Bridging the Artificial Intelligence Gap in Small and Medium-sized Enterprises in Canada

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The Diversity Institute conducts and coordinates multi-disciplinary, multi-stakeholder research to address the needs of diverse Canadians, the changing nature of skills and competencies, and the policies, processes and tools that advance economic inclusion and success. Our action-oriented, evidence-based approach is advancing knowledge of the complex barriers faced by under-represented groups, leading practices to effect change, and producing concrete results. The Diversity Institute is a research lead for the Future Skills Centre.

The Future Skills Centre (FSC) 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 policymakers, 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, Blueprint, and The Conference Board of Canada, and are funded by the Government of Canada's Future Skills Program.

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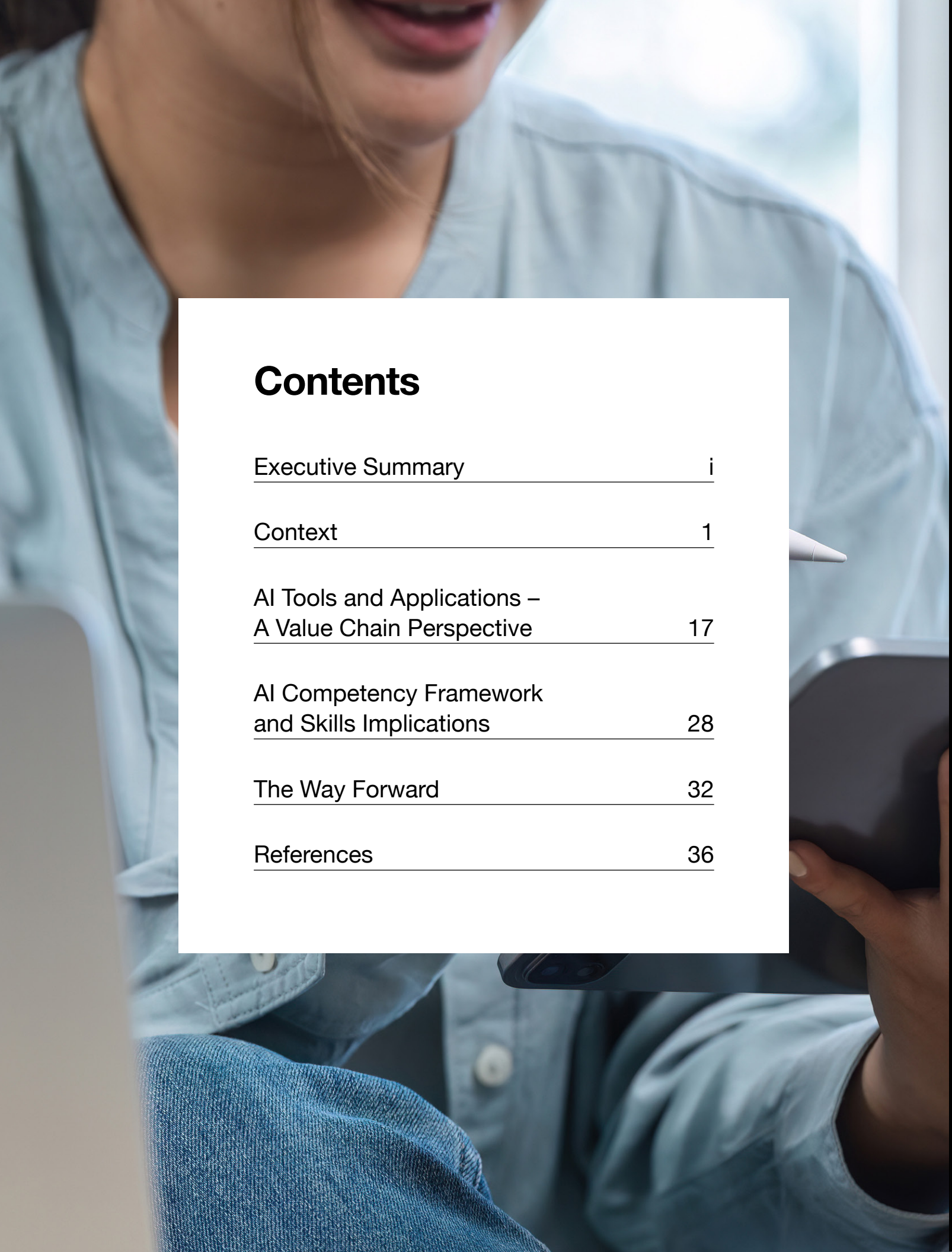

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Executive Summary

Artificial intelligence (AI) rapidly reshapes how businesses operate, offering new pathways for productivity, innovation and resilience. Canada has been a recognized global leader in AI research, talent development but there are signs that it is failing to capitalize on these advantages. Canada was among the first to present an AI strategy in 2017. The country ranks third among the G7 nations in per capita funding for generative AI companies and is home to over 670 AI startups and 30 generative AI firms. Canada's AI ecosystem is supported by $4.4 billion in government investment since 2016 and $15.3 billion in venture capital since 2013. Canada ranks fourth in the world for generative AI companies per capita but eighth in the number of newly created companies and is last among G7 countries in the amount of publicly available computational resources. As experts of innovation, it should be expected that we would also be experts in the use of AI. However, the use of AI by Canadian small and medium-sized enterprises (SMEs) is uneven. There is significant variations in the reported AI adoption rates among Canadian businesses, especially SMEs. Some studies show rapid adoption and others showing that adoption is lagging, with differences stemming from differences in how AI is defined, measured and interpreted. The results of a 2024 Business Development Bank of Canada survey indicate that 66% of SMEs use some kind of AI tool for at least one business function. While a 2025 Microsoft indicates that 71% of SMEs are using AI or generative AI. However, in a 2025 Statistics Canada survey, only 12.2% of businesses reported using AI to produce goods or deliver services. The range of numbers raises the question of how SMEs use AI and concerns that AI use by SMEs is underreported.

Helping to bridge the gap between innovation and implantation is especially important for SMEs, which represent 98% of all businesses in Canada and employ over 63% of the private sector workforce. In spite of recent gains, SMEs face the highest barriers to adoption, including limited expertise, constrained resources, regulatory uncertainty, and digital security risks, but also stand to benefit most from AI integration, particularly in the face of persistent talent shortages and productivity pressures.

This report examines the gap between AI innovation and implementation. It offers a practical roadmap for accelerating SME adoption through targeted skill development, accessible tools and stronger ecosystem supports.

Enablers and barriers to adoption

The opportunity is real and substantial: AI tools are already transforming business functions, from logistics and marketing to procurement and customer service. AI adoption among SMEs is not exclusively a technical challenge; it is also a skills and confidence challenge. Many businesses do not have access to the workforce capabilities, training infrastructure or strategic support needed to integrate AI into daily operations. Among microbusinesses, 72% rely on existing staff for AI implementation, with only 12% hiring specialized talent.

Despite the rise in demand for AI skills, fewer than one in ten SMEs report access to formal AI training. New data from the forthcoming 2025 National Survey on Skill Demands and Employment Practices in Small and Medium-Sized Enterprises shows that nearly one-half of employees who are using AI tools at work received no training, and over one-third had minimal employer guidance. This gap is especially critical for older workers: while 39% of 18-24-year-olds report being “very familiar” with AI tools, that number drops to just 5% among those aged 55+.

Beyond skills, SMEs face a wide range of barriers to adoption, including:

> Limited awareness of available tools or use cases relevant to their business

> Uncertainty around legal and regulatory compliance, especially in areas like intellectual property and data privacy

> Concerns about cybersecurity and the trustworthiness of AI-generated outputs

> Financial costs and difficulty in assessing return on investment for AI solutions

> Lack of internal champions or leadership buy-in to drive AI implementation

> Poor interoperability with legacy systems or limited digital infrastructure

Compounding these issues is the broader talent dynamic: Canada’s AI retention rate has dropped to 37.5%, and U.S. employers offer AI workers 67% higher salaries, drawing critical expertise out of the country. Research and discussions led by Canada’s National AI Institutes indicate that financial costs and investments are the most common challenges to the growth ambitions of small and medium-sized AI enterprises (AI SMEs). Other hurdles include gaining access to talent with the required skills, and identifying appropriate AI use cases. Deloitte’s State of AI in the Enterprise, 5th Edition cites insufficient funding for AI solutions, upskilling issues (especially lack of technical skills), concerns with choosing the right AI technologies and difficulty articulating the business value of AI solutions as barriers to the growth of AI enterprises globally.

Building confidence, skills and ecosystem readiness

The solution to these challenges lies beyond individual training. SMEs need applied, accessible tools and strategies, ecosystem-wide support, and a focus on confidence-building alongside skill-building. While some businesses are already experimenting with AI informally, often without clear policy guidance, this unstructured adoption risks inefficiency, security gaps and missed opportunities.

This report presents a value chain framework that maps where AI can be most effectively applied across business operations. Through real-world tools and curated use cases, it illustrates how AI can improve workflows, reduce costs and unlock innovation, even in resource-constrained environments. The goal is not to prescribe one-size-fits-all solutions, but to show the range of scalable, sector-relevant applications available to SMEs today.

To complement this, the report draws on a tiered competency framework to describe the spectrum of AI skills and competencies that SMEs need to develop, from foundational literacy to advanced expertise. A forthcoming publication will build on this analysis to introduce a new and innovative comprehensive AI competency framework designed specifically for the Canadian SME context, with detailed guidance on training, certification and workforce development.

The way forward: Inclusive, strategic and supported AI adoption

Bridging the AI skills gap is a shared responsibility. For Canada to capitalize on its AI leadership, it must ensure SMEs are not left behind. This report identifies four key priorities:

> **Diagnose and address barriers** by engaging SMEs directly, assessing readiness and using disaggregated data to design targeted interventions.

