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Public Sector Practice

Using AI in economic development: Challenges and opportunities

There's always been an art to stimulating economic growth. Now there's a science, too.

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The role of economic development leaders may be getting tougher than ever. The job is expansive, ranging from supporting economic growth and resilience to facilitating job creation and labor market transformations. Spending on economic growth can reach trillions of dollars—for example, the OECD countries spend an average of 3.9 percent of their GDP on economic affairs.[1] But interest rates have increased in many parts of the world, limiting governments' fiscal flexibility. The world economy is also still adjusting to the impact of the COVID-19 pandemic, which took a toll on global economic output.

At the same time, new forms of data and new ways to crunch them are affecting both business and society, including government. For example, generative AI alone could generate $2.6 trillion to $4.4 trillion in value across industries.[2] Capturing that value, however, will take new ideas and approaches. In this article, we discuss some major opportunities that AI offers, the challenges that could stand in the way, and how some organizations are tackling them.

Five promising applications of AI

AI can transform a variety of sectors and functions, but five economic development areas in particular stand to benefit from AI technologies.

— *Globally competitive value chains.* Economic development leaders are often asked to identify areas in which their country or region can be globally competitive. To do so, they assess the potential contribution of sectors to sustainable, inclusive, and resilient growth, and they can be the first to notice potential new opportunities. By performing real-time analysis of markets, identifying emerging economic trends, and detecting areas that are poised for growth, analytics models can give leaders access to powerful new capabilities.

For instance, an East Asian city used analytics models to identify untapped areas of economic competitiveness in beverages and auto parts—areas adjacent to where it already held strong capabilities. By focusing on those sectors and taking advantage of its existing talent, infrastructure, and supply chain capacities in related fields, the city increased its GDP per capita by $8,500 in six years.

— *Investment attraction and trade support programs.* Many economic development leaders focus on attracting foreign investment and increasing exports. AI can help leaders select companies that may boost local economic development, understand where companies could aim to expand, estimate the outcome of investments, and determine a budget for the government's efforts to attract businesses.

The US-based organization REDI Cincinnati—REDI stands for regional economic development initiative—employs predictive analytics to identify growing companies that will likely make future investments. Its model, which integrates business intelligence and real-time data analytics, uses data points such as mergers and acquisitions activity and earnings statements to proactively target companies for attraction and expansion efforts.[3] So far, REDI Cincinnati has facilitated more than $6 billion in capital investments.[4]

— *Future of work programs.* Labor agencies can use AI to identify important long-term shifts in the job market and to enable critical transitions. Analytics models can highlight jobs that risk being displaced from forces such as automation and global macroeconomic trends. They can also recommend related, more resilient occupations that workers can retrain for.

[1] General government expenditures by function (COFOG), Government at a Glance 2021, OECD iLibrary.
[2] "The economic potential of generative AI: The next productivity frontier," McKinsey, June 14, 2023.
[3] "Using predictive analytics to drive the next era of economic growth," REDI Cincinnati, November 15, 2019.
[4] Aida Ramusovic-Witham, "Six for success," REDI Cincinnati, December 20, 2023.

There are three key challenges that economic development leaders should be aware of when adopting AI: securing the right data, attracting talent, and gaining public trust.

The United Kingdom's Department for Work and Pensions uses workforce analytics to estimate demand for workers in various occupations. This allows job seekers to better navigate an evolving labor landscape. Moreover, it enables government agencies to offer more skills training programs in high-growth occupations such as social care and information and communications technology (ICT).[5]

— *Economic 'nowcasting' and forecasting.* Ministries of finance and economy and central banks no longer have to identify a crisis months after it has already begun. Instead, leaders can use AI technologies to detect early signs of turmoil, allowing them to course-correct faster and steer the economy through various economic cycles.

For instance, the OECD nowcasts weekly GDP growth using data from 46 countries across various economic sectors. The model uses machine learning to identify correlations between the frequency of searches for terms such as "unemployment," "investment," "crisis," "recession," and changes in different GDP components.[6] By providing real-time measures of economic activity, the OECD Weekly Tracker can readily evaluate quickly changing data, as in the event of an economic crisis.

— *Transforming public services with geographic information systems and spatial data.* Government organizations are increasingly using spatial data and satellite imagery to enhance delivery of public services, elevate disaster responsiveness, and foster the development of smarter, more sustainable, and more future-ready cities. Given the size and granularity of these data sets, complex AI models may be required to produce metrics in near real time.

