

A Three-Level

AI Competency Framework

for Inclusive AI Adoption

TED ROGERS SCHOOL OF MANAGEMENT | DIVERSITY INSTITUTE

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Based in TMU's Ted Rogers School of Management, the Diversity Institute (DI) has a research staff of over 50 in 10 regional hubs across Canada, and works with more than 200 partners and a global network of experts. The Diversity Institute leads research on skills and employment trends, technology adoption and inclusive ecosystems (with a focus on small and medium-sized enterprises (SMEs) and entrepreneurship), as well as related innovation pilot design and evaluation. Our action-oriented, evidence-based approach is advancing knowledge of the complex barriers faced by Indigenous people and equity-deserving groups, informing policies and practices to effect change, and producing concrete results.

The Diversity Institute is the academic research lead for the Future Skills Centre (FSC). It leads research on responsible AI adoption in Canada and internationally to inform policies, strategies and programs. As part of its commitment to advancing inclusive innovation and entrepreneurship, DI founded the Women Entrepreneurship Knowledge Hub (WEKH) and the Inclusive Innovation and Entrepreneurship Network (IIE-Net) and offers a range of training programs and advisory services.

The Future Skills Centre is a forward-thinking centre for research and collaboration dedicated to driving innovation in skills development so that everyone in Canada can be prepared for the future of work. We partner with policy makers, researchers, practitioners, employers and labour, and post-secondary institutions to solve pressing labour market challenges and ensure that everyone can benefit from relevant lifelong learning opportunities. We are founded by a consortium whose members are Toronto Metropolitan University, including the Diversity Institute and Magnet, Blueprint, and Signal49 Research, and are funded by the Government of Canada's Future Skills program.

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Executive Summary

19.2%

Statistics Canada reported that 19.2% of Canadian businesses used AI to produce goods or deliver services in the second quarter of 2026, up from 6.1% in the second quarter of 2024.

Canada's challenge is adoption, not ambition

Canada is a recognized world leader in artificial intelligence (AI) research but has been slower to spread AI and digital tools across its economy, especially among smaller firms. The federal *AI for All strategy* now puts adoption, productivity, skills and shared prosperity at the centre of the national approach. The question is no longer only whether people and organizations can access AI, but whether they have the capacity to benefit from it.

Benefitting from AI is not as simple as having access: turning tools into useful, safe and productive work also depends on data, skills, infrastructure, management capability and trust. AI adoption is growing fast but unevenly, with the share of Canadian businesses using AI to produce goods or deliver services roughly tripling in two years, from 6.1% to 19.2%. The structure of the economy raises the stakes, because small and medium-sized enterprises (SMEs) make up 99.7% of employer businesses and employ almost two-thirds of private-sector workers, with firms of fewer than 20 employees accounting for 88.6% of employer businesses. For most of these firms, the task is not to build AI systems but to decide which tools are useful, affordable and safe, as well as how to fit them into daily work.

Skills are one part of this larger ecosystem, not a substitute for investment, data readiness, governance or trust, but the gap in skills is real and measurable. Canada ranks 44th of 47 countries on AI training and literacy, and 28th of 30 advanced economies. Between 2023 and 2025, the share of employed Canadians who said they had not received enough training to use new workplace technologies rose from 33% to 50%.

What AI competency needs to account for

Discussion about AI skills tends to fall into one of two extremes: the technical elements of building and maintaining AI systems on the one hand, and the broad literacy that helps people understand what AI is on the other. Both matter, and neither is enough for adoption. AI is reshaping jobs by changing the everyday tasks people do, the tools they use and the outputs they must check. Most exposed jobs are more likely to be reorganized rather than eliminated, and the skills they

demand are shifting quickly, with one analysis finding junior roles up to seven times more likely to require skills traditionally associated with senior roles, such as judgment and decision-making. The same tool can call for very different competencies depending on the task, the information involved and who is affected; drafting a marketing email with an AI assistant is markedly different from using AI in hiring, health care or financial decision-making. Competency therefore reaches well beyond either coding or prompting to include judgment, verification, communication and domain knowledge.

Two realities underpin all of this. First, responsible AI use is a workplace competency, not only a governance concern. Many risks arise through ordinary use, such as "shadow AI," where employees paste sensitive information into public tools; in one survey, 46% admitted doing so. Protecting information, checking outputs and knowing when to escalate are practical, daily skills. Second, AI competency is a matter of equity. Access, workplace exposure, training and professional networks are distributed unevenly across gender, race, age, disability, geography and Indigeneity, from connectivity gaps affecting rural areas and First Nations reserves to lower workplace AI use among older workers. Women face compounded barriers: their occupations are nearly twice as exposed to generative AI as men's (29% versus 16%), yet women make up only about 30% of the global AI workforce, leaving them under more pressure to adapt while under-represented among those shaping the technology. Who develops and who benefits from AI competency is therefore not a neutral question.

The Diversity Institute AI Competency Framework

To make AI competency concrete, this report introduces the Diversity Institute (DI)'s three-level AI Competency Framework. Instead of asking whether someone "knows AI," it asks what a person needs to understand and what they should be able to do, giving learners, employers, educators and policy makers a common way to identify the capabilities required for different tasks and responsibilities.



Basic AI Literacy is for everyone who uses, encounters or is affected by AI: a plain-language grasp of what AI is and does, how to use common tools, how to check their outputs, and how to recognize risks such as bias, cybersecurity threats, privacy breaches and misinformation.



AI Innovation Skills are for the people who put AI to work in an organization: using AI tools to solve problems, spotting where AI adds value or detracts from it, evaluating tools, redesigning workflows, supporting implementation, leading change and measuring results.



Deep AI Skills are the advanced technical capabilities to design, build, train, deploy and maintain AI systems, along with the safeguards that keep them running safely.

The levels rise in depth and responsibility, but they are not a ladder everyone must climb; the competencies required depend on the task, level of responsibility, risks involved and organizational goals. Basic AI Literacy

is the foundation that the subsequent levels are built upon. A key distinction separates innovation from invention: applying available AI to solve problems is different from building AI systems, so an SME leader may have strong AI Innovation Skills without ever needing to develop an AI model. Responsible AI is built into each level rather than treated as a separate topic, and the framework gives particular attention to AI Innovation Skills, the capabilities SMEs most need to connect available tools to business goals.

Applying the framework

Because the right competency depends on the task rather than the job title, the three levels can come together within a single initiative rather than being assigned to separate groups of people. AI can enter work all along an organization's value chain, from marketing and customer service to finance, hiring and operations, and a single use case can draw on all three levels at once: in a customer-service project, front-line staff need Basic AI Literacy to use the tool safely, a manager needs AI Innovation Skills to choose the correct tool and align it to the required work, and internal or external specialists supply the Deep AI Skills to build and monitor the system. Each organization must decide which capabilities to spread across its staff, which belong to the people leading adoption, and which to draw from outside partners. Risk also matters: the same tool can be routine in one context and consequential in another, so competency and oversight need to reflect the information involved, the people affected and the consequences of getting it wrong.

AI Innovation Skills are particularly important in moving from access to adoption. They enable people to connect AI to a real problem, assess whether a use case is valuable and appropriate, prepare the people and workflows involved, test the application and determine whether it produces better results. In the smallest firms, these responsibilities may be concentrated in a single person or a few people rather than distributed across specialized teams, while deeper technical capabilities can often be obtained externally. AI adoption also must be judged by what changes in the work, including tasks, workflows and productivity. Time saved is capacity, not value, and it becomes value only when an organization decides what that capacity is for.

Building the conditions for AI competency and adoption

Naming the right capabilities is only the first step, because people and organizations still need the conditions to develop and use them. Competency grows when learning is tied to real tasks, offers genuine chances to practise, and is backed by the tools, time and organizational support needed to apply it. It also depends on addressing the barriers that shape who can participate and benefit; equity must shape outreach, delivery and support from the outset rather than being added later. SMEs face particular constraints of time, budget and formal training capacity, making organizational support and access to trusted intermediaries important for turning learning into lasting organizational capability. Success should also be measured by what people can do and whether those competencies are being applied, not only by enrolment or course completion.

Conclusion and ways forward

Canada's AI challenge is, ultimately, a challenge of capacity.

Four priorities follow from the creation of this framework:

01

Apply the framework to real tasks and decisions, rather than broad job categories, with competency determined by what people are expected to do and oversight calibrated to the risks involved.

02

Connect competency development to adoption by giving people the tools, time and support to use what they learn.

03

Design with the smallest firms in mind, since responsibilities associated with all three levels may be concentrated in a single person or a few people.

04

Measure results by demonstrated competency and application rather than course completions, keeping the framework current as AI tools, risks and workplace uses change.

The measure of true progress is not how many people can access AI, but how many can use it with purpose, judgment and accountability.

Canada's AI Challenge: From AI Ambition to Adoption Capacity

60%

Canada's AI for All strategy sets a target of 60% business AI adoption by 2034.

Canada's artificial intelligence (AI) adoption challenge is not new. For years, Canada has combined internationally recognized AI research capacity with weaker diffusion of AI and digital technologies across businesses, especially failing to reach smaller firms. What is changing is the policy emphasis. With *AI for All,* the federal agenda is putting adoption, productivity, skills, digital literacy, jobs, compute, safety and shared prosperity more explicitly at the centre of Canada's AI strategy.[1] The strategy sets a target of 60% business AI adoption by 2034 and pairs it with supports aimed largely at smaller firms, including a $500 million Business Development Bank of Canada LIFT initiative, a $500 million expansion of the Regional AI Initiative, and a planned AI Literacy and Adoption Assessment tool to help small and medium-sized enterprises (SMEs) assess readiness and identify use cases. The strategy also distinguishes between helping Canadians understand AI, use AI and build AI, reinforcing the need to differentiate broad literacy, applied adoption capabilities and deep technical skills.

This makes adoption capacity a central policy question. Canada's challenge is not only to produce AI research, support frontier firms or train technical specialists; it is to help organizations across the economy understand where AI is useful, integrate it into their work, manage its risks and ensure that productivity gains are broadly shared.