> **Deliver tailored, practical tools and embedded learning supports** that combine coaching, peer mentorship and inclusive modular training formats to foster reskilling and upskilling.

> **Pilot and iterate solutions** through demonstration projects and track real-world adoption outcomes to refine approaches.

> **Build collaborative adoption networks** that connect SMEs, training providers and policy makers through feedback loops and shared infrastructure.

With strategic investments, cross-sector collaboration and an unwavering focus on inclusive implementation, Canada can empower its SMEs to not only adopt AI, but to thrive in a rapidly transforming global economy.

Context

Artificial intelligence (AI) includes technologies like machine learning, automation, and natural language processing that are reshaping business operations. Recent advances, especially in generative AI, have made these tools more accessible, enabling even non-technical users to perform complex tasks and accelerating adoption across sectors. Despite Canada's strong foundation in AI research and talent, adoption remains uneven, particularly among small and medium-sized enterprises (SMEs) that often face financial, technical and human resource constraints. Ironically, these same firms stand to gain the most from AI, especially given growing productivity and talent pressures.

This section examines the current state of AI adoption in Canada, with a particular focus on small and medium-sized enterprises. It explores the types of AI, the persistent gap between innovation and implementation, the key drivers and barriers to adoption, and the evolving impacts on skills and employment.

Types of AI: An evolving spectrum of capability

AI has long been embedded in everyday applications, from voice recognition systems to search engines, self-driving cars, control systems and more, but the acceleration of the power and capability of AI tools coupled with dramatic reductions in cost have made AI more accessible for a broader range of applications.

The Organisation of Economic Co-operation and Development (OECD)'s updated definition of an AI system emphasizes that these capabilities differ in their autonomy and adaptiveness after deployment, a distinction that is critical for understanding both adoption and governance implications. AI outputs can be predictions, content, recommendations or decisions, which is a critical nuance for accurate adoption tracking and policy design.[1] The distinction between predictive machine learning (estimating values/classifying inputs from historical data) and generative AI (producing novel content requiring validation) is important; while these are often blended, market research on AI adoption can differ significantly depending on the types of tools being examined.

Machine learning enables systems to detect patterns, learn from data and make predictions or recommendations without being explicitly programmed.[2]

Predictive AI applications, a common use of ML, use historical data to classify, score or forecast outcomes, whether estimating customer churn, predicting inventory needs or flagging anomalies in financial transactions. Typically, these systems have been custom developed and cost prohibitive, except for larger organizations.[3]

Deep learning, a subset of ML, builds on neural networks with multiple layers to capture complex patterns in unstructured data, such as images, text and audio. These advances have made AI systems more autonomous and powerful, laying the foundation for the next major shift: generative AI.[4]

***Open access models** have facilitated rapid deployment of AI, but are **not without risks** as they provide **no protection of intellectual property** (using data to enhance learning) and are **prone to errors** and hallucinations.*

Generative AI builds on deep learning's representational breakthroughs. Generative AI emerged in the early 2010s as models that learn the structure of data and create "new" content (e.g., text, code, images, audio, synthetic data). It was officially commercially launched to consumers in 2022 by Open AI with the release of ChatGPT.[5] These models have been transformational in enabling individuals without coding skills to develop complete applications. Open access models have facilitated rapid deployment of AI, but are not without risks as they provide no protection of intellectual property (using data to enhance learning) and are prone to errors and hallucinations. As enterprise level systems emerged, some of these concerns have been alleviated.

Agentic and autonomous AI systems extend beyond generating content to planning and executing multi-step tasks, invoking external tools, maintaining context over time and adapting toward goals with minimal human oversight. In contrast to generative models, which respond to discrete prompts, agentic systems can proactively manage workflows and coordinate actions across software environments. In effect, users can create "agents" with specific characteristics and functionalities to perform recurrent tasks. For example, a small business could create an agent to manage projects, another agent to write proposals, another to process expense accounts and so on.

Autonomous systems require less human intervention and can interweave reasoning with action, deciding when to "think" and

when to “act” by using tools such as search or calculators. Emerging models coordinate multiple specialized agents, such as web browsers, coders and planners, to dynamically sequence tasks, handle failures and adapt to evolving goals. Because agentic systems can act, not just generate, organizations need explicit guardrails (e.g., permissions, audit trails, human-in-the-loop checkpoints). These guardrails help ensure that systems are safe, trustworthy and fair; they not only prevent harmful outcomes but, when grounded in equity, diversity and inclusion, also protect against discrimination and strengthen confidence in AI adoption.[6, 7]

Physical AI is the newest frontier in AI’s evolution. These are embodied systems, including industrial robots, collaborative robots (“cobots”), autonomous mobile robots and drones, that act on the physical world. Increased affordability, compact size, flexible programming and safety features that let them work alongside people are making these tools increasingly accessible.[8]

In summary, AI has progressed from broad artificial intelligence to machine learning, to deep learning, to generative AI, and now into agentic, autonomous and physical systems, each expanding possibilities and complexities. However, the pace of AI development often contrasts with its integration into everyday business practices, with adoption slowed by factors such as skills gaps, integration costs and governance readiness. These disconnects are explored in the next section.

Capitalizing on Canada’s AI leadership – creation versus adoption

Despite being a global leader in the development of artificial intelligence technologies and tools, Canada the adoption and implementation of AI remain uneven. While Canada ranks highly in AI research output and talent development, SMEs face barriers in adoption of AI tools.[9, 10, 11]

Canada has also become a leading hub for AI innovation in recent years, but there are signs that Canada is losing its edge. It ranks third among the G7 nations in per capita funding for generative AI companies and fourth globally

in the number of such firms per capita, but ranked eighth in the number of newly created AI companies in 2024.[12, 13] The country is home to over 670 AI startups, including more than 30 focused on generative AI. In 2023, over 140,000 professionals were working in AI, a 29% increase compared to the previous year.[14] Between 2022 and 2023, government investment in AI research reached $4.4 billion, with venture capital investments totalling $15.3 billion.[15, 16, 17]

Variations in reported AI adoption rates among Canadian businesses, particularly SMEs, arise from differences in how AI is defined, measured, and interpreted as well as the businesses surveyed. Some recently published studies use data from 2023 focus primarily on machine learning and reported 26% of businesses used AI. Some studies capture only specific uses. For example, Statistics Canada recently reported that 12.2% of SMEs declared having used AI "in the production of goods or delivery of services" over the 12 months preceding the survey."[18] Other studies adopt a broader view, encompassing a wider range of AI-enabled tools across business functions.[19, 20] For example, a recent study from the Business Development Bank of Canada (BDC) survey of 1,247 business owners) first asked if they used AI to which 39% of businesses said yes. However, when they provided a definition and examples of AI-enabled tools, such as automated translation services and generative AI, the proportion rose to 66%. This gap underscores concerns that AI adoption among SMEs is often underreported.[21]

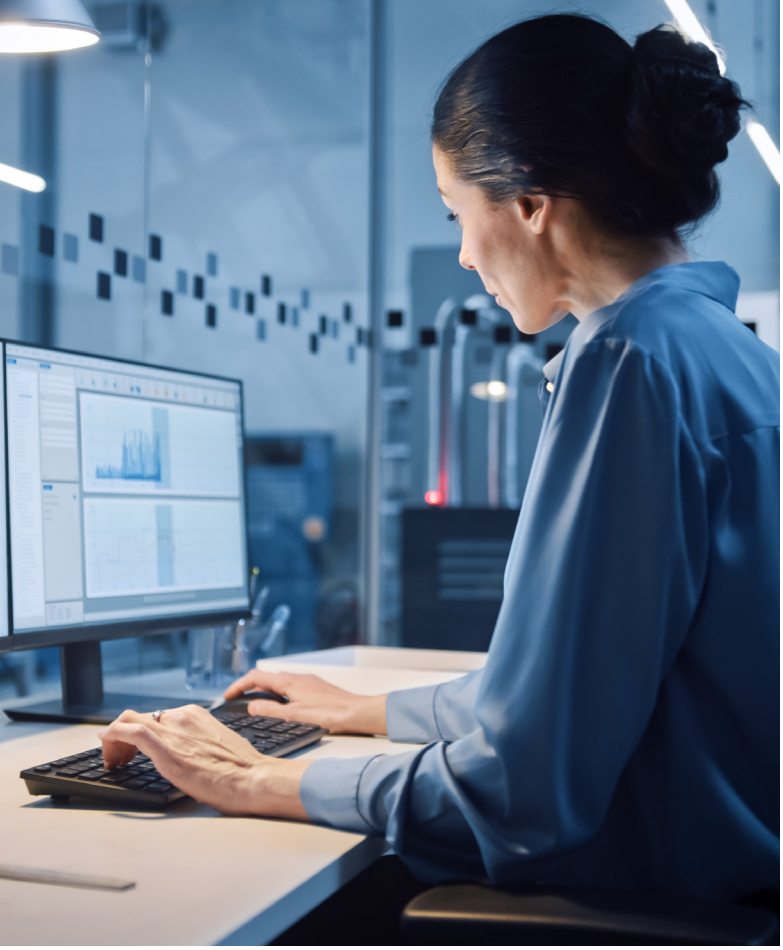
The structure of the Canadian economy means that it is essential to bridge the gap between AI innovation and adoption of AI tools by SMEs. About ***63.7% of private sector employment*** *is concentrated in SMEs, which* ***often lack the resources to meaningfully invest in AI***

Microsoft's 2025 SMB Report surveyed 300 Canadian SME decision-makers – including owners, partners, managers, and directors – who reported a 71% adoption rate.[22] Adoption rates also vary by geography (78% in urban areas compared to 55% in rural regions) and by business size (86% among larger SMEs compared to 60% among smaller ones), which further contributes to uneven reporting.[23]

The structure of the Canadian economy means that it is essential to bridge the gap between AI innovation and adoption of AI tools by SMEs. About 63.7% of private sector employment is concentrated in SMEs, which often lack the resources to meaningfully invest in AI.[24] These firms typically face barriers related to financial capacity, access to technical expertise and limited organizational infrastructure to support digital transformation. Larger SMEs are more likely to report using AI than small firms.

