

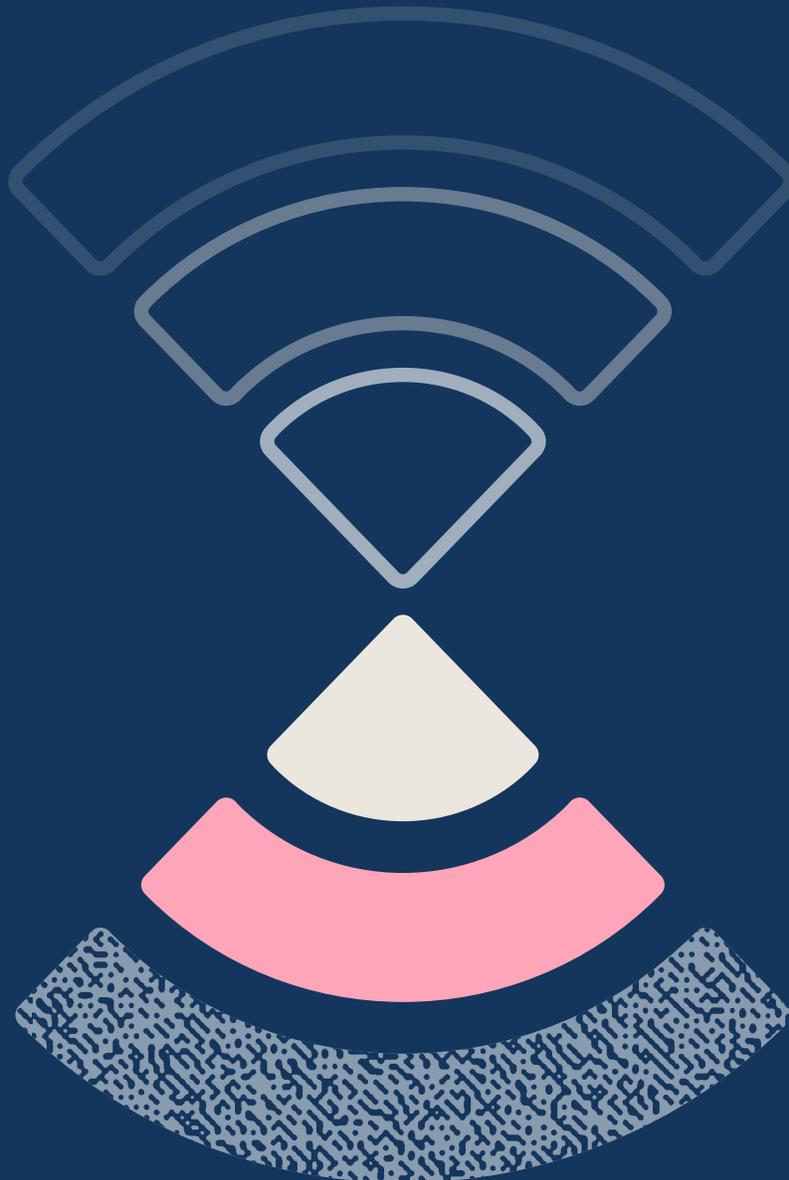
Picking Up Speed

DIGITAL MATURITY IN CANADIAN SMEs
—AND WHY INCREASING IT MATTERS

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Introduction and Key Findings

OVER THE COURSE of the COVID-19 pandemic, Canadian businesses have turned to digital technologies to help keep them working and selling. Technology has been a key lifeline amid a rapidly shifting business and public health environment. The most digitally-intensive businesses have been more resilient than the economy at large, suffering smaller drops in revenue and employment than less digitally intensive sectors.

However, not all Canadian businesses were able to take advantage of digital technologies. Small and medium-sized enterprises (SMEs) in particular suffer from lower levels of digital maturity than their larger peers. This is not a new story and the pandemic has simply exposed a divergence long in the making.

SMEs employ the majority of the private workforce, and they will have a crucial role to play in ensuring the post-pandemic recovery is a just, equitable, and sustainable one.¹ The importance of digital maturity is reflected in the federal budget's \$4 billion commitment towards a Canada Digital Adoption Program.² This report sets out to contextualize the state of digital maturity in Canadian SMEs to help inform the rollout of future programs and feed into Canada's long-term prosperity.

What is Digital Maturity?

A business's digital maturity reflects the use of digital technologies by enterprises of all sectors, not just technology developing ones.

Digital maturity comprises 1. technological intensity—the level of technology adoption and use across both internal and customer-facing operations and processes, and 2. its digital culture—whether it has the skills, leadership, and governance in place to successfully integrate digital technologies.³

Basic technologies form the baseline for technological intensity. Common starting technologies for businesses include social media use; electronic invoicing; e-commerce; and online interactions with government. Cloud services, which enable companies to scale their computing, software, power, and infrastructure needs on demand, can form a bridge between basic and advanced technologies. These more advanced technologies can include things such as big data analytics, enterprise resource planning and the use of Artificial Intelligence (AI).⁴ See [Table 1](#) for more examples.

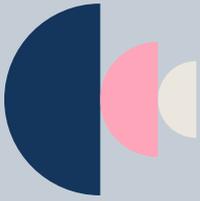
Table 1

Main digital tools used by Canadian entrepreneurs⁵

CUSTOMER-FACING ACTIVITIES		
 Communications tools <ul style="list-style-type: none">• Email• Social media• Mobile apps• Instant messaging• Websites (including blogs, live chat and forums)• Extranets or electronic data interchange (ED)	 Digital marketing tools <ul style="list-style-type: none">• Ad banners on websites• Search engine optimization• Online video• Email marketing• Marketing automation software• Online survey tools	 E-commerce tools <ul style="list-style-type: none">• E-commerce website builders• E-commerce research tools• Inventory tracking and shipping tools• Email automation
BACK-OFFICE ACTIVITIES		
 Business management and productivity tools <ul style="list-style-type: none">• Office software (e.g. Microsoft Office, Apple iWork)• Project management software• Online collaboration tools• Management software, such as enterprise resource planning (ER), customer relationship management (CRM) systems• Accounting and invoicing software• Budgeting software• Workforce management software	 Analytical, data storage and data management tools <ul style="list-style-type: none">• Web, social and video content analytics• Predictive analytics, data mining and machine learning• Cloud computing• Online data backup services	 Digital production tools <ul style="list-style-type: none">• Computer-aided design (CAD), manufacturing (CAM), engineering (CAE) and so on• Daily management systems• Electronic work instructions• Field service management software• Digital dashboards• Industrial Internet of Things (wireless sensors and analytics)• Automation technologies• 3D printing

Source: BDC Digitize Now report





The State of Digital Maturity of Canadian SMEs—Summary of Key Findings

THE FAILURE OVER many years to successfully adopt technologies has meant that SMEs have been leaving money on the table. That has impacted both the Canadian economy and Canadian

enterprises' ability to compete globally. The effects of the pandemic have only exacerbated the digital divide. The report that follows can be summarized in the following points:

Digitally mature businesses as of 2018 were **62% more likely** than their peers to have enjoyed **high sales growth** and **52% more likely** to have **more profit**.⁶

Significant productivity gains are associated with higher levels of digital maturity in businesses.⁷



SMEs owned or run by equity-seeking groups, such as entrepreneurs who are women, Black, Indigenous peoples, and recent immigrants all face **systemic discrimination, including racism and sexism**, that exacerbate the barriers to digital maturity.⁸

Digitally mature companies have had higher levels of resiliency—helping them maintain higher levels of revenues and employment during the pandemic.



SMEs face many barriers to digitization like knowledge and skills shortages that hamper their digital maturity.

Limited access to high-speed and reliable connectivity is a further barrier to digital maturity.

Investing in technology alone isn't enough to reap the benefits of digital maturity.



SMEs fall behind larger companies in adoption of all types of cybersecurity,

despite cyber attacks often being fatal to small businesses.

SMEs still significantly lag behind larger firms in foundational technologies

such as social media use and e-commerce, and not enough small businesses are taking advantage of the internet to make sales.



Cloud computing reduces the need to spend on infrastructure, computing power and software, yet SMEs lag behind large companies in their cloud usage.





Key Findings

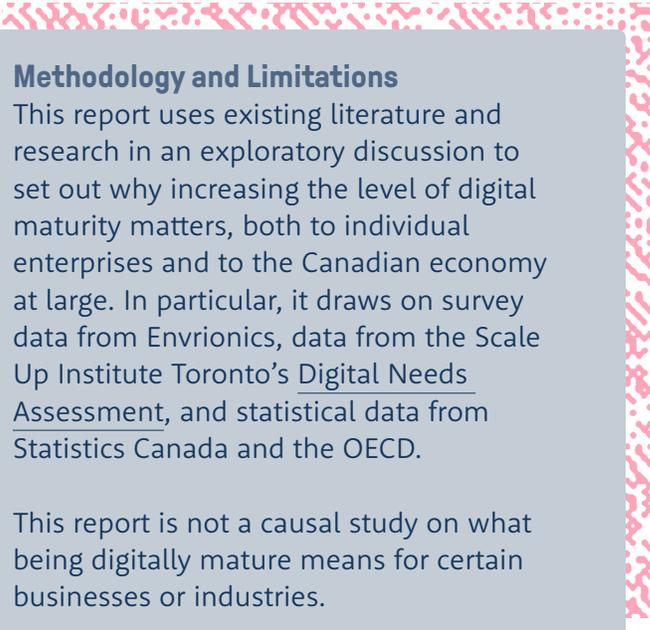
The failure over many years to successfully adopt technologies has meant that SMEs have been leaving money on the table. This was true even before the pandemic. Research from BDC has shown that more digitally mature SMEs are 62% more likely to have high sales growth and 52% more likely to have more profit growth over the previous three years. They are also 70% more likely to be exporters.⁹

Despite this, the majority of SMEs have not taken full advantage of digitization. 57% scored low in both digital intensity and digital culture in a 2018 BDC survey, with only 19% scoring high on both.¹⁰ These scores speak to the need to support SMEs to help them understand the benefits of digital investments and reduce the uncertainty and risks for their businesses. Without this, the companies that fail to increase their digital maturity are going to see an earnings gap which will grow over time compared to their more mature peers.

The value of increasing digital maturity applies across industries and sectors to both customer-facing and internal processes.

While not all technologies are relevant or applicable to all businesses, the value of increasing digital maturity applies across industries and sectors to both customer-facing and internal processes. There is also value for those organizations where growth and revenue are not their primary motive – for example, small and medium-sized non-profits or community-serving businesses.

No matter what the business though, whether they are selling goods or services to the Canadian public, are part of a larger supply chain to other



Methodology and Limitations

This report uses existing literature and research in an exploratory discussion to set out why increasing the level of digital maturity matters, both to individual enterprises and to the Canadian economy at large. In particular, it draws on survey data from Envrionics, data from the Scale Up Institute Toronto's [Digital Needs Assessment](#), and statistical data from Statistics Canada and the OECD.

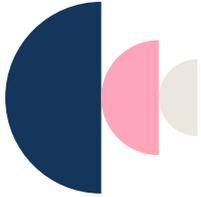
This report is not a causal study on what being digitally mature means for certain businesses or industries.

businesses, or operating on a different basis, increasingly customers, users, and stakeholders are expecting a digital experience.

SMEs' customers are digitizing, and their competitors are too. Small enterprises in every sector of the economy are making use of advanced or emerging technologies, from a low of 28.5% of small retailers to a high of 63.1% of small utilities.¹¹ **While overall rates remain low, the SMEs increasing their digital maturity will be the ones reaping the benefits.**

As SMEs go, so goes the country. The Canadian economy is heavily weighted towards SMEs. 99.8% of all Canadian businesses are SMEs and they employ 10.8 million individuals (88.5% of the total private labour force).¹² Small enterprises represented 70% of hours worked in Canada in 2008 versus 56% in the United States. However, Canadian small enterprises are also less productive than their American counterparts, something that contributes towards the productivity gap between the two countries.¹³ Research shows that increasing digital maturity is associated with significant productivity gains

within individual businesses.¹⁴ Increasing the digital maturity of Canada's SMEs then is likely to have a significant impact on the Canadian economy at large.



Increasing digital maturity is associated with significant productivity gains within individual businesses.

SMEs however, face many barriers to digitization. These can range from lack of data culture and digital awareness, internal skills gaps and access to infrastructure, to financing gaps to fund the costs of transformation, among others.¹⁵

These all apply for many SMEs in Canada. But not all SMEs suffer from them equally.

Applying an intersectional lens shows that SMEs owned or run by equity-seeking groups, such as entrepreneurs who are women, Black, Indigenous peoples, and recent immigrants all face systemic discrimination, including racism and sexism, that exacerbate the barriers to digital maturity.¹⁶ While entrepreneurs are clearly willing to digitize, action is needed to end the systemic discrimination that constrains the digital maturity and wider potential of these groups.

A further barrier to digital maturity is the continued existence of a digital divide in accessing high-speed and reliable connectivity. Only 24.8% of small enterprises have a fibre optic internet connection, compared to 73.1% of large enterprises. This limits the access of SMEs to the connectivity needed to take full advantage of advanced, bandwidth intensive applications such as Machine to Machine devices (smart meters, video surveillance, asset tracking, etc.).¹⁷ Furthermore, Canada lacks ambition in its digital infrastructure plans, even in urban areas, with target connectivity among the lowest in the OECD.¹⁸

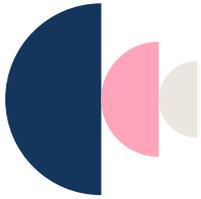
Looking in detail at the digital culture aspect of digital maturity, **SMEs face knowledge and skills shortages that hamper their digital maturity.** A 2020 IDC report in collaboration with the Future Skills Centre and the Diversity Institute found that 65.3% of small companies and 68.5% of medium-sized companies face difficulties in sourcing new digital skills either across the company or in some business areas.¹⁹ This is higher than the general skills gap for SMEs, with a BDC survey reporting only 39% of SMEs having difficulty finding new workers in general.²⁰

Some of this is a self-inflicted wound, with SMEs failing to take advantage of the talent available to them. The under-utilization and under-representation of trained and skilled-immigrants, women, racialized minorities, and Indigenous peoples in ICT jobs speaks to how better recruitment and retention policies could both provide more equitable access to employment opportunities and help SMEs grow a diverse talent pool to aid their digital maturity.²¹

SMEs also often lack the knowledge of technologies, their strengths and their drawbacks, to be able to successfully implement digital transformation strategies. Over a third of small enterprises either do not understand digital opportunities, or are only just beginning to understand but do not know how digitization will impact their businesses.²² **SMEs need guidance to help them implement technology as just having it is not enough to make their businesses digitally mature.**

When it comes to SMEs' technological intensity, the picture is mixed. **SMEs still significantly lag behind larger firms in foundational technologies.** As of 2019, 17% of small enterprises have no web presence at all, and only 74% have a company website versus 91.5% for medium-sized enterprises and 95% of large enterprises.²³ Canada lags behind the leading digital countries in the OECD for both the number of businesses with a website or home page, and businesses using social media by 12% and 15% respectively.²⁴ The result is that many SMEs will have missed out

on the huge boost in e-commerce seen over the course of the pandemic.



As of 2019, 17% of small enterprises have no web presence at all, and only 74% have a company website versus 91.5% for medium-sized enterprises and 95% of large enterprises.

When it comes to more advanced technology, there are both positive and negative indicators for the digital maturity of Canadian SMEs. Cloud computing is a particularly important bridging technology for SMEs, because it removes the need for large capital expenditures on server infrastructure, computing power, databases, and software. Instead it enables companies to access these applications on-demand and scale, or reduce, its use quickly and comparatively cheaply.²⁵ While small and medium-sized enterprises lag large enterprises' use of cloud computing (35.3%, 52.1% and 73.3% respectively), there are nevertheless promising levels of usage to be built on.²⁶ Furthermore, this adoption of cloud computing applies across all industries, though notable gaps between small and medium companies in some sectors potentially point towards areas where small enterprises could benefit from increasing their technology use in line with their larger competitors.²⁷

The picture for other advanced technologies is less positive. Canada's business uptake of Customer Relationship Management software (CRM), for example, ranks in the bottom five in the OECD.²⁸ Only 13% of small enterprises utilize CRMs.²⁹ When it comes to Artificial Intelligence (AI) a

similar picture plays out, with only 1.7% of small enterprises and 3.5% of medium-sized enterprises making any use of AI, compared to 17% of large enterprises.³⁰ AI has the potential, as a general-purpose technology, to unleash large productivity gains. Ensuring SMEs are benefiting from its deployment is going to be more important than ever.

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A final key component of digital maturity for SMEs is their cybersecurity. While SMEs remain lower risk targets for cyber crime, increasing their technological intensity still does increase their exposure and must be met with increased investment in cybersecurity. Yet despite this, SMEs fall behind larger companies in adoption of all types of cybersecurity.³¹ For example, 33% of SMEs polled in an Insurance Bureau of Canada survey reported spending nothing on cybersecurity, limiting them to only the most basic, free protections.³² A cyber incident to a small company can be catastrophic; that's why it is important for SMEs to ensure that effective cybersecurity is prioritised as they make efforts to digitize their operations.





