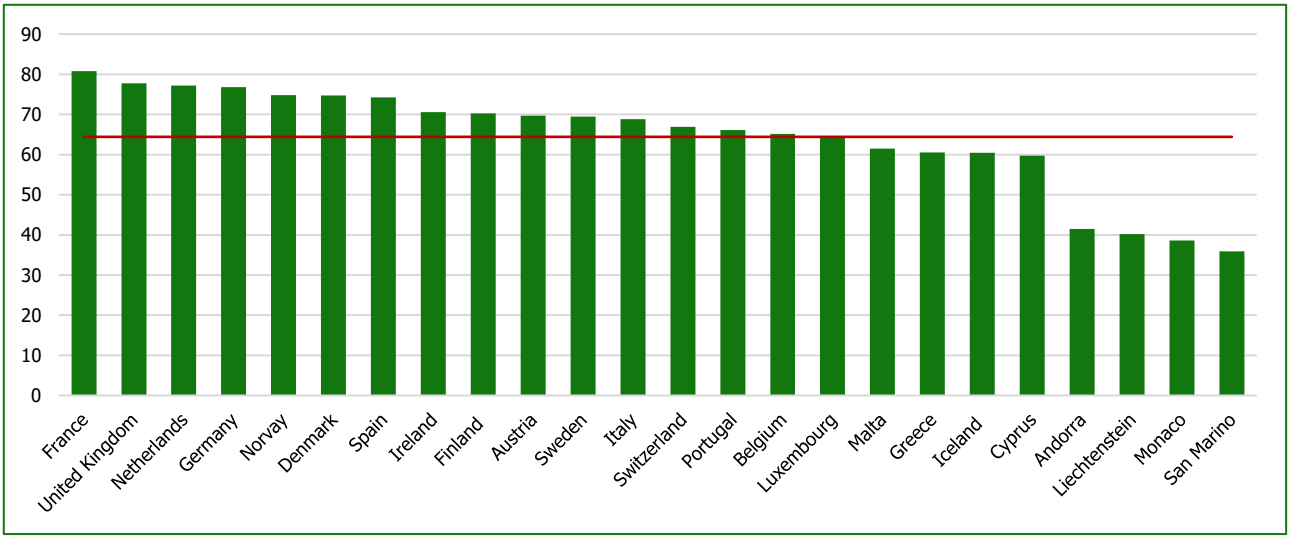

Figure 3. Government AI Readiness Index in Western Europe in 2025. *(Source: compiled by the authors according to Oxford Insights (2025))*

Western Europe includes 24 countries, the majority of which are members of the European Union, as well as a number of states that are not part of it, including Norway, Switzerland and the United Kingdom. In 2025, the region served as the venue for the Global AI Summit in France, which confirmed the leading role of the country in AI development. At the same time, different approaches to the development of AI are observed in the region. For example, the United Kingdom in 2025 signed a large-scale technology and AI partnership with the United States (The White House, 2025).

The EU, in turn, focuses on the formation of technological sovereignty through initiatives such as "EuroStack", the development of the "AI Factories" network, which combines computing capacity to support innovation, as well as through the implementation of the European AI Act (EU AI Act), which sets global regulatory standards in this field. Overall, the average indicator of the region is 64.42 points, and only 9 out of 24 countries of Western Europe have values below this level,

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which indicates a generally high and relatively balanced level of readiness of the region for the implementation of artificial intelligence.

The coefficient of variation in Eastern Europe is 20. The coefficient of variation in Eastern Europe is 20.48%, which indicates significant intra-regional differentiation of countries in terms of readiness for the implementation of AI (Figure 4). The highest result in the region is demonstrated by Estonia, which ranks 21st in the global ranking with an indicator of 69.56 points, while the lowest level is characteristic of Belarus (32.47 points).

