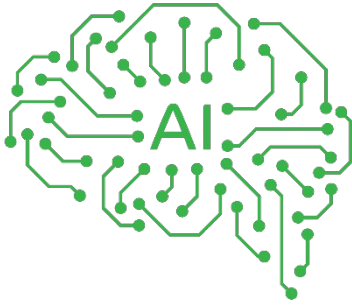# Automation Not Domination:
AI and Inclusion

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Canadian Chamber of Commerce | Chambre de Commerce du Canada

Background

Access to Artificial Intelligence

Canada has emerged as a leader in the global race to develop AI.[1] Thanks in part to historic investments in research and development, Canada is home to the third-largest concentration of AI experts in the world.[2] Our leadership comes at a pivotal moment; with rapid growth in computational power, experts predict that the next five years will bring more advancement than the past 30 years combined.[3] AI, long a theoretical possibility, will have become an inescapable commercial opportunity. According to one forecast, AI could generate $13 trillion in additional global economic activity by 2030, representing an additional 1.2% growth in GDP.[4]

In its 2017 budget, the Government of Canada announced $125 million for a five-year *Pan-Canadian Artificial Intelligence Strategy*. From 2017 to 2018 alone, there was a 28% increase in the number of active AI-related start-ups in Canada.[5]

However, to date, the artificial intelligence industry in Canada is concentrated in a handful of urban centres — Toronto, Vancouver, Montreal, Waterloo and Edmonton. This geographical concentration risks jeopardizing AI's potential to create significant opportunities for small- and medium-sized enterprises in all provinces and territories and across all sectors. Like digitization, AI stands to enhance SMEs' productivity while enabling them to develop new innovative ways to reach a global audience.

Canadian businesses appear to be lagging behind their international competitors in adopting AI technologies. A recent study ranked Canada last out of a group of 10 countries for AI deployment and it encountered the most resistantance to AI from Canadian employees due to concerns about job security.[6] A November 2018 report made a number of similar findings highlighting this gap, including that:[7]

- only 4% of Canadians reported they were confident explaining what AI is and how it works;

- only 16% of companies reported using AI over the past year, a number that was unchanged since 2014;

- only 31% of respondents thought AI would be critically important to their overall success in the near future; and

- only 8% of companies planned to increase spending by more than 20% in the upcoming year, which is 40% fewer than the global average.

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[1] For example, see 2018 articles from DMZ-Ryerson, Forbes, Fortune, Global Affairs Canada, Globe and Mail and University Affairs.

[2] J.F. Gagne, CEO & Founder, Element AI, "Canadian AI Ecosystem 2018" (2018).

[3] Forbes Technology Council, "Here's Why Canada Can Win the AI Race" (13 March 2018).

[4] McKinsey Global Institute, "Notes from the AI Frontier: Modeling the Impact of AI on the World Economy" (September 2018).

[5] Gagne, *supra* note 2.

[6] Accenture, "Organizations Are Gearing Up for More Ethical and Responsible Use of Artificial Intelligence, Finds Study"(25 September 2018).

[7] Deloitte, "Canada's AI Imperative: From predictions to prosperity"(November 2018).

5G

What is 5G?

5G refers to the fifth generation of wireless communications. It is expected to become a critical platform on which Canadians can build new, innovative services. 5G will do this by allowing for greater machine-to-machine communication, significantly reducing the time it takes to send information and allowing for increasingly rapid download speeds.[8]

Canada's wireless operators are expected to invest $26 billion deploying 5G infrastructure between 2020 and 2026.[9] The rollout in Canada is not occurring as quickly as in other countries, such as the U.S. and China, but it is expected that the share of 5G connections as a proportion of the total Canadian population will be nearly 50% by 2026.[10] 5G will have a significant impact on the Canadian economy, and it has been estimated that 5G will provide a $40-billion annual GDP increase by 2026, including the creation of approximately 250,000 permanent jobs.[11]

Why does 5G matter for AI?

Globally, the number of connected devices is growing exponentially, rising from five billion in 2017 to as many as 100 billion in 2020.[12] The advances that 5G will make possible will help individuals, businesses and their devices not only to enjoy faster connections but also to allow for new kinds of connections and applications across all industries. By helping to support the infrastructure and quick transfer of large amounts of data that AI requires, 5G will enable the adoption of AI-based technologies across a wide range of industries.