Why Digital Maturity Matters

HIGHER LEVELS OF digital maturity in SMEs are beneficial to individual businesses, local communities, and to the wider economy. At the enterprise level, digitally mature firms demonstrate higher levels of revenue growth and higher productivity. There is also an increased likelihood that digitally mature firms will also be exporters. Taken together, increasing the overall level of digital maturity could have a significant positive impact on the Canadian economy. Canada has a long-standing productivity gap with the United States, one in part fueled by the greater role SMEs play in the Canadian economy. Increasing the productivity of these smaller enterprises through the effective use of digital technologies could contribute towards narrowing that gap. **Furthermore, as we emerge from a pandemic-induced economic slump, digital maturity is also correlated with increased resiliency.**

Growth Opportunities for Businesses

THE DIGITAL TRANSFORMATION of SMEs is associated with increased resiliency, productivity and profitability. Research from BDC has found that digitally mature businesses were 62% more likely than their peers to have enjoyed high sales growth and 52% more likely to have more profit growth over the previous three years. They are also 70% more likely to be exporters.³³ While it is not in the nature of all businesses to be exporters, recent research on Canadian SMEs

concludes that “international online SMEs differ from domestic ones by having higher networking capabilities, digitalization capabilities, and scaling capabilities”—speaking to the important role digital maturity plays in helping facilitate international business expansion.³⁴

Digitally Intensive Industries vs Digital Maturity

Digitally intensive industries are measured through a range of metrics on technology use and investment by Statistics Canada and consequently represents industries where technology is a central part of their business model. This includes technology companies and advanced manufacturers, for example. In comparison, digital maturity encompasses all industries, including those where technology is not essential to their business, but can provide additional benefits to both internal and customer-facing operations and processes. These can include everyone from Main Street retail, to farmers, to logistics firms.

Other BDC research has also found companies that have built market expansion strategies based on their online strategies have outperformed those

that did not. They are also 1.7 times more likely to have enjoyed higher sales growth, 1.5 times more likely to have enjoyed higher profit growth, and 2.8 times more likely to serve international markets.³⁵ An Accenture global survey of larger companies found that digital leaders had 2x the revenue growth of companies in the bottom 25% of digital maturity. This translated in 2018 to 15% in foregone annual revenue, potentially rising to 46% in 2023.³⁶ Simply put, enterprises that aren't increasing their digital maturity are leaving money on the table.

Digitalization has also played a crucial role in opening up international markets to SMEs.

Digitalization has also played a crucial role in opening up international markets to SMEs. OECD research notes that digital adoption creates “effective mechanisms to reduce size disadvantages in international trade, such as by reducing the absolute costs associated with transport and border operations.” Furthermore, “wage gaps with large firms are smaller for exporting SMEs and for highly productive SMEs, particularly those at the frontier of the digital revolution.”³⁷

Likewise, increasing the digital maturity of industries is associated with significant productivity gains within individual businesses.³⁸ These gains extend to small and medium enterprises. However, different technologies have different impacts depending on enterprise size. For example, Enterprise Resource Planning benefits medium-sized and larger businesses more as opposed to cloud computing which offers greater flexibility, and therefore impact, for smaller businesses.

Canada's digitally intensive industries have already seen these gains. A range of indicators are taken



Simply put, enterprises that aren't increasing their digital maturity are leaving money on the table.

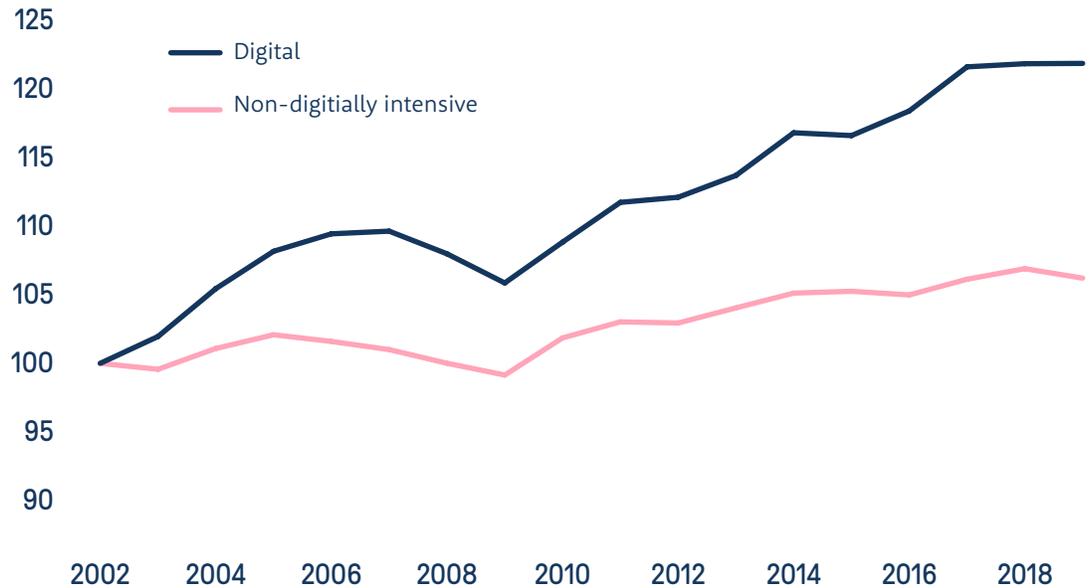
into account to define digitally intensive industries including information and communications technology (ICT) capital stock and investment, digital-related occupations, and robot use.³⁹ The result is a range of sectors, beyond what we think of as the ‘tech sector’, where technology is a central part of their business model. Together, these industries have outpaced the rest of the Canadian economy in labour productivity growth since 2002—growing 22.1% in the digitally intensive sector compared to 6.3% in the non-digitally intensive sector (Figure 1).⁴⁰

The link between higher revenues and higher levels of digital maturity is apparent in the scores of companies choosing to complete the Digital Needs Assessment conducted by the Scale Up Institute Toronto (Figure 2). However, digital maturity as a cause for high revenues is not clear cut—companies with higher revenues might be better able to fund increases in their digital intensity or companies with higher digital intensity might be better placed to yield higher revenues.

These trends are reinforced by shifting consumer preferences. Increasingly, retail consumers expect a digital first experience, wanting options for mobile apps and contactless payments among others, with e-commerce use especially seeing large growth during the pandemic.⁴¹ This shift towards digital options is not restricted to individual consumers, however. Even when it comes to business-to-business (B2B) buying, SMEs report increasing preferences for digital payments, advertising, and processes.⁴² Indeed,

Figure 1

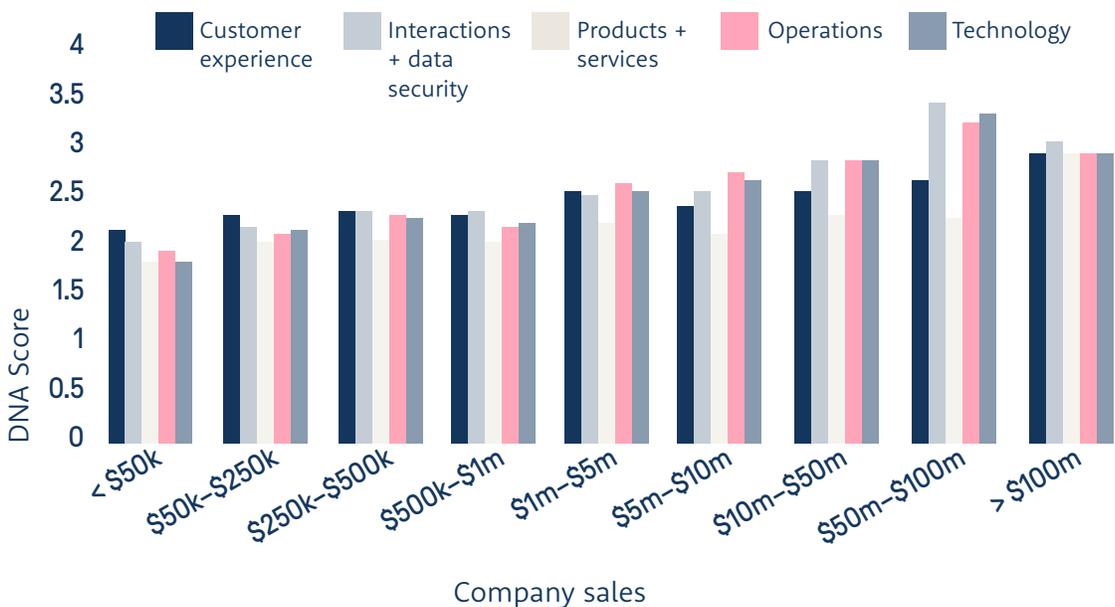
Labour Productivity Growth in the Digitally Intensive and the Non-Digitally Intensive Sectors (2002=100)



Source: Statistics Canada, Economic performance associated with digitalization in Canada over the past two decades. Tables 14-10-0202-01 and 36-10-0434-03. DOI: <https://www150.statcan.gc.ca/n1/pub/36-28-0001/2021002/article/00001-eng.htm>

Figure 2

Digital Needs Assessment (DNA)—Average digital intensity scores by company sales



Source: Scale Up Institute Toronto, 2021. 977 Ontario-based companies participated in the Digital Needs Assessment and answered a 44-question survey to generate their scores across different aspects of digital maturity.



BDC research shows that in the services sector it is companies providing B2B services that have the highest levels of digital maturity.⁴³

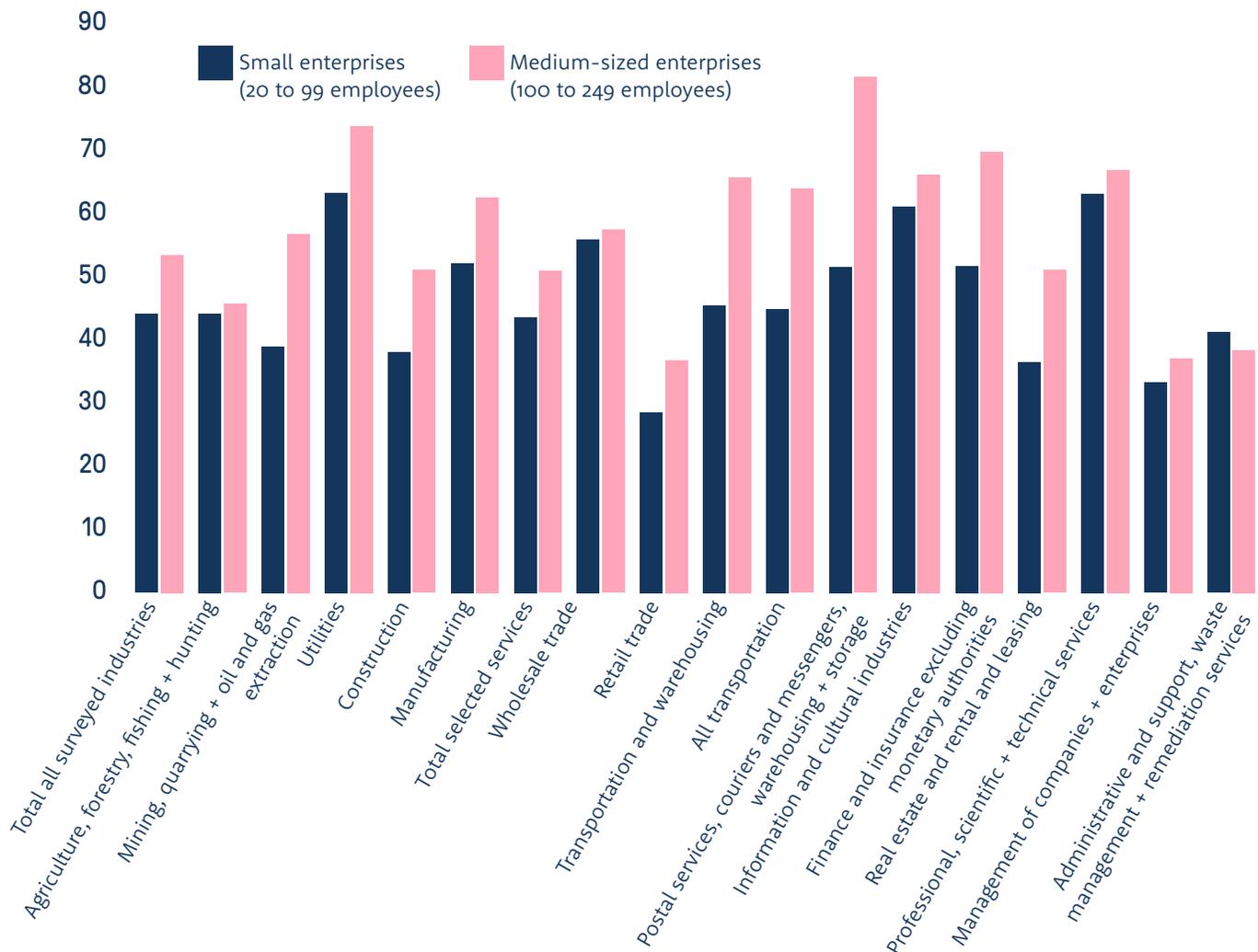
Yet despite all this, the majority of SMEs have not taken advantage of digitization with 57% scoring lowly in both digital intensity and digital culture in a 2018 BDC survey. Only 19% scored highly on both.⁴⁴ This is also reflected in the *Digital Needs Assessment* scores, which found around four-fifths

of companies completing it lacked digital maturity. These scores highlight the opportunity that exists if businesses can be supported in understanding the benefits of digital transformation, helping them to reduce uncertainty and risk.

The potential for digital maturity cuts across all industries and sectors. As **Figure 3** demonstrates, a portion of SMEs in every industry across the Canadian economy are making use of some

Figure 3

Use of any advanced or emerging technology by industry (SIBS, 2017)



Source: Statistics Canada. Table 27-10-0367-01 Use of advanced or emerging technologies by industry and enterprise size
DOI: <https://doi.org/10.25318/2710036701-eng>



form of advanced and emerging technologies.^a While not every technology is relevant to every business, it is generally the case that all businesses could benefit from the use of one or more digital technologies. Whether it is farmers making use of robots to aid food production, mom-and-pop shops using websites and social media to promote their businesses and advertise their opening hours, or small law firms digitizing records and automating billing, digitalization takes many forms. As demand for digitalization grows, both from individual consumers and from other businesses in a supply chain, every business will need to increase their digital maturity to grow and remain competitive.

The importance of digital maturity remains true even when looking beyond profit-generating businesses and at those pursued for social reasons. Increased productivity from digital maturity will also have a positive impact in supporting non-profit organizations and other businesses. For example, digital technologies can play a role in supporting Indigenous-owned businesses that seek to provide local employment, reduce income-leakage from communities, or provide other community services in line with Indigenous cultural, spiritual and environmental worldviews.⁴⁵ An example of the utilization of digital technologies can be seen with how Indigenous innovators and artists are utilizing video game and virtual reality technologies.⁴⁶

Growth Opportunities for Canada

SMES ARE THE DRIVERS of the Canadian economy. Canada's 1.22 million SMEs represent 99.8% of all Canadian businesses, employ 10.8 million individuals (88.5% of the total private labour

force), and contributed 55.3% of gross domestic product (GDP) generated by the private sector in 2016.⁴⁷

SMEs have a greater importance to the Canadian economy than to our nearest neighbour, and close economic partner, the United States. Small enterprises represented 70% of hours worked in Canada in 2008 versus 56% in the United States. Taken together, there is a larger gap between the productivity of small enterprises and large enterprises in Canada than there is in the United States, contributing to the productivity gap between the two countries.⁴⁸



Lagging ICT investment is an important factor in the productivity gap between Canada and the United States.

The Centre for the Study of Living Standards has found that lagging ICT investment is an important factor in the productivity gap between Canada and the United States. From 2008–2014 ICT investment per worker fell nearly 5% per year in Canada relative to the United States. The result was that nominal ICT investment per job fell to 56.3% of the US level in 2014, driven in particular by low investment in computer software and databases.⁴⁹

Despite this, 2018 BDC polling of Canadian and US businesses indicates that there is no SME digital maturity gap between the two countries.⁵⁰ This indicates the core reasons for the Canada-US productivity gap are not due to lagging digital adoption by Canadian SMEs but instead factors that have influenced the greater aggregate share of small enterprises in the economy. If increasing levels of digital maturity can support the growth of Canadian SMEs and help them scale, as well as its impact on firm-level productivity, then there is the potential for it to play an important role in boosting Canada's productivity overall.

a The Survey of Innovation and Business Strategy (SIBS) includes some technologies beyond the scope of this report in its definition of advanced and emerging technologies, such as nanotechnology and biotechnology. Given the variation between industries in what would count as advanced and emerging technologies, some caution is needed in cross-industry comparisons of technological intensity.