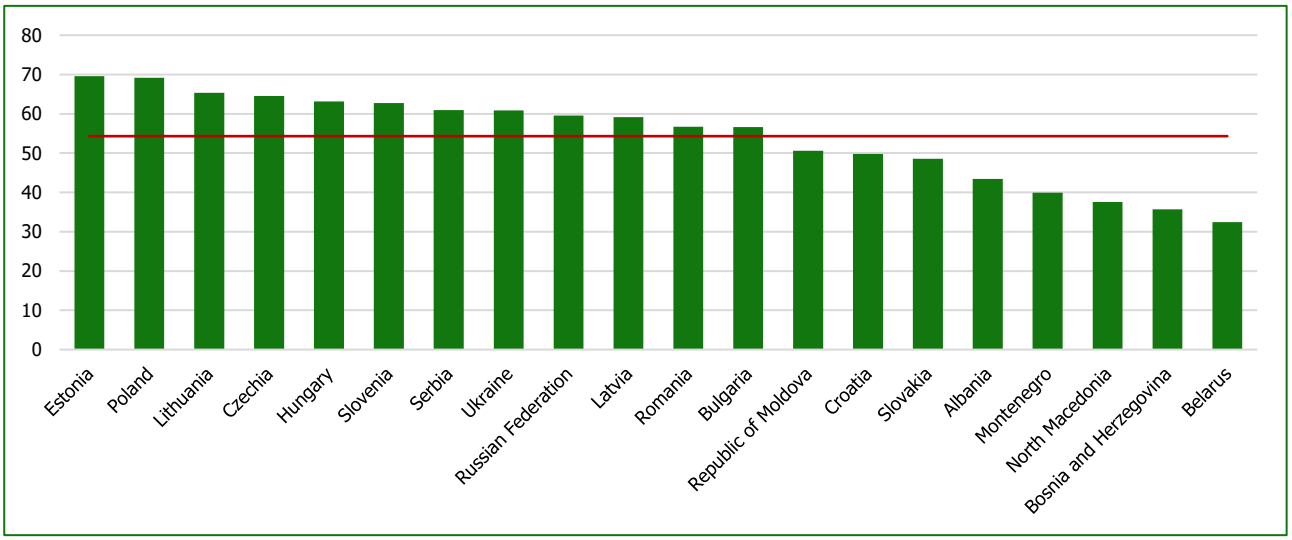

Figure 4. Government AI Readiness Index in Eastern Europe in 2025. *(Source: compiled by the authors according to Oxford Insights (2025))*

In 2025, the region ranked third among all world regions with an average indicator of 54.31 points, with only 8 out of 20 countries demonstrating results below this level. Overall, Eastern Europe forms a dynamic and promising ecosystem for the development of artificial intelligence.

The coefficient of variation for East Asia is 40.5%, which indicates a high level of intra-regional differentiation of countries within the region (Figure 5). This result points to significant unevenness in the development of the region. Alongside leading countries in the field of digital technologies and artificial intelligence, such as South Korea (76.89 points), Singapore (76.42 points), China (76.27 points) and Japan (72.24 points), the region also includes countries with a considerably lower level of digital infrastructure development and readiness to use AI technologies in public administration: North Korea (21.15 points), Myanmar (20.54 points), Timor-Leste (18.39 points).

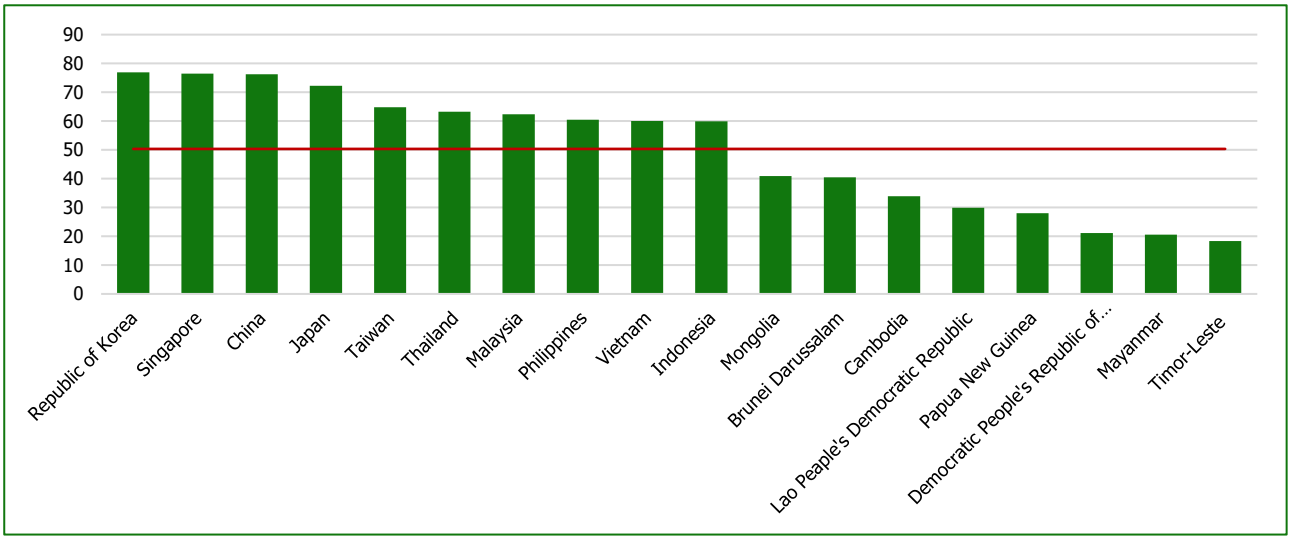

Figure 5. Government AI Readiness Index in East Asia in 2025. *(Source: compiled by the authors according to Oxford Insights (2025))*

The leading countries of the region are actively forming policy and regulatory frameworks in the field of artificial intelligence, as well as strengthening international coordination on issues of AI investment, governance, research and safety. In particular, South Korea, Japan and Singapore are participants in the International Network for AI Safety Institutes (European Commission, 2024).