Kazakhstan's approach to identifying and developing infrastructure in rural settlements uses a statistical model combining geographic, demographic, and economic data with analytical techniques. This model analyzed more than 6,293 communities, selecting 3,500 with the highest development potential—and in which 90 percent of the rural population lives. As a result, government leaders could more efficiently and precisely provide essential services and infrastructure to rural areas.[7]

Three challenges

There are three key challenges that economic development leaders should be aware of when adopting AI: securing the right data, attracting talent, and gaining public trust.

[5] *DWP's preparations for changes in the world of work*, UK House of Commons Work and Pension Committee, June 29, 2021.
[6] Nicolas Woloszko, *Tracking activity in real time with Google Trends*, OECD Economics Department working paper, number 1634, 2020.
[7] "Auyl – Yel Besigi: 3.5 thousand villages to be fully modernised in Kazakhstan," Press Service of the Government of the Republic of Kazakhstan, January 17, 2023.

Data

A lack of data can make it difficult for economic development leaders to accurately forecast macroeconomic trends, compare the impact of investments in different regions, and prepare the workforce for the changing labor market. Furthermore, a gap exists between data-rich and data-poor environments regarding the quality, availability, and cost of data. For example, fewer than half of all births are recorded in sub-Saharan Africa,[8] Afghanistan's latest census was done in 1979,[9] and about one billion people around the world don't have an official proof of identity.[10]

In data-rich environments, the challenge can be to distinguish the signal from the noise. Analytics models are only as good as the data they are based on, and working with unintegrated or scattered data can bog down projects and increase costs. Low-quality data can be incompatible with the use of AI-driven methods of analysis. One global survey found that 45 percent of developers agreed that government data was clean and accurate, meaning that more than half of the developers believed they were working with inconsistent or inaccurate data. Less than 35 percent thought data was well documented.[11]

Access to data is another challenge cited by experts. Analytics models typically require large data sets to make accurate predictions, but bureaucratic silos, diverging political agendas, and restrictive regulations can prevent organizations from sharing relevant data.

Talent

Public sector organizations are struggling to attract talent. In the United Kingdom, 51 percent of public sector entities report having a tough time filling vacancies, compared with 38 percent of private sector companies.[12] Recruiting younger, tech-savvy employees can be even harder. In the US government, for instance, there are more than four IT workers aged 60 and older for every one aged 30 and younger.[13]

Government leaders we spoke to emphasized that competition for talent with the private sector has further hampered their ability to hire technical talent. For example, there are currently as many job postings requiring knowledge of Python as there are professionals skilled in this coding language, and 0.9 data scientists exist for every job posting requiring data science skills.[14] One outcome of this is increased salary expectations that many public sector entities find hard to match.

Trust

Public entities committed to transparency in decision making can find it hard to leverage tools that can't be interrogated for an explanation or held accountable. Modern machine learning methods are sometimes said to operate in a black box, delivering results that can't be easily explained as linear relationships between variables. This can undermine trust in the model's output and may also indicate why many people are uneasy about AI. An Ipsos survey of approximately 22,800 adults in 31 countries showed that roughly half of the respondents reported being nervous about products and services that use AI.[15]

One potential benefit of using machine learning methods to analyze large amounts of data is to provide counterintuitive insights that a human-driven, hypothesis-led approach cannot. For instance, an algorithm might identify a large, untapped opportunity for a country to produce water pumps. But it would be difficult to justify the idea to investors and taxpayers if government executives themselves couldn't understand how the algorithm reached that conclusion. Some of the decision makers we spoke with also questioned whether AI could understand the cultural context for making economic development decisions.

[8] Share of births registered, 2010 to 2018, Our World in Data, May 29, 2023.
[9] "Urban planning in Afghanistan: angry warlords and no census," Global Times, December 12, 2019.
[10] Douglas Broom, "A billion people have no legal identity - but a new app plans to change that," World Economic Forum, November 20, 2020.
[11] Developers rate the current state of gov data accessibility (chart), Socrata, accessed May 2024.
[12] *Labour market outlook: Views from employers*, Chartered Institute of Personnel and Development, 2023.
[13] Jack Corrigan, "By the numbers: Federal agencies face uneven struggle hiring young tech talent," Nextgov, October 1, 2018.
[14] Michael Chui, Mena Issler, Roger Roberts, and Lareina Yee, *McKinsey Technology Trends Outlook 2023*, McKinsey, July 20, 2023.
[15] *Global views on A.I. 2023*, Ipsos, July 2023.