There are also other potential implications from increasing digital maturity. According to the OECD: “At the aggregate level, the SME digital gap contributes to increased inequalities among people, places and firms”.⁵¹ Low productivity in non-digitised SMEs contributes to lower wage growth: “Labour compensation levels correlate highly with labour productivity levels; hence, having more jobs in lower labour productivity activities has resulted in more jobs with below average wages in most economies, working to weigh down on average salaries in the economy as a whole.”⁵²

However, it isn’t as simple as increasing productivity to increase wages. Labour productivity growth often does not translate into wage growth for the median worker, a situation that has been seen in Canada over recent decades.⁵³ Across the OECD “many of the sectors where wage growth has lagged productivity have relatively high shares of SMEs”.⁵⁴

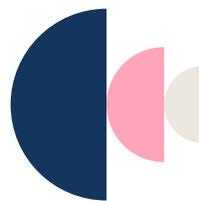
Nevertheless, as research from the Centre for the Study of Living Standards concludes, divergence in wages and labour productivity “does not imply that labour productivity growth has not been beneficial for Canadian workers, nor does it imply that policy efforts to raise productivity growth would be misplaced.”⁵⁵ If increasing digital maturity can increase the productivity of Canadian SMEs then there is the potential for it to benefit workers—especially if wider policy levers can encourage these benefits to flow through.

Given the state of knowledge of the impacts of digitization and the importance of SMEs to the Canadian economy, boosting SME’s digital maturity and productivity to levels closer to that of the United States could certainly have significant positive impacts on the wider economy.

COVID-19 and the Value of Resilience

THE CONTEXT FOR DIGITIZATION has, of course, dramatically changed since early 2020 thanks to the impact of the COVID-19 pandemic. While the full picture of the pandemic’s impact on the Canadian economy and on SMEs and their digital maturity is still emerging, some trends are clear.

One trend is the greater resilience of digitally mature businesses. A June 2020 survey by IDC on behalf of SAP studied 371 Canadian organizations with a minimum of 100 employees and \$50 million+ in revenue. The survey found that, fewer enterprises with higher levels of digital maturity were expecting reductions in revenue, employed workforce, operational capacity, and utilized facilities compared to their less digitally mature peers.⁵⁶



Digitally intensive industries have also been more resilient than other sectors during the pandemic.

This finding aligns with research from Statistics Canada which found that digitally intensive industries have also been more resilient than other sectors during the pandemic: “For the months of March to May 2020, employment declined on a year-over-year basis by 12.9%, 30.2% and 25.6%, respectively, in the non-digitally intensive sector. [This is found in contrast] to 1.1%, 11.3% and 9.7%, respectively, for the digitally intensive sector.” It has also rebounded faster in both employment and GDP.⁵⁷ While digitally intensive industries are likely to have high levels of digital maturity, it is important to note that not all digitally mature firms are necessarily digitally intensive. A digitally mature retail business, that has a digital growth strategy and makes use of web advertising, e-commerce, and business analytics software, would still not be measured as a digitally intensive business under the Statistics Canada definition.

One important aspect of digital maturity for enterprises during the pandemic has been the ability of employees to work from home. Statistics Canada found that by the last full week of March 2020, 39.1% of workers were teleworking, slightly higher than what they estimated was the “telework capacity” of the economy at 38.9% of Canadian workers. This suggests that “the Canadian labour market responded very quickly to the onset of the pandemic by increasing its prevalence of telework to the maximum capacity”.⁵⁸



“The Canadian labour market responded very quickly to the onset of the pandemic by increasing its prevalence of telework to the maximum capacity.”

Statistics Canada

While the shift to working from home was seen across all enterprise sizes (as can be seen from [Figure 4.1](#) and [Figure 4.2](#)) it is larger businesses who have been better placed to move to remote work. Research from the Brookfield Institute

for Innovation + Entrepreneurship on Statistics Canada’s Canadian Survey on Business Conditions (CSBC)⁵⁹ has shown that as of the first quarter

Figure 4.1

Workforce teleworking or working remotely prior to February 1st, 2020 (CSBC, 2020)

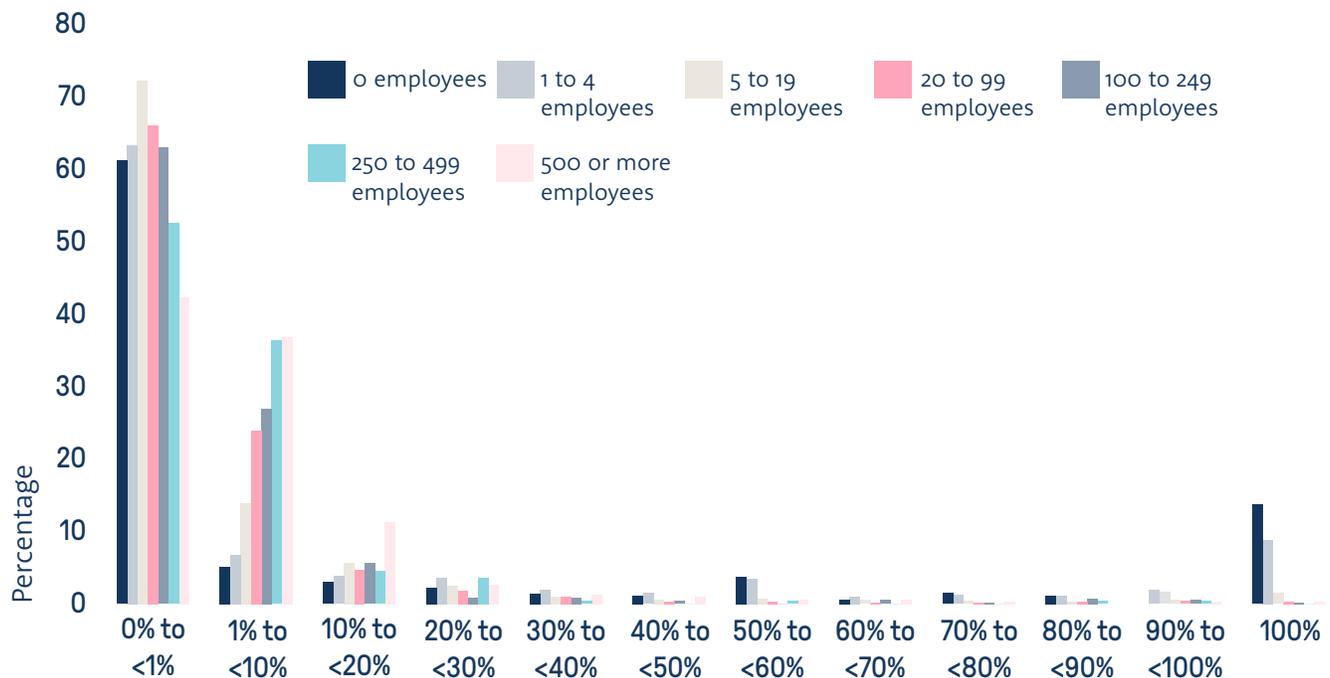
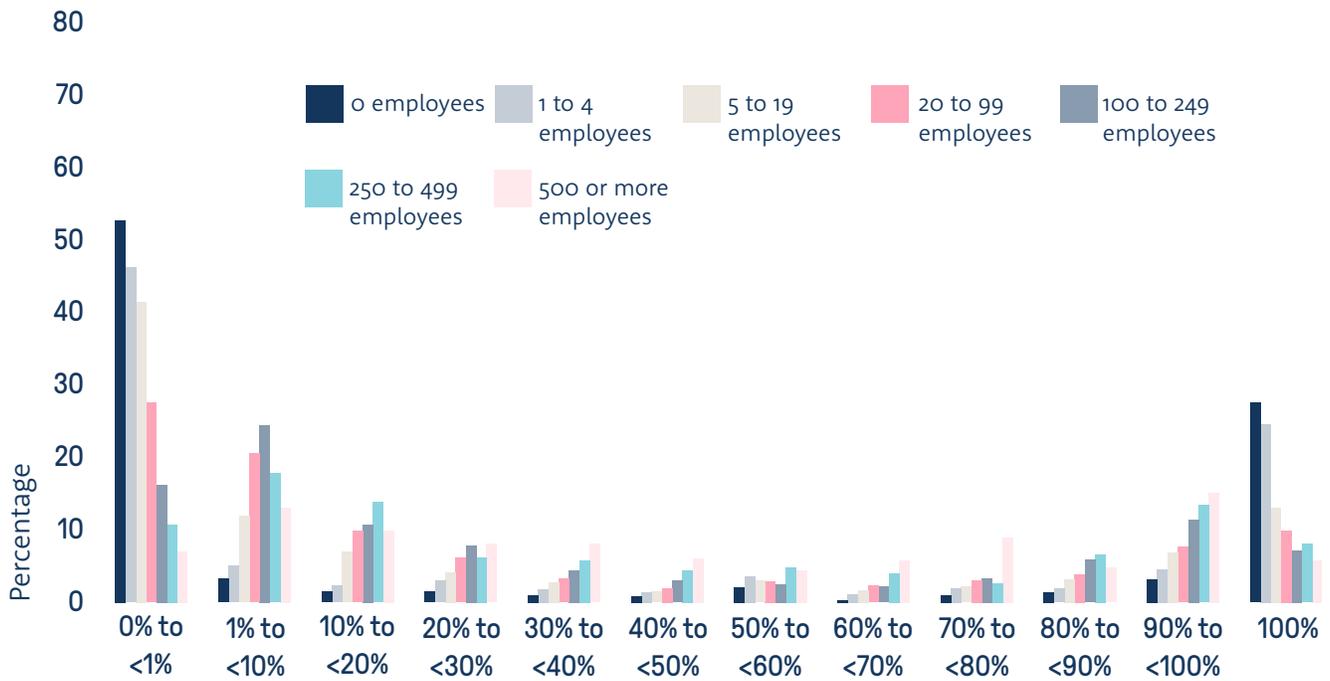


Figure 4.2

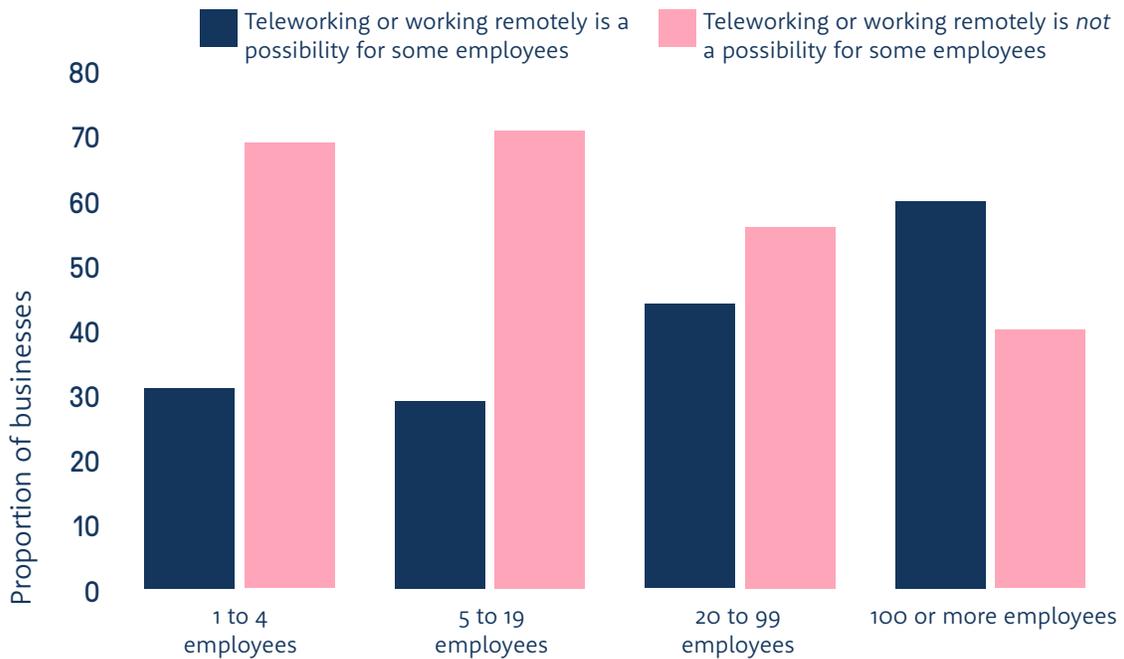
Workforce teleworking or working remotely on March 31st, 2020 (CSBC, 2020)



Source: Statistics Canada. Table 33-10-0228-01 Percentage of workforce teleworking or working remotely, and percentage of workforce able to carry out a majority of duties during the COVID-19 pandemic, by business characteristics
DOI: <https://doi.org/10.25318/3310022801-eng>

Figure 5

Remote Work Expectations over the Next Three Months; Canada, First Quarter 2021



Source "Remote Work In Canada", Brookfield Institute for Innovation + Entrepreneurship, March 2021, p. 10, <https://brookfieldinstitute.ca/wp-content/uploads/Remote-Work-in-Canada.pdf>

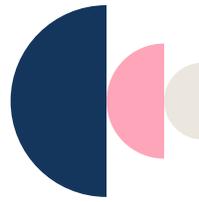


of 2021, it is companies of over 100 employees who have the most remote work capacity with over 60% reporting that it is a possibility for a proportion of their employees to work from home, compared to only 39% for companies with 5 to 19 employees (Figure 5).

Research from the United States suggests that those companies that had high work from home capacity before the pandemic “performed significantly better during the crisis compared to their peers on several dimensions ranging from financial performance, such as sales and net income, to stock returns and return volatility”. Moreover, non-high-tech industries were found to benefit more from a greater readiness to work from home pre-pandemic than high-tech industries.⁶⁰

The COVID-19 pandemic will not be the last unexpected shock that Canada’s SMEs face. The pandemic increased the urgency for businesses to digitally transform, but it did not create that need to begin with. It has instead accelerated long standing trends. Less digitally mature businesses were already losing out on revenue growth and profitability even before COVID-19 hit, as we have seen. The pandemic served to deepen those divides between the mature and the less so. The urgent need to socially distance and work remotely when possible might be something unique to the pandemic, but digital maturity has an important role regardless of what the shock might be.

Recent global research confirms this, with a majority of organizations recognizing that they need to build new digital businesses to keep their company economically viable by 2023.⁶¹ Whether it is future pandemics, environmental disasters, or an economic downturn, making use of digital maturity to improve resiliency is going to be essential to long term survival.



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Barriers to Digitization

Barriers that SMEs face

THOUGH SMES BENEFIT directly from a range of digital services, increasing digital maturity is not always straightforward. SMEs face challenges across both the technological intensity and digital culture aspects of digital maturity. The OECD has found that barriers for SME digitalization include: “access to infrastructure; low interoperability of systems; a lack of data culture and digital awareness; internal skills gaps; financing gaps for covering high sunk costs to transform; uncertainty about liabilities and responsibilities when engaging in new digital activities; risks of reputation damage, etc.”⁶²

This picture plays out in Canada. BDC’s 2017 survey of Canadian manufacturing firms of under 500 employees found that they faced a range of challenges digitizing and implementing Industry 4.0 solutions such as using sensors and software to optimize production processes. The top challenges cited were: lack of qualified employees (42%), excessive costs (38%), employees’ resistance to change and unclear return on investment (both 31%) (see [Figure 6](#)).

On top of the general barriers SMEs face, those led by under-represented and equity-seeking groups face further challenges, including systemic racism and sexism, that serve to create systemic barriers to their full participation in the economy

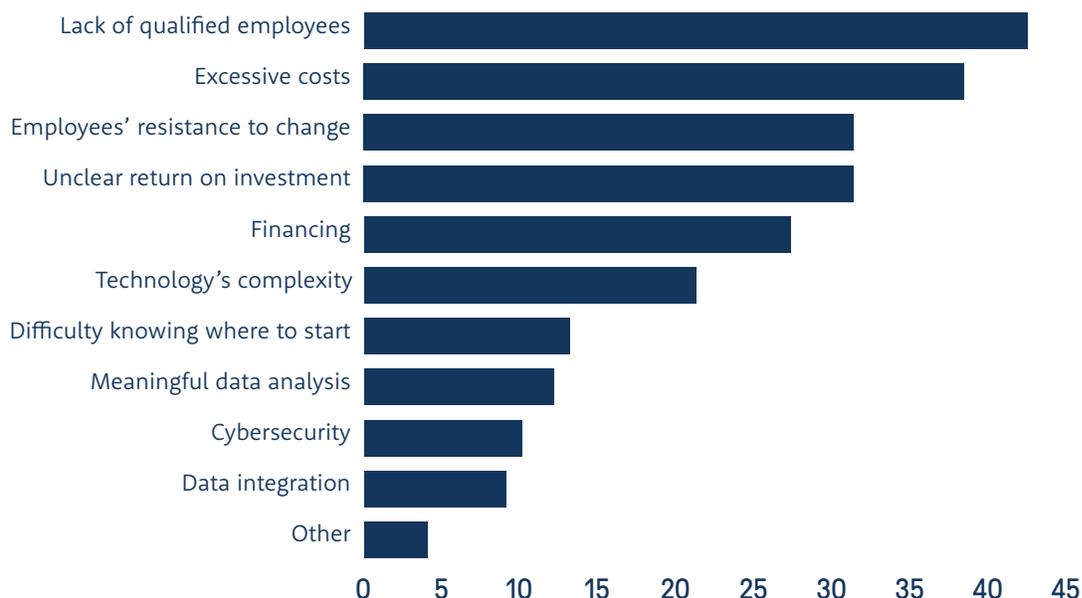
SMEs led by under-represented and equity-seeking groups face further challenges, including systemic racism and sexism, that reduce their ability to access services or supports.

and reduce their ability to access services or supports. This lack of an equitable playing field exacerbates the difficulties they face in digitizing their businesses.

