STRIVING TO BE SMARTER

THE EVOLUTION OF INTELLIGENT RETAIL IN CANADA

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Research by

Canada

PREFACE

The Information and Communications Technology Council is a not-for-profit, national centre of expertise for strengthening Canada's digital advantage in a global economy. Through trusted research, practical policy advice, and creative capacity-building programs, ICTC fosters globally competitive Canadian industries enabled by innovative and diverse digital talent. In partnership with an expansive network of industry leaders, academic partners, and policy makers from across Canada, ICTC has empowered a robust and inclusive digital economy for over 30 years.

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The opinions and interpretations in this publication are those of the authors and do not necessarily reflect those of the Government of Canada.

CONTENTS

GLOSSARY OF KEY TERMS

This glossary presents an overview of the terminology used in the text. For a more in-depth explanation of the concept of "intelligent retail," please consult **Section I.**

AUGMENTED REALITY A digitally-enhanced, interactive experience of a real-world environment, in which objects that reside in the real world are enhanced by computer-generated information that is seamlessly woven into the natural environment: for example, a simulator that allows shoppers to walk around a physical store while being able to access virtual product information pop-ups.

BIG DATA Refers to datasets that are too large or complex to be dealt with using traditional data-processing application software. Big data is often set to be high in the "three V's": variety (many types of data being in the same dataset), volume (high total of observations or measurements across metrics), and velocity (data arriving at a fast rate).

BRICK AND MORTAR (RETAIL) Retail sector activities that take place in physical shopping locations (department stores, shopfronts, outlet malls, strip malls, etc.).

CHANNEL The process the consumer undertakes to purchase a product, which includes physical channels (buying the product in the store), on-site (using the store's website), social, mobile (using a phone), email, and instant messaging.

CONVERSION RATE The rate at which a consumer's interaction with a brand leads to a sale or some other income desired by the brand.

DATA SCIENCE A field combining aspects of computer science (particularly artificial intelligence), statistics, and expertise specific to a given domain (for example, logistics, marketing). Data scientists use scientific methods and algorithms to extract knowledge from datasets and apply that knowledge to solve a problem.

DEATH OF RETAIL A phrase used to comment on the visible decline of brick-and-mortar retail, which was evident through high levels of store closures throughout the 2010s.

DIGITAL TRANSFORMATION (DIGITALIZATION) The adoption of digital technologies to create value and solve the problems faced by organizations.

E-COMMERCE The selling of products and services over the internet.

EXTENDED REALITY (XR) All types of technologies that simulate the real world, including virtual reality, augmented reality, and mixed reality.

GAMIFICATION The incorporation of game-like mechanics into non-game environments (for example, retail websites), with the goal of increasing users' engagement.

INTELLIGENT RETAIL (ALSO KNOWN AS SMART RETAIL) The digitalization of the retail sector, which involves the application of digital technologies to assist the retail section in generating value for customers and businesses alike.

INTERNET OF THINGS (IOT) Physical objects combining sensors' capabilities with processing power, software, and potentially other technologies. IoT sensors generally can communicate with other devices (for example, laptops, computers, tablets, or even other IoT devices) either over the internet or other communications networks.

LIVE COMMERCE (ALSO KNOWN AS SHOPATAINMENT, LIVESTREAM E-COMMERCE, LIVE SHOPPING) A shopping experience that gives customers a brand-engagement experience based on an entertainment platform (such as a social network or livestreaming platform), while offering access to an e-commerce point of sale.

MARKETING The process of exploring, creating, and delivering value to meet the needs of a target market.

METAVERSE The extension of the internet into a single, universal, and immersive virtual world, facilitated by the use of extended reality technologies.

MIXED REALITY The merging of real and virtual worlds, where physical and digital objects co-exist and interact in real time—a hybrid of augmented reality and virtual reality. For example, a simulator in which shoppers can "try on" virtual simulations of real clothes in a real store and then pay for them in a virtual store (without having to line up).

MULTI-CHANNEL Retail that blends the customer experiences and gives consumers a choice to engage on the channel they prefer. Consumers can purchase products through different "tracks" that are separate from each other—for example, through the online store on one device, through a social media marketplace, or through a physical store.

OMNICHANNEL An extension of multi-channel, in which customers, in addition to having multiple channels to purchase the product, have a seamless shopping experience. Customers can purchase wherever they are. Rather than functioning as "independent silos" in the multi-channel approach, omnichannel allows switching between channels during the shopping experience.

PHYGITAL The blending of aspects of digital experiences with physical ones for an immersive, versatile customer experience.

RETAIL The economic sector involving the sale of goods and services directly to consumers.

SUPPLY CHAIN The ensemble of behind-the-scenes systems that coordinate the creation of products and their delivery to end customers. It includes the sourcing of raw materials and technologies used to make products, the production process itself, packaging, distribution, delivery, and returns.

THIRD-PARTY LOGISTICS Using third-party businesses to outsource elements of distribution, warehousing, and fulfillment services (the first two parties being the selling organization and that organization's customers).

VIRTUAL REALITY A simulated experience, often involving a headset, that immerses the participant visually in a computer-generated world separate from the physical one; for example, a video game headset that allows players to be fully immersed in a first-person shooter.

WHOLESALING The economic sector involving the sale of goods and services to businesses or institutional customers.

LIST OF ACRONYMS
USED IN THIS REPORT

AC   Advisory Committee

AI   Artificial Intelligence

AR   Augmented Reality

BOPIS   Buy Online, Pick Up in Store

CAGR   Cumulative Annual Growth Rate

DEI   Diversity, Equity, and Inclusion

ESG   Environmental and Social Governance

EU   European Union

ICT   Information and Communications Technology

ICTC   Information and Communications Technology Council

IoT   Internet of Things

KII   Key Informant Interview

MR   Mixed Reality

PPE   Personal Protective Equipment

R&D   Research and Development

ROI   Return on Investment

SME   Small and Medium Enterprise

3PL   Third-Party Logistics

UK   United Kingdom

US   United States

VC   Venture Capital

VR   Virtual Reality

XR   Extended Reality

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EXECUTIVE SUMMARY

In 2021, the retail trade sector comprised 5.2% of the Canadian economy, making it one of the 10 largest sectors. Although the pandemic accelerated digital adoption across sectors, the trend of digitalization in retail existed long before COVID-19. Much of the transition toward intelligent retail is driven by consumers, who increasingly expect more from retailers. Many have become desensitized to experiences that would have once been considered exceptional (like extensive product reviews or same-day delivery), thanks in part to the proliferation of convenient platforms such as Amazon and Uber. Today, consumers do not simply expect high-quality products at a fair price; they are looking for unique experiences, seamless and convenient shopping, and brands that align with their values.