Several public sector officials told us that their organizations would launch AI pilots, only to see progress slow down. The lack of momentum would create frustration, leading to resource cuts that caused further delays. For example, official estimates reveal that in the European Union, only 38 percent of AI use cases in the public sector have reached the implementation phase, with the majority still in development or at the pilot stage.[16]

Seven strategies for AI adoption

Public sector entities can look to the following seven strategies to help accelerate their efforts to adopt AI technologies.

1. Use AI and other advanced technologies to cut through complexity

New technologies are complex, and complexity can be scary. However, combining AI and other tools with dashboards can help decision makers focus on the most important priorities and metrics. Models may also be used to efficiently synthesize information.

2. Ensure that the road map of use cases is based on core needs

Government leaders can prioritize quick wins when starting to engage with AI. Given the importance of maintaining employees' enthusiasm through the growing pains of developing new technical capabilities, this makes sense. However, organizations still need to create value with AI tools. Beginning from the end can help illuminate the steps leaders need to take to reach their goals, allowing organizations to avoid putting resources into unnecessary models and features.

3. Ensure seamless access to data through a strong statistics office, use of private provider data, and better data-sharing governance

Multiple leaders have shared that statistical agencies can play an essential role in enabling access to data. A good statistics office can exercise its independence and technical capabilities to publish trustworthy data that can be used to generate reliable models. Acting in compliance with local privacy and security regulations, this office can also partner with government entities to collect useful data for decision making.

New technologies are complex, and complexity can be scary. However, combining AI and other tools with dashboards can help decision makers focus on the most important priorities and metrics.

[16] "AI watch: European landscape on the use of artificial intelligence by the public sector," Joint Research Center, June 1, 2022.

Secure the right sources of data. Other published sources of data may be used—also in compliance with regulations—when government data isn't available. Consider the following examples:

— *Geolocation and satellite data.* Our McKinsey Global Institute (MGI) report, *Pixels of Progress: A granular look at human development around the world*, breaks down the world into 40,000 microregions leveraging nighttime satellite imaging and other data. MGI found that a country's GDP growth explains only about 20 percent of the growth in a given microregion and highlighted success stories that might have passed unnoticed—such as Mapusa, India, which increased its GDP per capita threefold over the past 20 years.[17]

— *Telecom data.* The World Bank used mobile services data, including call duration, network of contacts, and frequency of top-up payments, to identify the poorest households in Afghanistan. The approach worked about as well as more expensive data collection methods, such as field visits to count electric appliances.[18]

— *Payments data.* Credit and debit card transactions offer an especially interesting combination of high-frequency and geospatial data. The United Kingdom regularly publishes changes in credit and debit card spending in different categories such as consumer staples and discretionary spending. The data set is part of a wider set of indicators that it started compiling during the COVID-19 pandemic to track the economic and social impact of the pandemic and the pace of recovery. This includes data on weekly Pret A Manger store transactions, company creation and dissolution, layoffs, flights, supermarket prices, traffic, product stocks in stores, and value-added tax transactions.[19]

Ensure government-wide access to data through robust data governance. By ensuring that data sets are available, interoperable, and that data governance frameworks allow organizations within a country's government to share data, governments can play a crucial rule in strengthening the capacity of teams developing analytics models. This is critical, as models can require bringing together multiple data sets owned by different entities.

For instance, the US government's open data site, Data.gov, offers access to nearly 300,000 data sets; the site's stated aim is to "inform decisions by the public and policy makers, propel innovation and economic activity, achieve agency missions, and strengthen the foundation of an open and transparent government."

4. Understand that trust is earned slowly—and lost quickly

Leaders should consider using AI models and data analytics to demonstrate how these tools are crucial for enhancing workers' expertise and boosting collaboration, rather than a means for displacing human input.

Use AI to enhance the work of human experts, rather than replace them. This can be particularly important in economic development, where decisions are often not black-and-white. For instance, deciding how much a government should be willing to offer in subsidies to attract a new electric-vehicle (EV) gigafactory doesn't necessarily boil down to following a set of algorithmic rules. Leaders should be aware of what AI models can and can't contribute to a government's decision-making process.