Businesses owned by Indigenous peoples in Ontario, for example, have been found to face challenges in skills attraction and retention, lack of universal high-speed internet, and a heavy reliance on personal financing rather than access to bank or government support.⁶³ An increasing number of these businesses say that access to reliable “internet access, telephone and other IT technologies” remain a barrier to their business growth.⁶⁴ Women entrepreneurs in Canada also face barriers in accessing sufficient finance and resources as a result of a range of “structural

Figure 6

What are the biggest challenges in implementing Industry 4.0 solutions? (BDC, 2017)



Source: Pierre-Olivier Bédard-Maltais, "Industry 4.0: The New Industrial Revolution", BDC, May 2017, p. 11, https://www.bdc.ca/EN/Documents/analysis_research/bdc-etude-manufacturing-en.pdf?utm_campaign=manufacturing-2017--Studies--EN Respondents were able to pick multiple responses.

barriers and economic discrimination reinforced by laws as well as culture,"⁶⁵ which further hamper their abilities to become digitally mature. One 2018 PayPal-sponsored survey of 1000 Canadian business owners found that 47% of women-owned businesses that are leveraging e-commerce found trouble securing external investment, while 67% of male-owned online businesses said it was easy to find external investment.⁶⁶

A similar picture plays out for Black entrepreneurs. Research conducted for the Canadian Black Chamber of Commerce found that "the majority of programs providing access to capital and funding for entrepreneurs do not make a targeted effort to address Black communities," with many Black entrepreneurs ending up ineligible for assistance due to revenue or employee number requirements.⁶⁷

These barriers are reflected in the scores for companies completing the Scale Up Institute Toronto's *Digital Needs Assessment* survey.

Businesses that are Indigenous-owned, women-owned, visible minority-owned or owned by persons with disabilities averaged lower scores across the eight different capabilities surveyed than businesses not owned by any of those groups.⁶⁸ The existence of these systemic barriers and the lack of an equitable playing field is holding both these companies, and the Canadian economy, back.

However, the groups identified above are clearly demanding increased benefits from digitization.

The existence of these systemic barriers and the lack of an equitable level playing field is holding both these companies, and the Canadian economy, back.

The 2020 Ontario Aboriginal Business Survey found that 44% of Indigenous owned companies are “excited and energized” about technological advancements such as AI, more than double the 19% who are “anxious and worried”.⁶⁹ The research for PayPal found that 13% more women entrepreneurs than men believed that they had experienced sustained levels of success and growth, specifically through their online stores (73% to 60%). The same research found that there was a 58% gap in median revenue between women and men entrepreneurs in the same type of work, amounting to an estimated \$88.2 billion gap in total revenues for Canada’s 1.4

million women entrepreneurs.⁷⁰ Recent research from the Brookfield Institute for Innovation + Entrepreneurship has further demonstrated the “systematic differences in growth experiences for companies with women ownership and those with men ownership.”⁷¹

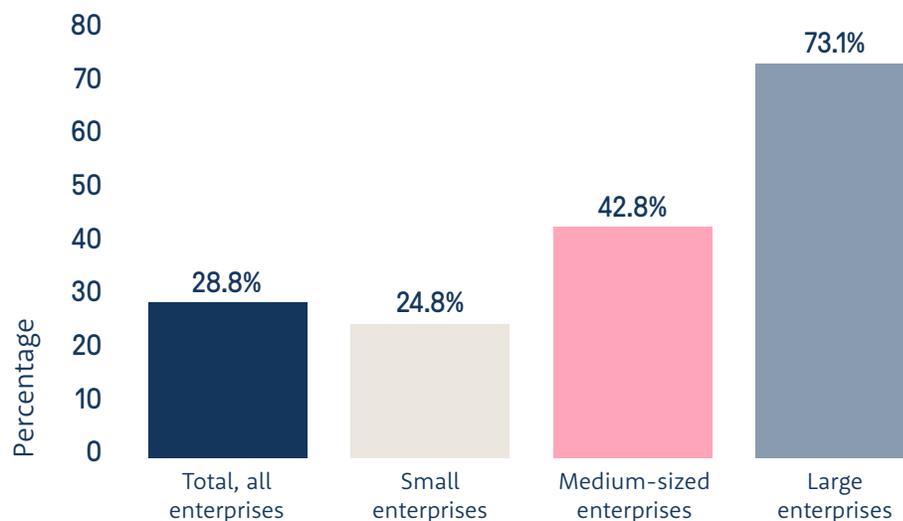
Removing systemic barriers and providing an equitable level playing field is essential to increasing the digital maturity of all of Canada’s SMEs. Doing so will require understanding these barriers to digital maturity through an intersectional lens.

The Digital Divide

ONE CRUCIAL BARRIER to digital maturity across all SMEs is their access to high-speed connectivity. Fibre, the essential backbone to digital connectivity, “allows for much higher speeds for high-bandwidth online activities” and plays a key role for the deployment of 5G networks that

“rely on a strong fibre backhaul infrastructure to face the growth of data traffic driven by the digital transformation”.⁷² Yet this is an area in which Canada’s small and medium businesses lag. As **Figure 7** shows, only 24.8% of small enterprises have a fibre optic internet connection, compared to 73.1% of large enterprises.

Figure 7
Enterprises that have a fibre optic line internet connection (SDTIU, 2019)

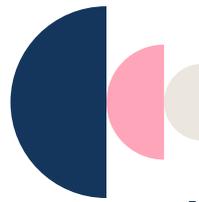


Source: Statistics Canada, Survey of Digital Technology and Internet Use, Table 22-10-0116-01 Internet access by type of Internet connection, industry, and size of enterprise
DOI: <https://doi.org/10.25318/2210011601-eng>

Having access to high-speed connectivity, as well as ensuring connections are reliable and low latency, is important future-proofing for businesses as internet connected devices proliferate. The Cisco Annual Internet Report estimates that Machine to Machine (M2M) applications, which includes things such as smart meters, video surveillance, healthcare monitoring, transportation, and package or asset tracking, will be the fastest growing device and connections category over the period 2018-2023, accounting for almost 15 billion connections globally. Businesses' share of total devices is estimated to grow faster than the consumer share over this period.⁷³

Having access to high-speed connectivity, as well as ensuring connections are reliable and low latency, is important future-proofing for businesses as internet connected devices proliferate.

As countries race to ensure their networks are capable of handling the expected higher speed requirements, Canada is being left behind. The Federal Government's Connectivity Strategy aims to deliver download speeds of 50 Mbps and upload speeds of 10 Mbps to 90% of Canadians by 2021, and 95% by 2026.⁷⁴ These are among the lowest targets in the OECD. The United States aimed to have 80% of households with speeds double Canada's target by 2020, with Norway also aiming for 100 Mbps download by 2020 but for 90% of households. Other countries have ambitions that are orders of magnitude higher than Canada's. Sweden's target is for 98% of households and businesses to have 1 Gbps broadband by 2025, and Belgium aims to have that speed to half of its households by 2020. South Korea has the highest target, aiming for 10 Gbps download speeds in half of urban households (85 cities) by 2022.⁷⁵



Even in Toronto, home to some of Canada's fastest digital infrastructure, there is a deep digital divide.

Even in Toronto, home to some of Canada's fastest digital infrastructure, there is a deep digital divide. Research from the Brookfield Institute for Innovation + Entrepreneurship and Ryerson Leadership Lab found that even though 98% of Toronto households had internet access, 38% reported download speeds below the target of 50 Mbps.⁷⁶

The projection that 10% of Canadians are still to be without 50 Mbps/10 Mbps speeds by the end of 2021 represents a crucial barrier to building a fair and inclusive economy. Residents of these rural and remote communities are often Indigenous people, and the lack of online access has been identified as a challenge for Indigenous businesses situation on-reserve, especially in the Territories and Atlantic provinces.⁷⁷

Without access to high-speed connectivity, Canada's SMEs risk missing out as new waves of technology are rolled out. Closing the digital divide and ensuring Canada's SMEs have high-speed and reliable internet is important to ensuring they are able to enjoy the full benefits of increasing their digital maturity.





The State of Digital Maturity—Digital Culture + Skills

Skills + Leadership

A CRUCIAL ELEMENT of digital maturity is an enterprise’s digital culture. BDC breaks this down as:

- a strong digital strategy and vision
- support from leaders
- appropriate planning
- an environment that rewards risk taking and collaboration
- a focus on training and continuous learning.⁷⁸

Cutting across all of these is the availability of digital skills in an SME’s workforce, something that is consistently cited by SMEs as the top obstacle to implementing digital technologies.⁷⁹

Combined, these factors are central to whether digital investments succeed or fail. Research from McKinsey Global Institute found that the businesses adopting AI successfully are the ones that bring these elements of digital culture together to create detailed strategies on what its deployment will mean across the business. Success requires businesses to: “identify the business case, set up the right data ecosystem, build or buy appropriate AI tools, and adapt

workflow processes, capabilities, and culture.” In particular, “leadership from the top, management and technical capabilities, and seamless data access are key enablers.”⁸⁰ These factors apply across the successful deployment of all technologies and business sizes.

SMEs have a disadvantage here. Research from 2008 looking at the digital divide between SMEs and larger enterprises in Europe and the US found that the “lack of proper knowledge, education and skilled owner-managers and employees within the enterprise” were the key barriers to better utilization of ICT.⁸¹ Another paper from 2017 looking at cloud adoption in the EU has found that SMEs in particular have “low levels of knowledge and training in the functionalities and advantages of the cloud.”⁸² Recent research looked at 535 internationally orientated Canadian SMEs and how their digitalization differed from enterprises focused on the domestic market. This found that their ability to “create new partnerships and foster inter-organizational system and service integration, particularly with large international online marketplaces and platforms” was important to their internationalisation. Another important factor was “the use of critical information systems such as CRM and ERP software for managing customer relationships and business processes in the digital and international environment”.⁸³



The findings from a recent poll conducted by Environics on behalf of the Scale-Up Institute Toronto speak to some of the challenges facing in SMEs in planning and managing the adoption of digital technologies. Over a third of small enterprises (between 10 and 99 employees) either do not understand digital opportunities, or are beginning to understand but do not know how digitization will impact their businesses. This is a significantly higher portion than for larger businesses (Figure 8). Similarly, 50% of small enterprises with 10-99 employees have ad hoc approaches to digital initiatives or only basic processes in place (Figure 9).

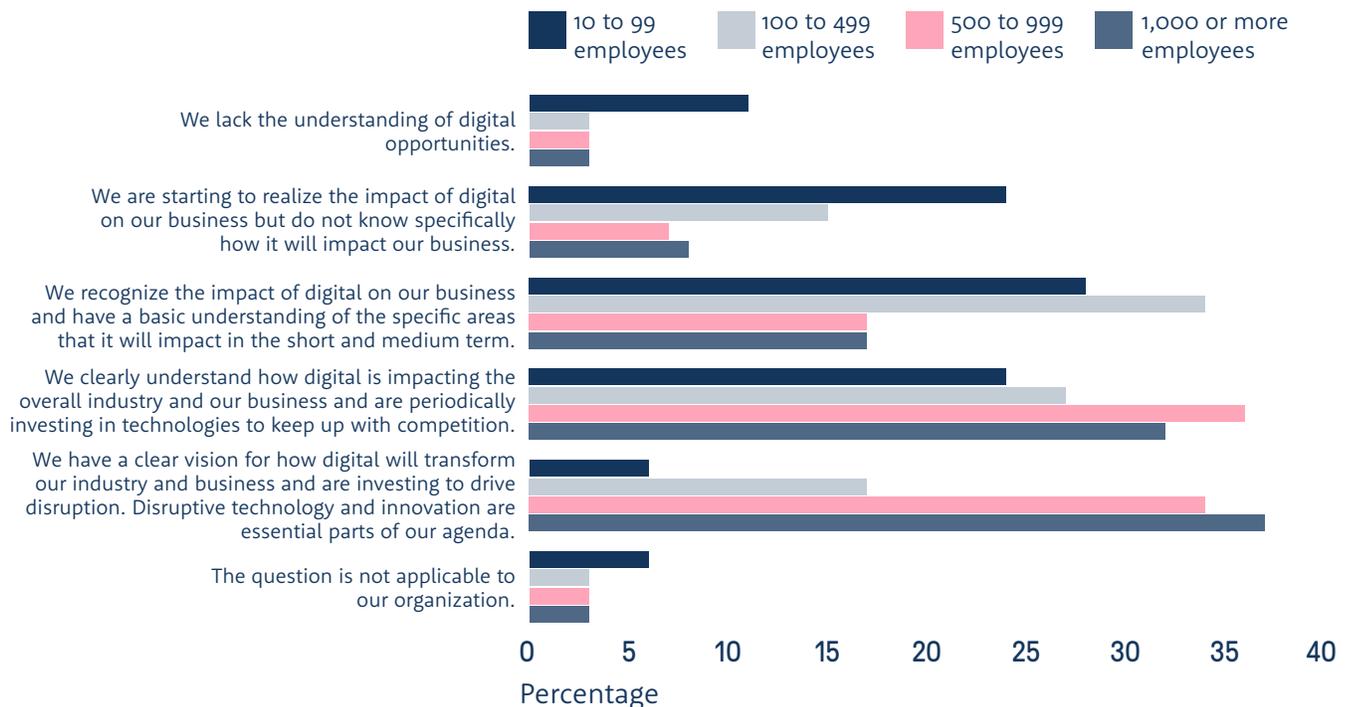
The difficulties SMEs face in terms of digital leadership and planning are further exacerbated by shortages in digital skills. Few small enterprises employ specialized ICT staff—5.5% compared to 21.7% of medium-sized enterprises and 53.2% of large enterprises (Figure 10). However, this gap may reflect both the mixed nature of roles in

small enterprises as well as the outsourcing of speciality digital tasks to third parties, to avoid the need to have people in these roles on staff. 21.6% of small enterprises and 28.5% of medium-sized enterprises responded to the IDC Canada Future of Work Survey that they are either using or plan to use outsourcing of IT admin and support to a managed service provider.⁸⁴ There is a need for further research on the relationship of outsourcing to digital maturity and whether it accelerates or hinders digital maturity.

SMEs certainly face skills shortages. SMEs often find it hard to hire staff of any stripe, with a 2018 BDC survey reporting that 39% of SMEs have difficulty finding new workers, with the shortages most acute in the manufacturing, retail and construction sectors.⁸⁵ But it is even harder to hire staff with digital skills. A 2020 IDC report in collaboration with the Future Skills Centre and the Diversity Institute found that 65.3% of small companies and 68.5% of medium-sized

Figure 8

Does your organization understand the opportunities offered by digitization for the overall business? (Environics, 2021)

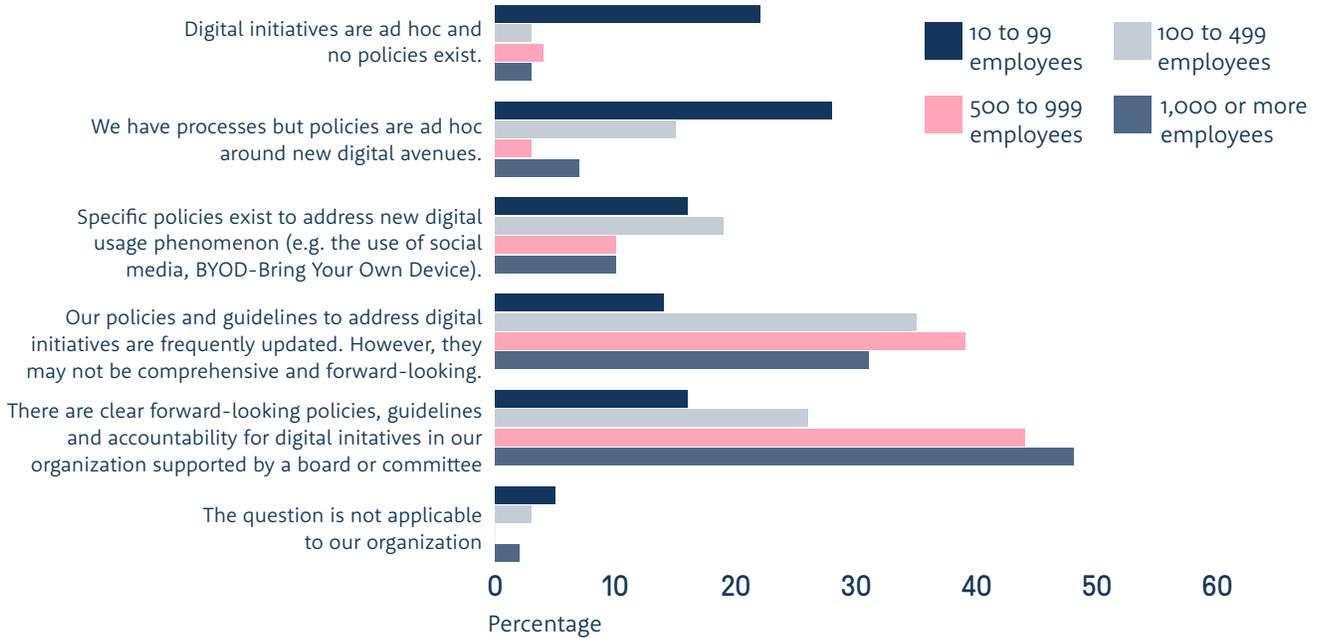


Source: Environics, 2021, on behalf of the Scale Up Institute Toronto. Data from Canadian headquartered respondents.