The global pandemic and accompanying health restrictions further reinforced trends already afoot. As some brick-and-mortar storefronts shuttered, others adopted in-store technological advancements, while others moved largely online; in all cases, digitalization was further entrenched in the retail sector. With this change came new innovations in areas such as payments, logistics, and digital marketing. For many retailers, COVID-19 was a decisive event that pushed them to invest even further in digital infrastructure and strategies to retain and attract customers and market share.

Digitalization and intelligent retail must remain top priorities for organizations in the volatile new climate; according to a recent study by Deloitte, at least two-thirds of Canadian retail executives plan to invest significantly in omnichannel, modernize supply chains, and enhance data privacy and security. Although more than half of Canadian organizations are making major investments in expanding their digital capabilities, Canadian businesses must accelerate digital adoption to compete with key players in other jurisdictions like the US and China.

However, the process of digitalization in Canadian retail is not a one-size-fits-all model; according to survey respondents and interviewees in this study, the sector can be seen as overly traditional, with the ecosystem comprising a relatively limited group of competitors. Advancing this trajectory requires a concerted effort on further digitalization and a talent pipeline to support this change. According to employers, talent pipelines must be bolstered to produce a higher volume of digitally skilled workers needed to turn Canadian retail organizations into world leaders.

This report explores these and other key trends in the Canadian intelligent retail space. It investigates the many ways that organizations are adopting or can adopt digital technologies in various areas of their businesses, and highlights the changing Canadian intelligent retail workforce, including experiences working in retail, talent needs and barriers, and drivers and incentives for digital adoption.

Enabling these changes from technical and cultural standpoints requires a strong and skilled labour force. Talent shifts are focal points for today's retailers; the rapid need to adapt to market changes, coupled with growing consumer expectations, put increased pressure on employers. Although retailers are now hiring quickly for digital-savvy jobs (such as UX/UI designers, data analysts, software developers, and digital marketers), other more traditional retail roles (such as cashiers or sales people) are increasingly at risk from automation and digitalization—these workers will require training, and in some cases reskilling, to be reabsorbed into the labour market. When it comes to in-demand roles, competition and wage inflation have collided with work-from-anywhere policies, functioning to put added pressure on employers (namely small and medium enterprises, or SMEs) while offering more bargaining power for workers. Beyond compensation and flexibility, culture becomes an increasingly important consideration for skilled workers in the retail space. Younger workers especially place emphasis on other factors when considering new opportunities: according to a recent survey by Glassdoor, diversity, equity, and inclusion (DEI) was ranked a top consideration when evaluating job offers; another is a company's environmental and social governance (ESG) strategy.

With up to 10 years of evolution in the retail sector compressed into a couple of years, exactly what retail will look like is uncertain. Many believe that COVID-19 will ultimately accelerate what they see as the growing obsolescence of the physical store. Indeed, many indicators point to a continued decline in physical retail; for example, it is estimated that 25% of US malls may go out of business by 2027. On the other hand, polls and expert interviews both show that customers still value the in-store shopping experience, and many retailers are thriving with an arrangement that merges an elevated level of online sales with an immersive in-store experience augmented by technology. Although the future path of retail is yet to be solidified, a few things seem clear: technology will continue to be a driving force for the sector and intelligent retail requires a steady supply of digitally skilled and domain-rich talent to fulfill ever-evolving consumer needs.

INTRODUCTION

Retail trade generated $103.9 billion in GDP in 2021, representing roughly 5.2% of Canada's economy. This makes the sector comparable in size to the Information and Communications Technology (ICT) sector, which generated $105.6 billion in GDP in 2021.[1] Over the last five years, the retail sector grew 7.0%, faster than the wider Canadian economy, which grew by 4.3%.[2] However, just as the ICT sector represents only a sliver of all digital output across the economy, the value of all retail sales in Canada grew to a record $674 billion in 2021.[3]

Like many other sectors in Canada's economy, Canada's retail sector has experienced a wave of digitalization driven by both customer demand and firms' own desire to surpass their competitors. Many figures attest to the speed of digitalization among retailers worldwide, such as the rapid spread of e-commerce. E-commerce is predicted to make up 24.5% of retail sales worldwide in 2025, up from 7.4% in 2015.[4]

Retail has long had high potential for digitalization. Well before the COVID-19 pandemic, Canadian retailers such as Lululemon were pursuing digitalization strategies. However, participants in this study affirm that COVID-19 has accelerated the digitalization of retail markedly. ICTC's Digital Talent Outlook 2025 identified retail as an example of major restructuring of the Canadian economy due to the COVID-19 pandemic.[5] The pandemic represented a substantial short-term shock to the retail sector; many stores shut their doors to reorganize their business processes to cope with safety precautions, while others struggled into bankruptcy, and others simply closed proactively.[6] However, surviving COVID-19 as a retailer almost always went beyond a simple modification of the shopping experience.[7] Supply chains were heavily impacted by the pandemic, with many organizations struggling to fulfill orders or source necessary materials.

