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The Value of Open Source AI for the Canadian Economy

A Review of Industry, Academic, and Open Source Evidence

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February 2026

Commissioned by Meta

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AI is forecasted to add up to **9% to Canada's GDP** by 2035 and $180 billion annually by 2030.

Canada is a global leader in **AI research and government policy**, but lags in large-scale commercial adoption.

Open source AI **lowers costs**, **boosts transparency**, and **accelerates innovation**, bridging adoption and commercialization gaps.

Canada shows a strong foundation for open source AI adoption, such as its **open by default policy**, **existing open source AI projects** and **open weights** releases.

By fine-tuning models to reflect its **multiculturalism**, **identities**, and **communities**, Canada can create a more **representative digital future**.

Open source accelerates Canadian AI leadership by enabling cost effective access to large language models and building trust through transparency of model parameters.

There is a **positive relationship** between commercial **open source startups** and early stage **valuations**, with strong **investor preferences for open weights**.

Startups are adopting open source AI to **cost-effectively build innovative, world class products** that solve complex business challenges.

AI is **strengthening Canada's workforce**, complementing jobs, creating 35,000+ new roles, and enhancing productivity by an average of 8%.

Following the federal government's **Canadian Sovereign AI Compute Strategy**, several companies are building **data centres** that capitalize on Canada's energy resources.

Canada's **financial services** sector is particularly well positioned for open source AI adoption, capitalizing on early investment in AI research and open source collaboration.

Policy recommendations include bridging AI research excellence to corporate modernization and startup incentive programs.

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Executive summary

Building on decades of leadership in artificial intelligence research and policy, Canada has established a strong foundation of academic excellence, public investment, and industry participation. Yet, while Canada ranks among the top global leaders in AI research and venture funding, it continues to face challenges in AI commercialization, infrastructure, and scaling adoption. This report argues that open source AI is central to bridging these gaps and securing Canada's global competitiveness.

Research shows that AI could add up to 9% to Canada's GDP by 2035 and $180 billion annually by 2030. Generative AI alone is projected to raise worker productivity by 8% and create over 35,000 innovation-driven jobs within five years. Canada was early to recognize this economic opportunity, activating AI research and innovation ecosystems that have yielded 10% of the world's leading AI researchers and have placed the country in the top 5 globally in AI investment. Its policymakers also seized the AI opportunity, crafting the 2017 National AI Strategy, making it a policy pioneer.

Today, Canadian businesses are increasingly deploying and implementing AI solutions. Across agriculture, energy, finance, healthcare, government, and manufacturing, organizations are addressing challenges unique to these sectors, building innovative products, and creating better customer experiences. However, data shows that mainstream implementation has lagged. Only about one-quarter of Canadian firms have fully implemented AI solutions. Combining this lag with workforce shortages and limited commercialization pathways threatens the nation's ability to convert its research investments and policy advantages into sustained economic growth.

Open source AI presents a compelling opportunity to accelerate Canadian innovation and competitiveness. Open source lowers barriers to entry, enhances transparency, and enables model fine-tuning, creating the environment to innovate quickly and responsibly. Open source options provide cost-effective access to technology, accelerate workforce training, and support sovereignty through data privacy, customization, and public trust. Open source frameworks are already being deployed in critical areas, including Indigenous language revitalization, misinformation detection, energy optimization, and financial risk management.

To capture the AI opportunity, Canada must strengthen open source infrastructure, accelerate workforce reskilling, and improve pathways for startups to commercialize publicly funded research. Policymakers and business leaders should build on national AI strategies, incentivize adoption in key sectors, and build public trust through transparency.

By embracing open source AI, Canada can transform its early leadership into a lasting competitive advantage, creating an innovative and inclusive digital economy for the decades ahead.

Introduction

Artificial intelligence (AI) is reshaping the economic and social landscape around the world. Canada is exceptionally well positioned to prosper from AI as a key accelerator to economic growth, competitiveness, and industry innovation. This report is the culmination of a review of academic, industry, and open source literature that describes Canada's unique AI opportunity. Canada is building on a strong foundation of world class technological research and development, favorable government policy, and AI adoption among its leading industries. Its pathway to capturing economic growth, driving inclusive innovation, and charting a resilient future, is strongly tied to AI technologies generally, and open source AI in particular.

Canada has long been a global pioneer in AI, with early roots in the 1970s when Canada formed the first national AI organization, the Canadian Artificial Intelligence Association (CAIAC) followed by the establishment of Canadian Institute for Advanced Research (CIFAR).[1] The country was also the first in the world to launch a National AI Strategy in 2017, supported by the Scale AI supercluster with $284 million from the federal government, $58 million from the Government of Quebec, and matched funding from the private sector.[2,3] The Strategy's goal is to accelerate the integration of AI across industries and boost Canada's economic performance.

In recent years, as a direct result of financial support from government and the private sector, world-class AI hubs such as Mila, the Quebec Artificial Intelligence Institute, in Montréal and the Vector Institute in Toronto have been built. Today, Canada continues to produce 10% of the world's leading AI researchers and ranks among the top five countries globally for highly cited research publications and newly funded AI companies.[4]

Yet Canada's early AI investments in research and integration have not manifested into market advantage. As the Conference Board of Canada warns about AI, "it's Canada's race to lose."[5] While Canada excels in research, strategy, and global collaboration, it lags in commercialization, infrastructure, and scaling adoption across sectors, comparative to other economies. Although venture capital activity has been strong, with Canada ranking second globally in VC investment in AI, startups face challenges moving from lab to market.[6] A 2024 Vector Institute survey found that Canadian B2B firms lag behind peers abroad.[7]

While generative AI adoption is accelerating in Canada, with nearly half of Canadian workers using generative AI in 2024 (a 116% increase from the year prior[8]), adoption alone is not enough to realize the technology's full potential and compete in a global marketplace. Open source AI will be central to Canada's competitive AI future for its ability to unlock the broader benefits of cost savings, flexibility, transparency, and trust.