Figure 9

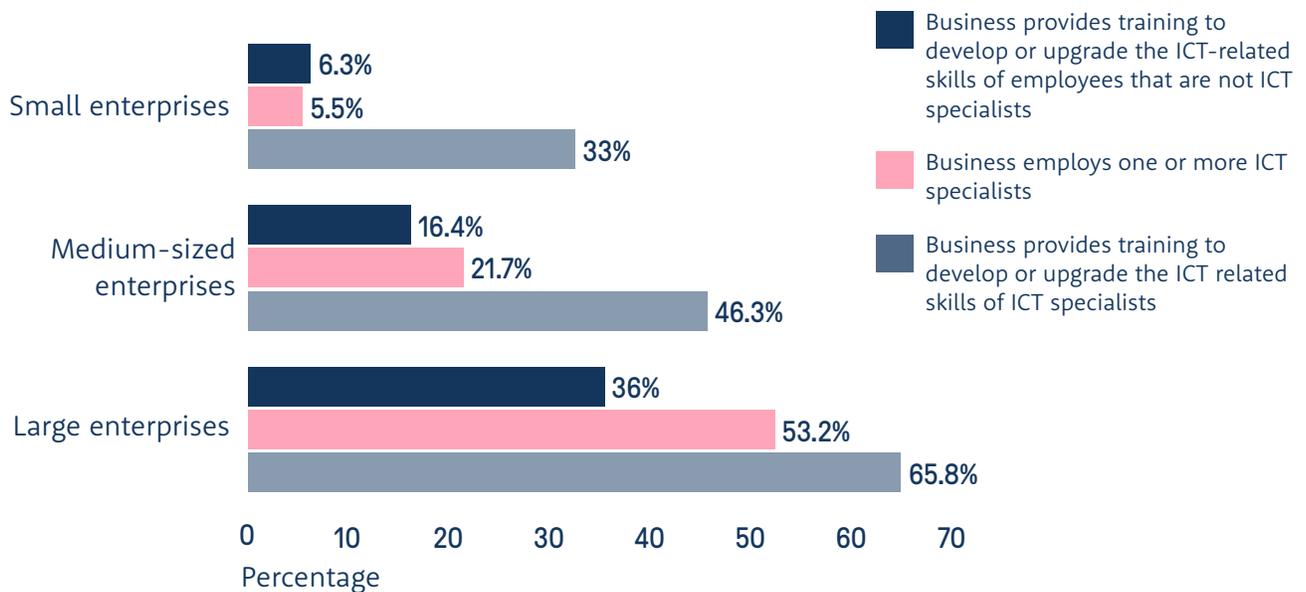
Is there clear accountability and responsibility in your organization to support digital initiatives? (Environics, 2021)



Source: Environics, 2021, on behalf of the Scale Up Institute Toronto. Data from Canadian headquartered respondents.

Figure 10

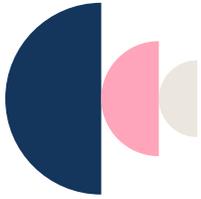
Enterprises with Information and Communication Technologies specialists, and training provided for ICT-related skills by enterprise size (SDTIU, 2020)



Source: Statistics Canada, Survey of Digital Technology and Internet Use, Table 22-10-0118-01 Enterprises with Information and Communication Technologies specialists, and training provided for ICT-related skills, by industry and size of enterprise DOI: <https://doi.org/10.25318/2210011801-eng>



companies face difficulties in sourcing new digital skills either across the company or in some business areas, though large companies face the most difficulty at 71.3%.⁸⁶



Women in STEM fields are paid less than men; people with “foreign-sounding” last names are less likely to be interviewed even if they have the same qualifications as others; racialized minorities and Indigenous peoples face unconscious bias and limited opportunities, especially in SMEs.

This is sometimes however, a self-inflicted wound. As the 2020 report on “Bridging the Digital Skills Gap” states: “the under-employment of skilled immigrants and under-representation of women and other groups in the ICT industry suggests that recruitment and retention policies and practices of the very firms complaining about this gap may be contributing to the problem”.⁸⁷ This research highlights the facts that: women in STEM fields are paid less than men; people with “foreign-sounding” last names are less likely to be interviewed even if they have the same qualifications as others; racialized minorities and Indigenous peoples face unconscious bias and limited opportunities, especially in SMEs; immigrants are often stuck in low-paying jobs despite having high levels of skill and education; and university graduates with severe disabilities have the same employment prospects as those without a high school diploma.⁸⁸ This is a damning indictment of the lack of equitable access to opportunities, and speaks to the desperate need

for Canadian SMEs to look to a more diverse pool of talent to fill their digital needs.

Using an intersectional lens shows that systemic barriers also operate to exacerbate skills shortages for disadvantaged enterprises and impact their ability to lead on other elements of digital culture.

Furthermore, using an intersectional lens shows that systemic barriers also operate to exacerbate skills shortages for disadvantaged enterprises and impact their ability to lead on other elements of digital culture. The review of a Social Research and Demonstration Corporation (SRDC) program that aimed to support rural small businesses with their digital skills found that between 75 and 88% of participating organizations “reported at baseline that their staff were not proficient in performing each digital essential skill”^b and that,

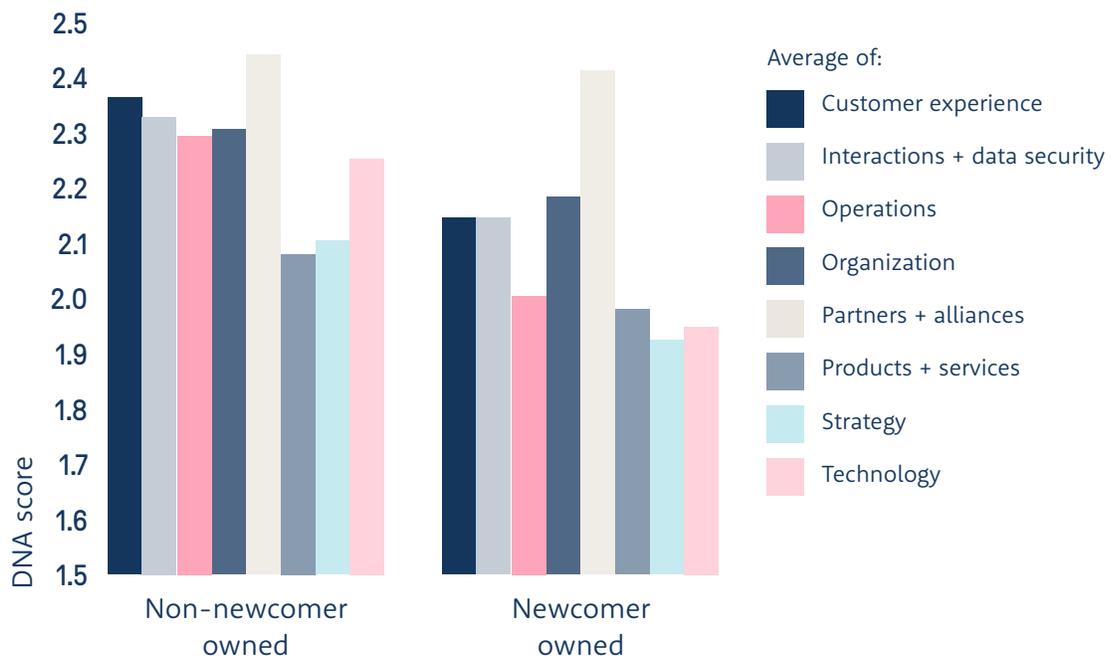
b SRDC define six digital essential skills in rising levels of complexity: 1. Communicate electronically (by email) with co-workers, suppliers or clients to coordinate workplace activities; 2. Consult/read and use digital documents on the Internet or by accessing databases; 3. Fill out digital forms and do commercial transactions on the Internet; 4. Use new digital technologies to access workplace coordination, collaboration and training tools; 5. Search, select and save useful information by using the Internet in a workplace problem-solving context; and 6. Know, understand and apply security measures in a digital environment. Norm Leckie, Julie Rodier & David Gyarmati, “Workplace Digital Essential Skills in Rural Small Businesses: Final Research Report”, SRDC, May 2016, p. 5, <https://www.srdc.org/media/199928/digital-skills-report-en.pdf>

overall, rural SMEs “have workforces that lack digital skills, which prevents the organizations and workers from fully taking advantage of digital technologies.”⁸⁹ Similarly, the lack of internet access makes it more difficult for Indigenous entrepreneurs in remote and rural areas to utilize free online business training programs.⁹⁰ Immigrant entrepreneurs also face barriers in growing their businesses that will particularly impact their digital maturity including “institutional barriers, discrimination, as well as knowledge and skill gaps”, all despite “having better than-average credentials, having stronger entrepreneurial intent and aptitude and more global knowledge and social capital”.⁹¹ Newcomer-owned businesses who chose to participate in

the Scale Up Institute Toronto’s *Digital Needs Assessment* posted lower average scores than non-newcomer-owned businesses across 8 different digital capabilities measured, potentially indicating the impact of these barriers (Figure 11). As a result of systemic barriers women entrepreneurs also tend to have “limited management and business training, difficulties with business planning, lack of mentoring, and limited financial understanding.”⁹² These issues, which reflect a lack of equitable access to support rather than any difference in ability or willingness to take business risks, will serve to further reduce women entrepreneurs’ ability to build their businesses’ digital culture and take advantage of the benefits increased digital maturity can bring.

Figure 11

Digital Needs Assessment average scores by newcomer status



Source: Scale Up Institute Toronto, 2021. 977 Ontario-based companies participated in the Digital Needs Assessment and answered a 44-question survey to generate their scores across different aspects of digital maturity.



The State of Digital Maturity—Technological Intensity

ULTIMATELY, A COMPANY'S digital maturity hinges on its successful use of technology. While not every technology is relevant to every business, a range of them almost certainly are. Almost every company could benefit from use of a foundational technology such as having an online presence. Important bridging technologies, such as cloud computing, or customer relationship management, might not be applicable for everyone, they can have big impacts in terms of transforming internal operations. Advanced technology uses, such as AI, big data analytics, or the Internet of Things, might only be relevant to a much more select group, but even then, these technologies are likely to be useful to a much larger number of companies than those already deploying them. Finally, cybersecurity is not the sole concern of large corporations or banks with large financial assets. It is instead something that every company (and individual) needs to be aware of and only increases in importance as digital maturity increases.

Foundational Technologies: Online Presence, Social Media, and E-Commerce

Foundational technologies such as social media use, having an online presence, and selling goods and services online are often the starting point for SMEs to increase their digital intensity. These technologies are generally customer facing, though they can feed into back-office functions,

such as through analyzing data from social media or e-commerce.

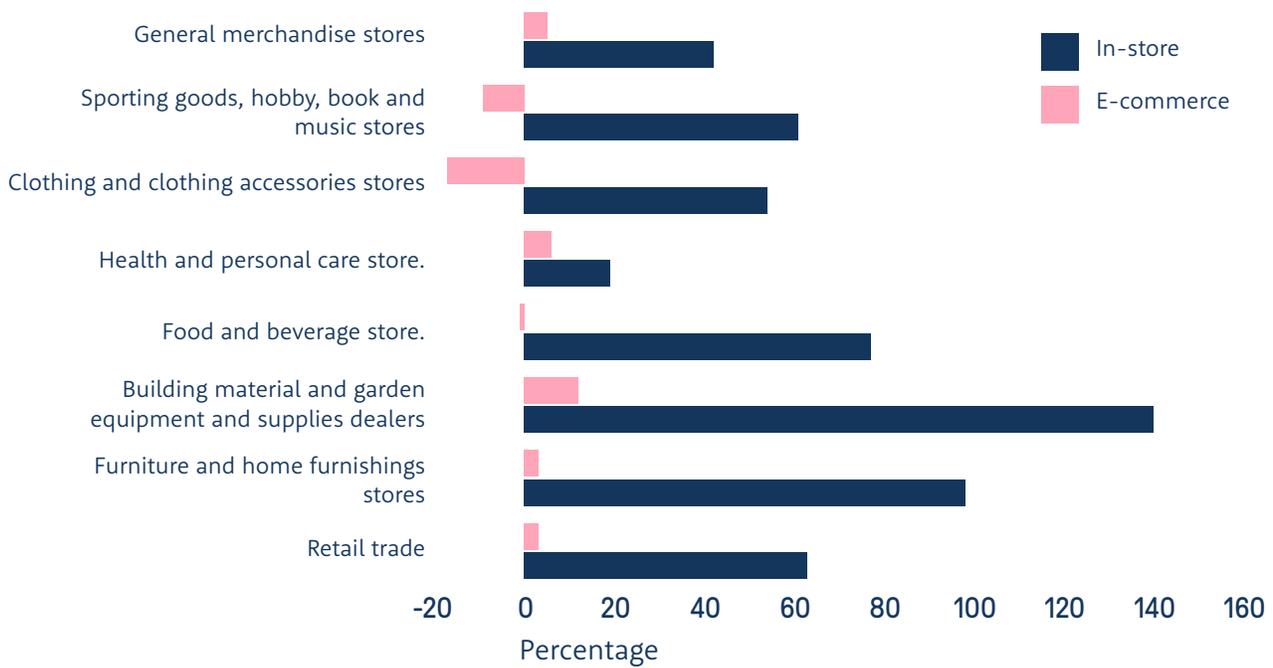
Almost every company could benefit from use of a foundational technology such as having an online presence.

The use of these digital technologies is driven by consumer demand. As of 2018, over 91% of Canadians aged 15 years and older were using the internet. Of them, 84% bought goods or services online, spending \$57.4 billion.⁹³ 84.04% of Canadians also used the internet in 2018 for finding information about goods or services, the 6th highest rate in the OECD.⁹⁴ The pandemic has only served to accelerate the use of e-commerce, with online sales up far more than in-store sales across the board, (Figure 12), with growth far outstripping pre-pandemic levels (Figure 13).