As the months of the pandemic went on, a new normal in retail gradually emerged. Essential retailers such as grocery stores restructured their shopping experiences to allow for minimum levels of physical contact, through contactless checkout and sometimes pick-up services. Some retailers even expanded their physical store

1   "Table 36-10-0434-03 Gross domestic product (GDP) at basic prices, by industry, annual average (x 1,000,000)," Statistics Canada, 2022, https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610043403.
2   "Table 36-10-0434-03 Gross domestic product (GDP) at basic prices, by industry, annual average (x 1,000,000)," Statistics Canada, 2022, https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3610043403.
3   "Retail trade, December 2021," Statistics Canada, 2022. https://www.statista.com/statistics/431661/sales-of-retail-trade-in-canada/#:~:text=In%20 2021%2C%20retail%20trade%20sales,percent%20in%20comparison%20to%202019
4   Sara Lebow, "Worldwide ecommerce continues double-digit growth following pandemic push to online," eMarketer, 2021, https://www.emarketer.com/content/worldwide-ecommerce-continues-double-digit-growth-following-pandemic-push-online.
5   Maryna Ivus et al. "Onwards and Upwards: Digital Talent Outlook 2025" Information and Communications Technology Council (2021), https://www.ictc-ctic.ca/wp-content/uploads/2021/08/digital-talent-outlook-for-2025.pdf
6   Mario Toneguzz, "Uncertainty for retailers in Canada with bankruptcies expected to increase in 2022: experts," Retail Insider, January 31, 2022, https://retail-insider.com/retail-insider/2022/01/uncertainty-for-retailers-in-canada-with-bankruptcies-expected-to-increase-in-2022-experts/
7   Ramya Murali, Randy Crooks, Mary Hahn, "The orthodoxies that COVID-19 broke: Reimagining customer loyalty strategy in a postpandemic world," Deloitte, 2021, https://www2.deloitte.com/us/en/pages/consulting/articles/the-orthodoxies-of-loyalty.html

presence in the middle of the pandemic.[8] The majority of retail organizations were united in a re-affirmed commitment to digitalization, with even small stores frequently acquiring digital tools or platforms to boost their online presence. Federal and provincial governments supported retailers through a variety of programs, such as small business grants.[9] Despite the challenges of the pandemic posed in the short term, Canada's retail sector appears healthy and poised for sustained growth.

Striving to Be Smarter: The Evolution of Intelligent Retail in Canada assesses changes and shifts in Canada's intelligent retail ecosystem, including company trends, trends in retail technology research and adoption, in-demand roles and skills sets, and competitiveness. The report uses a mixed-methods research approach, including an analysis of secondary literature and data, web scraping of in-demand roles and analysis of skill sets, 17 key informant interviews (KIIs) with industry experts, an advisory committee, and an industry survey of 80 business leaders in the Canadian retail industry. **Section I** of the report introduces the topic of intelligent retail, beginning with key concepts, technologies, and their applications. This is followed by an overview of Canada's intelligent retail ecosystem, illustrating the diversity of intelligent retail companies operating in Canada. **Section II** presents in-demand roles and skills in the Canadian intelligent retail ecosystem, informed by web scraping and interviews with industry experts. Finally, **Section III** provides insight into the adoption of digital technologies by retailers in Canada and findings from ICTC's intelligent retail survey. This section includes a discussion of trends and key challenges to adoption. Details about the research methodology can be found in the appendix.

[8] Alina Selyukh, "More retail wrokers are quitting than ever, but more stores are opening than expected," NPR, August 26, 2021, https://www.npr.org/2021/08/26/1029768029/ seriously-you-opened-a-store-in-the-pandemic-and-more-surprising-retail-trends

[9] "Business Outlook Survey – First Quarter of 2022," Bank of Canada online, 2022, https://www.bankof-canada.ca/2022/04/business-outlook-survey-first-quarter-of-2022/
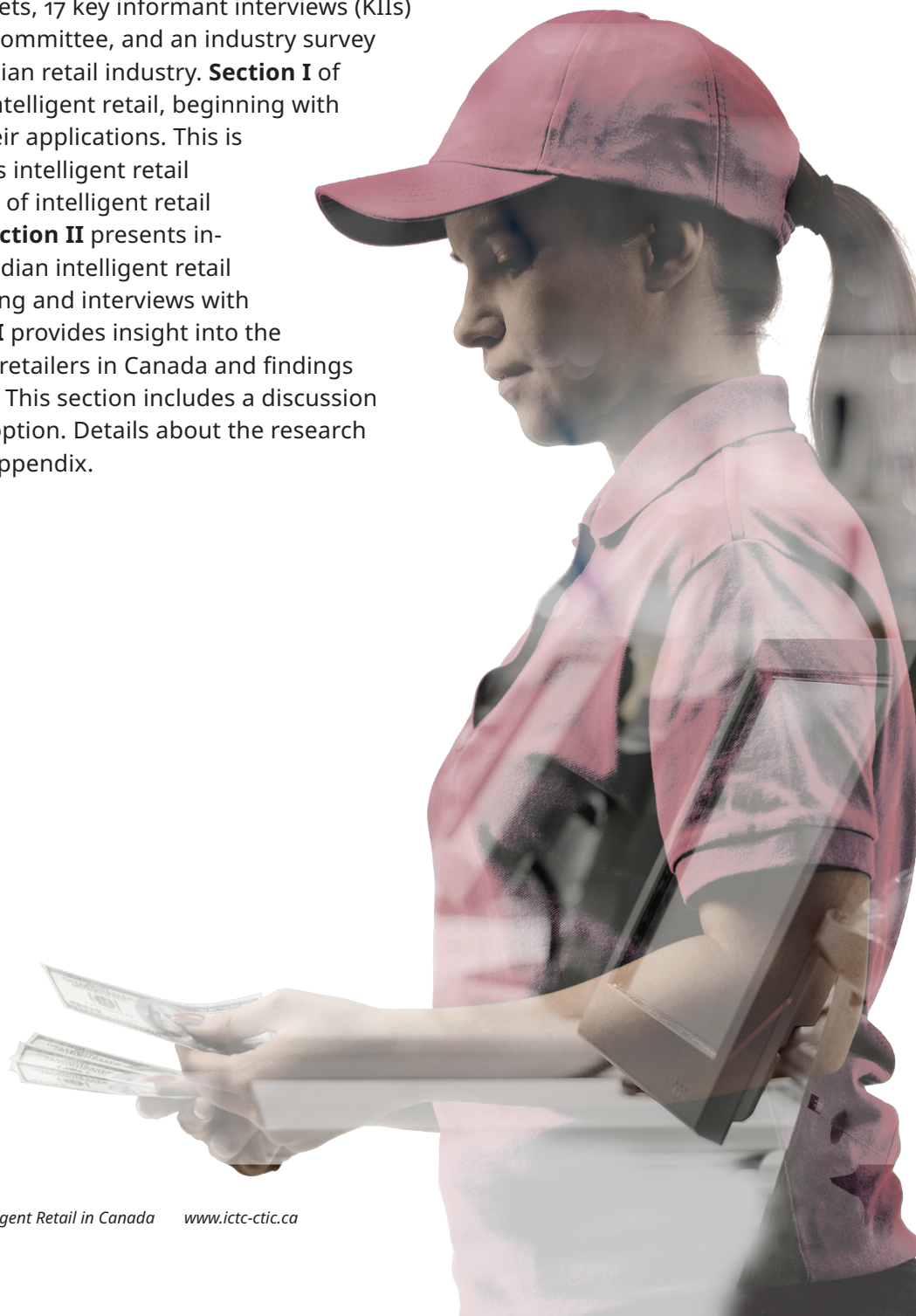
Defining Intelligent Retail