In the hypothetical example of the new EV gigafactory, the AI tool could estimate the number of jobs created by the factory, its GDP impact, and its contribution to exports. However, analytical models can't explain what the role of governments could be in setting industrial policy or how much to value personal mobility versus public transport.

Switzerland's Anticipate model illustrates the potential for collaboration between experts and AI. This app collects, categorizes, and analyzes data from various sources, including on-the-ground

[17] *Pixels of Progress: A granular look at human development around the world*, McKinsey Global Institute, December 7, 2022.
[18] Emily L. Aiken, Guadalupe Bedoya, Joshua E. Blumenstock, and Aidan Coville, "Program targeting with machine learning and mobile phone data: Evidence from an anti-poverty intervention in Afghanistan," *Journal of Development Economics*, 2023, Volume 161(C).
[19] "Economic activity and social change in the UK, real-time indicators," UK Office of National Statistics, April 25, 2024.

Leaders should consider where AI tools may be shared rather than duplicated.... Eliminating redundancy can generate significant savings.

networks and news articles. It uses expert forecasts to refine its predictions, giving more weight to experts that have a stronger track record.[20]

Ensure that results can be explained. Decision makers may wish to consider investing in educating others about AI models' benefits and limitations. For example, the Scottish Government and Mind Foundry helps nontechnical AI users understand how different factors can influence the model's results. The goal is to encourage experts to collaborate with AI tools, not to use AI to replace human judgment.[21]

Ensure transparent data policies (for example, data privacy) and control for biases in the data to address senior government leaders' concerns. The United Kingdom has established an Algorithmic Transparency Recording Standard to define how public bodies can publish information about their algorithms, including rationale for use, mechanisms for human oversight, technical specifications, potential risks and mitigations, and impact assessments.[22] This can decrease the risk of public entities misusing algorithms, help spread best practices, and increase trust in the use of these tools.

Develop solutions in-house or partner with homegrown institutions. Since some models require access to sensitive data, governments can understandably be hesitant to share them with external organizations. Leaders sometimes fear that their data and innovations may be leaked by overseas companies with fewer assets and people on the ground who can be held accountable. They can also be skeptical about foreign experts' ability to build tools attuned to local values and sensibilities. Our interviews with economic development officials suggest that partnering with local organizations can be one way to increase trust.

Abu Dhabi–based AI company G42 has convened a coalition of Abu Dhabi firms to develop Jais, an Arabic large language model.[23] The group included government agencies, academic institutions, state-owned companies, and local banks—all of which shared data that was used to create the model.

5. Pursue partnerships, mentorships, rotational programs, and external providers to help build and enhance expertise

Organizations can implement mentorship programs, connect with external providers to access macroeconomic models, and establish partnerships with other agencies to accelerate beneficial outcomes.

Partnerships. Most organizations we examined had modest AI and analytics teams. Partnerships can be instrumental in delivering immense value with limited resources. For example, Oxford University, Vivid Economics (a McKinsey company), and

[20] Anticipate, Observatory of Public Sector Innovation, 2020.
[21] Nick Sherman, "AI in government: Considerations for ethics and responsibility," Mind Foundry, March 10, 2021.
[22] Global trends in government innovation 2023, Observatory of Public Sector Innovation, May 15, 2023.
[23] "Meet 'Jais,' the world's most advanced Arabic large language model open sourced by G42's inception," Mohamed Bin Zayed University of Artificial Intelligence, August 30, 2023.

the UN Economic Commission for Africa collaborated to identify green economic opportunities in the Democratic Republic of Congo. They discovered that investing in utility-scale renewable energy, power lines, mini- and microgrids, and climate adaptation could be particularly beneficial.[24]

Rotational programs. Rotational programs can help attract talented data scientists and private companies to work in government for a few months, where they may coach junior team members. The US federal government, for instance, enables IT and cybersecurity workers to serve temporarily in other agencies. This can allow tenured professionals to create needed technical capabilities at less mature agencies.[25]

Mentorship programs. Mentorship programs, too, can allow seasoned economic development leaders to strengthen the capabilities of individuals in newer organizations. Some UK agencies mentor analytics-driven organizations in emerging countries, helping resource-strapped teams to learn new coding languages and adopt best practices in project scoping, quality assurance, project management, and more.[26]

External providers. Under-resourced teams, in particular, could focus on delivering tailored insights to decision makers, not on reinventing the wheel. Macroeconomic models and other tools can be purchased and customized rather than built from scratch.