5G can also narrow the gap of services between rural and urban areas and allow for the greater use of AI-based technologies in rural areas. Today, approximately 84% of Canadian households have access to fixed broadband internet services that meet the CRTC's target speeds. These households are distributed unevenly between urban and rural populations. While 96% of urban households have access, only 39% of rural households do.[13]

5G can help increase broadband access to rural markets. Its rollout can be more rapid and more cost effective than the fibre-based *status quo*. This is expected to have a significant impact on rural-focused industries like agriculture; it is estimated that 5G could unlock some $3.3 billion in growth in Canadian farming alone.[14]

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[8] Communications Research Centre Canada, "What is 5G?" (20 July 2017) [CRC].
[9] Accenture Strategy, "Fuel for Innovation: Canada's Path in the Race to 5G" (19 June 2018) at p. 3 [Fuel for Innovation].
[10] *Ibid.* at p. 4.
[11] *Ibid.* at p. 2.
[12] CRC, *supra* note 8.
[13] Fuel for Innovation, *supra* note 9 at p. 5.
[14] *Ibid.* at p. 8.

What We Heard...

On April 18, 2019, the Canadian Chamber of Commerce and McCarthy Tétrault LLP held a roundtable on AI and inclusiveness, hosted by Amazon in Toronto. This roundtable was part of a series to gather insight from experts and business leaders across industries and academia on the future of AI in Canada. The discussion spanned a broad range of challenges that will bear on Canada's ability to realize AI's full potential across our entire economy and geography.

The following is an overview of the discussion as we heard it. These findings were subsequently discussed and further developed at a roundtable discussion hosted by McCarthy Tétrault LLP in Vancouver on May 22, 2019.

I.   Close the AI "knowledge gap"

We Asked: **How do we improve awareness of, and reduce financial barriers to, the deployment of big data and AI technologies by Canadian SMEs? What role can the current leaders in the development of AI technologies and federal public policy play?**

We Heard: **As AI tools have become more accessible, the knowledge gap about the technology and how it functions has become more significant. Governments have an important role to play in bridging this gap.**

Canadian SMEs stand to benefit from lower costs and increased access to AI technologies. Yet, a lack of awareness, coupled with capacity and regulatory challenges, stands to impede business's effective application of AI.

Conventional business management practices are more receptive to capital expenses than to the more immediate operational costs of deploying off-the-shelf AI tools, or the "productivity paradox" that is associated with devoting personnel resources to the development of in-house technologies.[15] This traditional mindset can operate as a significant brake on AI adoption and implementation, particularly in smaller businesses and in industries and regions without a relatively high concentration of AI early adopters. Roundtable participants expect governments to adopt policies that overcome these cultural barriers and engrained management habits by bridging the knowledge gap among business leaders. Doing so will enable AI to realize its full potential across large and small-scale companies in every region.

Governments also have a role to play in "making AI real to all businesses and people in the community," as one roundtable participant put it. It is important for the public to understand key conceptual distinctions in the AI ecosystem — *i.e.*, what different AI technologies are, what they can do and how they can advance the public interest.

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[15] E. Brynjolfsson et al., "The Productivity J-Curve: How Intangibles Complement General Purpose Technologies" (2018)

Governments should work with the business community, AI service providers and subject matter experts to develop a common position on how AI can benefit consumers and industry alike. They should then develop educational resources that reflect this consensus and make them available to business and community leaders across Canada. This should include working with post-secondary institutions and technology companies to create accessible programming that raises awareness of and demystifies AI systems.

There is also a role for government in publicizing Canada's successes and our prominent position in the global AI ecosystem. The goal of this publicity should be to increase interest in and acceptance of AI. It is especially important to deliver this message among business leaders outside of major centres and in industries where AI may not yet be an everyday commercial reality.

Finally, governments and industry leaders should be concerned with educating the public about the division of labour in the AI ecosystem. This comprises software engineers, programmers, data scientists, machine learning engineers, business intelligence developers, translators and, most critically, managerial talent to coordinate AI-enabled change. Here, too, governments and the private sector have a shared responsibility. This work will be instrumental in addressing current realities and industry perceptions of an AI skills gap in Canada.

II.   Remove barriers to procurement and implementation

We Asked: **What are the unique opportunities and challenges created by software as a service ("SaaS") and related cloud-based digital tools as a new form of capital investment for businesses? What are the key barriers to procurement and implementation?**

We Heard: **Canadians' cultural aversion to risk is currently compounded by a lack of data strategy and the slow pace at which AI adoption is occurring.**

The biggest challenge for SaaS and other cloud-based tools is the lack of data strategy within organizations. Businesses and governments must be deliberate in articulating the problems that AI will address and then in delineating what companies can do with their data collection and organization practices to drive business growth. This will require not only industry-specific insight and a deep understanding of AI's capabilities but also sufficient confidence to overcome the aversion to risk and underinvestment in new technology[16] and automation[17] that is too often a feature of Canada's business culture.