Adoption capacity is uneven

AI adoption is often discussed as if it were a question of access: whether people or organizations have AI tools available to them. Access matters, but it is not enough. As the UN Independent International Scientific Panel on AI emphasizes, access to AI is not the same as the capacity to benefit from it: effective adoption also depends on data, skills, infrastructure, organizational capacity and institutional conditions. These complementary capabilities enable the tools to be used in useful, safe and accountable ways.[2]

Recent business data show rapid growth, but the variety of different measures used also reveals why AI adoption is difficult to measure. Statistics Canada reported that 19.2% of Canadian businesses used AI to produce goods or deliver services in the second quarter of 2026, up from 6.1% in the second quarter of 2024.[3] That measure captures AI use in production or service delivery, not every form of experimentation or informal tool use.

Other surveys produce higher figures because they ask different questions. In one survey of

1,247 business owners, 39% initially said they used AI. Once AI was defined and examples such as automated translation and generative AI were provided, the share rose to 66%. Reported use also varied by geography and firm size: 78% in large urban areas compared with 55% in rural regions, and 86% among larger SMEs compared with 60% among smaller ones.[4] More recent SME data also show that while 96% of Canadian SMEs invested in digital technologies in 2025 and 30% use generative AI, only 23% report high or very high digital maturity.[5]

Furthermore, “artificial intelligence” is an umbrella term rather than a single technology. The Organisation for Economic Co-operation and Development (OECD) defines an AI system as a machine-based system that, for explicit or implicit objectives, infers from the inputs it receives how to generate outputs such as predictions, content, recommendations or decisions that can influence physical or virtual environments; it also notes that AI systems vary in their levels of autonomy and adaptiveness after deployment.[6] The technologies and applications grouped under AI are diverse, including machine learning, natural language processing, speech and image recognition, data and text analytics, recommendation systems and automation.[7, 8] Generative AI is designed to create new content, including text, code, images or speech; in Canadian workplace data collected from September 2024 to July 2025, it was the most prevalent AI technology used by workers.[9] Agentic AI goes beyond generating outputs by carrying out tasks: agentic systems can sequence steps, interact with digital systems, use external tools and pursue defined goals within established boundaries and with varying degrees of human supervision.[10] AI also operates in



physical workplaces, where businesses can combine AI with smart robotics and technologies such as sensors, grippers and actuators, or embed intelligent software in vehicles and production lines so that systems can analyze information and take action.[11] Canadian businesses report using applications across this range, including data and text analytics, virtual agents and chatbots, natural language processing, large language models, machine learning, recommendation systems, image and pattern recognition, machine vision and robotic process automation.[12] These uses can overlap, but the distinctions help explain why AI adoption can involve very different tasks, competencies, infrastructure, risks and forms of oversight.

This distinction matters for adoption and implementation. A firm may be “using AI” because employees rely on a chatbot to draft emails, summarize documents or support marketing. That does not mean the firm has changed its workflows, trained workers, assessed risks, protected sensitive data or measured whether AI is improving productivity. Similarly, a public institution may have promising AI use cases but lack

the procurement, privacy, cybersecurity, transparency or oversight capacity needed to implement them responsibly.



Canada's economy is dominated by SMEs, and that changes what AI adoption requires. SMEs account for 99.7% of employer businesses in Canada and employ 63.6% of the private-sector workforce.

Adoption capacity depends on complementary conditions such as digital and data readiness, management capability, financing, trusted support, cybersecurity and governance.[13] Skills are part of this system. However, without the right competencies, access to AI tools is more likely to remain informal, uneven or disconnected from productivity, risk management, organizational learning and measurable returns.

Canada's SME-dominated economy shapes the adoption challenge

Canada's economy is dominated by SMEs, and that changes what AI adoption requires. SMEs account for 99.7% of employer businesses in Canada and employ 63.6% of the private-sector workforce. Businesses with 1 to 19 employees alone represent 88.6% of all employer businesses.[14]

This matters because AI adoption cannot be designed only around large firms with internal technical teams, legal departments, governance specialists, data infrastructure and dedicated training budgets. For SMEs, the challenge is not usually to build AI systems; it is to decide which tools are useful, affordable, safe and worth integrating into daily work to create benefits.[15]

AI use cases are often practical: quoting, scheduling, customer follow-up, invoicing, job documentation, inventory, recruitment, safety paperwork, compliance, marketing or service delivery. They are the everyday systems through which many small firms manage productivity, customer relationships, risk and growth. Maturity remains uneven, and many smaller firms still face barriers around time, training, HR capacity, implementation support and the ability to connect technology investments to business needs.[16, 17] This is the adoption gap in concrete terms: not simply whether firms have heard of AI, but whether they can use it well.

An SME-driven economy therefore needs adoption supports that reduce friction, including clear examples, trusted advice, relevant training, financing, cybersecurity guidance and implementation support. It also requires competencies that are practical enough for smaller organizations: not only how to use AI tools, but how to evaluate outputs, protect information, adapt workflows and know when additional expertise is needed.[18]

Skills are one part of adoption capacity

Skills alone will not solve Canada's AI adoption challenge. They cannot substitute for infrastructure, investment, data readiness, trust, governance, procurement capacity or management systems. However, firms

themselves identify skills as one of the binding constraints. When Canadian businesses were asked in 2026 what limits their use of AI, the most common answer was that AI is not relevant to the goods they produce or the services they deliver (40.0%), followed by cybersecurity or privacy concerns (13.4%) and cost (10.6%).[19] That pattern is itself revealing. Judging whether AI is relevant to a business requires knowing what AI can do and being able to see where it might fit, which is a competency question before it is a technology question. In one Northern Ontario program for SMEs, 82% of participating businesses initially identified a lack of internal AI skills or training as a barrier, compared with only 27% who identified the cost of tools.[20]



The skills gap is visible both internationally and in Canadian workplaces. Canada ranks near the bottom of a 47-country comparison on AI training and literacy, placing 44th overall and 28th out of 30 advanced economies.[21] From spring 2023 to spring 2025, the share of employed Canadians saying it was hard to keep up with workplace technology increased from 29% to 41%. Over the same period, the share saying they had not received enough workplace training to take advantage of new information or computer technologies rose from 33% to 50%.[22]

These figures point to a practical gap between exposure and preparedness. Access to AI tools has moved faster than the training and guidance that would let people use them well. What is far less settled is which competencies are required, by whom and for what tasks.

What an AI Competency Framework Needs to Account For

46%

46% of employees in a KPMG U.S. survey admitted uploading sensitive company information or intellectual property topublic AI platforms.

Discussions about AI skills often become too narrow in two ways. One version focuses on advanced AI talent: the people who can build models, develop applications, manage data, evaluate systems and support AI infrastructure. Another version focuses on generic literacy: helping people understand what AI is and how common tools work. Both are important, but neither is enough to support meaningful broad adoption.[23, 24]

Science, technology, engineering and mathematics (STEM) and other technical skills remain essential for AI innovation. Canada needs deep technical expertise to advance research, develop AI-enabled products and services, strengthen cybersecurity, evaluate systems and build the infrastructure that AI depends on.[25]

Adoption and diffusion require a broader skills base. Many SMEs, non-profits, public institutions and workers will not build AI systems themselves. They are more likely to adopt AI-enabled tools, adapt them to existing work, assess vendor claims, manage data and privacy risks, support employees, communicate decisions and decide when specialized expertise is required.[26, 27]

Only a small share of workers will need advanced AI-specific skills such as programming or model development. Many more will need digital, data, managerial and human skills such as problem-solving, creativity, collaboration and communication.[28] In the Canadian labour market, many workers exposed to AI are not expected to need specialized AI skills, but AI is still expected to change the tasks they perform and the skills they require.

AI adoption is changing jobs, tasks, workflows and responsibilities

AI is changing jobs, but not only by creating new AI-specialist roles. Much of the change happens through the tasks people perform, the tools they use, the outputs they are expected to assess and the responsibilities attached to their work.[29, 30] A standard role may now involve drafting with AI, summarizing information, reviewing AI-generated content, using AI-supported recommendations or documenting and explaining decisions. Meanwhile, as agentic AI systems that plan and carry out multi-step tasks become more common, the work shifts further still, from

producing an output to specifying what should be done, setting the boundaries within which a system may act and verifying what is produced.

Recent evidence points to both job disruption and task reorganization. OpenAI's 2026 AI Jobs Transition Framework estimates that 18% of jobs face higher short-term automation risk, 24% may be reorganized as task composition shifts, 12% could grow because AI lowers costs or expands access, and 46% are likely to see less immediate change.[31] PwC's 2026 AI Jobs Barometer finds that skills required in the most AI-exposed jobs are changing more than twice as fast as in the least AI-exposed jobs, and that AI-exposed junior roles are up to seven times more likely to require traditionally senior skills such as judgment, leadership, strategic decision-making and team building.[32]

The same AI tool can create different competency needs depending on the task. Brainstorming ideas is different from summarizing confidential documents. Drafting marketing copy is different from using AI in recruitment, education, health, financial services or public-service delivery. The tool may be similar from a functional perspective, but the data, risk, affected people and accountability are different.

Competency therefore depends on the task, context and level of responsibility involved. Workers need to understand what information can (or should not) be entered, how outputs should be checked, what errors or biases may occur, who may be affected, and when and to what extent human review is required. Managers need to clarify responsibilities, review points, escalation paths and



accountability. Leaders need to decide where AI adds value, where it creates risk and where it should not be used.

A skills approach tied too closely to today's tools will become outdated quickly. Tools will change. Use cases will change. Organizational practices will change. More durable competencies include understanding AI capabilities and limits, applying tools to real work, evaluating outputs, managing risks, communicating clearly and adapting as workflows evolve.[33, 34]

AI skills are broader than STEM, coding and prompting

Technical expertise is necessary, but it is not sufficient for adoption. AI diffusion depends on people who can connect technical possibilities to real problems, real workflows and real responsibilities.