6. Pool resources by building centers of excellence (CoEs)

Centers of excellence, focused on specific areas of expertise, are used by some organizations and governments to establish digital platforms and other tools to reduce redundancies and streamline access to data.

CoEs can help attract talent and deliver projects at scale. Governments can establish CoEs to mentor, nurture, and direct talent to the most relevant programs. They can also use CoEs to build common platforms to improve e-services and help break down silos across the government. For example, the United Kingdom's Government Digital Service, a team of 750 product managers, software engineers, and other specialists, has created digital platforms that more than 1,900 public sector organizations now use.[27]

Centralizing tools and processes can help organizations save time and money. Leaders should consider where AI tools may be shared rather than duplicated. A government's Ministry of Economy and its Ministry of Finance may both need access to macroeconomic forecasts, for instance, but that doesn't necessarily mean it must create two AI-based platforms. Eliminating redundancy can generate significant savings. An OECD study found that centralizing public procurement in one country could reduce costs considerably.[28]

7. Establish a strong value proposition to attract, retain, and develop a diverse pool of talent

Compensation isn't the only lever organizations can pull to draw top talent, as flexibility is increasingly important to prospective employees. And those that put greater emphasis on skills-based hiring can broaden the labor pool.

Consider compensation, but look beyond it. Governments spend an estimated $209 billion a year on IT services.[29] Over the past decades, many governments have outsourced their digital and AI capabilities, partly because of challenges in attracting talent.[30] Compensation is a contributing factor, as public sector pay scales can struggle to keep up with market demand for data scientists and other professionals. However, compensation is only one of several levers that government entities can use to recruit and retain talent.

[24] Julia Bird, Em Murdock, and Brian O'Callaghan, *Green economic growth for the Democratic Republic of the Congo*, Oxford University, Smith School of Enterprise and the Environment, and Vivid Economics (a McKinsey company), March 1, 2021.
[25] Federal Rotational Cyber Workforce Program, US Office of Personnel Management, accessed May 2024.
[26] "Making an international impact with data science mentoring," Data Science Campus, December 13, 2021.
[27] *Government Digital Service Blog*, "Government Digital Service: updates on our 2021–2024 strategy," blog post by Tom Read, December 20, 2022.
[28] *Productivity in public procurement - A case study of Finland: Measuring the efficiency and effectiveness of public procurement*, OECD, 2019.
[29] "Gartner forecasts worldwide government IT spending to grow 8% in 2023," Gartner, May 24, 2023.
[30] Ryan Tracy, "How can government attract the AI talent it needs?," *Wall Street Journal*, April 6, 2021.

A McKinsey survey of US civil servants reveals that employees who desire to stay at their current organization value doing meaningful work and having workplace flexibility. Meanwhile, those who wish to leave indicate that they are discouraged by limited options to develop their careers and take on leadership roles.[31]

Consider alternative talent pools. AI and analytics teams can scale up faster if they hire from a diverse pool of talent, including legal migrants and skilled candidates without university diplomas.[32]

Build a team with diverse profiles. Successful teams can include economists, subject matter experts, project managers, and communication specialists, as well as data scientists.[33]

After years of contending with one crisis after another, including the COVID-19 pandemic and rising inflation, economic development leaders are increasingly relying on AI and other advanced technologies to attract investment, reskill workers, and support economic growth. Recent shocks have emphasized both the advantages of making data-driven decisions and the challenges leaders can face in obtaining timely data. Strengthening an organization's AI muscle calls for new leadership capabilities, requiring a different type of courage and determination from simply reacting to crises in the moment. It may not consist of big, bold actions with near-immediate consequences but of consistent, small steps whose cumulative effect may be fully understood only years later. A commitment to advance economic development with the help of AI may not make headlines but it may prevent new crises.

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[31] "What workers want is changing. That could be good for government," McKinsey, October 26, 2022.
[32] Anita Dutta, Nora Gardner, Megan McConnell, and Angela Sinisterra-Woods, "Transforming public sector hiring with data-enabled talent 'win rooms'," McKinsey, July 5, 2023; Richard Choi, Sameer Chowdary, Drew Erdmann, and Tim Ward, *Bridging the talent gap in state government postpandemic*, McKinsey, March 17, 2023.
[33] "The Data Science Campus – five years of data science for public good," Data Science Campus, March 31, 2022.