As is often the case with emerging topics or industries, defining "intelligent retail" is not a straightforward process. Indeed, because retailers almost usually use at least some digital technologies, virtually every retailer is already "intelligent." For example, a 2019 survey by Deloitte of SMEs in the US found that 99% of SMEs across all sectors used at least one digital tool in their day-to-day operations. When asked to classify where they were in their digital journey, over three-quarters of respondent organizations were either advanced (19%), high (17%), or intermediate (41%) in their level of technology adoption, while only 23% of organizations considered their level of digital adoption to be basic.[10]

And yet, there is a definite difference between organizations that simply use technology as a tool and those for which digital technologies play an integral role in guiding company decisions. In studies regarding digital technologies and the retail sector, a vast number of terms are found, often without being defined. Some focus on various aspects of digital technology, such as "retail omni-intelligence."[11] Others are vague, including "the future of retail,"[12] "the store of tomorrow,"[13] "retailers of the future," "digital transformation of retail,"[14] "tech revolution of retail," [15]or "tech transformation of retail."[16] Some organizations intentionally avoid terminology, preferring such descriptions as "expanding digital capabilities."[17] Indeed, it seems that many, if not most, studies about retailers and technology do not use the term "intelligent retail" or "smart retail."

Among the studies that provide definitions, said definitions vary. For example, research firm Brisk Logic defines smart retail as "the use of strategies and technologies that enhance the customer experience by making it more enjoyable and personal."[18] But this definition falls short of the many ways digital technology can be used in other areas of the business, such as the supply chain, logistics, or marketing. On the other hand, in its presentation *Why and How Retailers Must Become an Intelligent Enterprise,* market research firm Incisiv identifies three "foundational

[10] "The performance of Small and Medium Sized Businesses in a digital world," Deloitte (2019),
      https://www2.deloitte.com/content/dam/Deloitte/es/Documents/Consultoria/The-performance-of-SMBs-in-digital-world.pdf.
[11] Bryan Ball, Sarah Gaffney, "Retail Omni-Intelligence: Leveraging Analytics to Combined CS Insights with Supply Chain Operations to Boost Satisfac-
      tion and Performance," Aberdeen Strategy & Research (2021), https://www.oracle.com/a/ocom/docs/cur-rr-omni-intelligent-retail.pdf.
[12] "Tapping into Smart Retail: A survey of CEOs and Consumers in the Greater Bay Area," KPMG (2018),
      https://home.kpmg/cn/en/home/insights/2018/11/tapping-into-smart-retail.html.
[13] "Harness change to create 360° Value," Accenture, 2022, https://www.accenture.com/bg-en/accenture-strategy-javelin-group-index.
[14] "Harness change to create 360° Value," Accenture, 2022, https://www.accenture.com/bg-en/accenture-strategy-javelin-group-index
[15] "How tech will revolutionize retail," McKinsey & Company, 2021,
      https://www.mckinsey.com/industries/retail/our-insights/how-tech-will-revolutionize-retail.
[16] "The tech transformation imperative in retail," McKinsey & Company, 2022,
      https://www.mckinsey.com/industries/retail/our-insights/the-tech-transformation-imperative-in-retail.
[17] Marty Weintraub et al. "Focus on customers, brand, and agility vital to retail success: 2022 Canadian retail outlook," Deloitte (2022). https://www2.
      deloitte.com/content/dam/Deloitte/ca/Documents/consumer-industrial-products/ca-en-consumer-retail-outlook-fy22-aoda.pdf?icid=heroDownloadEN
[18] "What is the definition of Smart Retail," BriskLogic, 2021, https://www.brisklogic.co/what-is-the-definition-of-smart-retail/.

capabilities" of an intelligent enterprise as foresight, agility, and ingenuity. However, these are not specifically technology-related, or even retail-related.[19] Other definitions are decidedly normative. For example, retail expert Karl Hellman defines intelligent retail less explicitly, centering it on the relationship with the customer. He suggests that intelligent retail "is not about technologies, such as AI, replacing human interaction, but rather using them to improve the interaction between the store and the customer."[20] This definition, again, falls short of encompassing the many ways in which digital technology can be used by retailers outside of the client-facing side, such as in logistics. But it raises an interesting theme that recurred in many of the interviews for this study.

Study participants generally did not define an organization as an intelligent retailer simply because they had adopted digital tools. Rather, how that organization adopted technologies was seen as the key factor. For study participants, being an intelligent retailer involved using technology intelligently and purposefully, with a clear goal in mind. Even though study participants saw digital transformation as having immense transformative potential for the retail sector, the same participants saw the uncritical adoption of technology as counterproductive. They acknowledged that in some cases, the truly "intelligent" option for a retailer may not even involve the use of technology. In short, for participants, an intelligent retailer effectively leverages the best tools on hand to serve the needs of customers, with digital technology being just one option.