This network brings together technical organizations from five continents of the world to build a shared scientific understanding and strengthen global trust in artificial intelligence. Overall, the average indicator of the region is 50.32 points, with 8 out of 18 East Asian countries demonstrating results below this level, which indicates the presence in the region of states that are still lagging behind in terms of the development of AI infrastructure, innovation potential, and digital readiness.

The coefficient of variation in the Middle East and North Africa (MENA) region is 36.47%, which indicates a high level of intra-regional differentiation of countries in the region (Figure 6). This situation is conditioned by significant differences between the leading countries of the region, in particular Saudi Arabia (71.57 points), Israel (71.32 points) and the United Arab Emirates (69.86 points), which are actively investing in the development of AI technologies and digital infrastructure, and countries with a lower level of technological and institutional development, such as Djibouti (24.52 points), Syria (21.72 points) and Yemen (14.48 points).

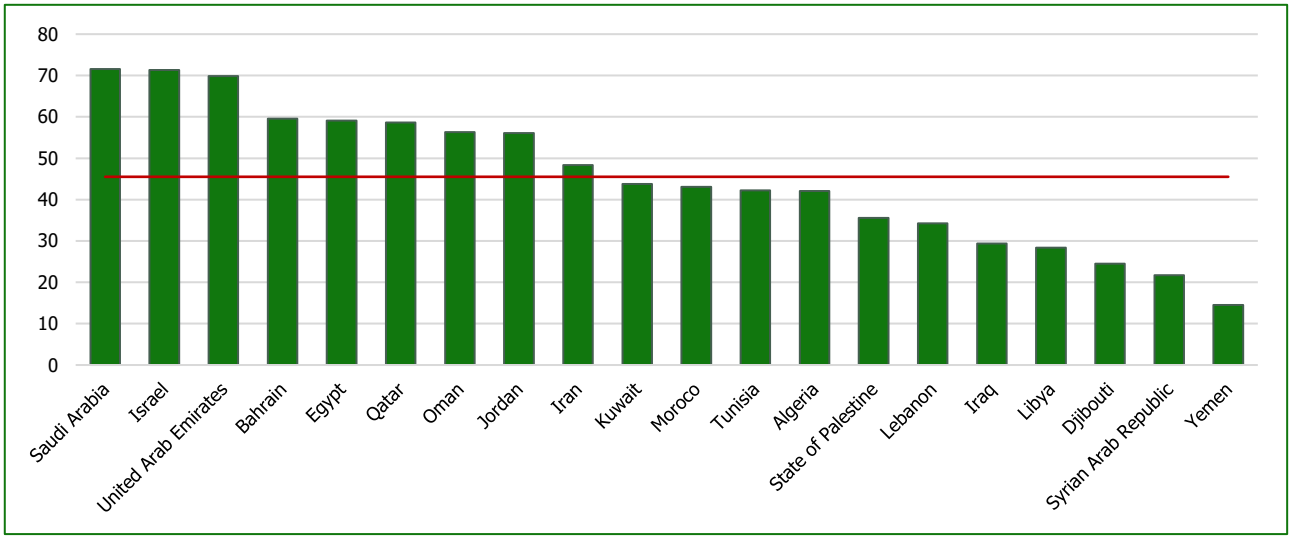

Figure 6. Government AI Readiness Index in the Middle East and North Africa in 2025. *(Source: compiled by the authors according to Oxford Insights (2025))*

It should be noted that the countries of the Gulf Cooperation Council are actively investing in the development of AI infrastructure, the creation of data centers, cloud platforms, computing capacity, and the training of highly qualified personnel. Saudi Arabia is implementing a large-scale strategy for the development of the AI technology stack HUMAIN, aimed at forming its own AI ecosystem, developing national language models, digital services and data processing centers (Vision 2030 AI, 2025).

The United Arab Emirates, Egypt and Qatar are also intensively implementing AI in public administration, healthcare, education and the financial sector. In contrast, countries facing political instability and limited financial resources demonstrate a considerably lower level of readiness for the implementation of artificial intelligence, which forms the high variation of indicators within the region. Overall, the average indicator of the region is 45.51 points, with 11 out of 20 MENA countries demonstrating results below this level. Thus, the level of AI readiness differs significantly between countries, creating considerable regional differentiation.

The coefficient of variation in the South and Central Asia region is 31.82%, which indicates a high level of intra-regional differentiation of countries in the region (Figure 7). The highest result in the region is demonstrated by India (66.55 points), Turkey (58.91 points), and Kazakhstan (58.7 points), while the lowest level is characteristic of Turkmenistan (22.5 points) and Afghanistan (15.72 points).