Prompting,[35] the practice of formulating instructions or other input to guide a generative AI system's response, shows the limits of a narrow skills agenda. Better

prompts can improve outputs, but prompting alone does not prepare people to use AI responsibly.[36] Effective use also requires knowing what problem is being solved, what context matters, what information should not be entered, how to check the result, what bias or error may be present, whether the output is appropriate and when human expertise should override the tool.[37]



Women and other equity-deserving groups do not have equal access to digital infrastructure, AI tools, workplace exposure, training or professional networks through which AI competencies are developed and rewarded.

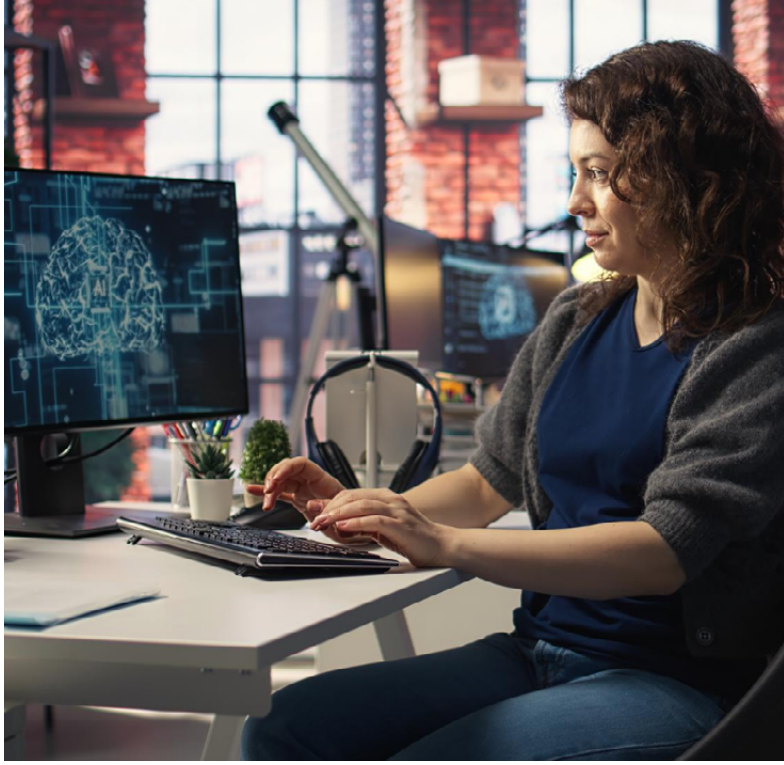
Adoption skills include digital and data literacy, but they also include judgment, verification, communication, domain knowledge and work design. These competencies, together with critical thinking, creativity, collaboration, ethics, change management and entrepreneurship, help technical and non-technical actors translate AI from a general-purpose capability into responsible and useful practice. Recent Canadian evidence reinforces the importance of this broader skill base.[38] A study of 1,380 workers across seven occupations found that social-emotional skills reduced vulnerability to AI-driven automation, while stronger professional involvement supported both higher-order thinking and social-emotional skills, greater adaptability and more effective AI implementation.[39]

This broader view also matters for inclusion. A narrow focus on coding or advanced technical credentials can overlook the skills people bring from management, education, communications, social sciences, humanities, public service, health, community work and entrepreneurship.[40, 41] AI adoption will still require technical expertise, but diffusion depends on many more people being able to apply, question, explain and govern AI in context.

AI competency is an equity issue

Broadening AI competency beyond coding and advanced technical skills does not by itself make AI adoption inclusive. Women and other equity-deserving groups do not have equal access to digital infrastructure, AI tools, workplace exposure, training or professional networks through which AI competencies are developed and rewarded. Internet access remains a foundational divide. In 2025, 97.3% of Canadian households had access to Internet service meeting the Canadian Radio-television and Telecommunications Commission's universal service objective of at least 50 Mbps download, 10 Mbps upload and unlimited data, compared with 86.9% of rural households[42] and 65.7% of households on First Nations reserves. Even where high-speed Internet is available, affordability, appropriate devices, accessibility and other barriers can affect whether people can use digital and AI tools meaningfully.[43]

For persons with disabilities, connectivity does not necessarily mean that digital services are usable: 13% reported barriers when using the Internet to access government information, services or supports.[44] AI divides



therefore extend from infrastructure and accessibility to the skills, institutional capacity and opportunities needed to use and shape AI. They affect who benefits from AI, who is prepared for changes in work and who has influence over how the technology is introduced.

Gender gaps in generative AI use are already visible. An analysis of 76 sources from more than 100 countries, covering 318,924 respondents in studies reporting use by gender, estimates adoption at 47.8% among men and 39.3% among women, a relative gap of 22%. Although the gap narrowed as generative AI became more widely available, it has remained at about 16% since early 2025.[45] Canadian workplace data show a similar underlying divide.[46] Women and men reported the same overall rate of workplace generative AI use, but women were less likely to use it after differences in education, industry and occupation were taken into account. These patterns point to more than access or individual interest. Exposure at work and institutional, organizational and social conditions also influence those who use AI.

Women may also face compounded barriers. Women-dominated occupations are almost twice as likely to be exposed to generative AI as male-dominated occupations, 29% compared with 16%.[47] The difference is larger in the highest exposure categories, 16% compared with 3%. At the same time, women accounted for only about 30% of the global AI workforce in 2022. For most occupations, generative AI is more likely to change tasks, skills and working conditions than eliminate jobs outright. Women may therefore face greater pressure to adapt while remaining under-represented in the roles developing AI and shaping how it is deployed.

Comparable Canadian data on AI use and competency remain limited for Indigenous Peoples, Black and other racialized communities, newcomers and persons with disabilities. Newcomers, refugees and Black youth can encounter barriers at the stages of entering digital-skills training, completing their studies and converting the knowledge gained into employment.[48] The lack of comparable, disaggregated AI data makes it difficult to determine who is developing and applying AI competency, who is being excluded and where the barriers arise.

Age adds another dimension. Workplace generative AI use was 27% among workers aged 25 to 54, compared with 15% among those aged 55 to 69, and the difference remained after accounting for job and sociodemographic characteristics.[49] Broader digital divides also persist among older Canadians, particularly at more advanced ages, and can involve affordability, accessibility, connectivity, safety concerns and

limited opportunities to develop emerging-technology skills. These barriers often intersect with gender, racialization, Indigeneity, disability, income, immigration status and geography. These divides show that equity in AI competency concerns who can access the necessary digital foundations, who can develop and apply relevant competencies, and who can benefit from and help shape AI adoption.

Responsible AI use is a workplace competency

Responsible AI is often discussed as a governance issue. It is also a workplace competency. Many AI risks emerge through ordinary use: copying sensitive information into public tools, relying on inaccurate outputs, using AI-generated content without verification, applying tools in inappropriate contexts or experimenting with AI outside approved systems. However, competency should not shift responsibility for safe AI use solely onto individual workers. AI literacy should complement, not substitute for, organizational safeguards, developer responsibility and appropriate governance.[50]

Shadow AI,[51] the use of AI tools or applications at work without formal organizational approval or oversight, shows how responsible AI becomes a workplace skills issue. Workers are already using AI tools in ways that can expose organizations to privacy, security and governance risks, and the scale is growing quickly. IBM and the Ponemon Institute found that the share of security incidents involving shadow AI more than doubled in a single year, from 20% to 43%, with those breaches averaging US$5.39 million. Organizational controls have not kept pace: among breached organizations, the share with no governance process to manage AI use or detect shadow AI rose from 63% to 68%.[52] Other evidence points to the scale of everyday exposure: 46% of employees in a KPMG U.S. survey admitted uploading sensitive company information or intellectual property to public AI platforms.[53]

Public expectations for oversight are also high. In a 2026 cross-border study, 90% of Canadians said AI should be regulated and 78% said human oversight of AI systems is essential.[54] Privacy, security, bias, transparency and human oversight need to be part of the core skills agenda. Safe use requires practical judgment: what information is appropriate to use, what risks are attached to the task, what review is needed, what should be documented and when a person should escalate the decision. Human oversight should also be proportionate to the context and consequences of the use, with clear human responsibility retained for consequential decisions.

For workers, responsible AI competency includes protecting confidential information, verifying outputs, recognizing potential bias and escalating concerns. For managers, this capacity includes setting clear expectations, building review points into workflows and ensuring that employees are not left to make risk decisions alone. For organizations, it includes providing approved tools, guidance, documentation, monitoring and access to expertise when tasks are at higher risk.

Basic literacy is essential, but it does not by itself provide the applied organizational or deep technical capabilities required across all adoption contexts.

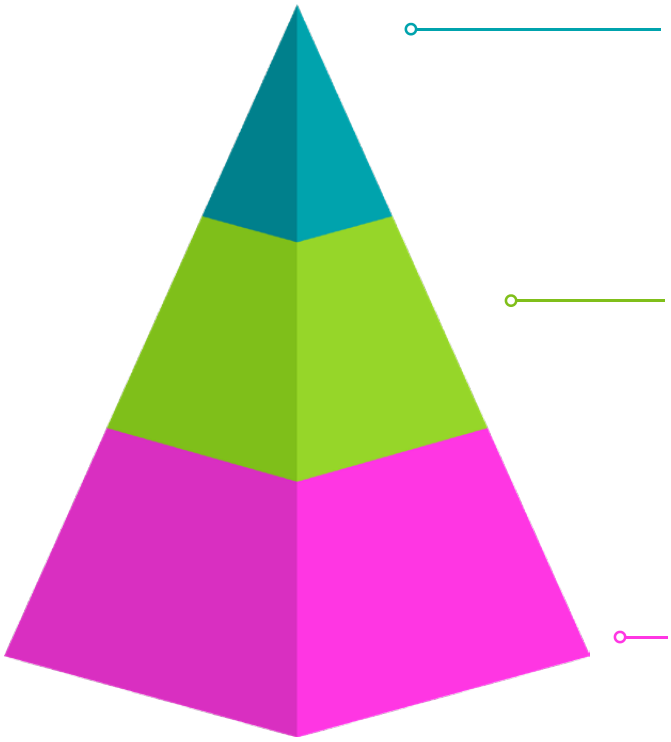
AI Competency Framework

112

The scan reviewed 112 courses, certificates, specializations and learning pathways offered by universities, technology companies, professional associations and online training providers.