The current SME AI landscape presents both opportunity and risk. At least two-thirds of Canadian SMEs report using AI for at least one business function. However, a 2024 survey of SME decision makers by BDC found that only 39% initially reported using AI but this percentage grew to 66% when provided a list of AI tools. However, much current adoption remains unstructured and informal, driven by self-taught employees using consumer-grade tools. Without proper training, security protocols or organizational alignment, this pattern may generate new risks rather than sustainable gains. Meanwhile, up to 40% of SMEs may already use AI-powered tools unknowingly, particularly through features embedded in standard business software.[25]

SMEs struggle to compete for scarce and in-demand AI talent. Tight budgets limit their ability to offer competitive salaries or invest in employee training programs, further constraining their ability to scale AI initiatives. As a result, Canada's leadership in AI research and startup formation is not yet translating into broader economic diffusion.



Simultaneously, individual usage of AI is on the rise. Many workers are experimenting with AI tools, particularly generative AI, on their own initiative, often without formal organizational frameworks.[26] While this signals grassroots momentum and growing awareness, it also introduces risks related to data privacy, accountability and tool misalignment. These issues will be discussed in more detail later in the report.

Bridging the gap between AI creation and adoption will require targeted support for Canadian businesses, particularly SMEs, through applied training, accessible technologies and supportive policy frameworks. Unlocking AI's full potential will depend not just on innovation at the frontier but on making those innovations usable, scalable and beneficial across all levels of the economy.

Impact of AI on jobs

The impact of AI on jobs and skills remains the subject of ongoing debate. Once considered speculative, the issue gained mainstream attention following the landmark study by Frey and Osborne (2013), which estimated that 47% of U.S. employment was at risk of automation within 10 to 20 years.[27] This projection sparked global concern about the future of work. Since then, researchers have applied and adapted their methodology to other national contexts, including Canada. One such analysis, using census data, estimated that around 60% of Canadian workers may experience significant transformation in their roles due to AI, particularly those in occupations with high complementarity to these technologies.[28, 29]

Understanding how jobs may be reshaped by AI is essential for policy makers and industries, especially SMEs, so that skills development initiatives and adoption strategies are designed to address these transformations rather than exacerbate them.

This transformation will not affect all workers equally. A recent study found that 57% of women are employed in roles expected to be disrupted by AI adoption, compared to 43% of men. Conversely, fewer women are in positions likely to be augmented by AI (46% versus 54% of men), suggesting that automation risks are more concentrated among women workers.[30]

There are also important sectoral and regional differences also shaping disruption and opportunity. Job loss and transformation already vary significantly across industries and provinces. For example, OECD research shows that 20% of finance workers and 15% of manufacturing workers have experienced job losses due to AI, while a further 19% and 14% in those sectors remain concerned about future displacement. However, sentiment is not uniformly negative: nearly one-half of workers in both sectors report little worry about being replaced by AI.[31]

Some industry leaders have expressed concern as well. The head of one of Canada's leading AI firms, Cohere, has warned that adoption could exacerbate income inequality and lead to the proliferation of low-quality, precarious jobs.[32] However, a lot of uncertainty remains around this issue.

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Examples of AI's impact in specific sectors

Manufacturing

AI-based predictive maintenance and automation are reshaping factory floors. Routine monitoring and oversight roles are being automated, while demand is rising for AI system managers and data analysts. According to the Institute for Research on Public Policy (IRPP)'s Harnessing Generative AI report, manufacturing faces high automation risk, but new technical roles are emerging in oversight and maintenance.[33]

Retail and wholesale trade

Inventory clerks and order processors are increasingly being replaced by AI-driven systems. Meanwhile, there is growing demand for roles in digital marketing, data analytics and e-commerce optimization. Canadian SME surveys and Deloitte sector analyses indicate rising demand for digitally fluent managers and marketing professionals.[34]

Finance and insurance

Automation of underwriting, fraud detection and customer service is shifting job functions across the financial sector. Entry-level and clerical positions are being replaced by AI systems, while new opportunities arise in AI oversight, compliance and ethical risk governance. Manulife Financial Corp. and Royal Bank of Canada are expanding their use of AI tools to more employees.[35, 36] The PwC Global AI Jobs Barometer and recent IRPP studies highlight increased hiring of AI auditors, data scientists, and financial analysts trained in AI model validation and supervision.[37]

Health care

AI's integration in health care is accelerating, particularly in diagnostics, patient record management, and workflow optimization. While some administrative roles are being reduced, new positions are emerging in health informatics, clinical AI integration and telemedicine. Reports from DigitalDefynd (2025) and IRPP emphasize the need for upskilling among clinicians and administrators as health care systems adopt AI to enhance service delivery and patient engagement.[38]

Employer expectations and firm-level evidence

While these transformations are unfolding at the sector level, firm-level data offers additional insight into how businesses are navigating the employment impacts of AI adoption. Data from Statistics Canada's Canadian Survey on Business Conditions further illustrates this complex dynamic.

Among 9,031 businesses using AI, 69.2% reported no expected change in employment levels.[39, 40] Only 9.4% anticipated job reductions. Larger firms (100+ employees) were more likely to forecast workforce declines (11.8%), while smaller businesses more likely to expect workforce growth.

As with most technological revolutions, the trajectory of change is evident, but its pace and full impact remain difficult to predict. After years of gradual progress in machine learning, the rapid advancement of generative AI has sharply accelerated adoption across industries. This shift is reshaping workflows, redefining roles, and challenging long-standing assumptions about the future of work. The following sections of this report explore these developments and their broader implications in greater detail.

Drivers and barriers to adoption

Across Canada, SMEs are awakening to AI's transformative potential. AI technologies promise enhanced productivity, streamlined operations and significant competitive advantages. However, despite this growing awareness and emerging success stories, adoption patterns remain stubbornly uneven, particularly among smaller firms. This section examines the compelling drivers motivating SME interest in AI and the complex web of barriers that continues to constrain widespread implementation.

Recognized benefits driving interest

The business case for AI adoption has never been clearer. A comprehensive 2024 OECD survey spanning over 5,000 workers and 2,000 firms across seven countries, including Canada, reveals overwhelmingly positive AI experiences. Findings from the Survey on Employment and Skills conducted by the Diversity Institute and Environics show that workers who use AI programs at work generally report positive impacts on productivity and creativity. Nearly four in five respondents said AI makes them at least "a little more productive," with 47% saying it makes them a little more productive and 31% reporting they feel a lot more productive. Similarly, 66% reported feeling more creative when using AI tools, with 35% saying they were a little more creative and 31% saying they were a lot more creative.[41]

Beyond individual productivity, several macro trends are accelerating adoption interest. These include AI tools becoming more accessible (46% of respondents), mounting pressure to reduce costs through automation (46%) and AI's integration into everyday business software (34%).[42]

The economic projections are staggering. Generative AI and related innovations could inject up to $187 billion into Canada's economy by 2030. This technological shift promises to boost national labour productivity by 8% over the same period, with sustained gains averaging 1.5% annually through the 2030s.[43, 44] For SMEs specifically, the opportunity is particularly compelling: generative AI could generate up to $100 billion in annual economic value by decade's end.[45]

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Barriers to adoption among small and medium-sized enterprises

SMEs lack the capacity, resources and expertise to drive technology adoption, and AI is no exception.

Understanding the link to organizational goals and priorities

Many SMEs struggle to envision AI's relevance to their operations, or their link to organizational goals and objectives. Nearly 70% of companies cannot identify how AI might address their unique challenges.[46] Recent data from the forthcoming Diversity Institute and Memorial University 2025 National Survey on Skill Demands and Employment Practices crystallizes this issue. Among non-adopting SMEs, the most common explanation is not cost or complexity; it is simply "lack of perceived need."[47] This response signals a profound awareness gap. Many SMEs, particularly in traditional sectors, remain unaware of AI applications relevant to their workflows and business models.

The trust deficit

Even where awareness exists, trust remains elusive. Persistent mistrust of AI's "black box" decision-making, combined with ongoing legal and ethical uncertainties, continues hampering progress. About 20% of Canadian businesses cite ethical concerns as direct adoption barriers.[48]

A Leger survey of 1,628 Canadians found pervasive concerns about AI: 84% worry about privacy implications, 79% fear job displacement, 78% perceive ethical issues, and 73% anticipate fraud and hacking vulnerabilities.[49] Business leaders share these anxieties: 27% are concerned about ethical risks, while 20% fear AI adoption could undermine leadership credibility.[50]

Findings from the Survey on Employment and Skills from the Diversity Institute and Environics indicate that, according to respondents, new technologies are creating more challenges than they are resolving, and this perception is growing, as highlighted in Figure 1 below.[51]