DOI: 10.55643/fcaptp.4.69.2026.5265

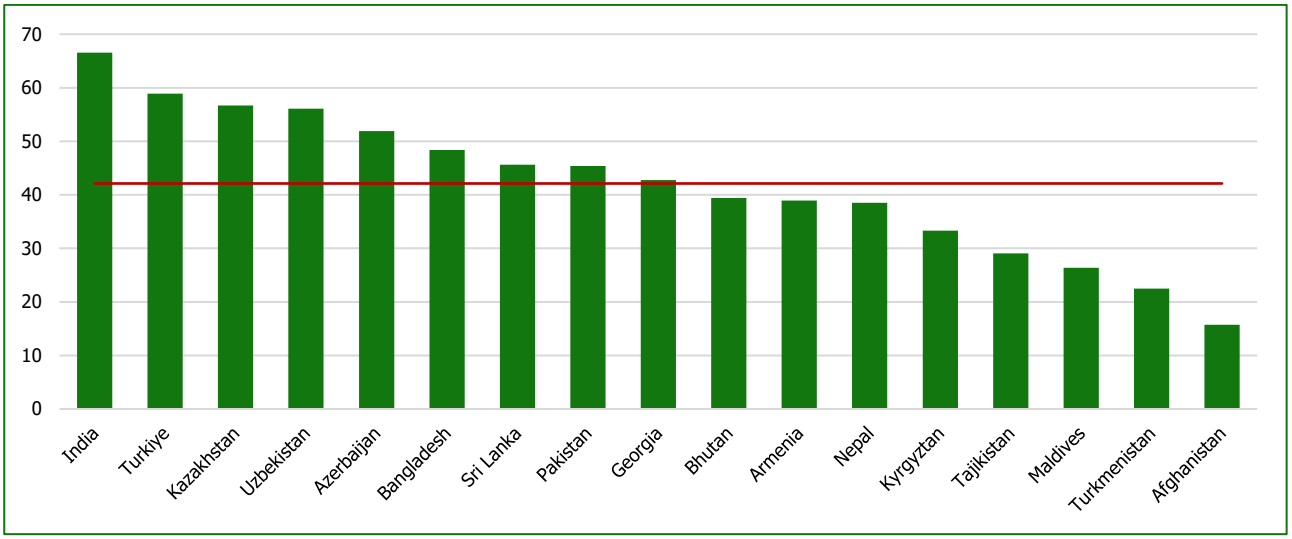

Figure 7. Government AI Readiness Index in South and Central Asia in 2025. *(Source: compiled by the authors according to Oxford Insights (2025))*

Overall, the South and Central Asia region is a dynamic reflection of the global landscape of AI development. India remains the undisputed leader of the region in terms of AI readiness and ranks 27th in the global ranking with an indicator of 66.55 points. Its significant progress in 2025 is conditioned by the implementation of a set of government measures, in particular the adoption of new AI Governance Guidelines and the creation of a coordinating body for AI governance with the support of a specialized expert committee on technology and policy (Press Information Bureau, 2026).

An important role in this process is played by government investments of approximately USD 1.3 billion directed toward the development of AI infrastructure over five years (PwC India, 2026). Turkey holds the second position in the region, ranking 53rd in the global ranking with an indicator of 58.91 points. The country continues to work on expanding the use of artificial intelligence, although part of the strategic commitments of previous years is still at the implementation stage. At the same time, Turkey has a strong digital base and potential for further development, in particular through the introduction of a special technology visa for attracting international AI specialists (Anadolu Agency, 2026).

Kazakhstan ranks third in the region and 58th in the world with an indicator of 56.70 points. The country launched a national supercomputer, which is an important step in the development of computing infrastructure (The Astana Times, 2025). Uzbekistan (56.11 points) also demonstrates positive dynamics, in particular through an ambitious government target of training 1 million AI specialists by 2030 (Euronews, 2026).

Overall, the average indicator of the region is 42.12 points, with 8 out of 17 SCA countries falling below this level, which reflects significant unevenness in the level of development of AI and digital infrastructure within the region. The lowest positions are occupied by Afghanistan and Turkmenistan, which is conditioned by a combination of limited digital infrastructure development, insufficient institutional capacity, and weak integration into global technological processes. Additionally, the situation is influenced by political factors: in Afghanistan – instability of public administration and security challenges (Council on Foreign Relations, n.d.), in Turkmenistan – a high level of political centralization and limited openness to international cooperation, which together restrains the development of fully functional national AI ecosystems (Atlas Institute for International Affairs, 2025).

The coefficient of variation in the Latin America and the Caribbean region is 41.91%, which indicates a high level of intra-regional differentiation of countries in the region (Figure 8). The highest result in the region is demonstrated by Brazil (69.55 points), while the lowest level is characteristic of Haiti (14.94 points). The average indicator of the region is 35.20 points, with 19 out of 33 countries falling below this level.

Overall, Latin America and the Caribbean is a region of significant contrasts, which is reflected both in the socio-economic development of countries and in the level of implementation of AI technologies. The region includes both the largest states in the world, in particular Brazil and Mexico, which are actively forming their own AI ecosystems, and small island countries of the Caribbean that face the problem of outflow of highly qualified personnel and seek to overcome the phenomenon of "brain drain."