Yet despite these demand side factors, Canadian companies as a whole are not at the digital frontier when it comes to increasing the rate of adoption of these foundational technologies. As Figure 14 shows, as of 2019 Canada was solidly

Figure 12

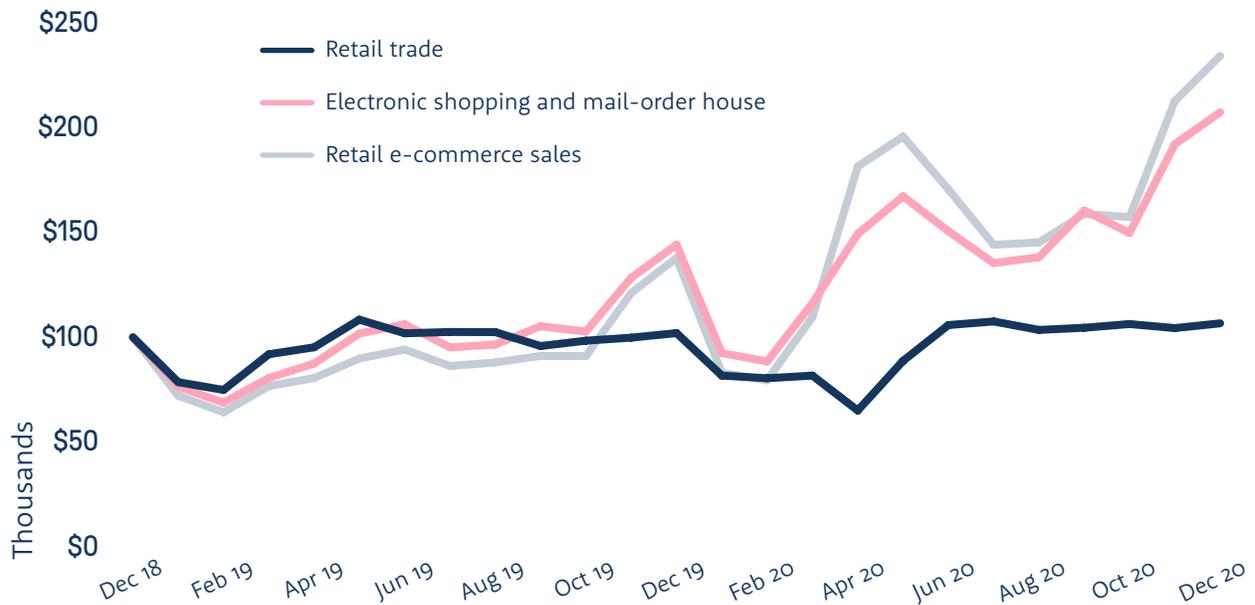
Changes in in-store and e-commerce sales during the pandemic, February and September 2020 (MRTS, 2020)



Source: Statistics Canada, Online shopping during the COVID-19 pandemic, <https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2020088-eng.htm>

Figure 13

Retail e-commerce sales (Dec 2018=100)



Statistics Canada. Table 20-10-0072-01 Retail e-commerce sales (x 1,000) DOI: <https://doi.org/10.25318/2010007201-eng>



International Comparisons:

It is important to place the digital maturity of Canadian SMEs in the context of their international peers to help understand the broader trends in digitization and where Canada might be leading or lacking.

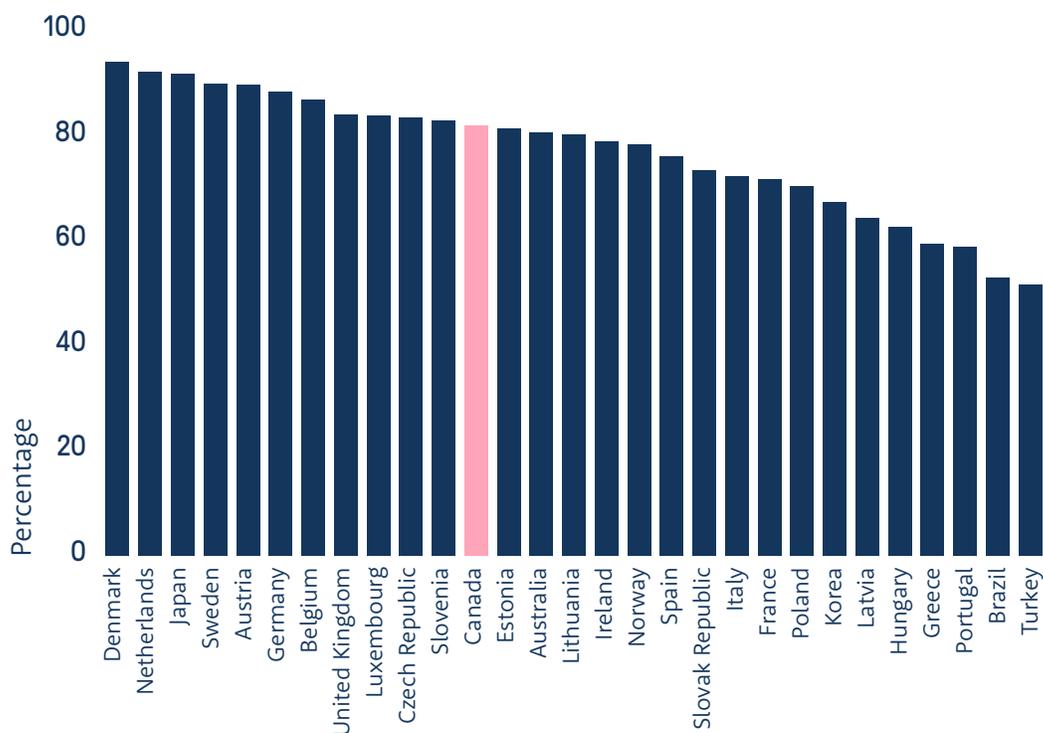
For this, comparisons have primarily been drawn from among members of the Organisation for Economic Co-operation and Development (OECD). With a membership consisting of countries with advanced, market-based economies that are governed by democratically accountable governments, the OECD represents a group of countries that are broadly comparable to Canada.

Even so, no single metric can tell a complete picture, and looking at a single metric can often mask significant cultural, consumer, and economic differences that can impact the digital maturity of those countries.

Methodological differences between Canada and other OECD countries, along with gaps where no data is available, reduce the ability for these comparisons to provide a consistent international benchmark. Nevertheless, taken along with other data, these comparisons can enrich our understanding of the state of digital maturity in Canada's SMEs.

Figure 14

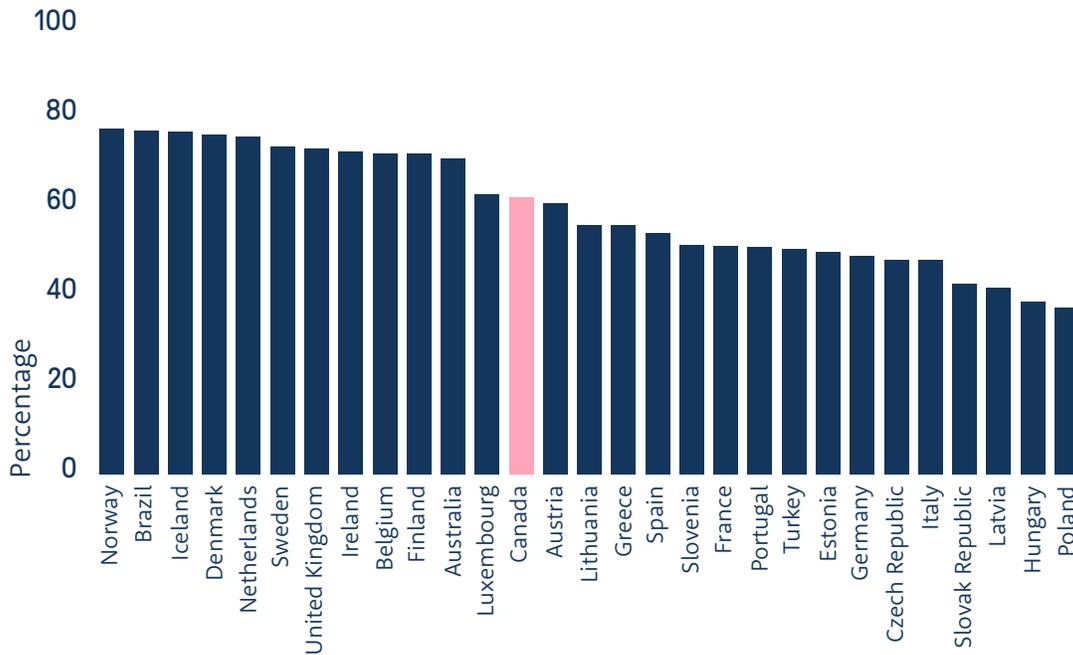
Businesses with a website or a home page (OECD, 2019)



Source: OECD.Stat, *Businesses with a website or home page (%)*
https://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS5

Figure 15

Businesses using social media (OECD, 2019)



Source: OECD.Stat, *Businesses using social media (%)*
https://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS

mid-table in the OECD for businesses with a website or home page, lagging behind the leader Denmark by just over 12%. When it comes to businesses using social media, it is a similar picture with Canada behind the leader Norway by just over 15% (Figure 15).

Canadian small enterprises, in particular, are lagging in their online presence (Figure 16). As of 2019, 17% of small enterprises have no web presence at all, and only 74% have a company website versus 91.5% for medium-sized enterprises and 95% of large enterprises. There is a smaller gap between small and medium-sized enterprises when it comes to social media use—55.4% to 64.4% respectively, though both still significantly behind large enterprises with 74.8% having a social media account.

Not only are there gaps in the baseline adoption of technologies, but also in the strategies around

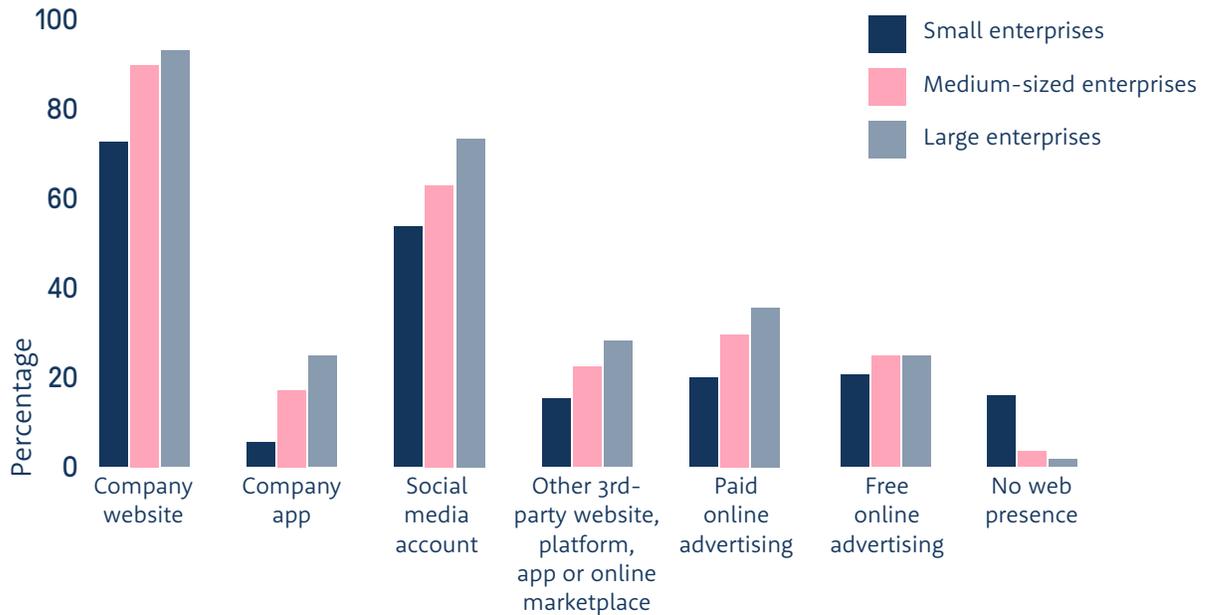
how they are used. Data from the March 2021 Environics survey commissioned by the Scale Up Institute Toronto shows that small enterprises are using social media for more basic uses compared with larger companies. For example, companies with 10-99 employees are three times more likely to report that their social media use is not designed for actively engaging with new and existing customers versus companies with over 500 employees (Figure 17).

There is a mixed picture in terms of industries who have no web presence (Figure 18). Across the board, small enterprises lag behind medium-sized enterprises. This lack of web presence harms enterprises when it comes to selling products and services online.

One area where SMEs are using the web in high numbers is in their procurement. 67.7% of small enterprises ordered goods or services over the

Figure 16

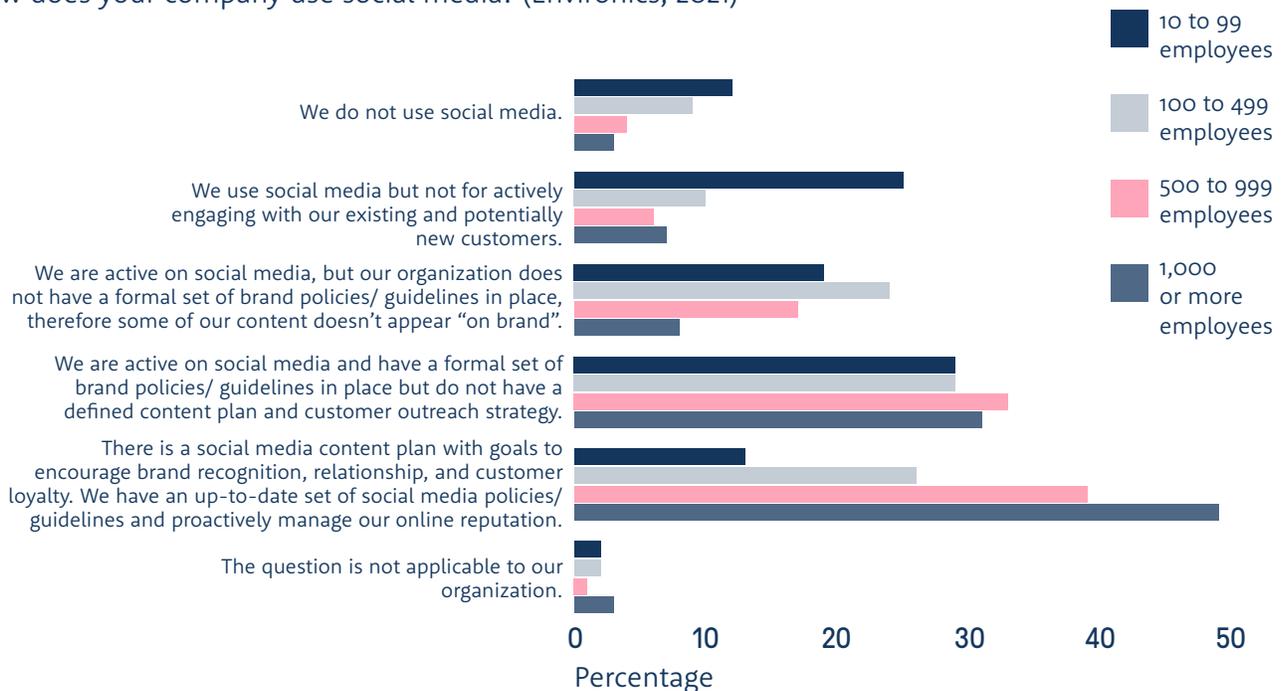
Types of web presence (SDTIU, 2019)



Source: Statistics Canada, Survey of Digital Technology and Internet Use, Table 22-10-0120-01 Types of web presence by industry and size of enterprise
DOI: <https://doi.org/10.25318/2210012001-eng>

Figure 17

How does your company use social media? (Environics, 2021)



Source: Environics, 2021, on behalf of the Scale Up Institute Toronto. Data from Canadian headquartered respondents.



Figure 18

SMEs with no web presence by industry (SDTIU, 2019)



Source: Statistics Canada, Survey of Digital Technology and Internet Use, Table 22-10-0120-01
Types of web presence by industry and size of enterprise
DOI: <https://doi.org/10.25318/2210012001-eng>

internet in 2019, along with 77.4% of medium-sized enterprises and 81.3% of large enterprises (Figure 19). Despite this, only 22.5% of small enterprises receive orders or make sales of goods or services over the internet. SMEs are apparently adept at making purchases online though not enough are taking advantage of the internet to make both business-to-business and business-to-consumer sales.

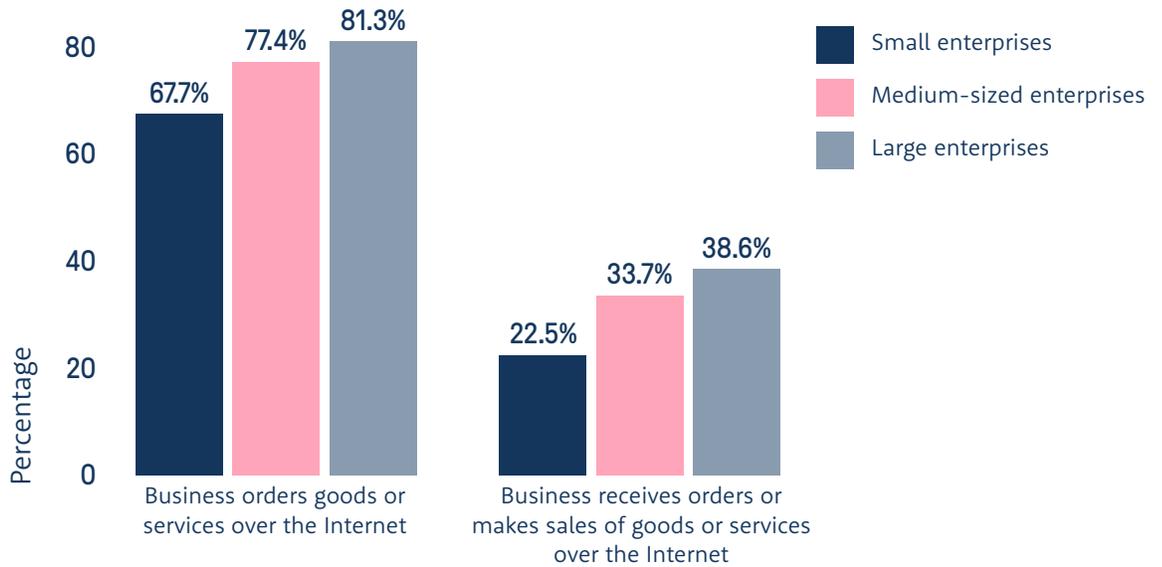
Recent analysis highlights some of the trends in online sales during the pandemic. Though, as noted earlier, there was a substantial growth in e-commerce during the pandemic, this was not matched by large numbers of enterprises shifting online. Indeed, in 2020 just 9% of Canadian businesses of all sizes made 60% or more of their total sales online, up just 3% from 2019.⁹⁵ Businesses majority-owned by women reported

a higher increase in companies that made at least some of their sales online in 2020 compared to all private sector businesses, though were also more likely to have reported a drop in revenue of 30% or more in 2020 compared to 2019—speaking to the disproportionate impact of the pandemic on women despite higher levels of digital adoption.⁹⁶

When it comes to proportion of online sales than in many other digital technology areas there is less of a distinction between SMEs and larger companies. There is almost no difference between enterprises with 20 to 99 employees and those with more than 100 employees in proportion of sales made online in 2020, with the smaller companies actually having a slightly higher proportion making more than 60% of their sales online—9% versus 7% (Figure 20).