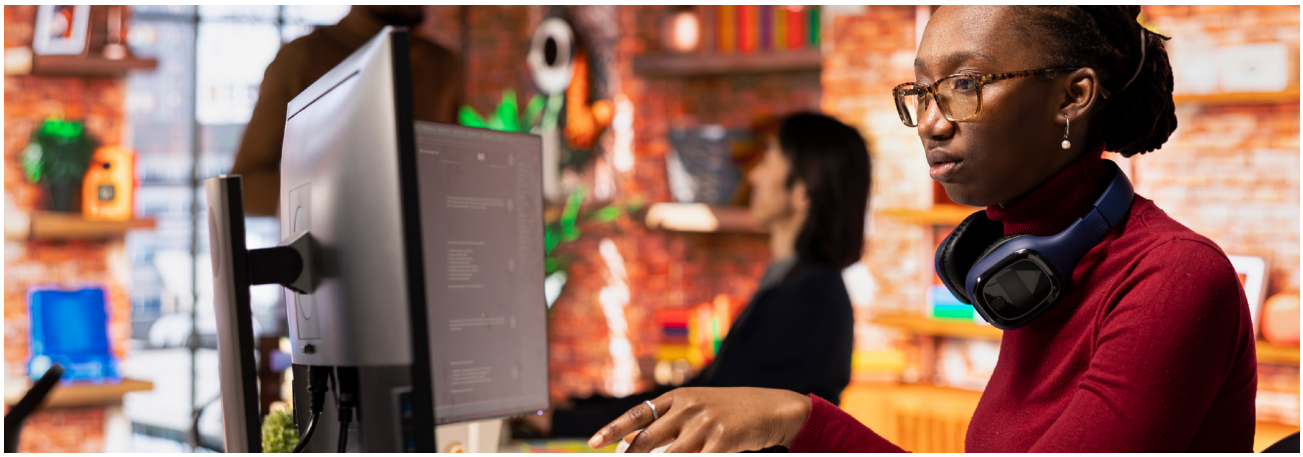
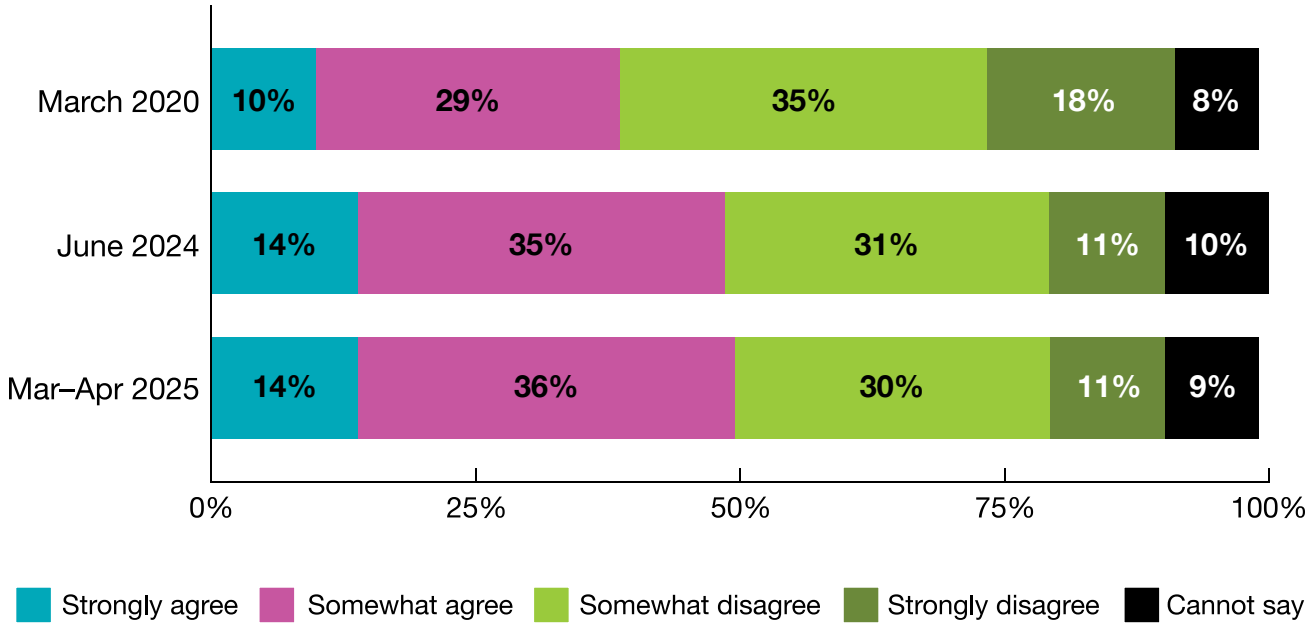


Figure 1

New technologies are causing more problems than they are solving



Source: Environics Institute. (Forthcoming 2025). Survey on Employment and Skills: Wave 8. [Environics & DI Calculations].

Workplace surveillance compounds these concerns. Among employees subject to AI monitoring, 81% report feeling inappropriately watched, and nearly one-third describe their mental health as fair or poor. However, the picture is not entirely negative: 49% believe AI monitoring enhances workplace safety, and 46% see its potential for deterring inappropriate behaviour.[52]

Economic barriers: Capacity constraints and resource limitations

Unlike larger organizations with dedicated IT departments and specialized roles, smaller firms must rely on existing employees to wear multiple hats, often adding AI evaluation and implementation to already full workloads.

Research reveals the extent of this challenge: 72% of micro businesses rely exclusively on existing staff for AI implementation, compared to just 19% engaging external consultants and 12% hiring specialized talent.[53] This places enormous pressure on employees to manage complex AI systems without formal training or added support. The capacity gap becomes starkly apparent when analyzed by firm size. While there is a range of numbers, large firms consistently report higher AI adoption rates than mid-sized, small businesses and micro enterprises 26%.[54, 55] These smaller firms often lack basic human resources and IT infrastructure to even begin exploring AI options systematically.

The reliance on existing staff would be manageable if accompanied by robust training and support systems. However, workplace data from the Survey on Employment and Skills reveals a troubling training gap.[56] Nearly one-half of employees using AI tools at work report receiving no training, while over one-third are figuring out how to use these tools with minimal employer guidance. This creates significant potential risks when employees get ahead of their employers.

Cost pressures and resource constraints

Financial barriers extend beyond initial technology costs. SMEs face substantial additional expenses for integration, training, and change management. For micro and small businesses operating on thin margins amid inflationary pressures, discretionary AI investments become difficult to justify.[57]

The talent retention challenge

AI expertise has become the most sought-after capability across industries, creating intense competition for qualified professionals. This demand exacerbates existing tech skill shortages, making it increasingly difficult to find professionals with current AI implementation and management expertise.[58]

Canadian firms face particular disadvantages in this global talent war. Startups and scale-ups compete against U.S. employers offering higher salaries, larger research budgets, and more robust support for experimental AI initiatives. The numbers tell the story: despite strong domestic talent production, Canada's AI retention rate has plummeted from 50% in 2019 to just 37.5% today, with professionals earning an average of 67% less than their U.S. counterparts.[59]

Regulatory complexity and compliance concerns

Legal uncertainty remains a significant barrier to AI adoption among Canadian SMEs. KPMG research shows that 60% of Canadian companies identify regulatory compliance as a key obstacle, significantly higher than the global average of 44%.[60] SMEs, lacking dedicated legal resources, struggle with intellectual property questions, AI-generated content rights and evolving data governance requirements.

Compounding these challenges are cybersecurity concerns, which intersect closely with legal and regulatory risks. AI systems can introduce new vulnerabilities, from data breaches to unauthorized access.

The risk of flawed or biased AI outputs adds another layer of concern, especially for SMEs in sectors where errors carry substantial financial, legal or reputational consequences.

Recent OECD data highlights the magnitude of this issue. Two out of three SMEs do not have robust digital security practices in place. Only 27% of SMEs have either a robust (16%) or advanced (11%) digital security framework, while 9% have no security measures at all. The share of SMEs reporting security breaches doubled to 32% over the past year. Most rely on basic protections like secure passwords (68%) and two-factor authentication (67%), with limited adoption of advanced safeguards such as third-party security audits and ongoing staff training.[61]

Resource constraints often push SMEs toward free or basic AI tools, which may expose them to heightened security and intellectual property risks. Without targeted legal and cybersecurity advisory support, many SMEs must navigate a complex, fast-evolving landscape largely on their own, leaving them vulnerable to costly consequences.[62]

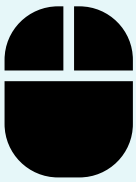
Representation and advocacy imbalances

AI policy development tables tend to be dominated by large players. Public discourse, funding programs, and regulatory initiatives continue focusing primarily on large enterprises. In the United States, over 80% of corporate perspectives in the Senate's AI Insight Forum came from Big Tech companies that collectively spent US$76 million on lobbying efforts.[63] In Canada, while there are restrictions on lobbying, the advocacy scene is not much different.

Infrastructure limitations

Despite Canada's vibrant AI ecosystem, infrastructure readiness lags significantly. The country ranks sixth among the G7 nations in overall AI infrastructure, placing last in supercomputer access and computing speed, and second-to-last in Internet speed.[64, 65, 66]

Only through such coordinated action can Canada bridge the gap between AI's promise and its realization across the full spectrum of Canadian businesses. With skills at the heart of the solution, the next section explores how evolving talent demands are shaping the future of work, while also presenting new challenges that must be addressed.



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AI skills

AI skills are rapidly becoming essential for workforce participation. According to Microsoft and LinkedIn's 2024 Work Trend Index, 66% of business leaders say they would not hire someone without AI skills, and 77% of executives view AI as the most impactful emerging technology for enhancing productivity and collaboration.[67, 68] Much like Microsoft Office proficiency became a baseline in the early 2000s, AI literacy is now emerging as a foundational competency in today's digital economy across sectors and occupations.