> **"I don't think the technology can or should ever drive [intelligent retail]. A big problem in our industry is that so many people are selling technology. Nobody wants technology. They want a result… you need to focus on the value proposition to the business or the customer."**
>
> Retail CEO

ICTC defines intelligent retail as follows:

> **Intelligent retail, or the digitalization of retail, involves the purposeful application of digital technologies to assist retail organizations in meeting their objectives (including generating value for consumers, reducing costs, or connecting with customers) in any area of business (whether the consumer-facing, size, logistics, marketing, or corporate decision making).**

[19] "Why and How Retailers Must Become an Intelligent Enterprise" Incisiv (2018), https://www.avanade.com/-/media/asset/point-of-view/why-and-how-retailers-must-become-an-intelligent-enterprise.pdf?la=en&ver=1&hash=7B98BB1A1A68AE109DFDD6407DFBCAE6.
[20] Karl Hellman, Mark Blessington, "Intelligent Retail: The Future of Shopping Experience Design," The Marketing Journal online, 2018, https://www.marketingjournal.org/intelligent-retail-the-future-of-shopping-experience-design/.

This broad definition of intelligent retail encompasses the diverse applications of digital technology (as shown in Figure 1). This report will address some of the technologies listed below, paying particular attention to the tools that are currently being adopted by retailers in Canada. This report affirms that digitalization as a characteristic of retailers should be conceived of as lying on a continuum. Furthermore, digitalization as a process should not be considered discrete, but rather an ever-evolving journey that firms pursue to serve their customers' needs more efficiently.
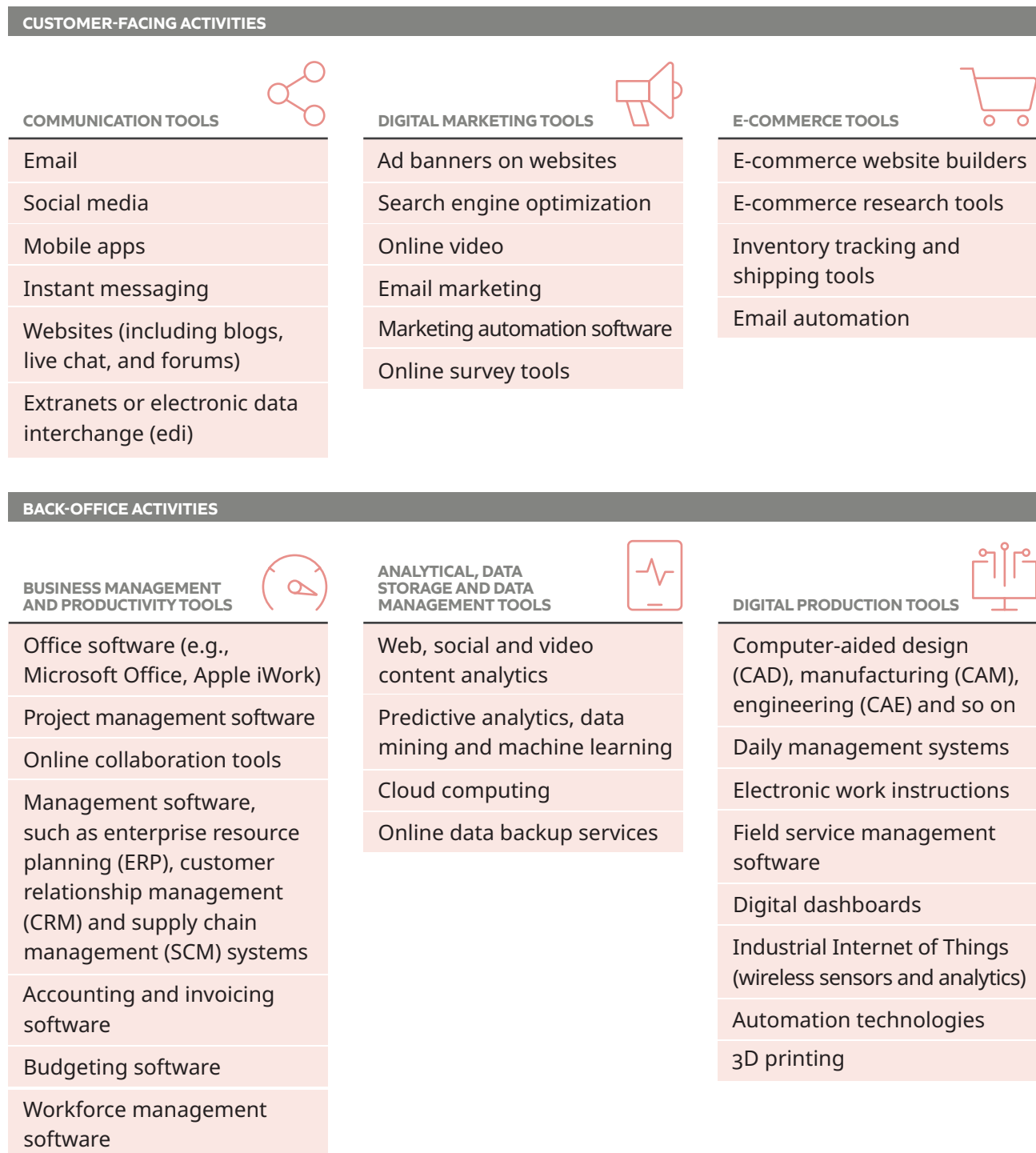
CUSTOMER-FACING ACTIVITIES

COMMUNICATION TOOLS

Email

Social media

Mobile apps

Instant messaging

Websites (including blogs, live chat, and forums)

Extranets or electronic data interchange (edi)

DIGITAL MARKETING TOOLS

Ad banners on websites

Search engine optimization

Online video

Email marketing

Marketing automation software

Online survey tools

E-COMMERCE TOOLS

E-commerce website builders

E-commerce research tools

Inventory tracking and shipping tools

Email automation

BACK-OFFICE ACTIVITIES

BUSINESS MANAGEMENT AND PRODUCTIVITY TOOLS

Office software (e.g., Microsoft Office, Apple iWork)

Project management software

Online collaboration tools

Management software, such as enterprise resource planning (ERP), customer relationship management (CRM) and supply chain management (SCM) systems

Accounting and invoicing software

Budgeting software

Workforce management software

ANALYTICAL, DATA STORAGE AND DATA MANAGEMENT TOOLS

Web, social and video content analytics

Predictive analytics, data mining and machine learning

Cloud computing

Online data backup services

DIGITAL PRODUCTION TOOLS

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

Figure 1 Source: BDC Research and CEFRIO.