Open models allow Canadian researchers, companies, and governments to localize solutions, safeguard privacy, and democratize innovation, and do so in a more sustainable fashion. As Michael Geist, Mark Surman, and Jeremy Hirsch-Allen argue, Canada's AI opportunity rests on embracing open ecosystems to ensure innovation is not only competitive but also inclusive.[9]

This point was reinforced in 2024 when three University of Toronto professors were among a group of distinguished global economists and experts who signed a statement underscoring the importance of open source AI, coordinated by the Mozilla Foundation.[10]

The goal of this study is to capture Canada's AI opportunity through the lens of open source as an accelerator to economic growth across industries and within Canadian society. Building on the global analysis of the economic and workforce impacts of open source AI conducted by the Linux Foundation in 2025,[11] this report narrows in on Canada to illustrate adoption and investment trends, economic potential, sectoral applications, and workforce transformation as a means to helping Canadian business and government leaders to fully realize the growth opportunities before them.

Defining open source AI

The definition of open source AI is continuing to take shape in the open source community. Its complexity is due to its various components, including software, data, model parameters, and documentation.[12] When we use the term open source AI in this report, we are referring to **open models in the domain of generative AI**, with the same definition as the May 2025 report:[11]

Open models are defined in the Generative AI Commons' Model Openness Framework as machine learning models whose architecture, parameters (i.e., pre-trained weights and biases), and documentation are released under permissive licenses that permit their use, study, modification, and redistribution.[13]

Generative AI refers to AI systems and models that create novel outputs, such as text, images, audio, video, and/or code, by learning patterns and distributions from training data rather than following explicit programming. Generative AI includes but is not limited to: language models, which enable tasks such as text generation and summarization; vision models, which enable tasks such as image generation and modification; and multimodal models, which are trained on data of multiple modalities, such as text, images, and audio, and accordingly enable the generation of outputs across different modalities, such as text-to-image creation or image-to-text reasoning. Among these, foundation models, which are characterized by their large scale, training on diverse datasets, and adaptability to various downstream tasks, play a crucial role in the development and application of generative AI systems.

AI investment and adoption in Canada

As reported across other studies, organizational adoption of and experimentation with AI is growing to increasingly new heights across the world. A 2024 Linux Foundation study shows that a majority of organizations are using AI in at least one business function, and up to 94% of companies have adopted AI in some form.[14] Companies and nations around the world are investing heavily in the technology, with global corporate investment reaching US $252.3 billion in 2024, increasing 25% from 2023.[15] Canada is an early leader, while also facing challenges in scaling AI.

Progress to date in AI adoption

Beginning with its comparative strengths, Canada has a strong foundation in government AI investment and research. It is among the top five countries globally with highly cited research publications from 2021-2023.[15] In addition to a $2.4 billion AI infrastructure package announced in the Canadian government's 2024 budget,[15,16] the Carney government recently created a 26-member AI task force and committed $185 million to accelerate AI adoption and commercialization, with a pledge to define its AI strategy by the end of 2025.[17]

Today, Canada ranks fifth globally in terms of private investment in AI.[15] According to the UK-based Tortoise Global AI Index, Canada ranks eighth worldwide on AI investment, innovation, and implementation of AI.[18] VC investment data from 2023 shows Canada ranking second globally in venture capital investment in AI,[6] in the top five countries with newly funded AI companies between 2013 and 2024,[15] and boasts three times the average number of patent filings among G7 countries.[4]

Canadian businesses show strong adoption momentum, reporting a median annual spend on AI of $15 million, $2.5 million above the global per-business median.[19] A recent IBM study showed that Canadian firms were set to boost AI investment significantly in 2025, recognizing the strategic importance of the technology, with RBC reporting that investing in GenAI is reported to lead to higher wages.[3]

The value of AI investment for organizational and country-wide impact is clear. As IBM reports, "Canada's success hinges on strategic investments across models, platforms and people," drawing a direct link to the "importance of open source platforms, high-quality data, and a well-defined AI strategy to enhance productivity."[20]

In terms of adoption, nearly half of Canadian workers were using generative AI as of August 2024 (a 116% increase in adoption since 2023),[8] with the trend continuing into the second quarter of 2025. Statistics Canada reports Canadian businesses showed increasing use of generative AI in the second quarter of 2025, a 6.1% increase over the second quarter of 2024.[21]

While many of the global rankings and investments to date bode well for Canada comparatively, it is still viewed as a laggard in terms of commercialization and infrastructure,[22] signalling that Canada has not realized its potential to solidify a leadership position globally where commercial AI opportunities are concerned.