Growing demand across skill levels

In Canada, demand for core/deep AI skills rose by 37% between 2018 and 2023. Survey findings from the 2025 National Survey confirm this trend, with SMEs identifying digital, communication and adaptability skills as the most in-demand over the next three years. Notably, digital skills, closely tied to AI adoption, were cited by 10% of respondents as their top future skill need, while only 31% of SMEs could articulate specific skills needed.[69]

The market is placing growing value on these skills: workers with AI-related competencies earned a 56% wage premium in 2024, up from 25% in 2023.[70]

While technical roles such as data scientists, machine learning engineers and AI researchers remain crucial, especially in startups and firms building proprietary AI tools, there is also growing demand for non-technical professionals who can effectively apply off-the-shelf AI tools to business problems.[71, 72, 73]

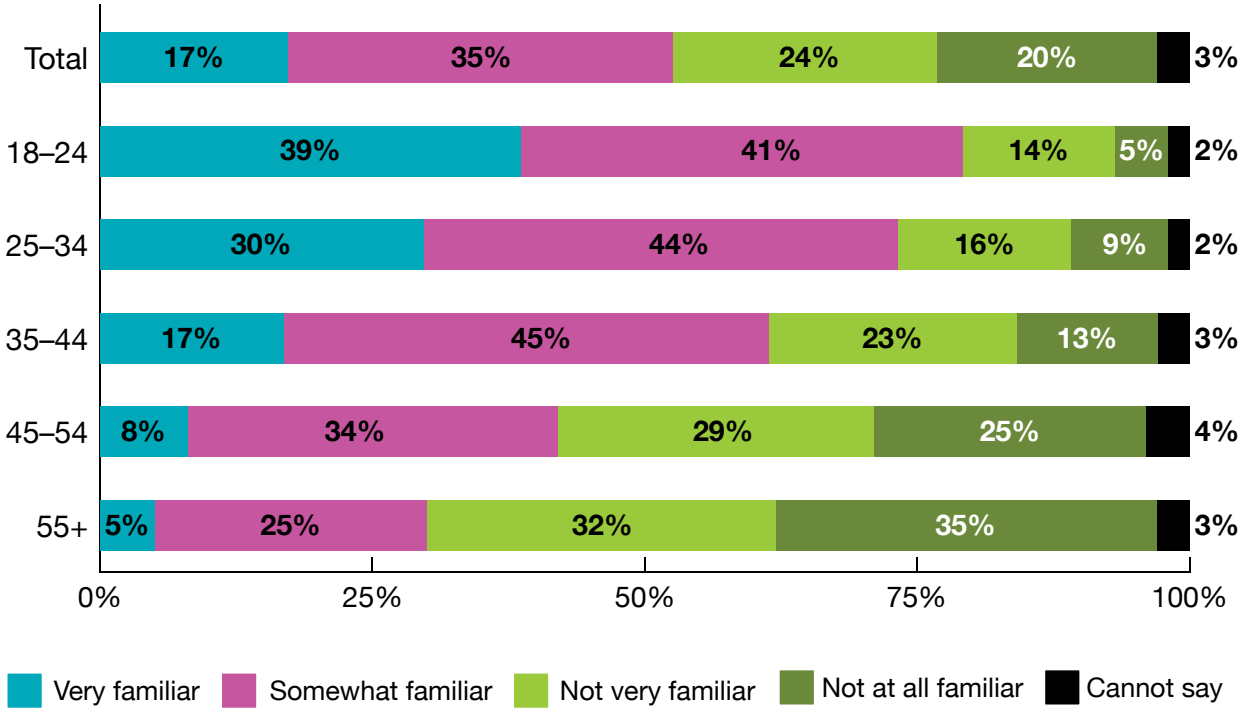
These "bridging" or "hybrid" roles require AI adoption or innovation skills: the ability to match tools to organizational needs, solve real problems and manage risks. Baseline AI literacy is no longer optional; it is critical for navigating emerging opportunities and risks across sectors.[74]

Uneven familiarity and adoption gaps

AI literacy remains uneven across demographic groups. Data from the Survey on Employment and Skills (2025) shows that only 17% of Canadians report being very familiar with AI tools like ChatGPT or Copilot in the workplace, while 20% say they are not familiar at all (see Figure 2 below).[75] This gap is particularly sharp among older workers: just 5% of respondents aged 55 and over reported being very familiar with AI tools, compared to 39% of those aged 18-24.

Figure 2

How familiar would you say you are with artificial intelligence programs that people can use in the workplace?



Source: Environics Institute. (Forthcoming 2025). Survey on Employment and Skills: Wave 8. [Environics & DI Calculations].

Note: Full question read as follows: How familiar would you say you are with artificial intelligence programs that people can use in the workplace? Some examples of these AI programs are chatbots like ChatGPT or Bing Chat, image generators like Midjourney or Sora, content creation tools like Jasper or Copy-ai, or coding assistants like Copilot.

Compounding this challenge, AI adoption in the workplace is outpacing the development of training policies and internal guidelines. Employees are already experimenting with AI tools, often without direction from leadership. If organizations do not act quickly to set policies and provide structured training, they risk losing control over how these tools are used, making future integration more difficult.

Interestingly, data reveal a correlation between greater familiarity with AI tools and heightened concern about job automation. While this may seem counterintuitive, similar patterns have been observed in other jurisdictions, such as the United States. However, these findings should be interpreted with caution. The meaning of "familiarity" remains unclear; respondents may equate it with usage,

exposure or simply media awareness. Given ongoing public discourse about job loss, misinformation and the risks of generative AI, further research is needed to better understand how people experience and interpret AI in the workplace.[76]

This challenge is especially acute for SMEs, which face systemic barriers such as lower productivity, limited training capacity and difficulty attracting specialized talent. Without access to skilled workers and training infrastructure, SMEs risk falling further behind, not just in AI adoption but in overall competitiveness.[77, 78, 79]

A deeper examination of skill tiers, competencies, and the pathways needed to build capacity across Canada's SME ecosystem is provided in a dedicated section later in this report.

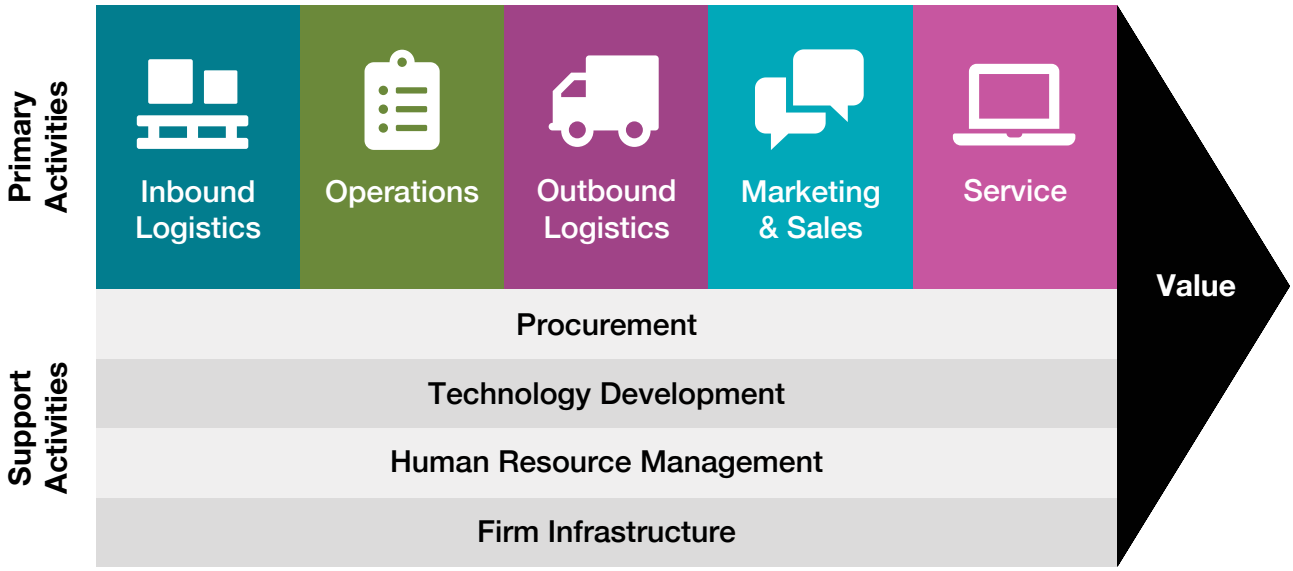
AI Tools and Applications – A Value Chain Perspective

Artificial intelligence is rapidly reshaping the business landscape.[80] While often associated with large corporations or technology firms, AI is increasingly accessible to SMEs, offering tools to streamline operations, improve decision-making and drive innovation.[81] From logistics and marketing to recruitment and customer service, AI can enhance activities across the entire value chain.

This section illustrates how AI can be applied across each stage of an SME's value chain. It highlights practical opportunities in both primary activities (e.g., logistics, operations, marketing, customer service) and support functions (e.g., procurement, HR, infrastructure).

Figure 3

AI Across the value chain



Each area is accompanied by examples of AI tools currently in use (summarized in Table 1 for convenience). These AI tools adapt and more enter the market regularly. The examples provided are meant to show the use case, not to endorse any specific tools over others.

Table 1

Summary table – Illustrative AI applications across the SME value chain

Value Chain Activity	Example AI Applications	Potential Benefits
Inbound Logistics	> AI forecasting for supplier deliveries > Computer vision for materials inspection > Automated inventory classification	> More reliable supply > Fewer stockouts and overstock > Reduced defects
Operations	> AI-driven production scheduling > Predictive maintenance > Process optimization using machine learning	> Greater efficiency and throughput > Lower downtime > Consistent product quality
Outbound Logistics	> Route optimization algorithms > Real-time delivery tracking > Automated dispatch scheduling	> Faster deliveries > Reduced transportation costs > Better on-time performance
Marketing and Sales	> Generative AI for personalized campaigns > Predictive analytics for lead scoring > AI-powered dynamic pricing strategies	> Higher engagement and conversion > More effective targeting > Optimized revenue
Service	> AI chatbots for customer support > Sentiment analysis of feedback > Automated ticket triaging	> Faster resolution times > Increased customer satisfaction > Proactive issue detection
Procurement	> Smart contract analysis > Supplier risk assessment > AI-assisted spend analytics	> More reliable sourcing decisions > Lower compliance risk > Improved negotiation leverage
Technology Development	> AI-assisted product design > Machine learning for R&D insights > Simulation of prototypes using generative models	> Faster innovation cycles > Reduced development costs > Better product-market fit
Human Resources	> AI-assisted recruiting and screening > Predictive retention and turnover models > Chatbots for employee onboarding	> Improved hiring outcomes > Lower attrition > Faster onboarding processes
Firm Infrastructure	> AI-enabled cybersecurity monitoring > Automated compliance checks > AI-powered performance dashboards	> Stronger data security > Reduced risk exposure > Better decision-making visibility

AI in primary activities

Inbound logistics

AI transforms inbound logistics by enabling predictive demand management, intelligent inventory optimization, and proactive supplier coordination.