A Global Perspective

The global retail market reached $65,356.2 billion USD in 2020[21] and is estimated to grow by 10.5% from 2021 to 2022, amounting to $72,696.61 billion USD in 2022.[22] Forecasting shows that retail sales will grow despite the initial slowdown in early 2022 because of the Omicron variant of COVID-19.[23] Growth is expected to continue, with some estimates suggesting that global growth rate will increase by 9.5% by 2026.[24] Much of this is attributed to firms adapting to the pressures of COVID-19, with an increase in e-commerce, interactive customer engagement tools, and smart delivery services.[25] However, as retailers have begun reopening stores, there remain some concerns, in particular regarding talent attraction, supply chains, and optimizing data analytics.

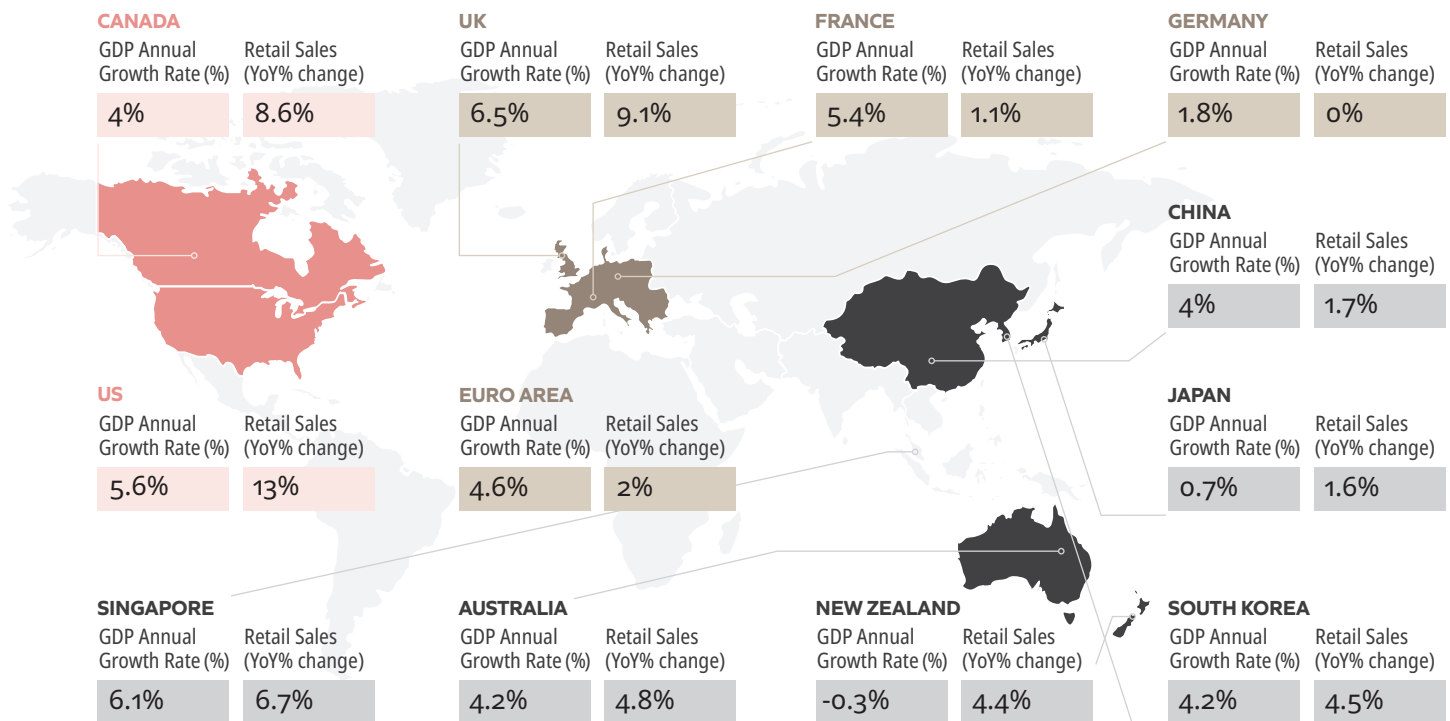## Global Economic Recovery: GDP and Retail Sales

	GDP Annual Growth Rate (%)	Retail Sales (YoY% change)
CANADA	4%	8.6%
UK	6.5%	9.1%
FRANCE	5.4%	1.1%
GERMANY	1.8%	0%
CHINA	4%	1.7%
US	5.6%	13%
EURO AREA	4.6%	2%
JAPAN	0.7%	1.6%
SINGAPORE	6.1%	6.7%
AUSTRALIA	4.2%	4.8%
NEW ZEALAND	-0.3%	4.4%
SOUTH KOREA	4.2%	4.5%

Figure 2 Colliers Canada's analysis of global GDP and retail sales in 2021. Source: Trading Economics

According to analysis conducted by Colliers Canada (Figure 2), the US and UK had the highest year-over-year growth in retail sales, at 13.0% and 9.1% respectively.[26] In 2020, 68% of global e-commerce sales were from Australia, Canada, China, Korea,

[21] "Global retail market opportunities and strategies to 2030 – COVID-19 impact and recovery," Research and Markets, August 16, 2021, https://www.globenewswire.com/en/news-release/2021/08/16/2280917/28124/en/Global-Retail-Market-Opportunities-and-Strategies-to-2030-COVID-19-Impact-and-Recovery.html

[22] "Global retail and wholesale market size and market growth opportunities," TBRC Business Research Pvt ltd., April 19, 2022, https://www.thebusinessresearchcompany.com/sample.aspx?id=1865&type=smp

[23] Madeleine Nicholls et al. "2022 Retail Outlook," Colliers Canada (2022), https://www.collierscanada.com/en-ca/research/2022-retail-outlook.

[24] "Global retail and wholesale market size and market growth opportunities," TBRC Business Research Pvt ltd., April 19, 2022.