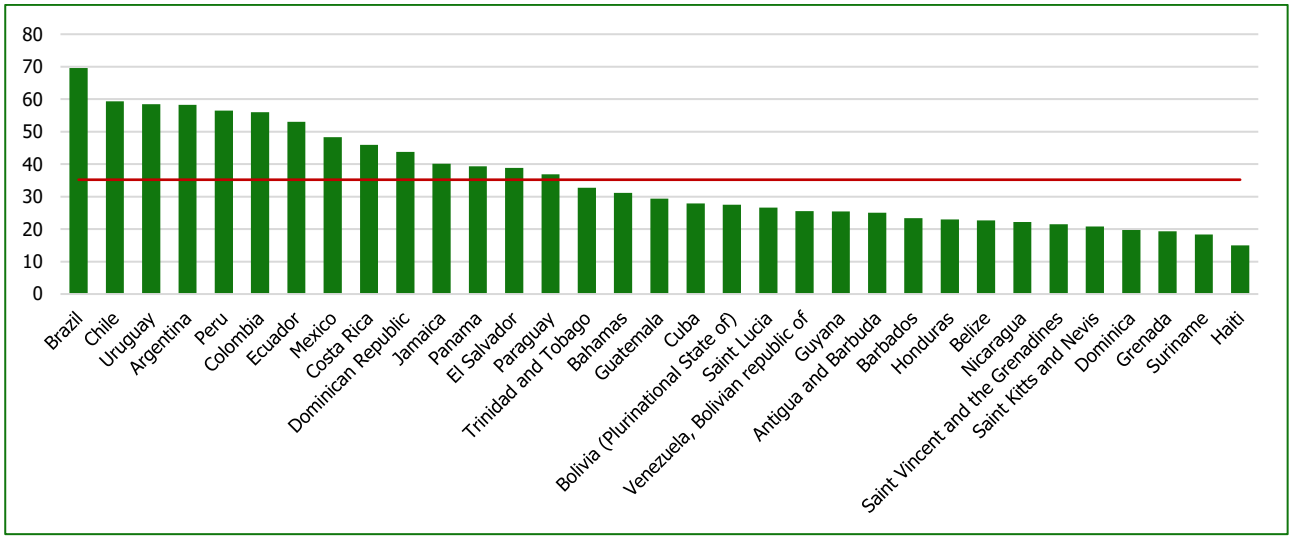

Figure 8. Government AI Readiness Index in Latin America and the Caribbean in 2025. *(Source: compiled by the authors according to Oxford Insights (2025))*

Despite the existing challenges, the region has a number of competitive advantages. Latin America traditionally occupies leading positions in the field of open-source software and digital innovations, and is also characterized by the active development of startups and technology companies working in the field of AI (The Linux Foundation, 2026).

In the Caribbean countries, particular attention is paid to the use of AI to address the specific problems of small island states, in particular in the areas of disaster risk management, digital agriculture and the development of regional cooperation mechanisms within the Caribbean Community (CARICOM). Further strengthening of the region's positions requires the activation of policy regarding the attraction and retention of highly qualified specialists in the field of artificial intelligence, in particular through the introduction of special visa programs and other incentives for talent. At the same time, the priority areas of development remain the improvement of state policy in the field of AI, the strengthening of digital technology governance mechanisms, and the expansion of the use of AI in the activities of the public sector. Accordingly, this will create prerequisites for increasing the competitiveness of the region in the global digital economy.

Similarly, to the Latin America and Caribbean region, the level of readiness for the implementation of AI in the Pacific region countries is characterized by significant unevenness of development. The main feature is a clear geographical division between highly developed states, such as Australia and New Zealand, and numerous small island countries of the Pacific, which have considerably limited resources for digital transformation. The coefficient of variation in the Pacific region is 54.9%, which indicates a high level of intra-regional differentiation of countries in the region (Figure 9). The average indicator of the region is 31.05 points, with 10 out of 13 countries falling below this level.