Key AI applications: AI enhances supply chain coordination by optimizing order processing, inventory tracking and raw material procurement. Intelligent systems can forecast demand, identify delays and automate stock replenishment, helping SMEs reduce waste, lower holding costs and improve operational resilience.[82]

Example of tools:

> **Kinaxis:** Provides comprehensive demand forecasting and logistics optimization, particularly valuable for SMEs managing complex supply chains with multiple suppliers and variable demand patterns.

> **Flexe:** Offers AI-driven warehousing and distribution solutions that help SMEs respond to fluctuating demand without needing to invest in permanent infrastructure.

> **Toolio:** Enables predictive inventory allocation based on historical sales trends, helping businesses manage purchasing decisions and stock distribution across channels.

> **Cisco IIoT:** Allows SMEs to deploy smart sensors and edge-connected devices for monitoring temperature, pressure or fill levels in real time, especially useful in agriculture and resource-dependent industries.

> **Zapier:** Automates reordering and integrates supply chain software systems.

To get started, SMEs can implement forecasting tools that integrate with existing enterprise resource planning systems, then expand to include supplier performance monitoring and automated reordering systems.

Operations

AI revolutionizes operations through predictive maintenance, quality assurance automation and intelligent resource allocation.

Key AI applications: Within core operations, AI is used to automate repetitive tasks, improve quality assurance and predict equipment failures before they disrupt production.[83,84] Predictive analytics and machine learning help businesses optimize workflows, manage uncertainty and allocate resources more efficiently.[85] This enables SMEs to increase throughput while reducing operational risks.

Example of tools:

> **Microsoft Copilot:** Integrates across Office tools and operational systems, assisting with task automation, reporting and resource management.

> **Landing AI:** Specializes in visual inspection automation using customizable AI models that require minimal training data for defect detection.

> **AlwaysAI:** Enables deployment of AI models for anomaly detection and inventory tracking through edge devices.

> **Vention:** Enables SMEs to design, simulate and deploy automated production lines with minimal coding.

> **Azure Percept:** Provides AI-powered environmental monitoring for factory floors.

> **AWS Panorama:** Enhances industrial safety and quality through AI analysis of camera feeds.

> **NotionAI:** Assists operations teams with planning documents, standard operating procedures and shift schedules. Good for centralizing updates and making procedures searchable and consistent.

> **Otter.ai:** Transcribes and organizes internal meetings or operational reviews. Helps teams track follow-ups and decisions, improving accountability and workflow coordination.

> **Lightspeed Commerce:** Optimizes retail and food operations via sales trends and inventory analysis.

These tools offer SMEs powerful entry points to modernize operations while reducing risks and increasing throughput.

*Predictive analytics and machine learning **help businesses optimize workflows**, **manage uncertainty** and **allocate resources more efficiently**. This enables SMEs to increase throughput while reducing operational risks.*

Outbound logistics

AI optimizes outbound logistics through intelligent routing, automated documentation processing and real-time shipment coordination.

Key AI Applications: AI applications in outbound logistics include real-time shipment tracking, delivery route optimization and automated freight audits. These tools improve accuracy and communication with logistics partners, helping SMEs meet customer expectations for speed and transparency, even with limited distribution infrastructure.[86]

Example of tools:

> **Flexe:** Provides on-demand warehousing and logistics using AI to forecast needs and optimize distribution, particularly valuable for SMEs with fluctuating demand.

> **Google Gemini AI (via Vertex AI):** Extracts and validates logistics data from documents like bills of lading or invoices. Reduces manual data entry and ensures that shipments are recorded accurately and promptly.

> **Zapier:** Connects delivery systems (e.g., Shopify, inventory tools) to send customer updates, auto-generate shipping labels or flag fulfillment delays. Streamlines outbound workflows for SMEs shipping physical products.

These tools help SMEs scale their logistics capabilities and handle higher freight volumes without proportional increases in administrative overhead.

Marketing and sales

AI enables hyper-personalized marketing campaigns, intelligent lead scoring and automated content generation at scale.

Key AI Applications: Generative AI is rapidly transforming marketing by enabling businesses to personalize content, segment audiences and automate campaign execution at scale.[87] For instance, platforms like Salesforce use embedded AI to track customer behaviour, recommend next-best actions and manage sales pipelines. By leveraging these tools, SMEs can engage customers more effectively and respond dynamically to market shifts.

Example of tools:

> **Salesforce Einstein:** Provides comprehensive sales prediction, lead scoring and campaign personalization.

> **Jasper:** Automatically generates marketing content (e.g., blogs, social posts, emails) tailored to target audiences, enabling SMEs to run content campaigns without needing a dedicated marketing writer.

> **Adobe Firefly:** Generates visuals and ad creatives based on simple prompts. Enables small teams to produce high-quality graphics without hiring designers.

> **Apollo.io:** Combines a sales contact database with email automation and analytics so that SMEs can quickly launch outreach campaigns and track prospect engagement.

> **Surfer SEO:** Guides SMEs on how to write website content that ranks higher on search engines. Ideal for firms with limited SEO expertise who want to boost visibility.

> **Runway:** Offers video editing with AI tools for trimming, enhancing or auto-generating content. Useful for SMEs producing product explainers or ads on a budget.

> **Storydoc:** Converts traditional sales decks into interactive, AI-enhanced presentations. Helps SMEs pitch to clients more effectively and track engagement with shared links.

> **Smart Write:** Assists with marketing messaging and outbound communications. Particularly helpful for SMEs without a dedicated comms or brand team.

These tools give SMEs the ability to engage customers more effectively and respond to dynamic market demands with professional-grade content and insights.

Customer service

AI transforms customer service through 24/7 automated support, predictive issue resolution and personalized customer experiences.

Key AI Applications: Chatbots and virtual assistants powered by natural language processing are now essential tools for SMEs delivering 24/7 customer support. These systems analyze customer queries, deliver instant responses and escalate issues when needed, freeing up human agents for more complex tasks.[88] AI also enables predictive service by anticipating customer needs based on past interactions, improving satisfaction and retention.[89, 90]

Example of tools:

> **ChatGPT:** Enables conversational support, message drafting and summarization for faster responses.

> **Zendesk Advanced AI:** Automatically routes tickets, suggests responses and identifies urgent cases. Reduces customer wait times and manual triage work for small support teams.

> **Help Scout:** Summarizes customer emails, suggests tone-consistent replies and helps agents write more clearly and empathetically. Good for SMEs who want to humanize digital support.

> **Ada:** A Canadian-developed chatbot platform with strong customer resource management integration and scalability. Enables SMEs to deliver automated responses while maintaining personalization.

> **Tidio:** Delivers multichannel live chat and automation across platforms like Messenger, Instagram and email.

> **Freddy AI (Freshdesk):** Helps businesses build AI-powered knowledge bases and chatbots. Ideal for deflecting repetitive inquiries and freeing agents for more complex issues.

> **Kustomer:** Centralizes customer data and enables AI-driven personalization. Enhances loyalty by helping agents see the full context of each customer's journey.

> **Gorgias:** Built for e-commerce brands to unify service across Shopify, email and messaging platforms.

These tools allow SMEs to maintain service quality at scale while freeing up human agents for high-value, relationship-driven support.

Across the primary value chain activities, AI enables SMEs to operate with greater speed, precision, and scalability. Whether streamlining inventory, improving customer response times, or accelerating marketing campaigns, these examples show that AI can deliver real business value even in resource-constrained environments. However, the impact of AI in these areas often depends on enabling conditions (e.g., access to skilled staff, reliable data infrastructure, intelligent back-office systems) that are supported by strategic investments in procurement, HR and technology. The next section examines these foundational support activities that make AI adoption possible across the business.

AI in support activities

While primary activities directly create value for customers, support activities play a critical role in enabling and sustaining AI adoption across the business. From sourcing smarter to building internal capabilities, these foundational functions make innovation possible.

Procurement

AI enhances procurement through supplier risk assessment, price optimization and automated vendor management.

Key AI Applications: AI helps SMEs navigate volatile supply chains by extracting insights from structured and unstructured data, forecasting price fluctuations and flagging supplier risks. This is especially important for businesses sourcing green materials or managing carbon emissions. AI tools also assist in strategic sourcing by evaluating supplier performance and automating vendor onboarding.[91]

Example of tools:

> **Kinaxis:** Forecasts supply and demand trends to help procurement teams make proactive purchasing decisions. Enables better timing, minimizes overbuying and strengthens supplier coordination in volatile markets.

> **Zapier:** Automates procurement workflows by connecting systems like approval chains, inventory trackers and finance platforms. Reduces time spent on manual handoffs or document routing.

> **ChatGPT:** Assists with drafting supplier communications, summarizing vendor contracts or interpreting complex procurement policies. Speeds up knowledge tasks and internal documentation.

These tools can help SMEs move beyond reactive purchasing by embedding intelligence into their supplier coordination and planning processes.

Technology development

AI democratizes innovation by allowing non-technical staff to contribute to software development and enabling advanced analytics through user-friendly tools.

Key AI Applications: In product and service development, AI enhances prototyping, user testing and customer feedback analysis.[92] Platforms like Lightspeed POS use AI to streamline multi-location operations, accounting and workflow management. Tools such as natural language processing and sentiment analysis help businesses improve offerings based on real-time user insights. Importantly, AI is enabling non-technical staff to contribute to software development, expanding innovation capacity within smaller firms.[93,94]

Example of tools:

> **Claude Opus 4:** A versatile assistant for generating long-form content, writing software code or automating multi-step digital tasks. Helps teams accelerate prototyping and internal tool development.