Opportunities for AI growth

Despite Canada's strong foundation in AI research and early investment, the country continues to face notable challenges in AI adoption and translating innovation into commercialization. AI maturity lags behind global peers, with only 26% of Canadian organizations having implemented AI, compared to 34% globally.[23]

A 2024 survey in partnership with the Vector Institute found that 69% of Canadian B2B businesses remain in the "crawl" or "walk" phases of adoption, compared with higher maturity levels internationally.[7] Canadian firms also report lower adoption rates of AI pilots (54% versus 61% globally), and fewer efficiency gains (74% versus 84% globally), pointing to a slower pace of integration into business operations.[7]

Perceptions of AI within Canada also trail behind other advanced economies. Canadians rank relatively low on measures of AI optimism, although the outlook improved through 2023 and 2024.[15] Statistics Canada reported that in the second quarter of 2025, a full 41% of businesses do not consider AI relevant to their operations.[21] In practice, Canadian businesses report that the impact of AI on core business metrics has been weaker than in other regions, particularly in areas such as cost of customer acquisition (14% versus 26% globally).[7]

Workforce and talent challenges compound adoption and impact issues. A 2025 KPMG study shows that "Canadians have among the lowest levels of training, literacy, and trust in artificial intelligence systems in the world," ranking 44th out of 47 countries.[24] While Canada ranked among the top five countries for AI skills diffusion from 2016 to 2023, Canadian firms are among the top five globally citing an acute shortage of AI talent.[25] This mismatch underscores the paradox of Canada's training systems and the persistent demand for advanced expertise. At the same time, concerns about a "brain drain" of Canadian AI talent to better-funded ecosystems abroad are growing.[26]

The innovation ecosystem also reflects opportunities yet to be realized. Despite Canada's high standing in venture capital rankings, the country has been characterized as "losing the AI startup race,"[27] with difficulties in translating publicly funded research into commercial ventures. Without stronger mechanisms to transition IP from labs to market, Canada risks underperforming relative to its scientific and venture potential.

Despite its strong history of AI research R&D, Canada lags global peers in scaling advanced AI implementations. A 2025 Georgian/Vector survey found that Canadian R&D leaders face persistent challenges integrating AI into existing systems, with data privacy and infrastructure cited as the most pressing barriers.[7] Addressing these shortfalls in peripheral and integration infrastructure will be critical for enabling startups and enterprises to deploy AI seamlessly and at scale.

While Canada has succeeded in building research excellence and a strong strategic foundation, it has not yet fully realized its potential in commercialization, infrastructure, and advanced implementation. Bridging these gaps, through faster adoption, targeted reskilling, and support for startup creation, will be essential if Canada is to capture its share of the global AI opportunity, as articulated in a call to action from the Canadian Chamber of Commerce.[28]

Canada is not alone in its untapped opportunity for greater AI adoption, and open source can provide a pathway to AI acceleration. The open source "adoption imperative" has been a common theme across global economies, including in a report from the Linux Foundation titled *The Workforce and Economic Impacts of Open Source AI*, showing that organizations adopting open source models achieve higher cost savings, faster time to

market, and stronger returns on investment than those relying solely on proprietary solutions.[11] By providing accessible, hands-on training, open source communities play a vital role in closing workforce gaps—findings echoed in the Linux Foundation's *2025 State of Tech Talent Report*, which highlights reskilling and upskilling as essential for future AI competitiveness.[29]

Canada may seek to address these challenges or risk losing out on the economic and societal value of AI. In the words of the Scale AI community report in September, 2025, "Adopting AI right here in Canada offers a unique opportunity to strengthen technological sovereignty and build long term prosperity."[30]

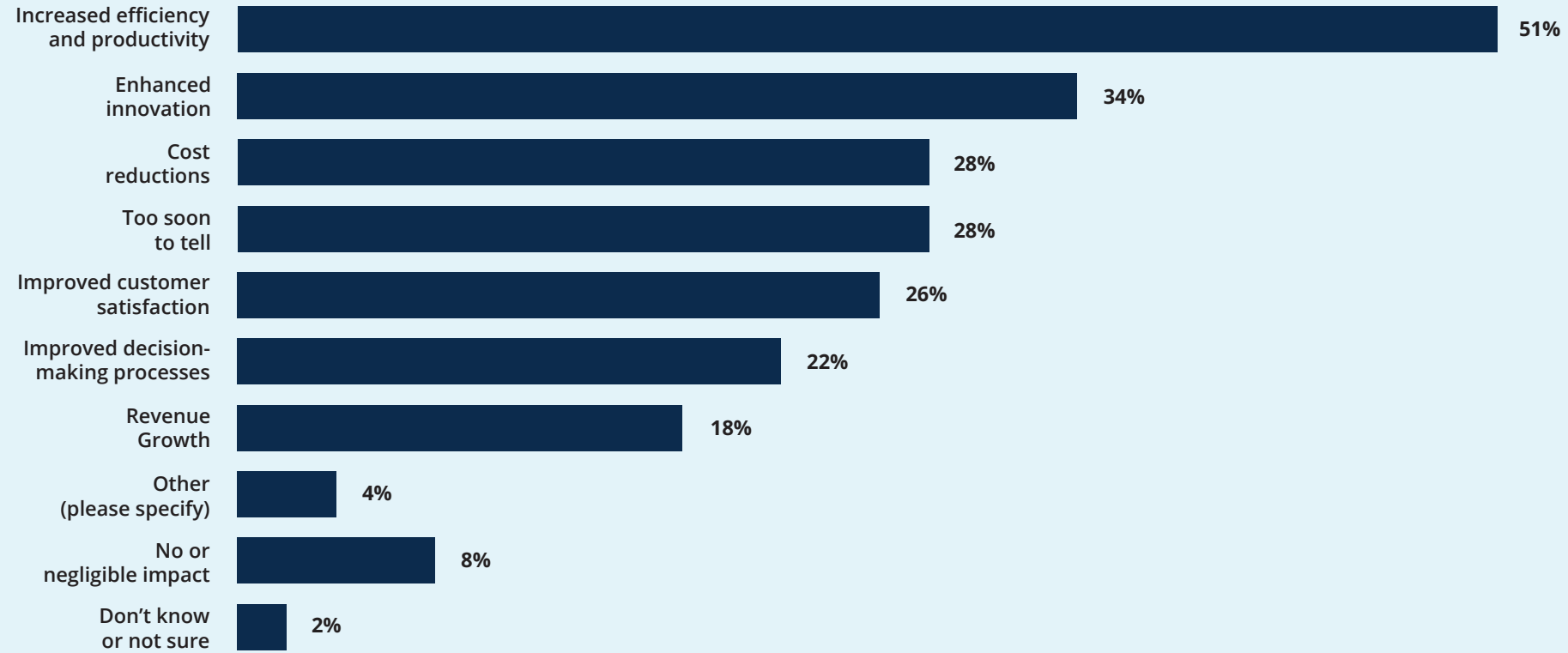
Canada's economic, workforce, and social AI opportunity