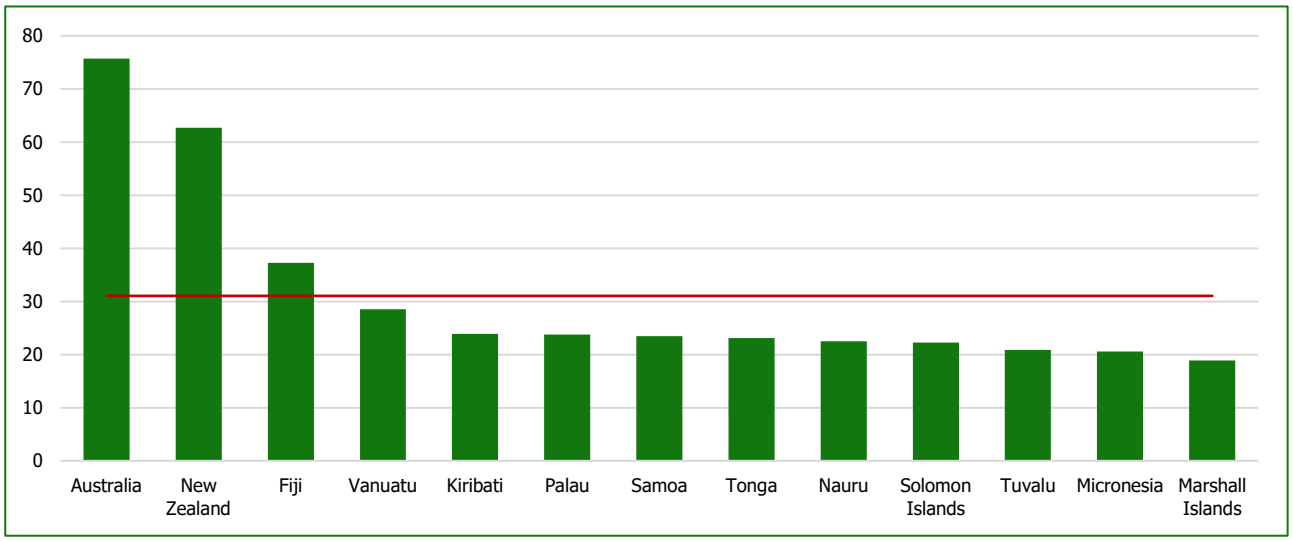

Figure 9. Government AI Readiness Index in the Pacific in 2025. *(Source: compiled by the authors according to Oxford Insights (2025))*

DOI: 10.55643/fcaptp.4.69.2026.5265

The leader of the region is Australia, which ranks 9th in the world in terms of readiness for the use of AI with an indicator of 75.73 points. The high results of the country are largely ensured by the implementation of a comprehensive action plan in the field of AI (Australia AI Action Plan), which defines clear strategic priorities and demonstrates consistent support from the federal government (Department of Industry, Science and Resources, 2025). The second position in the region is occupied by New Zealand, which ranks 37th in the global ranking with a result of 62.70 points. A significant achievement of the country was the adoption of the first national AI development strategy and the introduction of measures aimed at ensuring the safety and reliability of the relevant technologies (Ministry of Business, Innovation and Employment, 2025).

The third place in the region is held by Fiji, which ranks 108th in the global ranking with an indicator of 37.26 points. The state is gradually integrating AI into national development processes within the framework of the implementation of the National Digital Strategy. In addition, the country is forming its own innovation ecosystem in the field of AI, and the adoption of the first national AI development strategy is planned for 2027 (Government of Fiji, 2025).

At the same time, the majority of other small island states of the Pacific region lag considerably behind the regional leaders, occupying positions below 130th place in the global ranking. This situation creates risks of deepening the intra-regional gap in the level of readiness for the use of AI technologies.

The coefficient of variation in the Sub-Saharan Africa region is 40.89%, which indicates a high level of intra-regional differentiation of countries in the region (Figure 10). The average indicator of the region is 29.12 points, with 29 out of 49 countries falling below this level. According to the results of the Government AI Readiness Index, the highest positions among Sub-Saharan African countries in 2025 were occupied by South Africa (53.94 points), Mauritius (52.76 points), Kenya (52.55 points) and Nigeria (50.79 points). In addition, ten more African countries entered the top one hundred states in the world in terms of readiness for the use of artificial intelligence. Particular attention deserves Rwanda (48.54 points) and Ethiopia (41.58 points), where innovation hubs have been created aimed at attracting investment in the field of AI and developing new technological initiatives. An important indication of the growing role of the region in the global development of AI was the holding in April 2025 in Rwanda of the Global AI Summit on Africa, which brought together political leaders, ministers of digital development of African countries and leading representatives of the global technology community.