[25] "Retail and wholesale global market report 2021: COVID-19 impact and recovery to 2030," The Business Research Company, January 2021.

[26] Madeleine Nicholls et al. "2022 Retail Outlook," Colliers Canada (2022), https://www.collierscanada.com/en-ca/research/2022-retail-outlook.

Singapore, UK, and the US.[27] The US and China continued to dominate e-commerce markets, with 11 of the top e-commerce firms originating from the two countries.[28] On the other hand, Europe had the largest number of retail companies of any region, and European retailers contributed 32.7% of total retail revenue among the 250 top retailers globally.[29] Europe is predicted to be the largest regional market, while the US is to be the fastest-growing.[30]

The US was frequently described as a retail global leader by retail experts interviewed for this report. Many attributed the US's success in the sector to the investments in innovation and a competitive ecosystem. Despite a number of US brands reporting closures during the pandemic, the US market continues to be a global leader. US retailers are known for attracting the best talent and anticipating the needs of consumers by making early investments in digital channels and investing more in retail technology when compared to other global leaders (Figure 3). In quarter one of 2022, the US invested $9.3 billion USD.[31]

US overtakes Asia with nearly 40% of global retail tech funding in Q1'22

US
$9.3B / 39%

Total Funding $23.8B

Asia
$7.3B / 31%

Europe
$5.6B / 23%

Canada
$0.7B / 3%

LatAm
$0.6B / 3%

Africa
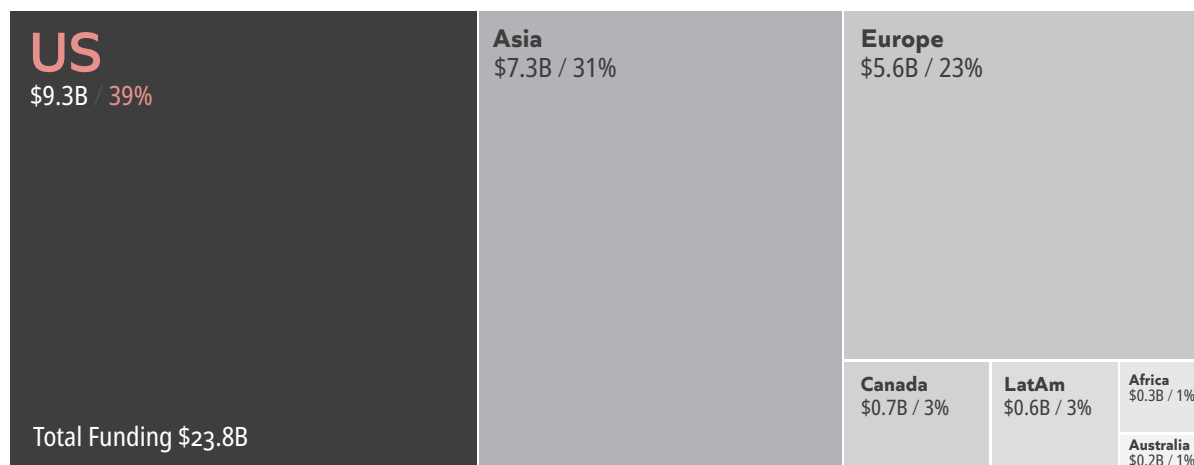$0.3B / 1%

Australia
$0.2B / 1%

Figure 3 Source: CB Insights

China, one of the world's largest and fastest-growing economies, is another major player in the field of intelligent retail. Many experts attribute China's success in e-commerce to early investments, starting in the 1980s.[32] China boasts major e-commerce giants, including Alibaba and Vip.com.[33] The Chinese market is an

27 *"Estimates of Global e-commerce 2019 and preliminary assessment of COVID-19 impact on online retail 2020," UNCTAD Technical Notes on ICT for Development, Issue 18, 2020.*
28 *"Estimates of Global e-commerce 2019 and preliminary assessment of COVID-19 impact on online retail 2020," UNCTAD Technical Notes on ICT for Development, Issue 18, 2020.*
29 *"Global Powers of Retailing 2022," Deloitte (2022), https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Consumer-Business/gx-global-powers-of-retailing-2022.pdf.*
30 *"Smart Retail: World Market Report," StrategyR, 2022, https://www.strategyr.com/market-report-smart-retail-forecasts-global-industry-analysts-inc.asp.*
31 *"Asian Population (Live)," Worldometer, accessed July 3, 2022, https://www.worldometers.info/world-population/asia-population/.*
32 *Messaline Nicolaï and Camille Grange. "The Digital Transformation of Retail During the Covid-19 Pandemic: A Comparative Study in Canada, China, and France," Proud Pen (2020), https://www.proudpen.com/book/the-impact-of-covid-19-on-eCommerce/the-digital-transformation-of-retail-during-the-covid-19-pandemic-a-comparative-study-in-canada-china-and-france/*
33 *Messaline Nicolaï, Camille Grange, "The Digital Transformation of Retail During the Covid-19 Pandemic: A Comparative Study in Canada, China, and France," Proud Pen (2020), https://www.proudpen.com/book/the-impact-of-covid-19-on-eCommerce/the-digital-transformation-of-retail-during-the-covid-19-pandemic-a-comparative-study-in-canada-china-and-france/*

enthusiastic adopter of novel payment systems—not only are online sales more common than in Europe and North America, but 80.3% of online sales were conducted using a mobile device in 2019.[34] China also saw a boom in live streaming, or shopatainment, which is the use of live streaming shopping events where viewers can virtually engage with the products and the brand.

The global consumer is also shifting, with key changes including the demand for sustainable products and growing concern about inflation.[35] Upwards of 55% of global retail leaders surveyed by Deloitte indicate that their companies' environmental sustainability efforts will have a positive impact on customer satisfaction, as more consumers seek to spend on sustainable products and services.[36] At the same time, 77% of global consumers mention concerns about inflation, with the majority feeling that prices for groceries, restaurants, apparel, and footwear are higher month-over-month.[37] Of course, Canada is not insulated from these global trends, and consumers are pushing brands to adapt business processes, materials, technologies, and strategies to keep up with their ever-evolving expectations.