Across the world, the economic benefits of AI are being explored empirically. A 2024 study from the Linux Foundation quantified the different benefits that AI offers organizations, with the leading response being increased efficiency and productivity (51%), followed by enhanced innovation (34%) and cost reduction (28%) (see Figure 1).[14]

FIGURE 1

ECONOMIC BENEFITS OF AI BY USE CASE

What impacts has generative AI had on your primary use case?



2024 Generative AI Survey, Q16, Sample Size = 297, answered by organizations who adopted GenAI, Source: LF GenAI 2024 survey data.world

In Canada, artificial intelligence presents a significant opportunity to strengthen its economy, expand its workforce, and deliver inclusive societal benefits. Public consultations led by Innovation Science and Economic Development (ISED) estimate the near-term value of the AI market at $28.2 billion by 2028, growing at an annual rate of 33.9% from 2023.[4] Looking longer term, Statista projects the GenAI market size will expand at a compound annual growth rate (CAGR) of 36.98% between 2025 to 2031.[31] Together, these estimates point to an inflection point for Canadian competitiveness: the extent to which Canadian AI adoption and innovation accelerates will determine whether Canada can realize its projected growth potential.

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Economic growth and productivity

Evidence suggests that AI adoption in Canada will significantly boost productivity and GDP. PwC forecasts AI could contribute up to 9% GDP by 2035, while Deloitte places the likely impact between 5% and 8%.[23] Accenture and Microsoft estimate that GenAI will save Canadian workers 125 hours annually on average and increase productivity by 8% by 2030.[32] More broadly, Microsoft projects that GenAI could add $180 billion per year to the Canadian economy by 2030, alongside $5 billion in revenue from new GenAI-driven products and services.[8]

Canadian companies are pursuing AI adoption primarily to enhance competitive advantage and revenue growth. Surveys show that sales, marketing, and market research are among the top business functions adopting GenAI to capture market share.[7] While Canada's productivity rate trails the United States by approximately 30%, GenAI's potential to close this gap, through new products and services, and job creation, represents one of the strongest economic cases for accelerated adoption.

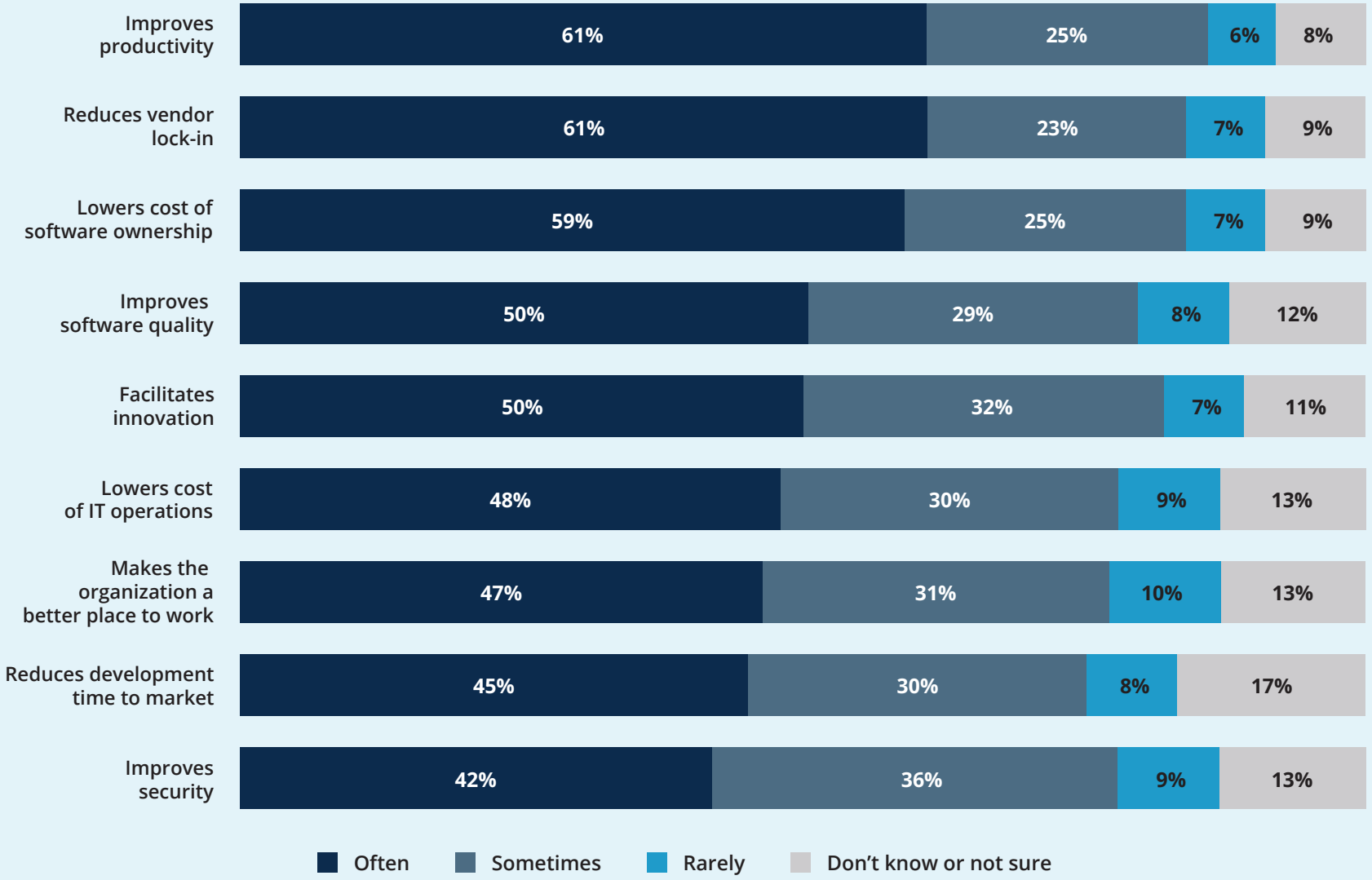
Looking specifically at the economic opportunity of open source AI, its value comes from combining AI's innovation, productivity, and revenue benefits with the benefits of open source software. These include improved productivity, vendor independence, lower software ownership costs, and improved software quality by using open source, according to 2025 research from the Linux Foundation (see Figure 2).[33]