> **Replit Ghostwriter:** An embedded coding assistant that suggests, autocompletes and explains lines of code. Ideal for teams building applications or customizing open-source tools.

> **Perplexity AI:** Synthesizes technical research, generates citations and helps teams validate findings. Supports knowledge-heavy tasks like benchmarking or evaluating competing technologies.

> **Edge Impulse:** Simplifies the development of machine learning models for embedded systems like sensors, wearables or edge devices. Speeds up the path from data collection to deployed prototype.

> **Weights and Biases:** Tracks and compares AI model training sessions. Ensures code and model reproducibility, which is essential for scaling and maintaining high-quality software.

> **Google NotebookLM:** Organizes and connects research documents, meeting notes, and references into a searchable knowledge base. Useful for managing evolving product specs or testing logs.

> **Le Chat Enterprise:** A platform for building custom AI agents that span planning, development and deployment tasks. Useful for managing multi-stage projects or data pipelines.

> **Mistral Medium 3:** Offers fast, open-weight language modelling for teams developing tailored natural language interfaces or analytics.

> **Devstral:** An open-source AI agent that supports software engineering workflows, such as planning sprints or debugging.

> **Qodo:** Helps enforce code quality, structure and documentation standards. Particularly valuable when collaborating across distributed or rotating teams.

These tools expand the innovation capacity of SMEs by reducing reliance on large internal dev teams and accelerating iteration cycles.

Human resource management

AI transforms HR through bias-reduced recruitment, intelligent workforce planning and personalized employee development.

Key AI Applications: AI-driven hiring platforms can reduce bias and improve the recruitment of diverse candidates, including newcomers, racialized individuals and Indigenous youth.[95] AI also plays a key role in workforce planning, matching employee skills with evolving business needs, identifying training gaps, and promoting equitable advancement opportunities.[96, 97] Tools like voice recognition and adaptive training modules promote accessibility and inclusive learning, enhancing equity within the workplace.[98, 99]

*AI-driven hiring platforms can **reduce bias and improve the recruitment of diverse candidates**, including newcomers, racialized individuals and Indigenous youth. AI also plays a key role in **workforce planning**, matching employee skills with evolving business needs, identifying training gaps, and promoting equitable advancement opportunities.*

Example of tools:

> **Eightfold AI:** Matches candidates to job openings using deep learning models based on skills and career potential. Improves talent acquisition outcomes and supports diversity in hiring pipelines.

> **Lattice:** Tracks employee performance, engagement and development goals through AI-driven analytics. Helps HR leaders identify growth needs and align with business objectives.

> **Grammarly:** Polishes internal communications, reviews HR policy drafts and ensures tone consistency. Supports inclusive, professional and effective writing across employee touchpoints.

> **Synthesia:** Creates professional training videos with digital avatars and voiceovers. Speeds up onboarding and supports multilingual, accessible learning experiences.

> **Rippling:** Combines payroll, onboarding and benefits management in a unified system with AI-powered automation. Reduces HR overhead and improves process reliability.

These tools allow SMEs to implement scalable, inclusive and effective HR strategies, even with lean HR teams.

Firm infrastructure

AI enhances firm infrastructure through intelligent financial planning, automated compliance monitoring and enhanced digital security.

Key AI Applications: AI supports strategic decision-making by improving forecasting, financial planning, and compliance monitoring. It can streamline internal processes (e.g., expense reporting, payroll management, digital recordkeeping) freeing up time for higher-value activities. In addition, AI enhances digital security and infrastructure management, helping SMEs protect sensitive data and comply with regulatory standards at lower cost.[100]

Example of tools:

> **UiPath:** Comprehensive robotic process automation platform for automating repetitive tasks like invoice processing and data entry.

> **RBC (Nomi, Aiden):** Offers AI-driven budgeting and financial insights through banking platforms. Helps with cash flow tracking, savings recommendations and revenue forecasting.

> **ChatGPT:** Supports internal documentation, policy summaries, meeting note drafting and team communications. Provides fast, on-demand support for administrative tasks across departments.

These tools help SMEs scale internal systems without expanding headcount, making it easier to maintain compliance and reduce costs.

Together, these support activities form the foundation that enables effective AI adoption across the value chain. For example, smart procurement systems ensure timely access to materials for AI-optimized operations; AI-enabled HR platforms build the skills needed to use AI tools across departments; and automated infrastructure supports secure, scalable workflows. When integrated strategically, AI in support functions not only enhances internal efficiency but also unlocks greater value in logistics, marketing and customer engagement.

In summary, the applications of AI continue to evolve. Unlike traditional automation, which primarily affected low-skill, repetitive tasks, AI is now reshaping work that requires decision-making, creativity, and problem-solving.[101] From predictive analytics and natural language processing to generative tools, AI technologies are unlocking new efficiencies and transforming how organizations create value. To stay competitive and relevant in this rapidly changing landscape, SMEs must familiarize themselves with available tools and technologies.

AI Competency Framework and Skills Implications

While the previous section demonstrated how AI can drive productivity and innovation across the SME value chain, translating these opportunities into measurable impact depends on cultivating the right skills and capabilities. Even the most accessible AI tools require a workforce equipped with the knowledge, confidence and practical competencies to integrate them effectively. Building on the earlier discussion of the drivers and barriers to AI adoption, as well as the skills gaps, this section explores the evolving landscape of AI skills in Canada. It introduces a tiered framework that categorizes the spectrum of proficiency SMEs require today and lays the foundation for a forthcoming report, which will present a comprehensive national AI competency framework to guide training, certification and workforce development.

Clarifying skill pathways

To help illustrate the diversity of AI-related skill needs, it is helpful to distinguish between different tiers of proficiency. A commonly used framework (see Figure 3) organizes AI skills into three broad categories:

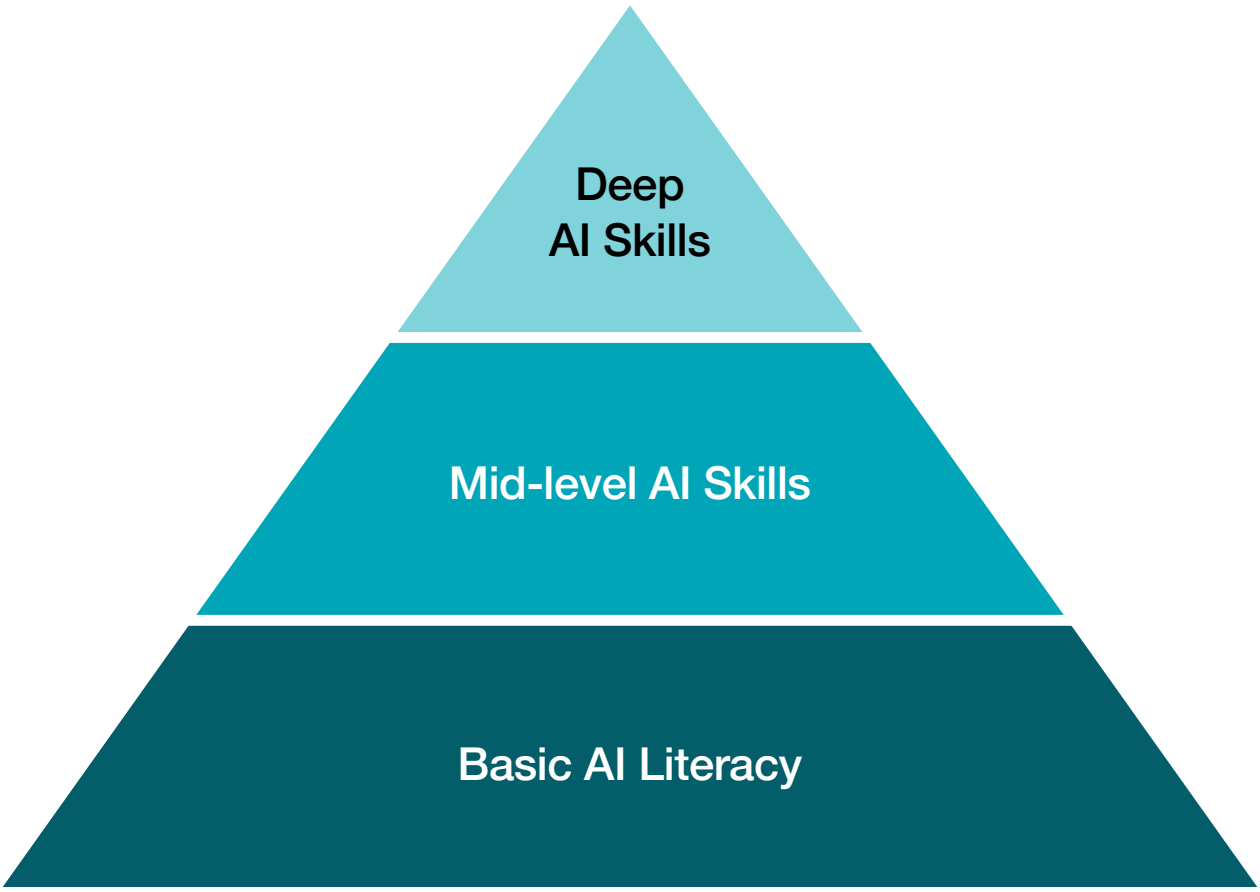
> **Basic AI literacy—**Knowledge of core AI concepts, understanding of the importance of personal privacy and security and the risks of deep fakes and cybercrime, understanding of some of the common AI applications for search, and how to assess and evaluate information and opportunities to deepen AI skills.

> **AI skills for adoption and innovation—** Understanding how AI is used across industries, understanding of how to match technology to organizational function, ability to use low code, no code applications, competence in using generative AI technologies and specialized tools, understanding of responsible AI principles and ethical policies.