The Diversity Institute AI Competency Framework translates the broad goal of "AI literacy" into three distinct levels of capability:

1. Basic AI Literacy	2. AI Innovation Skills	3. Deep AI Skills



3. Deep AI Skills

- Knowledge of AI development frameworks and models
- Advanced knowledge of AI applications in specific fields
- Deep understanding of ethical AI development

2. AI Innovation Skills

- Understanding how AI is used in different industries
- Competence in using AI technologies for content generation and analysis
- Mid-level expertise working with datasets

1. Basic AI Literacy

- Knowledge of core AI concepts
- Familiarity with generative AI tools
- Awareness of key ethical considerations

Each level responds to a different need. **Basic AI Literacy** establishes the knowledge and judgment required to understand AI, recognize how it is being used, and navigate its opportunities and risks. Digital skills are a core component of Canada's Skills for Success[55] framework; AI literacy should increasingly be embedded within the category of Digital skills as an essential part of what Canadians need to participate safely and effectively in an AI-enabled society and economy. It also includes the skills people need to protect themselves, their information and others from risks such as misinformation, deepfakes, privacy breaches and inappropriate reliance on AI. **AI Innovation Skills** support the practical application of AI across business functions, workplaces and sectors. They focus on understanding organizational goals and processes, identifying where AI can create value, and redesigning work to use AI effectively. The specific competencies required will also vary by role and function because marketers, procurement professionals, HR practitioners, finance teams and operations staff encounter different use cases, data, decisions and risks. **Deep AI Skills** are the advanced scientific and technical capabilities required to research, design, build, train, adapt, deploy, govern and maintain AI systems.

The three levels reflect increasing depth, complexity and responsibility, but they should not be interpreted as a pathway that everyone must complete. The appropriate level depends on the learner's role, the tasks they perform, the risks attached to those tasks and the organization's objectives. The distinction between innovation and invention is important. AI Innovation Skills focus on applying available AI capabilities to solve organizational problems, re-engineer processes and create value. Deep AI Skills focus more on the scientific and technical work required to build AI systems. An SME leader can therefore have strong AI Innovation Skills without being able to or needing to build an AI model.

Most workers, students, job seekers and members of the public need Basic AI Literacy. People who apply AI within their function or who implement or lead AI adoption may need AI Innovation Skills, including managers, entrepreneurs and professionals working in areas such as marketing, procurement, HR, finance, operations, education and public service. Technical specialists, developers, data scientists, cybersecurity professionals and some governance and assurance professionals require Deep AI Skills.

These levels bring together the framework's core areas of competency: AI concepts, responsible AI practices, generative AI and prompting, business applications, sector-specific applications, responsible AI advocacy and technical capabilities. Responsible AI is embedded across all three levels rather than treated as a separate or optional topic. The point is not to make everyone a technical expert. It is to clarify the different forms of competency needed to understand AI, apply it effectively and manage its risks.

While all three levels are important, this report focuses on AI Innovation Skills, specifically the capabilities SMEs need to connect available AI tools to business goals, value-chain activities and organizational processes.

Table 1. The Diversity Institute AI Competency Framework at a glance

	Basic AI Literacy	AI Innovation Skills	Deep AI Skills
Core question	Can I understand AI, recognize where it is being used, use common tools safely and assess their outputs?	Can I connect AI to organizational needs, redesign processes and lead implementation?	Can I design, build, adapt, test and maintain AI systems?
Who it is for	Everyone, as AI becomes ubiquitous all members of the public are likely to encounter or be affected by AI	Those who actively use AI in an organization or sector	Those who build, adapt, deploy or technically evaluate AI systems
Illustrative roles and audiences	Workers, students, job seekers, members of the public	Managers, entrepreneurs, marketers, procurement professionals, HR professionals, finance and operations staff, educators, public servants	Developers, AI engineers, data scientists, cybersecurity and assurance specialists
Focus	Understanding, common tool use, verification, risk and fraud awareness	Hands-on AI application, use-case identification, tool evaluation, workflow redesign, implementation, change management and measurement	Data, models, development, deployment, monitoring and technical safeguards
Responsible AI	Protect information, verify outputs, recognize AI use, recognize bias, know when human judgment is needed	Set expectations, build in review points, assess risks and impacts on people	Embed privacy, security, transparency, accountability and oversight in AI systems by default

Developing the framework

The Diversity Institute at Toronto Metropolitan University developed the AI Competency Framework as a practical tool for Canadian SMEs, their leaders and their workforce. The three-level structure builds on DI's previously published AI Pyramid.[56, 57, 58] It extends a broader program of competency-framework development at DI, including the Inclusive Entrepreneurship Competency Framework (IECF), which sets out the competencies entrepreneurs need across five stages of business development and across sectors and equity-deserving groups.[59] It is aligned with Employment and Social Development Canada's Skills for Success framework.



Five design commitments shaped the framework:

1. It is cross-disciplinary, spanning roles, disciplines and levels within an organization rather than treating AI competency as the property of technical staff.

2. It is built for SMEs, giving smaller firms a consistent way to define AI-related skills and a practical route for employees to develop these skills in their roles.

3. It is grounded in the Canadian labour market and in inclusion, with particular attention to women entrepreneurs, Indigenous entrepreneurs and entrepreneurs of other equity-deserving groups.

4. It is anchored in DI's applied research on AI adoption and skills.

5. It is employment-focused, oriented around real job requirements rather than course catalogues.

A market scan of publicly available AI courses, training programs and resources from leading institutions and organizations was used to examine how existing offerings address the competencies associated with each level and identify gaps and promising practices. The development process also included consultations with market experts and AI community partners to identify gaps, trends and promising practices.

The scan reviewed 112 courses, certificates, specializations and learning pathways offered by universities, technology companies, professional associations and online training

providers, providing a structured view of the types of AI learning already available and the competencies emphasized across different offerings. The distribution was uneven; the majority of offerings concentrate on applied use and business application, a smaller share on foundational understanding and safe use, and very few on the technical work of designing and building AI systems. As the framework developed, Deep AI Skills were defined more broadly to include advanced technical competencies that are often developed through university, graduate and other specialized technical pathways, rather than the types of shorter-form training emphasized in the original scan. The scan also showed how difficult it is to determine what competencies a course actually develops from its title or marketing description alone, which is part of why clearer competency definitions are needed.

The framework was not built only by reviewing technical content. It also considered accessibility, target audiences, the balance between foundational and advanced AI concepts, practical applicability and ethical considerations. This included attention to women entrepreneurs, Indigenous entrepreneurs and entrepreneurs from other equity-deserving groups.

The framework is already in use across DI's work. It informs the design of new AI



courses for learners and entrepreneurs, shapes ongoing and upcoming research, and supports DI's knowledge dissemination and its work with entrepreneurs.

It is also being integrated into key programs and initiatives, including Advanced Digital and Professional Training (ADaPT) for Black Youth,[60] Artificial Intelligence Digital and Professional Training (AiDaPT),[61] the Women's Entrepreneurship Hub (WE-Hub),[62] the Newcomer Employment and Entrepreneurship Skills Hub (NEESH)[63] and Skills Bridge.[64] These initiatives extend the framework across different settings, including workforce development, entrepreneurship, AI training and SME skills development.

Level 1: Basic AI Literacy

Basic AI Literacy establishes the foundation for understanding AI and its implications for individuals, workplaces and society. It is intended for all people who may encounter or be affected by AI, regardless of whether they use AI tools as part of their work or are responsible for implementing or developing AI systems.

At this level, individuals develop a plain-language understanding of AI, machine learning and automation, including how AI uses data to produce predictions, recommendations, classifications and generated content. They recognize common applications such as language and image generation, translation, chatbots, recommendation systems, document analysis, fraud detection, scheduling, customer service, marketing and workplace productivity tools. They also understand that AI outputs may be wrong, incomplete or misleading, and that AI is not appropriate for every task or problem.

Basic AI Literacy includes a general understanding of generative AI tools such as ChatGPT, Claude, Gemini and Microsoft Copilot. People with this skill set understand, at a general level, how these tools generate outputs and why those outputs need to be approached critically. They also understand that AI-generated information may require verification before it is trusted, acted upon or shared. They recognize that AI systems can produce inaccurate, biased or inappropriate outputs and that human judgment remains an integral aspect of responsible AI use. A clear prompt can improve an output, but cannot guarantee that it will be accurate, unbiased or appropriate. They are also aware that some AI tools act on their own behalf rather than simply responding, carrying out sequences of steps such as searching, drafting and sending, and understand that greater autonomy can introduce additional privacy, cybersecurity and accountability risks.

Responsible use is central to all levels of the AI Competency Framework, but is introduced at this level. Individuals can identify common risks and ethical issues, including:

Bias and discrimination	Privacy and the inappropriate use of personal or confidential information	Data security and the use of unapproved tools
Misinformation, fabricated content and deepfakes	Overreliance on AI-generated outputs	Overreliance on AI where human judgment, empathy or contextual understanding is required

Individuals can also identify situations in which AI may not be the best solution. They understand that complex ethical decisions and higher-risk uses may require human judgment, professional expertise or additional review.

A person with Basic AI Literacy can:

- ✓ Define AI and its core functionalities
- ✓ Recognize common AI applications in business, workplaces and society
- ✓ Understand what generative AI tools do and their common limitations
- ✓ Explain, in plain language, how AI uses data to generate different kinds of outputs
- ✓ Describe the general capabilities and limitations of generative AI tools
- ✓ Use clear and concise prompts for common tasks
- ✓ Review and verify AI-generated outputs
- ✓ Identify basic privacy, security, bias and misinformation risks
- ✓ Recognize when AI is inappropriate or when human judgment is required

Basic AI Literacy provides the knowledge and safe-use practices needed to understand how AI is used in workplaces and communities, recognize its opportunities and risks, and navigate an increasingly AI-enabled environment. It does not, by itself, prepare someone to apply AI to organizational processes, lead adoption or develop an AI system.



Level 2: AI Innovation Skills

AI Innovation Skills focus on putting AI to work to improve decisions, workflows, productivity, products, services and customer outcomes. They connect an understanding of AI technology with its practical application in business and organizational contexts. At this level, individuals move beyond general understanding and individual tool use. They can identify where AI may create value, evaluate potential applications and support implementation within an organization or sector.