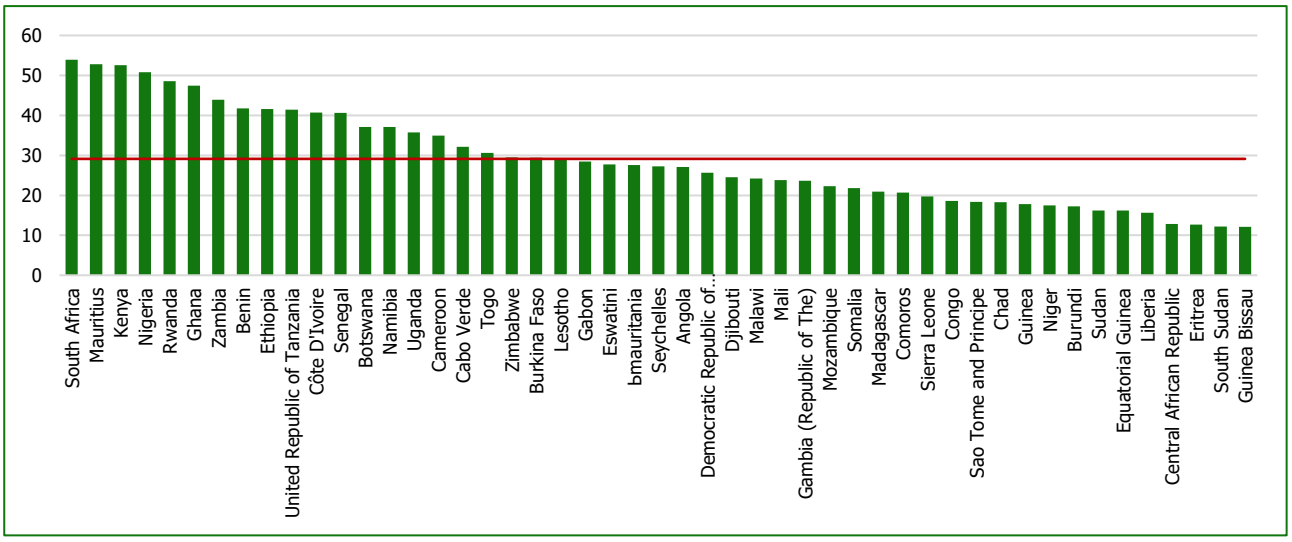

Figure 10. Government AI Readiness Index in Sub-Saharan Africa in 2025. *(Source: compiled by the authors according to Oxford Insights (2025))*

Overall, the countries of Sub-Saharan Africa have significant potential for the development of artificial intelligence, which is largely conditioned by the demographic characteristics of the region. According to data from the African Union, approximately 400 million people aged between 15 and 35 live on the continent, which makes Africa the youngest continent in the world. (African Union, n.d.). At the same time, the region has considerable experience in the field of digital innovations. In particular, over recent decades one of the largest mobile payment ecosystems in the world has formed here, which in 2024 ensured the conducting of financial transactions amounting to more than USD 1.68 trillion between the population, businesses and government institutions (GSMA, 2025).

At the same time, the development of AI in the region is restrained by a number of structural problems. First of all, these are the insufficient level of development of digital and energy infrastructure, limited possibilities for the training of highly

qualified personnel, as well as the need for the formation of an effective regulatory framework in the fields of digital technologies, data and artificial intelligence. An important task remains the creation of integral mechanisms for supporting human capital: from education and scientific research to the commercialization of innovative developments.

DISCUSSION AND CONCLUSIONS

As a result of the conducted research, it was established that the implementation of AI technologies in public administration systems has a pronounced regional character and largely depends on the level of socio-economic development of countries. It was found that the highest level of AI integration is observed in economically developed regions, which are characterized by developed digital infrastructure, significant investments in innovations, and the availability of strategic state programs supporting digital transformation. Based on the results of the regional analysis in 2025, North America demonstrated the highest level of readiness for the implementation of AI in public administration. In addition to North America, the regions of Western and Eastern Europe and East Asia also had values above the global average.

In contrast, in developing countries, in regions of the Middle East and North Africa, South and Central Asia, Latin America and the Caribbean, Pacific and Sub-Saharan Africa, the implementation of AI in public administration is occurring more slowly, which is conditioned by limited financial resources, an insufficient level of digital readiness, and uneven access to technologies. At the same time, in these regions, a growing interest in the use of AI tools is observed, which creates prerequisites for the gradual reduction of the digital divide.

The research confirmed the existence of a positive relationship between the level of readiness for the implementation of AI and the general level of economic development of regions. Accordingly, this indicates that AI is becoming not only a tool for increasing the effectiveness of public administration, but also a factor in strengthening the competitiveness of national economies. This result is consistent with the conclusions of Vatamanu & Tofan (2025), who determine a rise in resource allocation as a positive effect of AI integration in public administration, and with the OECD (2025), which links the depth of public sector AI adoption to the adequacy of financial and institutional foundations.

North America region has the highest regional score of 81.51 points, with the United States occupying first place globally at 88.36 points in 2025, with the lowest coefficient of variation at 8,4%. This outcome reflects a combination of factors – primarily, the density of leading technology companies, the strength of research infrastructure, and sustained federal commitment to AI investment- that collectively correspond to the innovation ecosystem conditions Clim (Moga) et al. (2025) identify as central to digital capacity formation. Western Europe and Eastern Europe followed with regional averages of 64.42 and 54.31 points, respectively, and coefficients of variation at 19,74% and 20,48%. The gap within Western Europe between digitally mature economies such as France, the United Kingdom, and the Netherlands and smaller states with more limited capacity reflects the intra-regional differentiation patterns observed across most regions in this study.

East Asia region has a coefficient of variation of 40.5%, with South Korea (76.89 points), Singapore (76.42 points), China (76.27 points), and Japan (72.24 points) ranking among the world's top performers, yet the same region includes Myanmar (20.54 points) and Timor-Leste (18.39 points).

The Middle East and North Africa region has an average of 45.51 points with a coefficient of variation of 36.47%, which illustrates how resource use can dramatically accelerate AI readiness in some countries while conflict and institutional fragility suppress it in others within the same region. Saudi Arabia (71.57 points), Israel (71.32 points), and the UAE (69.86 points) contrast sharply with Yemen (14.48 points) and Syria (21.72 points). The Gulf states are actively constructing sovereign AI infrastructure – most visibly through Saudi Arabia's HUMAIN strategy.