In particular, open source software's (OSS) cost savings represent a staggering value-add globally. Findings from a 2024 Harvard Business School study show that if OSS did not exist, companies would have to spend USD 8.8 trillion to replace it.[34] This is particularly salient for a highly transformative technology like AI, which already requires significant investment in infrastructure and human resources. Innovating with open models and tools decreases the financial burden of adopting and deploying AI for Canadian organizations and widens the opportunity for innovation. Open source AI can address the commercialization challenges and productivity gaps facing Canada by enabling: 1) free access to new technology for the development of AI projects and commercial AI pilots; 2) crowdsourced development to accelerate innovation; 3) transparency into the models and its parameters to increase public trust; lowered development cost of AI-related products; and 4) faster time to markets and venture capital investment, as described below.

FIGURE 2

BENEFITS OF OSS USE

How often does using OSS deliver the following benefits in your organization? (select one response per row)



2025 World of Open Source Survey, Q28, sample size = 851, Source: data.world

Workforce transformation

Contrary to fears of widespread job displacement, Canadian evidence suggests that AI adoption is complementing rather than replacing jobs. Statistics Canada found that nearly 90% of firms currently adopting AI have not reduced their workforce, while the Conference Board of Canada reported that nearly two-thirds of startups implementing AI maintained headcount, and the same proportion said that AI instead made them more competitive.[21,35] Overall, AI is expected to create over 35,000 new innovative jobs in Canada over the next five years.[36]

In the near term, the labor market shift is thus far toward job transformation, not replacement. AI is opening opportunities across technical, managerial, and applied roles, ranging from AI auditors and ethicists to product designers and sector-specific specialists. By reducing repetitive tasks and augmenting complex ones, AI adoption is enabling Canadian workers to focus on higher-value activities and command higher wages.

Education and skills development

AI's potential in education is equally significant. Deloitte research indicates that GenAI will enhance operational efficiency across Canadian learning institutions, while also improving course design, knowledge transfer, and personalized learning.[37] Open source AI plays a pivotal role in these transformations by providing accessible training environments. By lowering licensing costs and fostering cultures of knowledge sharing and problem solving, open source AI allows educators, students, and workers alike to gain hands-on experience, equipping Canada with the skilled workforce required to meet growing demand, while democratizing access to technologies.[38]

An AI economy built on inclusion and trust

Open source AI also carries unique advantages for ensuring that innovation in Canada is inclusive, locally relevant, and trusted. Montreal-based Mila, an AI research institute, is advancing multiple initiatives in this direction, including the following notable examples:

FLAIR (First Language AI Reality): an open source project enabling Indigenous language revitalization through AI.[39]

Veracity: an open source application developed with Meta's Llama models to mitigate misinformation and build trust in public information ecosystems.[40]

These projects are an example of how open models can be used to develop solutions that reflect Canadian values of cultural inclusion, transparency, and resilience. According to the Linux Foundation's 2025 State of Sovereign AI report, 89% of respondent organizations believe that open source is a key aspect of sovereign AI initiatives, with 81% considering open source software essential to advancing sovereign AI, and another 65% considering open data essential.[41] The top reasons for this include access to model weights and architecture, ability to inspect and modify the code, and transparency of training methods. Over 60% of survey respondents felt that this transparency increases accountability as well as security and trust, and a large minority also focused on its ability to increase innovation and provide vendor independence.

By enabling localization, privacy, and control, open source AI specifically enhances digital sovereignty. Its use helps ensure that Canadian languages, identities, regulatory environments, and communities are represented in the country's digital future, and as a means to accelerate faster time to market, lowering the

total cost of startup technology stacks, and ensuring access to a global innovation ecosystem.

The AI opportunity for Canada's startup ecosystem

The AI opportunity for startups is similar to that for more mature businesses, and those who embrace it have been more likely to reap the benefits in terms of higher productivity, lower costs, and faster pathways to building innovative products and to funding sources. Recent research from Harvard reveals that entrepreneurs using GenAI advisors are 15% more profitable than those without.[42]

Open source AI has proven to be a startup accelerator. At the community level, a 2025 study from the Linux Foundation shows the importance of open source startups to a healthy technology ecosystem, and in particular, how open source AI models spark community-driven innovation.[43] For individual entities, the same study shows the positive correlation between commercial open source startups and early stage valuations, with strong investor preferences for startups with open source software and open weights infrastructure and tooling. For the dual advantage of keeping innovation build costs low, and the speed to market high, open source has proven strategically advantageous for startups in Canada, and worldwide.