People with AI Innovation Skills understand how AI works at a practical level. They can recognize the capabilities and limitations of different AI-based technologies and consider how these technologies may be applied across business functions, workplaces and industries. They can select and use tools appropriate to a particular task, provide effective instructions and context, refine their approach based on outputs, and assess whether the results are accurate, useful and appropriate for the intended purpose. This increasingly includes agentic tools that carry out multi-step tasks with limited supervision, raising distinct questions about what a system is permitted to do, what it can access and where a person must remain in the loop.

People with this skill set can connect potential AI applications to specific organizational needs. For SMEs, these may include quoting, scheduling, invoicing, marketing, customer follow-up, inventory, recruitment, compliance, safety documentation or service delivery. In other organizations, applications may include analysis, knowledge management, forecasting, communications, case processing or decision support. Effective application requires matching both the tool and the competencies needed to use it to the individual, task and use case, rather than treating AI tools or training as interchangeable. Skilled individuals examine the existing process, identify the problem to be solved and determine whether AI is a suitable response. They can then research and evaluate tools based on business needs, expected benefits, costs, available resources, data requirements and readiness.

Individuals versed in AI Innovation Skills can also assess how well an AI application performs in practice. This includes evaluating the quality and usefulness of its outputs, identifying potential bias or limitations, and considering whether appropriate privacy, security and human-oversight practices are in place. It also includes assessing whether the application of AI produces measurable improvements in productivity, quality, service, capacity or other intended outcomes.

Moving from experimentation to structured implementation requires learners to define goals, roles, timelines and resources and plan how AI will be integrated into existing work. They can identify where workflows, responsibilities and review points need to change, which tasks may be supported by AI, which decisions must remain with people, how outputs will be checked and when concerns should be escalated.

Change management is part of AI innovation. Introducing a tool does not automatically

improve productivity or service quality. Employees need clear expectations, opportunities to practise, access to support and an understanding of how AI affects their roles. Managers and project leaders need to address concerns, communicate the purpose of implementation and ensure that employees are not left to make difficult risk decisions alone. Managers and organizational leaders also need to support the transition from experimentation to consistent and effective use across relevant workflows and approved use cases.

People with AI Innovation Skills can also use AI to develop and test new processes, products and services. They can experiment with tools, create prototypes, compare approaches and refine ideas based on feedback and evidence. They can translate a business or service need into requirements and work effectively with technical specialists, data professionals and other experts.



A person with AI Innovation Skills can:

- ✓ Explain how AI may be applied across functions and industries
- ✓ Identify and prioritize AI use cases based on organizational needs
- ✓ Analyze existing processes and identify opportunities for improvement
- ✓ Research, compare and evaluate AI tools and solutions
- ✓ Assess the suitability of AI for a specific task or workflow
- ✓ Evaluate outputs, benefits, limitations and risks
- ✓ Implement existing AI applications within a business function or sector
- ✓ Define implementation goals, roles, timelines and resources
- ✓ Redesign workflows and establish human review points
- ✓ Determine what an AI system should be permitted to do independently and where human approval or review is required
- ✓ Lead change management and support employees through adoption
- ✓ Establish measures and assess whether AI implementation improves the intended outcomes
- ✓ Use AI to develop and test new processes, products and services
- ✓ Translate business needs into requirements
- ✓ Work effectively with technical, data, privacy and governance experts
- ✓ Advocate for responsible AI use within the organization

AI Innovation Skills combine practical AI understanding with domain knowledge, critical thinking, communication, change management, entrepreneurship and judgment. The objective is not simply to increase AI use; rather, it is to identify where AI is useful, integrate it into work responsibly and assess whether it produces the intended results.



Level 3: Deep AI Skills

Deep AI Skills are the advanced scientific and technical capabilities required to research, design, build, train, adapt, deploy and maintain AI systems. As with the other levels of the Diversity Institute AI Competency Framework, responsible AI practices are embedded throughout this technical work.

At this level, people understand the capabilities and limitations of machine learning, deep learning, natural language processing and computer vision, and can select, design and apply appropriate technical approaches based on the problem being addressed.

People can prepare, clean, transform and manage complex datasets, assess whether data are suitable for a task, and identify limitations that may affect performance or produce biased outcomes. They can also evaluate model and architecture options, assess their strengths and limitations, select appropriate performance measures, and train and adjust models for defined tasks.

Deep AI competency extends from development into real-world implementation. People can design, deploy and maintain AI systems, including the data pipelines, models and performance-monitoring processes needed to keep them operating effectively. They can assess performance in real use, update models or systems when needed and establish processes for testing, access control and incident response. Where systems act autonomously, this also includes scoping permissions, constraining what a system can access or execute, and maintaining the logging needed to attribute and audit its actions.

Deep AI Skills also involve translating defined business and organizational requirements into technical specifications. People with these skills can identify the data, system, evaluation and monitoring requirements associated with an AI application. They can design and develop systems or tailor existing AI solutions to fit particular sectors, organizations and workflows.

Responsible AI is embedded throughout this level. People can apply ethical frameworks and responsible-development practices during design, development, deployment and monitoring. They can implement safeguards for secure data handling, privacy, access control, testing, documentation, bias assessment, incident response, transparency, accountability and human oversight.

These capabilities are generally concentrated among technical specialists such as AI engineers, machine-learning specialists, data scientists and developers. While Deep AI Skills are essential to the broader AI ecosystem, they are not the primary focus of this report, which concentrates on the literacy and innovation skills required to support broad-based and inclusive AI adoption.

A person with Deep AI Skills can:

- ✓ Select among machine learning, deep learning, natural language processing and computer vision approaches
- ✓ Work with complex datasets and prepare data for AI development
- ✓ Evaluate model and architecture options for specific tasks
- ✓ Select and apply appropriate performance measures
- ✓ Design, develop, train and adjust AI models or systems
- ✓ Translate defined business and organizational requirements into technical specifications
- ✓ Tailor AI solutions to specific fields and workflows
- ✓ Test systems before and during deployment
- ✓ Monitor performance over time and update systems when needed
- ✓ Implement technical and operational safeguards
- ✓ Scope and enforce the permissions of systems that act autonomously
- ✓ Apply ethical frameworks throughout development and deployment
- ✓ Embed privacy, security, transparency and accountability into AI systems
- ✓ Design processes for human oversight, escalation and review

Deep AI Skills may be concentrated in different areas, including data analysis, machine learning, natural language processing, computer vision, system development, deployment, technical assurance and governance. Complex AI initiatives therefore require people with complementary technical, organizational and sector-specific capabilities.

Matching competency to the task and its risks

The competency required for AI use depends not only on the technology involved, but on the task, context, level of responsibility and potential consequences of getting it wrong. Risk is not a fixed property of an AI tool. The same generative AI system may be used for a low-stakes task in one setting and support a highly consequential decision in another.

Many factors shape the level of risk associated with an AI application: the consequences of error, the sensitivity of the data involved, the number of people affected, the degree of autonomy given to the system and how difficult an action or decision is to reverse. These factors influence the judgment, safeguards, human oversight and, where relevant, technical expertise required.

Table 2. Illustrative risk levels for AI use*

Lower-stakes uses	More consequential uses	Higher-stakes uses
Brainstorming ideas	Customer recommendations	Hiring and promotion
Drafting routine content	Forecasting and planning	Pay and performance decisions
Summarizing non-sensitive information	Analysis using de-identified business or customer data	Credit and financial decisions
Routine translation	Workflow and decision support	Health, safety and legal decisions

As risk increases, so should the level of human oversight, verification, safeguards and accountability. The competency level itself, however, is determined by what a person is expected to understand or do with AI: whether they need foundational AI literacy, the skills to apply AI to organizational needs, or the technical skills to build AI systems.

Risk does not map mechanically onto the three competency levels. Basic AI Literacy may be sufficient for an individual carrying out a lower-stakes task with an approved tool, provided they can protect information, assess the output and recognize when human judgment is required. AI Innovation Skills become increasingly important when someone is selecting an AI application for an organization, deciding how it should fit into a workflow, establishing review points or assessing whether it produces the intended results. Higher-stakes or technically complex applications may also require Deep AI Skills to test systems, implement safeguards and monitor their performance over time.

The framework therefore considers both a person's role and what they are responsible for doing with AI. Role helps identify the tasks, workflows and use cases for which competency is needed; responsibility determines the depth of competency required.

*These examples are illustrative. The same activity can carry very different levels of risk depending on the context. Translation of routine marketing material, for instance, is substantially different from translation used in a legal, medical or immigration decision.

Table 3. Competency priorities by AI responsibility

Responsibility	Priority competencies	Typical competency need
Encounter or be affected by AI in everyday life and work	Understand capabilities and limits; recognize where AI is being used; understand opportunities and risks; recognize misinformation, deepfakes, privacy and cybersecurity risks; know when human judgment or additional verification is needed	Basic AI Literacy
Use AI tools to support tasks and workflows	Use and adapt AI tools; prompt effectively; evaluate outputs; understand relevant data and risks; improve how work is carried out	AI Innovation Skills
Select, implement or oversee AI applications	Identify and assess use cases; compare tools; evaluate data readiness; redesign workflows; establish human review; manage change; measure results and assess whether AI is creating value	AI Innovation Skills
Build, adapt or technically evaluate AI systems	Prepare data; develop or adapt models and systems; integrate and test applications; establish technical safeguards; monitor performance	Deep AI Skills, with relevant business requirements informed by AI Innovation Skills

These responsibilities may be distributed across many people in a large organization or concentrated in only one or two people in a small business. A solopreneur, for example, may need Basic AI Literacy to understand AI, recognize its opportunities and risks, and make informed decisions about its use, as well as substantial AI Innovation Skills to select and apply relevant tools, identify useful applications, improve workflows and evaluate results, while relying on software providers or external specialists for Deep AI Skills.

The framework should also be used dynamically rather than as a one-time assessment. As AI tools, workplace applications, responsibilities and risks evolve, individuals and organizations will need to reassess their competency needs and continue developing the knowledge and capabilities relevant to their roles, tasks and use cases.