South and Central Asia (average 42.12 points, CV 31.82%) and Latin America and the Caribbean (average 35.20 points, CV 41.91%) both show wide internal differences – India at 66.55 points and Brazil at 69.55 points, alongside states with severely constrained institutional and infrastructural capacity such as Afghanistan (15.72 points) and Haiti (14.94 points). The structural barriers present in these regions include inadequate digital and energy infrastructure, weak regulatory environments, and chronic human capital deficits.

The Pacific region records the highest coefficient of variation of all regions studied at 54.9%, with Australia (75.73 points) and New Zealand (62.70 points) positioned far above the regional average of 31.05 points, while 10 of 13 countries fall below that threshold. Sub-Saharan Africa has a regional average of 29.12 points and a CV of 40.89%.

Overall, the obtained results can be used for the formation of state policy in the field of digital transformation, in particular for the development of differentiated strategies for the implementation of AI, taking into account regional characteristics and the level of development of countries.

DOI: 10.55643/fcaptp.4.69.2026.5265

Several limitations of this study should be mentioned. The analysis is based on a single composite index, the Government AI Readiness Index, which, like all such instruments, is composed of indicators that may not capture the full complexity of AI governance aspects. Regional groupings are based on international practices that combine different countries in economic development, which is fully reflected by high coefficients of variation across most regions. The analysis based on the connection between the Government AI Readiness Index and GDP establishes correlation rather than direction of effect and doesn't provide an explanation about the mechanisms through which economic development is translated into institutional AI capacity.

Future research should address these gaps through longitudinal analysis tracking index dynamics across multiple time points to determine whether regional disparities are narrowing or widening. Given the pace of regulatory change observed across all regions, further investigation into how specific governance frameworks translate into measurable public sector outcomes is needed.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

FUNDING

The Authors received no funding for this research.

CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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DOI: 10.55643/fcaptp.4.69.2026.5265

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РЕГІОНАЛЬНІ ОСОБЛИВОСТІ ЕКОНОМІЧНОГО РОЗВИТКУ В УМОВАХ УПРОВАДЖЕННЯ ШТУЧНОГО ІНТЕЛЕКТУ В ДЕРЖАВНОМУ УПРАВЛІННІ

Стрімкий розвиток технологій штучного інтелекту та зростання їх застосування в різних царинах суспільного життя зумовлюють фундаментальні зміни в підходах до державного управління. Незважаючи на посилення наукового інтересу до інтеграції штучного інтелекту в систему державного управління, регіональний вимір особливостей економічного розвитку в умовах упровадження штучного інтелекту залишається недостатньо вивченим. Метою дослідження є виявлення регіональних особливостей упровадження штучного інтелекту в системах державного управління та оцінювання взаємозв'язку між рівнем готовності до використання технологій штучного інтелекту й рівнем економічного розвитку регіонів світу.

Інформаційну базу дослідження становлять дані Government AI Readiness Index. Методологічна основа включає порівняльний аналіз, статистичний аналіз, методи групування та кореляційно-регресійний аналіз, що були використані для аналізу дев'яти регіонів світу: Північна Америка, Західна Європа, Східна Європа, Східна Азія, Південна та Центральна Азія, Близький Схід і Північна Африка, Латинська Америка та Карибський басейн, Тихоокеанський регіон та Африка на південь від Сахари.

Результати свідчать про те, що впровадження штучного інтелекту в державному управлінні значно впливає на економічний розвиток у регіонах світу. Північна Америка продемонструвала найвищий рівень готовності з інтегральним показником 81,51 б., за нею – Західна Європа (64,42 б.) та Східна Європа (54,31 б.), показники яких перевищують середньосвітовий рівень у 48,17 б. Регіони Африки на південь від Сахари, Тихоокеанський регіон і Латинська Америка й Карибський басейн мають найнижчі показники, що є результатом обмеженого рівня цифрової інфраструктури, недостатніх фінансових ресурсів і слабкої інституційної спроможності. Регресійний аналіз показав, що понад 90% варіації рівня готовності до впровадження штучного інтелекту в регіонах може бути пояснено показником ВВП на особу.

Отримані результати підтверджують наявність сильного позитивного взаємозв'язку між рівнем економічного розвитку та готовністю уряду до впровадження штучного інтелекту, водночас указуючи на те, що інституційні, регуляторні та політичні чинники також мають влив. Результати дослідження створюють основу для розробки диференційованих національних стратегій інтеграції штучного інтелекту в державне управління з урахуванням регіональної специфіки та рівнів розвитку.

Ключові слова: штучний інтелект, державне управління, економічний розвиток, цифрова трансформація, Government AI Readiness Index, регіональні диспропорції, управління штучним інтелектом, цифрова інфраструктура

JEL Класифікація: O33, O38, H11, H83, O57