To overcome these obstacles, roundtable participants commented that governments could: (i) create new incentives and evaluate the efficacy of current federal innovation strategies for businesses to develop data and AI strategies; (ii) incorporate data strategy into its own procurement practices; (iii) adopt policies that "de-risk" AI adoption for SMEs; and (iv) adopt clear guidelines for performance measurement that can inform funding and investment decisions, both by government and by the private sector.

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[16] The Conference Board of Canada, "ICT Investment - Innovation Provincial Rankings - How Canada Performs" (2018).
[17] C. Lamb et al., "Better, Faster, Stronger: Maximizing the benefits of automation for Ontario's firms and people" (2018).

III. Address the needs and characteristics of Canadian businesses, society and customers

We Asked: **How do we ensure data sets and algorithms that power AI-based technologies address the unique needs and characteristics of Canadian businesses, society and customers?**

We Heard: **Governments should work with the private sector to ensure AI reflects Canadian realities.**

Canada cannot afford to cut itself off from the global market for data. Protectionist measures that would impede cross-border data flows, coupled with unduly cumbersome privacy regulations, would harm the interests of Canadian businesses and consumers. Governments should not undermine AI's potential by preventing Canadian companies from accessing, collaborating with or contributing to data sets at a worldwide scale.

Still, allowing algorithms to learn from worldwide data must be matched by a commitment to represent Canadian realities so that AI tools can be of value to all Canadian consumers and reflect the diversity of our communities. A number of roundtable participants advocated for inter-industry cooperation in the form of consortiums and similar global best practices to enhance this sort of AI access and inclusiveness — and for incentives from government to encourage such collaboration. Further, AI is largely fueled by data and, therefore, is inherently suited to bridging between different industries. This could result in substantial innovation and disruption as multiple industries cross-pollinate.

IV. Enable 5G access across Canada

We Asked: **How will accessible, affordable and increasingly faster broadband internet access and 5G wireless networks affect data collection, processing and AI technologies across Canada?**

We Heard: **5G will ultimately mean that businesses that do not adopt AI will not be competitive. Canada's economic future thus depends on access to 5G across the country.**

While the federal government has focused on expanding high-speed conventional broadband infrastructure, roundtable participants noted that market economics could be a barrier to 5G broadband rollout in northern and rural areas, and that this would directly affect data collection and processing and eventual AI adoption in many regions of Canada. It would also represent a market failure; even if the return on investment is limited in the short run, in the end, every sector of the economy — including agriculture, forestry, fisheries and others concentrated in rural and remote areas — will require AI and, thus, 5G connectivity to compete globally. Roundtable participants suggested that, where the private sector does not put the necessary 5G infrastructure in place, governments may have a role to play in closing the gaps.

Because 5G network technology will create safer, faster and more effective pathways for emerging technologies to operate at a much larger scale, it will heighten the need for clear regulatory frameworks for data collection, processing and AI deployment. A complex and fragmented regulatory landscape will discourage investment. This would leave 5G's potential unrealized.

Recommendations

The Government of Canada should:

- **Increase AI awareness:** The government should adopt policies that help increase AI awareness and enable AI to realize its full potential. The government should work with the business community, AI service providers and subject matter experts to increase interest in, and acceptance of, AI among Canadian workers, consumers and business leaders in every region of Canada and across all sectors of our economy.

- **Create incentives:** The government should create new incentives to encourage businesses to develop data and AI strategies, adopt policies that "de-risk" AI adoption for SMEs and develop incentives that encourage inter-industry cooperation.

- **Offer regulatory certainty:** Both established AI service providers and SMEs looking to adopt technologies need clear guidance on how government agencies will regulate data governance, security, bias and other issues relating to AI systems. Any national strategies and frameworks need to be co-created in collaboration with businesses, including SMEs, with a focus on facilitating early adoption and reducing investment risk.

- **Unlock AI's potential:** The government should ensure it is not undermining AI's potential by preventing Canadian companies from accessing and contributing to data sets at a worldwide scale. It should avoid protectionist measures or burdensome privacy regulations that would impede AI's development and undermine its value proposition at the level of individual businesses.

- **Support 5G infrastructure:** The government should adopt policies and provide incentives to ensure there is 5G infrastructure put in place across Canada. The government should play a role in closing potential 5G infrastructure gaps, especially in rural and remote areas.

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