Applying the Framework

24%

Among Canadian businesses with one to four employees already using AI, only 24% reported training existing employees, compared with 51.9% of businesses with 20 to 99 employees and 68% of those with 100 or more.

The AI Competency Framework identifies the capabilities needed to understand and navigate AI, apply it to organizational needs and build or support more complex AI initiatives. Applying the framework requires connecting those capabilities to actual tasks, roles and responsibilities. The questions are what an individual needs to do with AI, who may be affected by its use and what level of judgment, oversight or technical expertise the task requires.

Applying AI across the value chain

AI can be applied across an organization's value chain, and the way AI competencies are applied will vary by function. The competency level required depends on the task, the information involved, who may be affected and whether a person is using an existing tool, leading implementation or developing a technical system. For SMEs, these activities may be concentrated among a few people rather than divided across separate departments. The examples below illustrate where AI may enter everyday work; they do not imply that every application will be suitable for every organization.

Figure 2. AI across the value chain

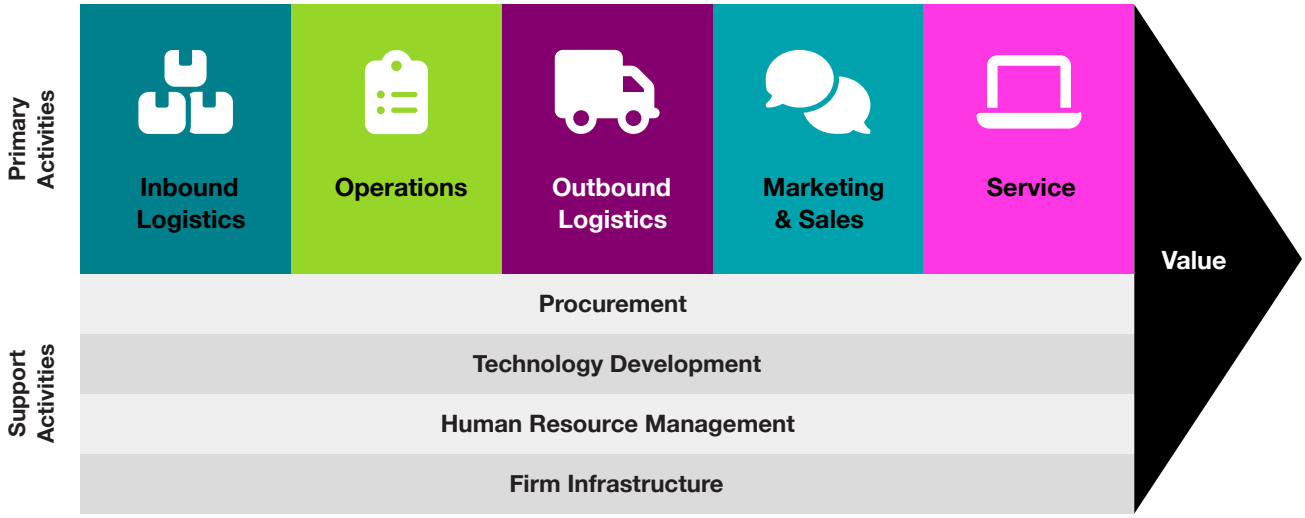


Table 4. AI across the value chain

Activity	Illustrative AI applications
Primary Activities	
Inbound logistics	Forecasting input needs, monitoring inventory, coordinating deliveries, identifying supply disruptions, optimizing material flows
Operations	Scheduling, inventory management, quality monitoring, preventive maintenance, workflow improvement
Outbound logistics	Forecasting demand, planning distribution, optimizing delivery schedules, tracking orders, identifying delivery disruptions
Marketing and sales	Market research, content development, lead prioritization, campaign analysis, personalization
Service	Drafting responses, summarizing cases, routing requests, customized recommendations, supporting chatbots, identifying recurring issues
Support Activities	
Procurement	Comparing suppliers, summarizing contracts, evaluating bids, identifying supply risks, supporting purchasing decisions
Technology development	Analyzing customer and business needs, generating and testing concepts, prototyping, providing user support, detecting threats, monitoring systems, supporting technical integration
Human resource management	Drafting job materials, identifying skills needs, supporting learning, informing workforce planning
Firm infrastructure	Processing invoices and expenses, forecasting cash flow, classifying documents and automating routine administrative tasks; monitoring requirements, identifying risks, documenting decisions, supporting audits

These applications frequently cut across multiple activities in an organization's value chain. A customer-service tool, for example, may also affect data governance, employee responsibilities, cybersecurity and compliance. The table illustrates where AI may be applied to create value or improve work, rather than assigning a competency level to a particular business function. The same application can require different capabilities from the people who encounter or are affected by it, those who apply or lead its implementation and those responsible for its technical development or integration.



The three competency levels are best understood as complementary responsibilities within AI adoption, not as a sequence that every individual must complete.

Examples from small Canadian firms show how AI adoption often begins with a specific business problem or opportunity within the value chain. The Unscented Company, a 15-person home and body-care manufacturer, uses AI to extract products, quantities, customer details and order notes from inconsistent purchase orders and feed validated information into its existing system for human review, reportedly saving customer-service staff one to three hours per day.[65] MJK Performance, a five-person Calgary-based manufacturer of custom Harley-Davidson parts, uses AI-powered generative design to produce and test parts against strength, weight and manufacturing requirements; a design process that previously took one to two days was compressed to a result that was 80% to 90% complete, requiring roughly 20 minutes of human refinement before production.[66] Woodruff Vet Services, a small mixed-animal veterinary practice in Alberta, introduced AI dictation to turn appointment conversations into structured medical records, reportedly saving five to ten minutes per appointment, eliminating its records backlog after being adopted by the team in under a week.[67] Additional examples of how Canadian SMEs are applying AI across different value-chain activities and sectors are provided in Appendix A.

None of these firms needed to build an AI system themselves. In each case, adoption addressed a specific business need or bottleneck using an existing capability and required changes to part of the workflow. These examples illustrate an important feature of SME adoption: the critical capability is often identifying where AI can improve the work and determining how to use it effectively.

Competency in practice

The three competency levels are best understood as complementary responsibilities within AI adoption, not as a sequence that every individual must complete. In a single implementation, employees may need Basic AI Literacy to use and assess a tool safely, managers may need AI Innovation Skills to select the application and redesign work, and internal or external specialists may provide the Deep AI Skills needed to build, integrate or technically evaluate the system. The examples below show how the three levels can contribute to the same use case.

Table 5. Example of AI competency in practice

Use case	Basic AI Literacy	AI Innovation Skills	Deep AI Skills
Customer service	Recognize potentially fraudulent or AI-generated customer interactions.	Can I connect AI to organizational needs, redesign processes and lead implementation?	Can I design, build, adapt, test and maintain AI systems?
Use an approved tool to draft or summarize responses, protect customer information and verify accuracy, tone and appropriateness.	Identify suitable tasks, compare tools, redesign routing and review processes, support employees and measure service outcomes.	Configure, integrate or develop the system, connect approved data sources, test accuracy, security and bias, and monitor performance.	Those who build, adapt, deploy or technically evaluate AI systems
Inventory and operations	Review AI-assisted forecasts or recommendations, question unexpected results and recognize when human intervention is required.	Define the operational problem, evaluate potential solutions, redesign ordering and review processes, and establish measures of success.	Build, customize or integrate forecasting systems, prepare the required data pipelines, validate performance and monitor the system over time.

The contrast between these use cases is important. Customer service may involve relatively routine uses of AI, while hiring can affect employment opportunities and therefore requires greater scrutiny, human oversight, documentation and safeguards. The competency level depends on what an individual is responsible for understanding or doing, while the depth of judgment, oversight and safeguards required increases with the risk and consequences of the use case.

These examples show why competency should be assessed at the level of the task, use case and responsibility, rather than assigned broadly by occupation or business function. Organizations need to determine which foundational knowledge is needed broadly across the workforce, which AI Innovation Skills are required by those using AI to improve work or leading adoption and where Deep AI Skills are needed by internal specialists, vendors or external partners. The appropriate mix will depend on the use case, the sensitivity of the information involved, the potential effects on people and the complexity of the system.

Putting AI Innovation Skills to work

Identifying the relevant competencies is only the beginning. Organizations also need a way to move from a business problem to an AI application that is useful, responsible and worth sustaining. The framework can be applied through a practical sequence of decisions that places AI Innovation Skills at the centre of adoption. Table 6 illustrates one way of organizing that process, from defining the problem through implementation and scaling.

Table 6. From business problem to AI adoption[68]

Step	Core question	What it demands of people
Align	What business problem or priority are we trying to address?	Judgment about where value can be created or a constraint addressed across the organization's value chain and which outcome should improve
Identify	Where in our work could AI create value?	Knowledge of the work, tasks and workflows involved, and the ability to identify specific use cases where AI may add value rather than assuming technology is the solution
Assess	Is the use case valuable, feasible and appropriate?	Ability to evaluate tools and vendor claims and assess business value, feasibility, data readiness, costs, risks and safeguards
Prepare	What needs to change in people, workflow, data and safeguards?	Work design, change management, clear responsibilities, attention to data and vendor requirements, guardrails and decisions about where human review is required and how success will be measured
Pilot and learn	Does it actually improve the work?	Applied use of the selected tool in the specific use case, feedback, measurement of quality, time, capacity and employee or customer experience, and willingness to change or stop an approach that is not working
Scale	What should we standardize, expand or stop?	Ability to turn a successful use case into a repeatable and appropriately governed practice through standardization, workforce training, integration, governance and ongoing monitoring of performance, outcomes and risk

The steps in Table 6 also show why AI adoption is a change-management task. Organizations need to create understanding and buy-in, involve the people doing the work early, build capability and remove barriers, and use feedback and results to reinforce and adapt the change. AI should not simply be added on top of an existing process; the work around it may also need to change.

Read down the third column of the table and a pattern emerges. Most of these demands are not advanced technical capabilities. They are judgment, process knowledge, tool evaluation, work design, change management and measurement. Technical expertise becomes important where data, integration, safeguards or system development are involved, but many of the decisions that determine whether AI creates value sit at the AI Innovation Skills level. An organization can obtain Deep AI Skills externally. It cannot fully outsource knowledge of where its own work is breaking down.