As a result, at the federal government level, nurturing the startup landscape on all matters AI has become a priority. To address AI compute access barriers, in March of 2025 the Canadian government launched the AI Compute Access Fund to provide up to $300 million for small and medium sized enterprises to encourage the development of products and solutions made in Canada through more affordable access to AI compute infrastructure.[44] National platforms such as Canada.AI map the country's AI startups, incubators, and labs, ScaleAI offers a directory of specific investment projects, while organizations like Mila's Entrepreneurship Lab (eLab) provide access to open source projects, funding, and community support to responsible AI startups.[45,46]

In Toronto, Montreal, Vancouver, and Calgary, the primary hubs for tech innovation in Canada, startups are adopting and implementing AI to accomplish specific goals: to lower business operating costs; to create new products by embedding AI capability; and to build businesses that meet increasing demand for productivity solutions for industry. There are signs that the market is rewarding them. For example, Montreal-based BotPress, originally built on an open source chatbot platform, recently closed a series B round of CAD $34 million to assist other companies to build and deploy AI agents, and meet a critical need in infrastructure and integration markets.[47]

Emerging ventures illustrate the breadth of bespoke, business-specific innovation, such as Toronto-based startup Eirene's FuneralOS, a GenAI-enabled tool to optimize death care and regulatory obligations, demonstrating how AI applications extend beyond traditional sectors.[3] Seizing on the opportunity for agentic AI capability, Ontario-based Taskd.ai uses Meta's Llama 3.2 to create, deploy, and scale intelligent AI agents from fragmented data, code, and workflows, while controlling for regulatory compliance.[48,49] Alberta-based FireSafe provides AI-driven wildfire detection, prediction, and simulation, integrating Llama models to improve results.[50,51]

"Llama models let a small team in Ottawa deliver enterprise results, turning unstructured information into a dynamic, private knowledge graph. Faster quotes, fewer errors, less waste. The data stays with the customer. Every step is cited and auditable, and the graph learns each cycle. This drives fuller loads, fewer last minute runs, and less waste."

Ryan Hanley, CEO, Taskd.ai

For Canadian startups to thrive, they ought to increasingly embrace AI research, tools, and frameworks to solve market-specific challenges, and bring their products to market faster by leveraging the pre-competitive innovation layer that open source AI in particular provides.

Although evidence is sparse on the value of open source AI to Canada in terms of specific GDP data, it is clear that the country has a strong foundation for its adoption and implementation, including its open by default policy, open weights releases, and existing open source AI projects.[39,52,53]

Canadian sectors using AI

A sectoral analysis of AI adoption provides a compelling picture into the varied impacts of the technology on Canada's economy. In 2024, the Federal budget committed $200 million through the Regional Artificial Intelligence Initiative, whose aim is to support the adoption of AI in critical sectors such as agriculture, energy, healthcare, and manufacturing.[32,54] According to TD Bank analysis, sectors that rely on knowledge work will be most transformed by the technology, although all industries are poised to benefit.[6]

Agriculture

AI is a key tool for the Canadian agriculture sector to increase and optimize its supply, mitigate risk and adapt to climate change, and remain competitive on a global scale.[55] The technology analyzes agricultural data to provide predictive and precision analytics, crop monitoring, and smart irrigation, and can be used to roboticize field equipment.[56,57] Integrating AI and data analytics into the next generation of agriculture represents a significant untapped opportunity for the Canadian sector. However, only 3.2% and 6.9% of businesses in agriculture, forestry, fishing, and hunting plan to adopt AI-related software and hardware, respectively, in 2025.[21]

Across enterprise, academia, and small businesses, the Canadian agri-tech AI community is growing. For example, Ontario's Nature Fresh Farms is using sensors in their greenhouses to precisely control lighting, temperature, and irrigation.[56,58] Some Canadian farms are also transforming as "Smart Farms," providing testing grounds for new technologies.[56,59] This application has allowed the farm to increase yields while reducing water and power usage. There are also a number of Canadian startups providing precision seed and fertilizer applications and pest identification—some of which are built on open source AI.[60,61,62] The Canadian company 4AG Robotics, which raised $40 million CAD in a Series B funding round in July 2025, builds robots with AI-powered vision and suction grippers to harvest mushrooms that have been deployed around the world.[63]

Energy

Energy sectors around the world are in transformation as climate change and growing populations strain the demand for energy. Digitization is an important aspect of this transformation, with AI providing the opportunity for smart grids that can adjust and optimize consumption and production in real time according to occupancy, weather, and energy prices.[64]

In Canada, grid modernization solutions are cropping up in different provinces. Local Energy in Quebec uses AI to design and operate energy networks in order to pool and reuse energy: for example, industrial factories can trade their waste energy in real time, reducing the group's energy use and generating income.[65] In British Columbia, BC Hydro partnered with Rainforest Automation to use its AI-powered real-time alerts to reduce energy consumption at peak hours, which dropped up to 50% in its 2018-2019 trial.[66] Hydro-Québec is a strong advocate for open source in the energy sector, applying and developing open source AI tools to enhance the sector. For example, it developed an open dataset to help detect anomalies in power lines and enhanced the PatchCore algorithm to optimize its detection capabilities.[67] Alongside IBM, it also contributed the GRIDFM project to LF Energy, an open source framework to support the development of foundation models for power grids.[68] To ensure the sustainability of these applications at the implementation

level, the Alberta Machine Intelligence Institute has developed AI literacy training for Canada's energy workforce.[69]

Canada's role in meeting AI's energy demands

The AI opportunity in Canada's energy sector is not just in its operations and digitization. Canada's availability and affordability of energy resources, as well as its climate, make it a key location for data centre development.[70] Indeed, various projects across the country are cropping up, such as telcos Bell and Telus announcing the building of data centres in Quebec and BC.[71,72,73] These projects come in the wake of the federal government's Canadian Sovereign AI Compute Strategy, which will provide 2 billion CAD over 2025-2030 in funding for computing infrastructure and AI data centres.[16] Beyond resolving practical computational needs for the country, these projects also support sovereignty considerations, enabling the localization, privacy, and control of data and models.[70]

If all data centre projects currently under review proceed, by 2030 they would account for 14% of the country's total energy needs.[74] This demand in turn necessitates digital transformation through AI in order to manage and optimize the grid.