> **Deep AI skills—**Knowledge of AI development frameworks and machine learning models, skills to develop AI tools and systems.

Figure 4

Employment-focused framework for developing AI skills across all skill levels



K-12 and postsecondary education	Occupational training	Self-story/social interaction
Deep AI skills	**Mid-level AI skills**	**Basic AI literacy**
> Knowledge of AI development frameworks and machine learning models	> Understanding how AI is used in different industries, such as AI-powered chatbots and recommendation systems	> Knowledge of core AI concepts, including machine learning and deep learning, as well as supervised, semi-supervised and unsupervised machine learning
> Advanced knowledge of AI applications in specific fields	> Competence in using generative AI technologies like ChatGPT or Microsoft Copilot for content generation, analysis and problem-solving	> Familiarity with generative AI tools such as ChatGPT, Gemini, Microsoft Copilot and others
> Deep understanding of ethical AI development, ensuring fairness, transparency and accountability in AI systems	> Mid-level expertise in working with datasets	> AI in the value chain
> Managing risks such as data breaches or ethical dilemmas		> Awareness of key ethical considerations, such as bias and privacy

This structure provides a practical lens for understanding the range of competencies needed across occupations and industries. While deep AI skills remain essential in specialized roles, most SMEs require a workforce equipped with baseline literacy and applied adoption skills that can be developed on the job or through short, targeted training. These competencies are relevant not only to technical positions but also to functions across the business value chain, where AI can drive transformation including customer service, marketing, finance and operations.

While these tiers reflect the breadth of AI expertise, SMEs also benefit from a structured progression within each category, from foundational knowledge to applied skill development and, ultimately, to confident, experienced use. A forthcoming report will detail this progression through the three levels (Knowledgeable, Skilled, and Experienced), supporting clear learning pathways for employees and leaders alike.

From skills to competencies, and systemic support

Addressing this gap requires more than just hiring “job-ready” workers. SMEs must play an active role in skill development, creating opportunities for employees to build AI fluency in real work contexts. However, SMEs cannot meet this challenge alone. They need coordinated support in the form of funding, partnerships with training providers and educational institutions, simplified access to tools, and policy frameworks that recognize the unique barriers smaller firms face.[102, 103, 104, 105]

These strategies must also move beyond discrete skills to build broader competencies. While skills target specific, task-oriented abilities, competencies encompass behaviour, judgment and adaptability, all essential for navigating real-world AI adoption and deployment.[106] This includes ethical reasoning, leadership, communication and the ability to adapt in uncertain environments. Responsible AI practices (e.g., transparency, data security, proactive bias mitigation) are increasingly critical competencies that must be developed alongside technical capabilities.[107, 108, 109] These competencies are crucial for navigating complex business environments, allowing SMEs to remain agile and competitive while effectively integrating AI innovations and responding to market changes.

Equity and inclusion are also vital. Ensuring that diverse workers, including those from equity-deserving groups, can access training and advance through AI competency pathways is essential for building an inclusive economy.[110]

More work is needed to develop a national AI competency framework that clearly defines the knowledge, behaviours and outcomes expected at each tier, guiding learners and employers through the expanding landscape of courses, microcredentials and certifications. Wayfinding tools, such as adoption roadmaps, competency checklists or trusted provider registries, will be essential to ensure skills development supports real business impact. These efforts must be supported by a broader ecosystem that includes funding, regulatory clarity, trusted information sources, and mechanisms for employers to identify and signal the AI competencies they need.

A forthcoming report will present this framework in detail, including clear definitions of competencies at each level, example learning pathways tailored to SME contexts, and recommendations for supporting equitable and responsible AI skill development across Canada.

Building a skilled and confident workforce is essential to ensure SMEs can keep pace with technological change and fully leverage AI's benefits. However, closing these gaps is not the responsibility of individual firms alone. It will require sustained collaboration among governments, training providers, industry associations and ecosystem partners to deliver accessible learning pathways, reliable infrastructure and targeted supports. The following section outlines key strategies and actions to advance inclusive, sustainable AI adoption across Canada's SME ecosystem.

The Way Forward

Artificial intelligence is one of the most powerful and disruptive forces reshaping the global economy. While its transformative potential is undeniable, so too are the challenges of adoption, particularly for SMEs. For business leaders, ignoring AI is no longer an option. It is not merely a technological shift; it is a foundational driver of competitiveness, resilience and long-term prosperity. But to harness this potential, implementation must be deliberate, evidence-informed and systemically supported. Leaders must take charge, not just by adopting AI, but by working collaboratively with ecosystem partners to build the capabilities, infrastructure and inclusive practices that will sustain adoption over time. They cannot do it alone.

AI is often portrayed as a frictionless revolution: an omniscient force capable of automating every task, predicting outcomes and surpassing human decision-making. The reality is far more complex. Achieving real results with AI demands more than access to tools. It requires clean, structured data; robust digital infrastructure; specialized expertise; and sustained organizational commitment. For SMEs, these requirements can be daunting, constrained by limited financial and human resources, capacity for training, and, in some cases, uncertainty or skepticism about AI's relevance and risks.

Canada's position as a global leader in AI research and innovation is commendable, but research leadership alone is not enough. Adoption across the business landscape remains uneven, and SMEs, despite being the backbone of the Canadian economy, face some of the steepest barriers. Without deliberate and coordinated action, these firms risk being left behind in the very economy they help power. A patchwork approach, where firms navigate siloed programs and inconsistent supports, will only deepen inequities and slow progress.

The AI transition must be grounded in skills, strategy and support. AI is not merely a threat to jobs; it is a catalyst for redefining them. While automation may displace certain tasks, it also has the potential to enhance productivity, create new roles and unlock economic opportunities across sectors. The priority must be to prepare Canada's workforce for this evolution, not only through training and skills development, but by embedding learning and capacity-building within implementation pathways so that adoption and upskilling occur in tandem, rather than as disconnected efforts.[111, 112]

This preparation must be embedded in workforce transitions, with training aligned to shifting roles and emerging demands. Skills strategies should be proactive, modular and tailored to learners' diverse needs and circumstances. They must also be designed with equity at their core, ensuring that equity-deserving groups, including women, racialized entrepreneurs, Indigenous-owned businesses and rural SMEs, are not left behind as AI adoption accelerates.

Collaboration across these sectors is key to moving from awareness to application. Regional pilots, shared curriculum platforms and embedded supports can translate training into practical business impact. Equally important is building system feedback loops so that SMEs' experiences inform continuous improvement of policies, tools and funding mechanisms.

Achieving inclusive and effective AI adoption will depend on coordinated actions across key domains.

Further diagnosis of barriers and enablers to adoption

Understand what is preventing adoption and where opportunities exist to unlock it.

> Conduct AI readiness assessments across SMEs to identify gaps in data, infrastructure, leadership or workforce confidence.

> Collect and analyze disaggregated data on barriers faced by SMEs, especially those in equity-deserving communities or rural regions.

> Engage SMEs in co-design processes to identify contextual enablers and resources that can be shared, and define success for their own adoption journey.

Design and deliver practical tools and learning supports

Equip SMEs with tools and embedded training tailored to their business reality.

> Develop practical toolkits, checklists and templates that address actual SME needs (e.g., readiness maps, decision guides, use-case selectors).

> Create modular interventions that combine tool usage with light-touch coaching, workplace-based learning and peer mentoring.

> Ensure all tools and learning pathways apply an equity, diversity and inclusion lens, supporting safe, inclusive and bias-aware AI use.

> Align training content with practical tasks and adoption scenarios, especially in priority sectors.

> Provide flexible and stackable learning formats (e.g., microcredentials, just-in-time videos, applied simulations) to meet diverse learner needs.

> Expand AI literacy efforts across all levels of the workforce and leadership, ensuring that training addresses real business use cases and practical adoption.

Pilot and iterate with demonstration projects

Test tools, track outcomes, and adapt in real time to maximize learning and uptake.

> Support SME clusters or regional innovation hubs to trial tools and document real-world impact.

> Measure adoption outcomes such as successful implementation, time to value, and changes in organizational confidence.

> Use pilot results to generate actionable insights and evidence that can inform policy and funding decisions while refining tools and embedded training resources to create scalable models.

Build adoption networks and system feedback loops

Foster continuous improvement through ecosystem engagement and shared learning.

> Establish communities of practice or peer-learning groups for SMEs engaging in AI transformation.

> Create structured feedback loops so SMEs can inform training providers, tool designers and policy makers.

> Use regional platforms or shared infrastructure to spread insights and reduce duplication of effort. Coordinate across sectors to align investments, policies and supports so no business is left to navigate adoption alone.

AI will not wait. The global race to leverage AI for innovation, productivity and strategic advantage is already underway. Canada cannot afford to lead in research but lag in implementation. SMEs must be empowered not only to adopt AI, but to shape it. That requires bold investment, clear direction, and an unwavering commitment to inclusive innovation.

Canada should also look to the emergence of "Frontier Firms," organizations that are rapidly integrating AI across strategy, operations and talent, as potential models for SME support. By establishing sector-specific or regional adoption hubs, policy makers and ecosystem leaders can create environments where SMEs experiment with AI tools, access shared infrastructure and scale successful approaches with guidance from early adopters.[113]

With the right vision, infrastructure, partnerships and wraparound supports, AI can be a catalyst for a more dynamic, equitable and competitive economy.

Addressing these challenges requires a multidimensional approach that goes beyond education, toward adoption, enablement and system-wide coordination. Otherwise, these limitations will continue to affect SMEs' ability to remain competitive, agile and innovative. Leaders, policy makers, educators and funders have a vital role to play when it comes to bridging the AI gap in SMEs. Only by working together can we ensure that Canada's small businesses, and the communities they sustain, are ready to thrive in an AI-enabled future.

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