What the framework means for the smallest businesses

AI is already reaching the smallest firms: in the second quarter of 2026, 19.9% of Canadian businesses with one to four employees reported using AI to produce goods or deliver services in the previous 12 months.[69] For very small businesses, these responsibilities are often concentrated rather than distributed across separate teams or specialists. A solopreneur or the owner of a five-person firm may be the person who identifies the opportunity, chooses the tool, uses it, checks the output, sets the rules and decides whether it is actually improving the business.



This makes AI Innovation Skills more than a management competency for the smallest firms. They become part of the owner's practical operating capability. Basic AI Literacy remains the foundation for using tools safely and evaluating outputs, while Deep AI Skills can often be obtained through vendors or external specialists when they are needed.

The same adoption questions can be applied much more lightly in a very small business. A solopreneur does not need a formal AI strategy before using AI to improve a recurring task. They may need only a clearly defined bottleneck, one appropriate use case, a simple rule about what information should never be entered into an AI tool, a consistent process for checking outputs and a measure of whether the change is working.

Very small firms can also face many of the same privacy, confidentiality and liability risks as larger organizations without having an IT function, legal department or specialist to consult. Training is also less likely to be provided: among Canadian businesses with one to four employees already using AI, only

24% reported training existing employees, compared with 51.9% of businesses with 20 to 99 employees and 68% of those with 100 or more.[70] The firms with the least capacity to absorb a mistake are also the least likely to be preparing their people to avoid one. At the same time, limited time and training capacity mean that adoption support must fit the realities of running a small business rather than assume the availability of lengthy formal training.



Very small firms can also face many of the same privacy, confidentiality and liability risks as larger organizations without having an IT function, legal department or specialist to consult.

Saving time is not the same as creating value

AI can make a task faster without necessarily making the organization more productive. Time returned to a business is capacity, not value. It becomes valuable only when the organization decides what that capacity is for: serving more customers, clearing a bottleneck, improving quality, reducing costs, accelerating delivery or shifting people toward higher-value work. Organizations need to consider how time savings will translate into improved business or organizational outcomes. Forty-two percent of workers report saving eight or more hours per week using AI, yet 66% say they receive little guidance on what to do with the time saved.[71]

This is why measurement belongs within AI Innovation Skills rather than being treated as a reporting exercise after implementation. Identifying a use case should include defining the outcome AI is expected to improve and establishing a baseline against which results can be assessed. The question a pilot should answer is not simply whether people used the tool or liked it, but whether the work improved and against what baseline. Without that, an organization can increase AI use without being able to determine whether adoption has created meaningful value.

Identifying the competencies needed and applying them to real work is only part of the picture. Whether people and organizations can develop and sustain these capabilities also depends on the learning, organizational and equity conditions considered in the next section.

Building Conditions for AI Competency and Adoption

1,854

Across the Beta phase, 1,854 learners from 1,527 SMEs engaged in training.

Turning the framework into capability depends on more than training. People need relevant opportunities to learn, practise and receive feedback, but they also need the tools, time, guidance and organizational support required to apply what they learn where AI use is relevant to their role. For AI competency to contribute to adoption, learning conditions and adoption conditions need to develop together. Program design must also address the equity barriers that shape who can participate, complete training and benefit from it.

AI readiness operates at two levels

The framework identifies the competencies people need, but individual competency is only one dimension of readiness. Individual readiness depends on whether people have the knowledge and, where relevant, the applied skills required for their roles, tasks and use cases. Organizations also need the capacity to identify suitable use cases, provide the required technology and data, support implementation, manage risk and determine whether AI is creating value. Individual and organizational readiness therefore need to be considered together.

Table 7. Two levels of AI readiness

Individual readiness	Organizational or business readiness
AI knowledge and literacy: Understanding AI, its opportunities and risks	**Strategy and use cases:** Clear business problems or opportunities where AI could add value
Current AI use: Which tools are being used, how often and for what tasks	**Technology and data readiness:** Appropriate systems, infrastructure, data quality and access
Applied skills: Ability to select and use tools and assess their outputs	**Workforce capability:** Employee skills, training needs, roles and capacity to implement

Individual readiness	Organizational or business readiness
Confidence and willingness: Comfort experimenting with and adopting AI	**Leadership and implementation readiness:** Management commitment, resources, ownership and capacity for change
Responsible AI literacy: Awareness of privacy, security, bias, accuracy and appropriate use	**Governance and responsible AI:** Policies, privacy, cybersecurity, risk management and oversight
Learning and support needs: Competency gaps and the support required to address them based on role, task and use case	**Business case and expected value:** Costs, productivity opportunities and measurable outcomes

The distinction matters because individual skills and organizational capacity can develop unevenly. A business may have employees experimenting with AI without the data, approved tools, policies or leadership needed to apply it systematically; another may invest in the technology without having people with the competencies needed to use it effectively.

Build competency through relevant and applied learning

Learning should be designed around the competencies participants need to develop and the responsibilities they are expected to hold in relation to AI. Foundational concepts can be introduced through plain-language resources, guided demonstrations and realistic exercises. Applied and technical competencies require more sustained practice, such as role- or sector-specific projects, tool comparison, workflow analysis, supervised experimentation, coaching, peer learning, laboratories and system-development work. Training is more effective when it combines workplace relevance, advisory support and opportunities to apply skills in real settings. Workers who receive AI training are also more likely to report positive effects on their performance and working conditions. Across the framework, assessment should test whether participants can apply the competency, not only whether they have completed the course content.[72, 73, 74]
A common foundation can support broad AI literacy, but learning should then be tailored to the tasks people perform, the responsibilities they hold and the ways they are expected to use or oversee AI.

The form this takes will vary across audiences and settings. Students and job seekers may need foundational AI literacy alongside curriculum-based projects, work-integrated learning and career navigation that connect learning to workplace expectations.[75] Workers need training appropriate to their roles. Where AI use is relevant, this should include practice based on their actual tasks, access to approved tools, clear guidance and time to apply what they learn. Managers, supervisors and SME leaders need practical learning tied to specific business needs and use cases, relevant tool selection, workflow changes, vendor decisions and employee support.[76]

For SMEs, modular and stackable formats can make learning easier to fit around operating demands, while structured pathways can help participants build the competencies relevant to their needs without assuming that everyone must progress through all three levels.

Upskilling in Action: Soo Foundry & Machine[77]





Soo Foundry & Machine, a roughly 40-person machining, welding and hydraulics company serving industries including mining, steel and manufacturing, participated in a five-week Northern Ontario SME program that combined practical AI workshops, peer learning and one-to-one coaching. The company identified concrete applications in employee health and safety and training automation and began integrating them into the business. Across the program, 90 participants from 49 businesses took part, and every participating business developed a customized AI adoption blueprint.

Educators and trainers need continuing professional learning that connects AI to pedagogy, curriculum and assessment, while students need opportunities to develop AI literacy and critical judgment with applied or technical capabilities developed where relevant to their learning and career pathways. The United Nations Educational, Scientific and Cultural Organization competency frameworks for teachers and students provide models for integrating human-centred thinking, ethics, AI knowledge and practical application. Public institutions need role-based and recurring training tied to privacy, security, documentation, human review and accountability.[78, 79] Canada's guidance for federal institutions also places responsibility on organizations to provide secure tools, training, oversight and change-management support rather than leaving individual employees to manage these issues alone.[80]

Community learners, including older adults, may need plain-language materials, flexible pacing, access to devices and connectivity, trusted local delivery and one-to-one or small-group assistance. For these audiences, the priority should be foundational AI literacy: understanding where AI is encountered, recognizing opportunities and risks, protecting personal information and identifying misinformation, deepfakes, fraud and other AI-enabled threats. Needs can vary substantially

within the same audience depending on prior experience, goals, income, disability, confidence and access to technology. Delivery should respond to these differences rather than assume that all members of an audience require the same supports or the same level of AI competency.[81] The common principle is to adapt learning to participants' goals, responsibilities and circumstances.

Removing barriers to participation and application

Barriers can arise before, during and after training. Cost, work schedules, caregiving responsibilities, language, accessibility, discrimination, limited professional networks, and access to devices and connectivity can all affect participation. Before training, clear outreach, affordable access and basic technology support can help people enter. During training, flexible delivery, accessible and multilingual materials, coaching, child care, transportation and supportive learning environments can help people complete it.[82] After training, mentorship, career navigation, employer connections, work placements and opportunities to apply and build new competencies can help turn learning into employment, career progression, increased confidence and participation, or organizational change.[83, 84, 85]

These barriers are often compounded. Women, newcomers and refugees, Black and Indigenous learners, persons with disabilities, people in rural and remote communities, low-income learners and older adults may encounter different combinations of financial, logistical, digital and systemic barriers.[86] Equity should shape outreach, delivery, learner supports and evaluation from the start, rather than being added after a program has already been designed. Programs also need to recognize that different learners require different forms and levels of AI competency. Equitable AI skills development does not mean providing everyone with the same training; rather, it ensures people can access the knowledge, skills and supports relevant to their circumstances, roles and goals. Customized training and wraparound supports can help programs respond to these different circumstances while maintaining clear competency outcomes.[87, 88]

Upskilling in Action: ADaPT4Success

ADaPT4Success combined bilingual training in digital skills, Skills for Success and job-search skills with access to paid work placements. Of the 281 participants who completed training and earned a microcredential, 221 secured placements, and 272 participants were from equity-deserving groups. The program also involved 432 SMEs in shaping the training based on employer needs and job vacancies.

The model connected competency development to real work, employer input and paid opportunities to apply learning, while embedding equity into program design from the start.