Financial services

As both a B2B and B2C industry, the financial services sector is well positioned for the incorporation of AI technologies into a range of banking and financial interactions. This is reflected in Statistics Canada's findings, where 27.4% of finance and insurance businesses plan to adopt AI software by the end of 2025—the third-highest adoption rate across Canadian sectors and almost 10 percentage points above the average—while three Canadian banks rank in the top 10 globally for AI adoption.[3,21] AI's benefits to the sector include augmentation of workflows, optimizing banking operations, personalizing customer experiences, and enhancing risk mitigation and fraud detection.[75] Some organizations are already seeing returns on their AI investments: a Linux Foundation research report from 2025 shows that 44% of financial services organizations expect returns in 2 to 5 years, and 18% are already seeing returns.[76] For Canada, a 2024 study from Microsoft estimates that AI could represent a 17 billion CAD annual value-add to the sector through faster and greater quality service for customers.[32]

Two of Canada's big five banks rank in the top 5 globally for AI research, with RBC Borealis, an online hub leveraging open source research code to advance AI in finance, and TD's Layer 6, consistently translating "ideas into deployed use cases, and demonstrating value to both the institution and its clients."[77] As of September 2025, 49% of CIBC employees (49,000) have access to generative AI assistants.[78] At Wealthsimple, AI chatbots handle 70% of customer inquiries.[5]

Open source factors favorably for three of Canada's big five banks in the Evident Global AI Ranking report, which measures the AI capabilities of global banks, and places RBC, TD, and BMO in the top ten of fifty in terms of their innovation posture.[79] Where global collaboration in open source AI is concerned, BMO has taken a leadership role as a founding member of the AI Governance Framework of the Fintech in Open Source Foundation's AI Readiness SIG, a Linux Foundation-hosted open source umbrella for the financial services industry, while RBC serves as Chair of the FINOS Governing Board.[80] The clear value gains created from AI adoption and open source innovation in the financial services sector—an industry uniquely focused on return on investment—is a bellwether for other industries.

Government services

The adoption of AI in Canadian federal, provincial, and municipal government services represents a 14 billion CAD annual value-add for the sector.[32] Its key use cases include reducing administrative burden, increasing speed of applications and procedures, and improving and expanding access to the delivery of key services.[32] The transparency of open source AI makes it an attractive option particularly in government, where data privacy concerns and compliance burdens are high.[81] According to Canadian law firm Osler, open source plays a key role in responsible AI governance.[81] In 2025, the federal government demonstrated a commitment to using open source AI in government with plans to host "rapid solutions labs" to create open source AI applications for the public sector, built by and shared amongst a collaborative AI network.[82]

Various activities across Canadian government bodies indicate a level of maturity. For example, the federal government, the federal judiciary, and the BC government released guidelines on the use of AI in their institutions.[83,84,85] The federal government guidelines provide examples of LLM tools public institutions may use, including open source options Llama, GitHub Copilot, and Stable Diffusion.[84] Various governmental bodies are already using AI in their processes: Immigration, Refugee, and Citizenship Canada has deployed an AI-based model in its residency application triage process which has processed over 7 million routine applications, leaving the more complex cases to human officers; Shared Services Canada is using a multilingual chatbot to help with drafting, editing, researching, summarizing, and data analysis; and at the municipal level, the city of Kelowna is using AI to enable 24-hour citizen access to its municipal information services.[32,86]

Healthcare

Canada's healthcare spending represents upwards of 12% of its annual GDP, making it one of the top 10 healthcare spenders globally.[87] The Canadian healthcare system, similar to other publicly administered systems around the world, struggles with significant wait times, staff shortages, rising costs of personalized care and medications, and an aging population.[87] Digital transformation, in particular with the adoption of AI, can help address these issues.

Healthcare institutions are increasing their adoption of AI—25.5% of healthcare and social assistance organizations plan to adopt AI software in the later half of 2025—as its potential becomes clear.[21] AI can increase the productivity of healthcare workers through the automation of simple tasks, diagnostic detection, and decision support. AI can also support deeper, broader, and faster research and development in pharmaceuticals. Its implementation would improve the quality of care, reduce administrative burden, and provide predictive and optimized system management.[87] According to McKinsey, at full-scale deployment, AI applications could allow Canada to lower net healthcare expenditures by 4.5-8% per year, and could add 11 billion CAD annually to the sector.[32,87]

Examples of AI in the Canadian healthcare system already exist across automation, detection, and prediction activities. Mutuo Health has developed a note-taking app that enables transcription of conversations between patients and physicians, and is being used by more than 1,000 physicians.[3] The University Health Network in Toronto launched the AI Hub, which has developed various solutions such as Surgical Go-No-Go, which provides surgeons with real-time guidance and navigation during operations using computer vision.[88] Unity Health Toronto's CHARTwatch, which provides predictive analysis of hospital patients who may require medical intervention.[88] Data projects

are critical to adoption. The Vector Institute and Unity Health partnered on a project to anonymize and standardize patient data.[88] Hospitals are using Meta's Llama to process patient data through AI applications on premise.[89] Canadian company Reliant AI offers a platform built on Llama to speed up evidence synthesis in the pharmaceutical and health science industry.[90]