Figure 19

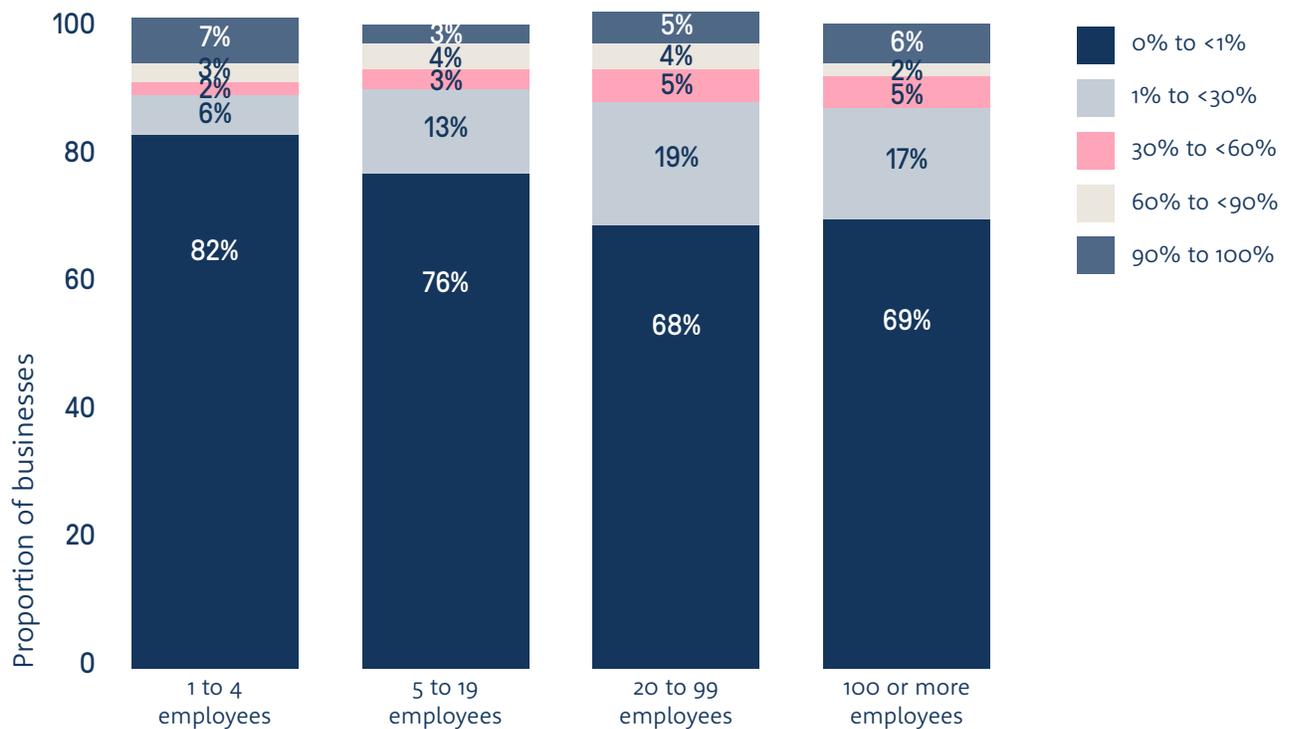
Online Orders received and purchases made for goods and services (SDTIU, 2019)



Source: Statistics Canada, Survey of Digital Technology and Internet Use, Table 22-10-0123-01 Online orders received and purchases made for goods and services, by industry and size of enterprise
DOI: <https://doi.org/10.25318/2210012301-eng>

Figure 20

Proportion of Total Sales Made Online (CSBC, 2020)



Source: "Online Sales in Canada", Brookfield Institute for Innovation + Entrepreneurship, March 2021, p.9 <https://brookfieldinstitute.ca/wp-content/uploads/Online-Sales-in-Canada.pdf>



Cloud Computing and Advanced Technology Use

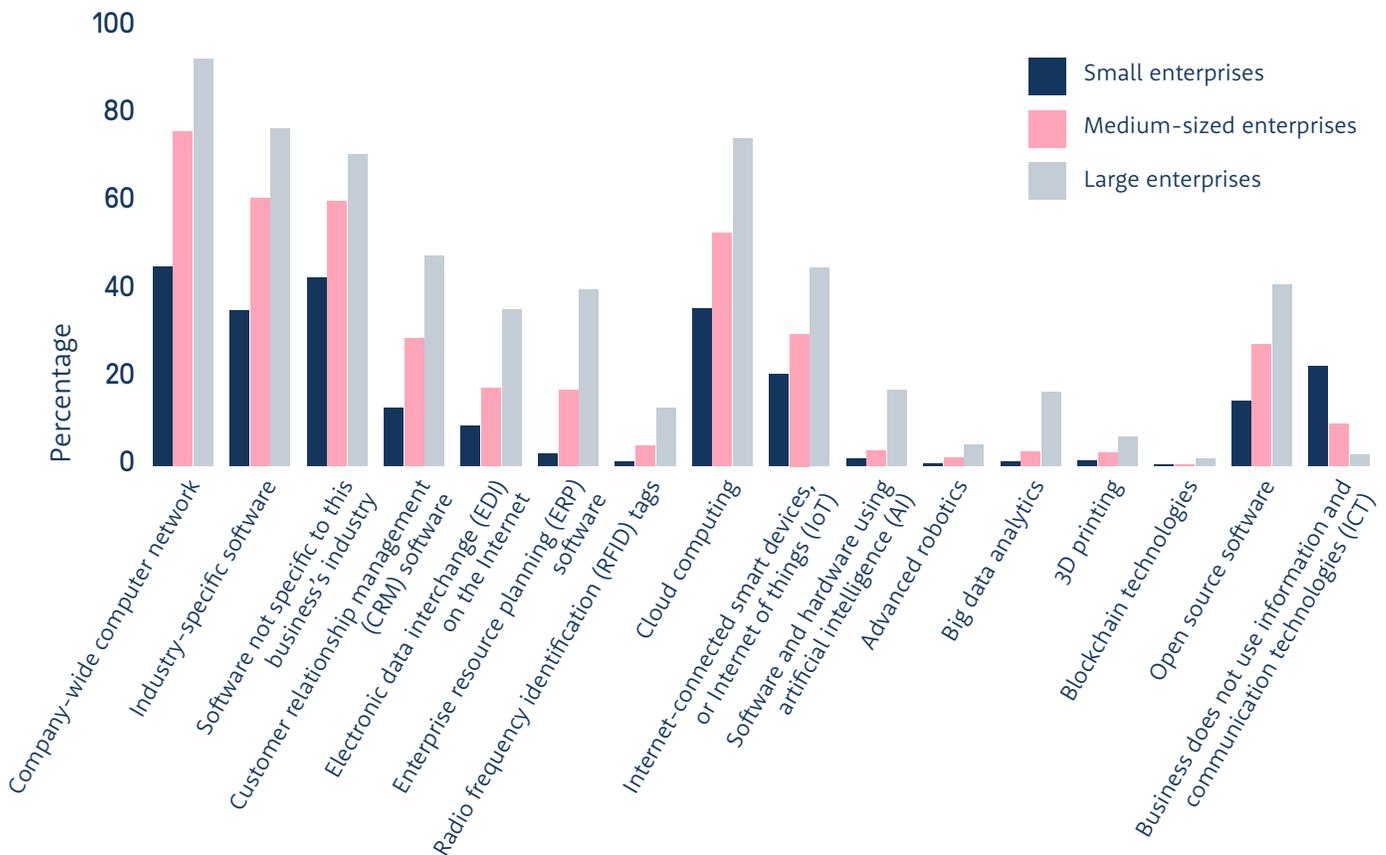
There is a more varied picture for the digital intensity of SMEs at more advanced levels of technology use. Some of these technologies have more niche applicability, depending on the industry an enterprise operates in or their size. 3D printing, for example, is a technology with applicability for businesses in only a few sectors of the economy. Enterprise Resource Planning (ERP) software that helps an enterprise manage data and processes from a range of activities is also probably not a worthwhile investment for a small or medium-sized enterprise with only one or two lines of business, as can be seen from the fact that

only 2.7% of small businesses use it versus 39.5% of large businesses (Figure 21).

Other more advanced technologies are more applicable across industries and sizes. This is particularly true for cloud computing which is an important bridging technology to higher levels of digital maturity and covers everything from productivity software such as Google Docs, through storage such as Dropbox, to on-demand computing power for advanced applications and beyond. Cloud removes the need for large capital expenditures on server infrastructure, computing power, databases, and software, instead enabling companies to access these on-demand and scale

Figure 21

Information and communication technologies used by size of enterprises (SDTIU, 2019)



Source: Statistics Canada, Survey of Digital Technology and Internet Use, Table 22-10-0117-01 Information and communication technologies used by industry and size of enterprises
DOI: <https://doi.org/10.25318/2210011701-eng>



its use quickly and comparatively cheaply. This pay-as-you-go model is particularly beneficial for SMEs.⁹⁷ This model can also be beneficial for those SMEs owned by equity-seeking groups that face difficulties in accessing finance and capital for investment due to systemic discrimination, by helping to reduce upfront costs to digital adoption.

Overall, 35.3% of small enterprises and 52.1% of medium-sized enterprises in Canada use cloud computing, significantly lagging behind large enterprises which use cloud services at a rate of 73.3% (Figure 21), highlighting the room for growth for adoption of this important technology.

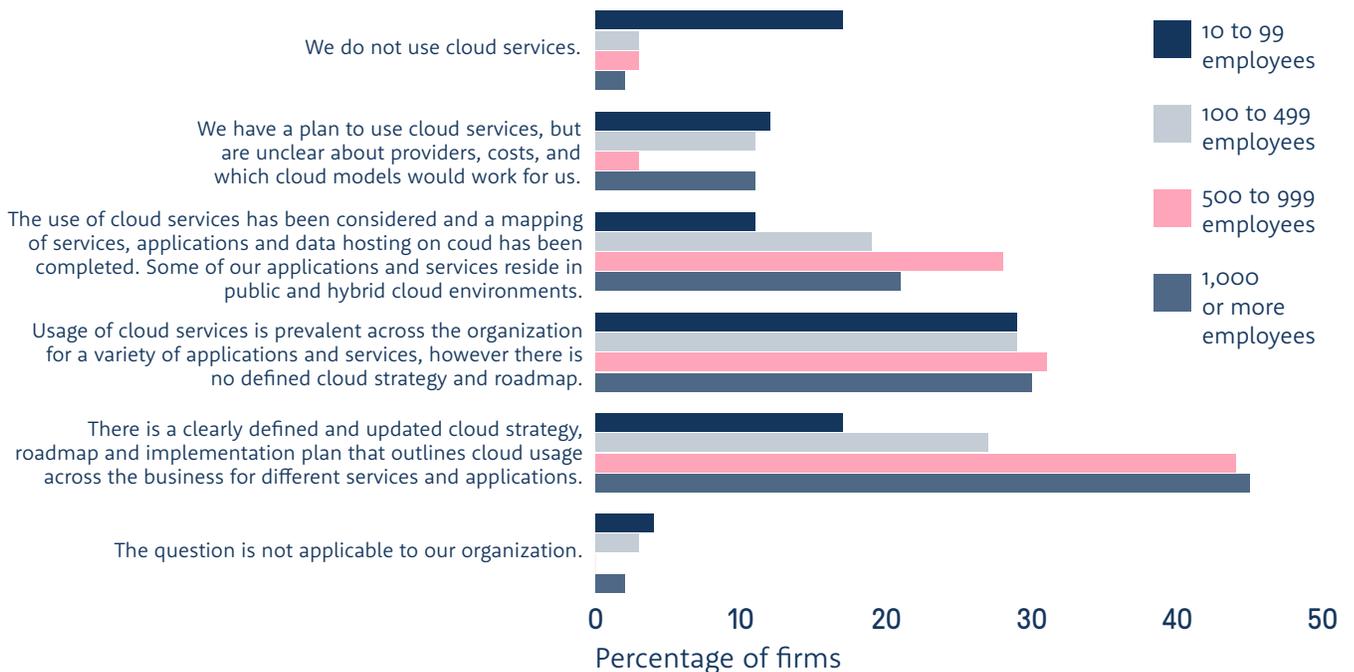
The reasonably high level of uptake by SMEs of cloud computing technologies is also reflected in how they use it. Survey data shows that there is only a 1% difference between firms with between 10–99 employees and those with over 1000 when responding that “usage of cloud services is prevalent across the organization for a variety of applications and services, however there is no

defined cloud strategy and roadmap”. Smaller firms still however make up the vast majority of businesses responding that they do not use cloud services, and lag behind larger enterprises in having clearly defined and updated strategies, roadmaps and implementation plans for cloud usage.

It is notable that all industries are making use of cloud computing (Figure 22). However, there is some variation in its uptake. Some of the most digitally intensive industries, such as information and cultural industries and professional, scientific and technical services, unsurprisingly have high cloud use by both small and medium-sized enterprises. But, the large gaps in use rates between small and medium-sized enterprises in industries such as utilities, finance and insurance, real estate and rental and leasing, and administrative and support, waste management and remediation services potentially point towards areas where small enterprises could benefit from increasing their technology use in line with their

Figure 22

To what extent does your organization utilize cloud services? (Environics, 2021)



Source: Environics, 2021, on behalf of the Scale Up Institute Toronto. Data from Canadian headquartered respondents



larger competitors. They further speak to the fact that digitalization is not something limited to certain industries or sectors, but is something relevant across the Canadian economy.

Across other technologies covered in **Figure 21** the picture is less positive. Canada's SMEs severely lag in the use of Customer Relationship Management (CRM) software for example. CRMs help enterprises manage their customer and client interactions, supporting them to develop leads and increase sales and are also important bridging technologies.⁹⁸ Despite this, Canadian enterprises have low rates of CRM use across the board, with only 13% of small enterprises using one (**Figure 21**). Canada's low uptake across all enterprise sizes leaves it ranking in the bottom five in the OECD (**Figure 24**).