Create the organizational conditions to apply learning

Organizations also determine whether learning can be put into practice. SMEs often have limited HR capacity, formal training systems, budgets and time, while immediate operational demands can displace learning.[89] Protected learning time, approved tools, clear policies, supervisor support and opportunities to test new approaches can help convert individual learning into organizational capability. Depending on the application, firms may also need access to technical, legal, cybersecurity or governance expertise.[90]

Many SMEs cannot develop or maintain all the capabilities needed for AI adoption in-house. Industry associations, chambers of commerce, sector councils and other trusted intermediaries can help businesses assess their readiness and competency needs, identify relevant training and tools, access specialized expertise, share infrastructure and obtain advisory support.[91, 92] Libraries, settlement agencies, community organizations and local service providers can play a similar role for individuals by providing trusted outreach, accessible learning spaces and connections to further training and support.[93]

Experience from Skills Bridge reinforces the importance of this navigation function.[94] Across the Beta phase, 1,854 learners from 1,527 SMEs engaged in training, but participation declined substantially between enrolment and sustained course completion. Time constraints, workload and competing business priorities were the main barriers rather than technology itself. Among participating SMEs with 0–10 employees, about 34% completed at least one course,



compared with about 44% of firms with 51–200 employees, suggesting that organizational capacity affects whether firms can sustain participation. The evaluation also found that the breadth of available training could itself create a wayfinding challenge when SMEs lacked clear guidance on where to begin or which courses best matched their needs. Chambers of commerce played an important intermediary role, with personalized outreach and support helping to sustain engagement.

Measure outcomes and improve over time

Success should be measured beyond enrolment and course completion. Relevant outcomes include competency gains, confidence, demonstrated knowledge and judgment, responsible application, employment and career outcomes, and changes in organizational practice or performance. Where programs are intended to support adoption, evaluation should also examine whether new competencies are being used in practice and whether they contribute to the intended organizational outcomes.

Measures should reflect the competency level and purpose of the training rather than assume that all learners are expected to use AI tools directly. Participant and employer feedback can identify where content, delivery and supports need to improve. Because AI tools and organizational uses will continue to change, programs should also review and update their learning content, delivery methods and measures of success over time. Outcome tracking and continuous improvement are particularly important when programs serve audiences with different needs and starting points.[95, 96]

Measurement is also where the framework does practical work. Reporting that a certain number of people completed AI training says little about the competencies they may have actually developed. Using the competency levels makes the outcome more specific: whether participants can understand AI, recognize its opportunities and risks and exercise appropriate judgment, use AI tools safely and assess outputs, apply AI to a use case and redesign work around it, or build and technically evaluate AI systems. This gives organizations, funders and policy makers a clearer way to assess whether training is developing the specific capabilities required for AI literacy, adoption and innovation, or technical development.

Applying the framework to program design

The following questions provide a simple test for whether a program is aligned with the framework and creates the conditions needed for participants to develop and apply the relevant competencies.

Table 8. Questions for program design

Design question	Why it matters
Which audience and setting is this for?	Recognizes that Basic AI Literacy is relevant to everyone, while the content, examples, delivery and supports should reflect the audience and setting. It also helps determine where more applied AI Innovation Skills or Deep AI Skills may be required.
Which competency level is being targeted?	Clarifies whether the program is about Basic AI Literacy, AI Innovation Skills or Deep AI Skills, and prevents different forms of AI training from being treated as interchangeable.
What should participants be able to understand or do in relation to AI?	Translates the framework into clear learning outcomes tied to the intended role, task or application. For Basic AI Literacy, this may focus on knowledge, awareness and judgment; for AI Innovation Skills, it includes applying relevant tools to specific tasks and use cases.

Design question	Why it matters
How will participants practice and demonstrate the relevant competency?	Ensures that learning includes realistic application, feedback and assessment rather than only exposure to course content. This may involve demonstrating understanding and judgment at the Basic AI Literacy level or applied practice, feedback and assessment for AI Innovation Skills.
What supports are needed beyond training?	Brings work-integrated learning, coaching, SME advisory support, templates, governance tools and wraparound supports into program design.
What organizational conditions are needed to apply the learning?	Recognizes that protected time, approved tools, clear policies, supervisor support and opportunities to apply new competencies can affect whether training contributes to adoption.
What structural barriers could block participation or adoption?	Identifies constraints that training alone cannot address, including cost, scheduling, caregiving, accessibility, language, devices and connectivity.
How are equity-deserving groups included from the start?	Moves equity, diversity and inclusion from an add-on to a design requirement across outreach, delivery, learner supports and evaluation. Inclusive digital-skills programs also need to account for variation within broad audience groups, and ensure people can access the level of AI competency relevant to their needs, circumstances and opportunities.
What outcomes will be measured and by whom?	Shifts evaluation beyond course completions to competency gains, responsible application and results for learners and organizations.
How and by whom will competency needs and program content be reviewed over time?	Addresses the fact that AI tools, risks and workplace uses will keep changing and creates a process for adapting content, delivery and assessment.

Defining competencies and creating the conditions to develop them are two halves of the same task. Relevant training, accessible supports and opportunities to practise and demonstrate learning help turn a defined competency into meaningful capability. Training alone does not guarantee adoption; people also need the organizational conditions to apply and sustain what they have learned.

Conclusion and Ways Forward

88.6%

Businesses with 1 to 19 employees alone represent 88.6% of all employer businesses.

Canada's AI adoption challenge is ultimately a capacity challenge. Access to tools matters, but lasting benefits will depend on whether people and organizations can understand where AI is being used, identify where it can create value, exercise judgment, manage risks and translate new capabilities into better work, services and outcomes.

The Diversity Institute's three-level AI Competency Framework provides a practical way to distinguish among the competencies required for AI literacy, informed participation, organizational adoption and innovation, and technical development. Its purpose is not to move everyone through the same pathway; rather, it is to help individuals, organizations, educators and policy makers identify the capabilities required for particular roles, tasks and levels of responsibility, while recognizing when additional support or specialized expertise is needed.

Apply the framework to real tasks and decisions.

Competency needs should be defined by what people are expected to understand or do in relation to AI, the information involved and people affected, and the judgment, oversight or technical capability involved. The task and level of responsibility determine the competency required, while the potential consequences shape the judgment, oversight, safeguards and technical expertise needed. The same tool can be routine in one use and consequential in another, so oversight, safeguards and accountability should reflect the consequences of getting it wrong. This will produce more useful learning outcomes than generic training organized around tools or broad job categories.

Connect competency development to adoption.

Training should include opportunities to practise and demonstrate skills, while organizations provide the time, approved tools, guidance and support needed to apply them. For SMEs, trusted intermediaries and access to external technical, legal, cybersecurity and governance expertise will remain especially important. Adoption should also be judged by what changes in the work, not by time saved alone. Capacity becomes value only when an organization decides what that capacity is for.

Design with the smallest firms in mind.

Businesses with fewer than 20 employees make up the large majority of Canadian employer businesses, and in these firms, the responsibilities associated with the three levels may be concentrated in a single person or a few people rather than distributed across specialized teams. Support for these firms must be proportionate: a defined bottleneck, an appropriate use case, training matched to the task, tool and competencies required, rules and reference documentation about what information should never be shared with an AI tool, and a way of checking whether the change is working. Supports designed around the structures and resources of larger organizations may not fit their realities.

Measure results and keep the framework current.

Success should be assessed through demonstrated competency, responsible application and outcomes for learners and organizations, not enrolment or course completion alone. Reporting against the three levels makes this concrete by showing whether people can understand AI and recognize its opportunities and risks; can select and apply relevant AI tools to specific use cases, redesign work and assess results; or can build and technically evaluate AI systems. The framework should also be reviewed regularly as AI capabilities, workplace uses, evidence and risks evolve.

Canada's advantage will depend not only on its capacity to develop AI, but also on its ability to diffuse it across businesses, institutions and communities. The measure of progress must not simply be how many people have access to AI, but whether Canadians have the literacy to understand and navigate AI, whether organizations have the skills to apply it productively and responsibly, and whether the benefits of adoption are broadly shared and accessible.



Appendix

Table A1. Additional examples of AI adoption in Canadian SMEs

Organization and context	Business problem	AI application	Reported outcome
Sands Commercial Floor Covering,[97] a Canadian commercial flooring company	High-volume manual invoice processing	AI extracts invoice data, learns different vendor formats and feeds validated information into the company's accounting workflow.	One employee manages more than 7,000 invoices annually; the company avoided adding up to two employees, and weeks of accumulated invoices can be cleared in about two days.
Fabridor,[98] a Sherbrooke-based manufacturer of cabinet doors	Repetitive sanding work, productivity and employee-retention challenges	A dual-cobot line automates repetitive medium-density fibreboard door sanding while employees supervise the process and perform other production work.	Sanding productivity increased 31% within six weeks; the same output can be maintained with 50% less labour assigned to sanding.
Ora Graphene,[99] an advanced-materials manufacturer producing graphene-based components for speakers and headphones	Labour-intensive inspection and packaging	Robotic systems automate sample weighing, inspection, photography and packaging.	Production capacity increased four-fold without an equivalent increase in labour, with reported return on investment between seven and ten months.

Organization and context	Business problem	AI application	Reported outcome
Robco,[100] a manufacturer of industrial sealing products and solutions for piping, pumps, valves and other equipment	Water loss, equipment wear and maintenance	Sensors and AI predict seal deterioration and recommend maintenance or operating adjustments before leaks or failures occur.	Up to 30% less water loss, representing more than 500,000 litres per plant per day, while extending seal and equipment life.
Projets STR,[101] a Montréal-based construction contractor	Slow construction quoting	AI-enabled construction software supports estimating and quotation.	Quoting time reportedly fell from three hours to 30 seconds, while revenue increased 2.5 times.
SearchKings,[102] a Canadian advertising agency managing online advertising campaigns for business clients	Time-intensive search-term review across client accounts	Generative AI analyzes search-term and customer data and recommends keywords to exclude; account managers approve or reject each recommendation.	Manual review fell from 20–45 minutes per account per month to about five minutes.
Macaloney's Distillery,[103] a Canadian distillery	Fragmented HR administration, payroll and employee onboarding	An integrated AI-powered HR and payroll platform supports onboarding, employee management, payroll and workforce reporting while standardizing previously inconsistent processes.	New employees can be onboarded within one business day; the company also reports saving hours across HR administration and payroll approvals, with time redirected toward one-on-ones, team development and strategy.



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