Information and communication technology (ICT)

The ICT sector is the highest user of AI software in Canada. According to Statistics Canada, Nearly 40% of businesses in information and cultural industries plan to adopt AI software by the end of 2025, up from 26.6% in 2024.[21] The greatest uses of the technology are natural language processing (40.7%), machine learning (34.5%) and data analytics (29.5%). The government is supporting this adoption through the AI Compute Access Fund, offering funding to Canadian SMEs needing compute to power their AI innovation, incentivizing their use of Canadian cloud-based compute services.[91]

Two Canadian e-commerce examples represent the value of AI to the ICT sector. Canadian Tire Corporation's AI-powered shopping assistant, CeeTee, improves customer experiences through real-time inventory management, connecting customers to personalized tire needs. Open source AI is a critical layer at Shopify, which integrates with the Enthusiast platform to provide customized AI agents that enhance their clients' customer support, search, and content creation.[92] Incorporating AI into an e-commerce stack allows businesses to remain globally competitive, optimize their inventory, and develop high-quality and customer-tailored products.[3]

Manufacturing

Canada's manufacturing sector is an important sector for digitization, representing nearly 10% of Canada's GDP in 2024.[35] The sector includes the manufacturing of food, transportation equipment, gas and coal products, chemicals, and primary metals, among other products. Compared to its G7 counterparts, Canada's manufacturing sector ranks consistently low.[35] The implementation of AI could bridge this gap and unlock significant savings for Canadian manufacturers, with primary uses in product development, production optimization and equipment monitoring, defect detection, and supply chain management.[3]

Although momentum is still limited—16% of Canadian manufacturing businesses plan to adopt AI software by the end of 2025—there are some key AI applications in this sector, particularly in equipment manufacturing.[21] For example, the Royal Canadian Air Force partnered with the SME Contextere to implement an industrial chatbot for technicians to query maintenance and repair information, reducing their time searching for this same information by 80%.[32] As well, the Canadian automotive tech company Magna International and the Canadian aircraft company Bombardier have implemented AI-powered predictive maintenance systems across their production lines, achieving 35-40% reduction in maintenance costs.[93] Magna International is also partnering with Vancouver-based Sanctuary AI to implement a robotic system across their automotive lines for manual or repetitive tasks, mimicking human motion.[3,94]

Conclusion and recommendations

Capturing Canada's AI opportunity will require addressing structural weaknesses while leveraging the country's strengths in research, talent, and open innovation. Open source AI is central to this effort. It lowers the cost of adoption, accelerates commercialization, and democratizes participation across regions and populations. By investing in open source AI-enabled reskilling, strengthening peripheral infrastructure, and ensuring startups can transition publicly funded intellectual property into market-ready solutions, Canada can transform its early leadership into sustained global competitiveness.

AI's economic opportunity for Canada is clear: it has the potential to raise productivity, generate new jobs, and drive growth across industries. Across agriculture, energy, financial services, government, healthcare, ICT, and manufacturing, Canadian organizations are already showing measurable gains in efficiency, innovation, and value creation. Importantly, the evidence suggests that AI is augmenting rather than replacing work, creating demand for new skills and opening pathways to higher-value employment.

Although Canada's investment in the technology is high, the country is nevertheless experiencing scaling and commercialization challenges, and consumer trust remains a central factor. Open source AI is uniquely positioned to help fill this gap by providing transparency and lowering barriers to entry as a way to secure public confidence and ensure widespread societal benefit. Moving forward requires Canada to "plant a flag," as the Quebec Artificial Intelligence Institute has urged, and signal its commitment to building a world-class AI ecosystem rooted in openness and collaboration.[23] At a corporate level, Canadian businesses must use a "portfolio mindset" when adopting and implementing the technology, where open source is a key component of the portfolio.[23]

Canada now stands at a pivotal moment in shaping its AI future. When properly governed, AI technologies have the potential to distribute wealth and prosperity across Canadian workers, firms, and researchers, ensuring that innovation is both competitive and inclusive.[70] By strengthening open source infrastructure, building AI literacy across the workforce, and fostering public–private partnerships, Canada can accelerate adoption and achieve meaningful impact.

For Canada to address its AI scaling challenges and become a global leader in AI transformation, the following strategic activities are recommended:

1. Set national, provincial, and municipal strategies, building on Canada's strong research foundations, that establish an interoperable AI stack, standards, accessible datasets, and guidelines for use, and further promote innovation through open source.

2. Incentivize startup incubation alongside corporate modernization programs that prioritize funding for infrastructure and innovative product creation, invest in the development of an AI-literate workforce, and encourage collaborations with the public sector and global open source ecosystems.

3. Build trust across stakeholder groups that includes employees, customers, and the general public through advocacy, education, and awareness of AI's potential. To increase Canadians' trust in AI and to further its adoption, greater transparency in the technology is critical, and is achieved through open source.

4. Prioritize adoption and implementation in strategic sectors and in SMEs by reforming national procurement practices, creating funding opportunities, and providing other economic incentives to innovate.

If Canada acts decisively now by embedding openness into policy, practice, investment, and innovation, it can transform its early leadership on AI into a lasting global advantage.

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Acknowledgments

The authors would like to thank the Meta team for their close collaboration and detailed feedback and the Linux Foundation Creative Services team for the production of the PDF.

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To reference this work, please cite as follows: Hilary Carter and Anna Hermansen, "The Value of Open Source AI for the Canadian Economy: A Review of Industry, Academic, and Open Source Evidence," The Linux Foundation, February 2026.