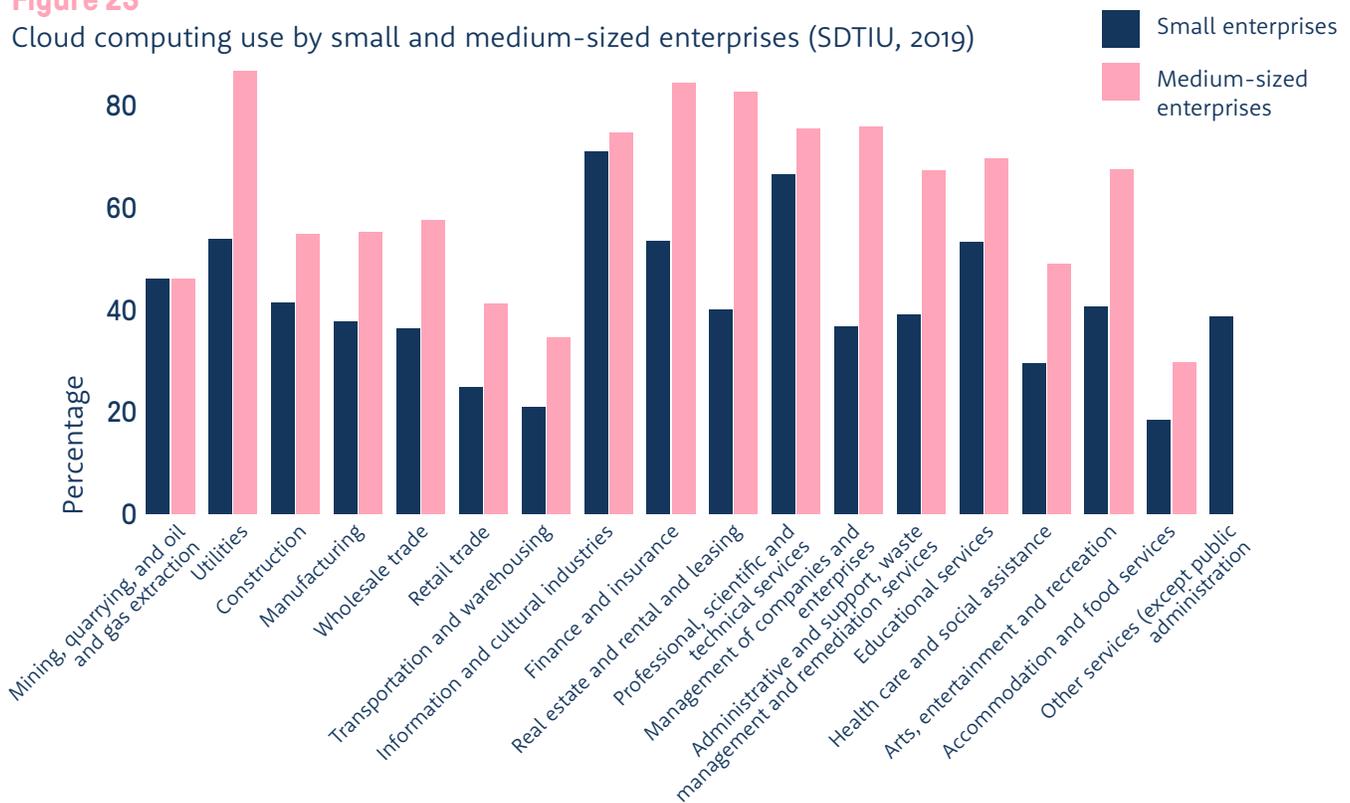
A similar picture plays out for Radio Frequency Identification (RFID) technologies. RFID utilizes smart tags that store information, such as

those in modern ePassports. With uses that cut across areas like access fobs, animal tracking, and apparel tagging, it is a technology with an important role in Internet of Things (IoT) use scenarios,⁹⁹ and a growing global market worth USD\$11.6 billion in 2019.¹⁰⁰ Yet despite this, only 1% of small enterprises reported using RFID technologies, with medium and large enterprises not much higher (**Figure 21**).

Finally, Artificial Intelligence (AI) use is another area that SMEs lag their larger peers. Only 1.7% of small enterprises and 3.5% of medium-sized enterprises make any use of AI, compared to 17% of large enterprises (**Figure 21**). Despite the potential of AI, and in particular its Canadian pioneered sub-field Machine Learning, to be a new revolutionary general-purpose technology, along the lines of electrification and mass production,¹⁰¹ its uptake remains lower than expected. The 2019 Brookfield Institute for Innovation + Entrepreneurship report on AI

Figure 23

Cloud computing use by small and medium-sized enterprises (SDTIU, 2019)



Source: Statistics Canada, Survey of Digital Technology and Internet Use, Table 22-10-0117-01 Information and communication technologies used by industry and size of enterprises
DOI: <https://doi.org/10.25318/2210011701-eng>



adoption highlights that “for Canadian firms to effectively adopt AI and reap its productivity benefits, they will need to invest in the right talent, develop complementary infrastructure, and design and adhere to relevant business processes” but that it is difficult to know exactly what type of these is needed and how these investments should be integrated.¹⁰² As has been explored above, these kind of decisions around technology implementation are even difficult for SMEs, and without support, they may miss out on the growth that could come with its successful deployment.

Cybersecurity

A CRUCIAL FINAL ELEMENT of digital maturity relates to cybersecurity. While SMEs might be lower value targets for cyber crime than larger enterprises, they are certainly not immune from attacks. This is reflected in the proportions of businesses that have been impacted by cybersecurity incidents in Canada, with 43% of large businesses reporting incidents in 2019, against, 29% for medium-sized businesses and 18% for small businesses.¹⁰³

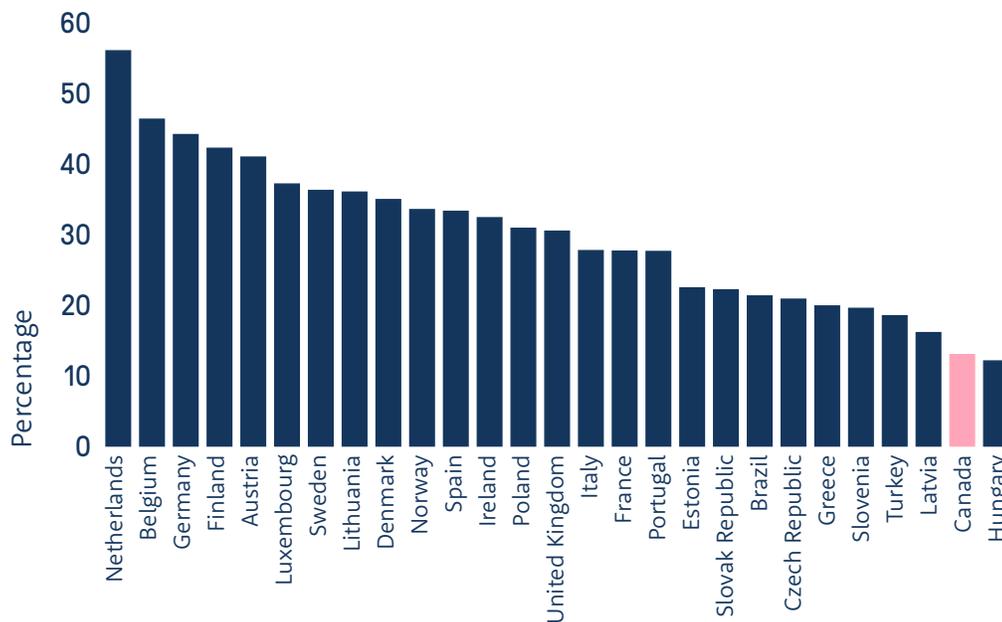
According to the OECD “digital transformation increases SME exposure to digital security risks

and the likelihood to be victims of cybercrime by making them more exposed to digital security incidents and making them more reliant on digital technology.”¹⁰⁴ Yet despite this increased exposure, 33% of SMEs polled in the IBC survey reported spending nothing on cybersecurity.¹⁰⁵ 19.8% of small enterprise respondents to the Canadian Survey of Cyber Security and Cybercrime reported having no risk management arrangements for cybersecurity.¹⁰⁶

The costs of these attacks can be high or even fatal to a small business. A 2019 survey for the Insurance Bureau of Canada (IBC) found that of SMEs that had suffered a cyber attack, 57% were either unaware of the extent of the damages or stated that the breach cost them over \$100,000.¹⁰⁷ Around 60% of small enterprises who suffer a cyber attack go out of business within six months.¹⁰⁸ For small enterprises in 2019 who suffered cybersecurity incidents, 11.5% lost revenue, 27.3% saw employees unable to carry out their day-to-day work, 22.7% had additional repair or recovery costs, and 3.7% paid a ransom payment, a higher percentage than both medium and large businesses.¹⁰⁹

Figure 24

Businesses using CRM (Customer Relationship Management) software (OECD, 2019)



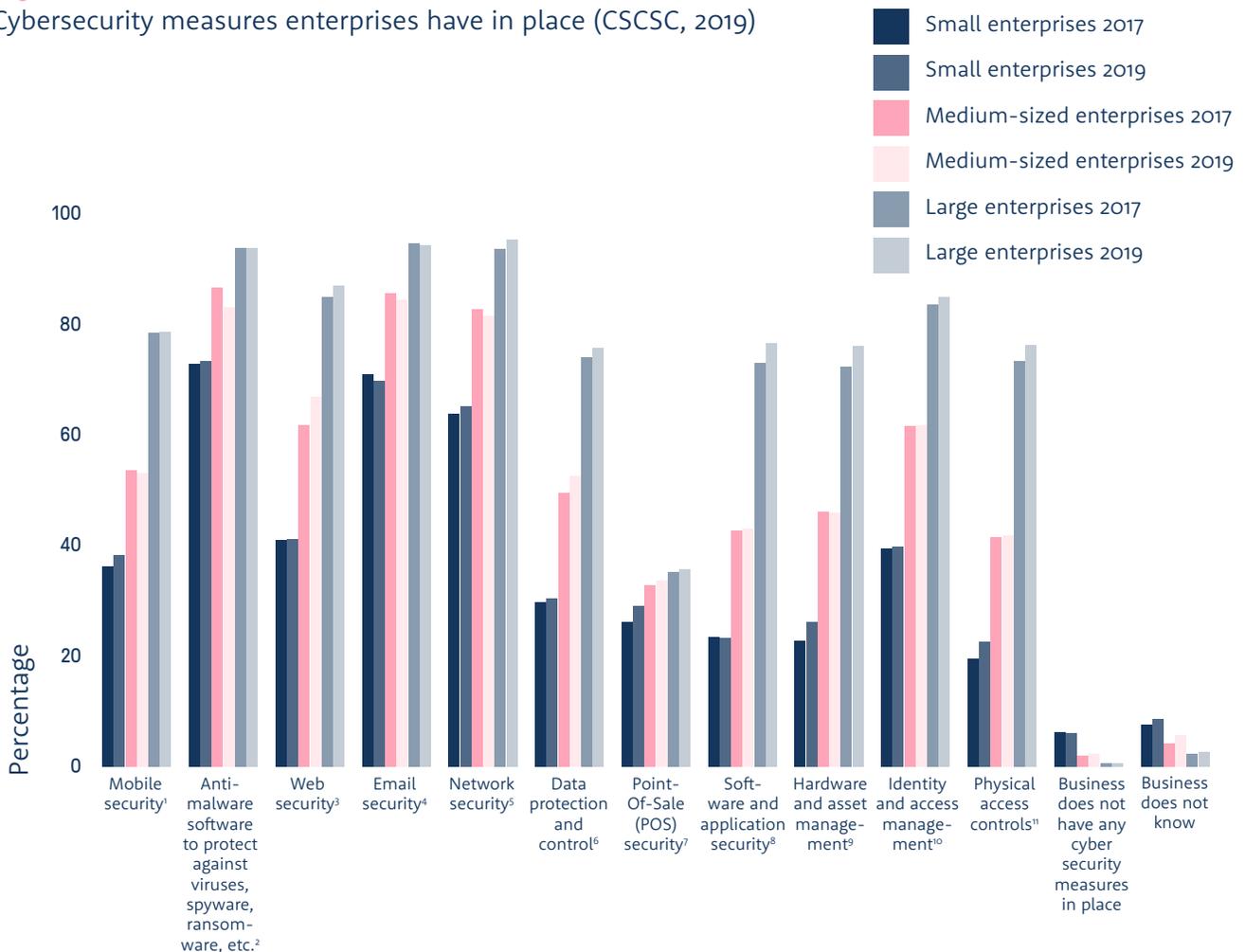
Source: OECD.Stat. *Businesses using CRM (Customer Relationship Management) software*
https://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS



However, despite the potentially severe costs of these breaches relative to the size of the business, small and medium-sized enterprises lag behind larger enterprises across all types of cybersecurity measures (Figure 25).

A failure to match an increase in digital intensity and maturity with an increased focus on cybersecurity could undo all the previous work. As the OECD notes, SMEs need “to see digital security as an investment rather than a cost centre” and as they digitize, “an early change in culture and practices is increasingly critical.”¹¹⁰

Figure 25
Cybersecurity measures enterprises have in place (CSCSC, 2019)



Source: Statistics Canada. Table 22-10-0001-01 Cyber security measures enterprises have in place by industry and size of enterprise
DOI: <https://doi.org/10.25318/2210000101-eng>

Footnotes:

- 1 Mobile security, for example: security measures for smartphones and tablets, secure remote access and virtual private network (VPN).
- 2 Anti-malware software to protect against viruses, spyware, ransomware, et cetera, for example: Microsoft Security Essentials, Malwarebytes and Symantec Endpoint Protection.
- 3 Web security, for example: digital certificates and website restrictions.
- 4 Email security, for example: spam filters and email scans.
- 5 Network security, for example: firewalls, proxy servers and honeypot systems.
- 6 Data protection and control, for example: encryption and rights management.
- 7 Point-Of-Sale (POS) security, for example: encryption of cardholder data.
- 8 Software and application security, for example: application whitelisting and scheduled patching.
- 9 Hardware and asset management, for example: inventory of information technology (IT) equipment and encrypted universal serial bus (USB) storage devices.
- 10 Identity and access management, for example: password complexity rules and restrictions based on user accounts.
- 11 Physical access controls, for example: keypad access control systems and identity badges.





Research Takeaways

DIGITAL MATURITY MATTERS for both individual companies and for Canada at large. The clear correlation across a range of metrics such as increased productivity, higher profits, more sales, and greater likelihood to be exporters all speak to the relationship between business performance and digital maturity. At the national level, the greater resiliency in both GDP and employment from more digitally intensive industries during the pandemic shows the growing importance of technology to the economy.

However, it is not clear whether higher performing firms are more likely to be digitally mature, or whether embracing digital maturity increases performance. **More research is needed to understand the causality between digital maturity and the aggregate impacts at enterprise level and economy wide.** Likewise, there would be value in further research to understand the different impacts of digital maturity between industries, to help identify where support could be targeted for greatest effect.

Increasing digital maturity is not just about high-tech firms. It is something that is valuable across all industries, sectors and business sizes. A company does not have to be at the cutting edge of innovation to benefit from increasing their technology use or their levels of digital skills.

Indeed, the potential gains are more for those businesses who are lagging behind.

The low hanging fruit of foundational technologies are an important place to begin efforts to support SME digital maturity. Programs such as the Scale Up Institute Toronto's Recovery Activation Program that supports Ontario-based companies to digitize across all areas of business operations, or Digital Main Street, which supports retail businesses in Ontario, Alberta, and Nova Scotia to get online and use e-commerce, are good examples of a programs doing just that.

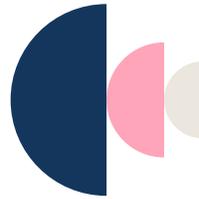
It is not just retail businesses that can find value in foundational technologies. SMEs across every sector can benefit. As has been seen, small enterprises across sectors lack a web presence. Yet other businesses are using e-commerce and the web in their purchasing decisions. **Companies who form parts of supply chains, or who service other businesses, could benefit from greater adoption of these basic technologies. Raising awareness of the possibilities and helping businesses with the process of implementing digital technologies and processes could be a fruitful initiative.** The Canada Digital Adoption Program, announced in the 2021 Federal budget, is a positive development to support SMEs across both retail and other sectors to increase their digital maturity.

The greater challenge comes from helping SMEs adopt more advanced technologies. **Supporting the use of cloud computing, an area where Canada is performing well, is a good first step.** As detailed above, cloud computing is a valuable stepping stone towards more advanced technological functions, and has the flexibility in its business model for SMEs to increase or decrease its use and costs as needed. It will be more difficult to increase the levels of adoption of other technologies by SMEs. Given that it is unlikely that an SME is going to be adopting more advanced technologies before foundational ones, **a range of supports need to be available to help SMEs at different stages in their digital transformation journeys.** A key barrier to technology adoption by SMEs is the uncertainty around these investments and what they will mean for their organization. **Supporting them through that process with vendor-neutral independent advice, training, and planning could be something to aid that.**

More broadly it is worth considering and **further researching the wider range of policy levers that could be used to incentivize technology adoption by SMEs.** One area this report has not explored but could be valuable is understanding the tax implications of digital investments. How companies invest in technology—for example, buying it or accessing it through a subscription—can create tax incentives one way or the other. How that investment is taxed, when and what portion is tax deductible, are all considerations that could have important implications on the short-term business decisions SMEs make. The \$2.6 billion provided to the Business Development Bank of Canada in the 2021 Federal budget to help SMEs finance technology adoption could be a significant boost, though consideration is needed to ensure that available funding supports the most appropriate forms of technology use—e.g. not provide incentives to buy or license technology if a subscription would be more appropriate.

Improving the accessibility of the immigration system for SMEs is another area that could help address the digital skills shortages. The

high bureaucratic requirements of immigration processes, along with significant costs, reduce the ability of smaller companies to take advantage of Canada's open immigration policy to strengthen their businesses.¹¹¹



More broadly it is worth considering and further researching the wider range of policy levers that could be used to incentivize technology adoption by SMEs.

Particular action needs to be focused on removing systemic barriers that hold back equity-seeking entrepreneurs and that further serve to restrict their ability to increase the digital maturity of their companies. Increasing digital connectivity has to rank highly in that. Ensuring SMEs across the country, in both urban and rural settings, have access to the high-speed connectivity they need is going to be especially important as bandwidth-intensive technologies proliferate, and as other countries outpace Canada in their speeds.

More attention must also be given to equity seeking groups and their digital maturity. As has been seen, the barriers facing SMEs in general intersect with the discrimination and other systemic barriers that women, Indigenous, Black, and other equity seeking entrepreneurs face. This lack of an equitable playing field makes the task of increasing digital maturity so much harder for these groups. There is no 'one size fits all' approach and it is important that there are specific programs, policies and supports that cater to specific groups.

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