Retail in the Pandemic: A Game of Losers and Leaders

Global lockdowns shocked the retail industry, with many retailers reporting closures and struggles containing costs.[38] Many high-profile US retailers such as JCPenney filed for bankruptcy,[39] and Gap and Macy's closed their physical locations.[40] On the other hand, some retailers that began online, like Warby Parker, have opened physical locations.[41]

In a global economic outlook study by Deloitte, the top 10 retailers included Walmart, Amazon, Costco, Schwarz Group, The Home Depot, Kroger, Walgreens Boots Alliance, Inc., Aldi, JD.com, and Target. In 2020, Walmart's retail revenue grew by 6.7%, and its e-commerce sales grew 79% a result of investments in omnichannel and e-commerce innovation during the pandemic. Without a doubt, Amazon achieved record-breaking retail revenue, increasing by 34.8% year-over-year. E-commerce leaders like Alibaba and Amazon benefited largely from the pandemic closures,[42] reporting annual revenues of $71.99 billion USD[43] and $386.06 billion USD in 2020[44] respectively.

[34] Messaline Nicolaï, Camille Grange, "The Digital Transformation of Retail During the Covid-19 Pandemic: A Comparative Study in Canada, China, and France," Proud Pen (2020), https://www.proudpen.com/book/the-impact-of-covid-19-on-eCommerce/the-digital-transformation-of-retail-during-the-covid-19-pandemic-a-comparative-study-in-canada-china-and-france/

[35] "Global State of Consumer Tracker," Deloitte, June 2022 , https://www2.deloitte.com/global/en/insights/industry/retail-distribution/consumer-behavior-trends-state-of-the-consumer-tracker.html

[36] "2022 Deloitte CxO Sustainability Report," Deloitte, 2022, https://www2.deloitte.com/global/en/pages/operations/articles/deloitte-cxo-sustainability-report.html 2

[37] "Global State of Consumer Tracker," Deloitte, June 2022.

[38] Rene Vader and Paul Martin, "Global trends 2020," KMPG, 2020, https://assets.kpmg/content/dam/kpmg/xx/pdf/2020/05/global-retail-trends-2020.pdf

[39] Chris Isidore and Nathaniel Meyersohn, "JCPenney files for bankruptcy," CNN Business, May 15, 2020, https://www.cnn.com/2020/05/15/business/jcpenney-bankruptcy/index.html.

[40] Phil Wahba, "A record 12,200 U.S. stores closed in 2020 as e-commerce, pandemic changed retail forever," Fortune, January 7, 2021, https://fortune.com/2021/01/07/record-store-closings-bankruptcy-2020/.

[41] Celia Young, "Warby Parker Keeping First Brick-And-Mortar Outpost at 121 Green," Commercial Observer, June 8, 2022, https://commercialobserver.com/2022/06/warby-parker-brick-and-mortar-outpost-121-greene/.

[42] "Estimates of Global e-commerce 2019 and preliminary assessment of COVID-19 impact on online retail 2020," UNCTAD Technical Notes on ICT for Development, Issue 18, 2020.

[43] "Alibaba Revenue 2011-2021," Microtrends, https://www.macrotrends.net/stocks/charts/BABA/alibaba/revenue.

[44] "Amazon revenue 2010-2022," Microtrends, https://www.macrotrends.net/stocks/charts/AMZN/amazon/revenue

Canada's Retail Landscape

Sales of retail trade in Canada grew every year in the last decade, except in 2020. In the first year of the COVID-19 pandemic, sales of retail trade in Canada declined by 1.5% to $606 billion.[45] That said, the retail sector as a whole proved considerably more fiscally resilient than the wider Canadian economy during this time: in the first year of the pandemic, the overall Canadian economy posted a 5.4% decline.[46] Furthermore, recovery from an economic standpoint was relatively rapid in retail: the sector leaped to $674 billion in sales in 2021, 5.2% of Canadian GDP. Indeed, the sector's decline in 2020 was almost entirely due to an exceptionally steep dive in sales at the onset of the pandemic—sales in April 2020 were close to 30% below what they were in January 2020, but by July 2020, they resumed a growth trajectory. In 2021, Canada's retail sales grew by 8.6% year-over-year, the third-highest growth rate globally.[47] In 2022, Canada's relative GDP growth is estimated to be 3.9%, higher than the US (3.7%), and outpacing regional growth of Western Europe (3%) and North America (3.6%).[48] The Business Confidence Index (BCI)[49] in Canada has recovered and surpassed its pre-pandemic level.[50]

YEAR	SALES OF RETAIL TRADE ($BN CAD)	YOY GROWTH
2012	468	
2013	482	3.0%
2014	506	4.9%
2015	516	2.0%
2016	532	3.0%
2017	588	11.0%
2018	605	2.9%
2019	615	1.7%
2020	606	-1.5%
2021	674	11.2%

Table 1: *Sales in Retail Trade, 2012-2021, Canada.*

[45] "Retail trade, December 2021," Statistics Canada, 2022. https://www.statista.com/statistics/431661/sales-of-retail-trade-in-canada/#:~:text=In%20 2021%2C%20retail%20trade%20sales,percent%20in%20comparison%20to%202019

[46] "Canadian economy posts worst showing on record in 2020," Global News, 2021, https://globalnews.ca/news/7671568/canadian-economy-gdp/.

[47] Madeleine Nicholls et al. "2022 Retail Outlook," Colliers Canada (2022), https://www.collierscanada.com/en-ca/research/2022-retail-outlook.

[48] "Real GDP Growth: Annual Percentage Change," IMF (2022), https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/OEMDC/ADVEC/WE-OWORLD/CAN/WEQ/NMQ/USA

[49] The Business Confidence index is calculated by the OECD based on "enterprise' assessment of production, orders, and stocks, as well as its current position and expectations for the immediate future. Opinions compared to a "normal" state are collected and the difference between positive and negative answers provides a qualitative index on economic conditions. https://www.statista.com/statistics/1227020/business-confidence-index-in-canada/

[50] "Business confidence index (BCI)," OECD online, 2022, https://data.oecd.org/leadind/business-confidence-index-bci.htm.
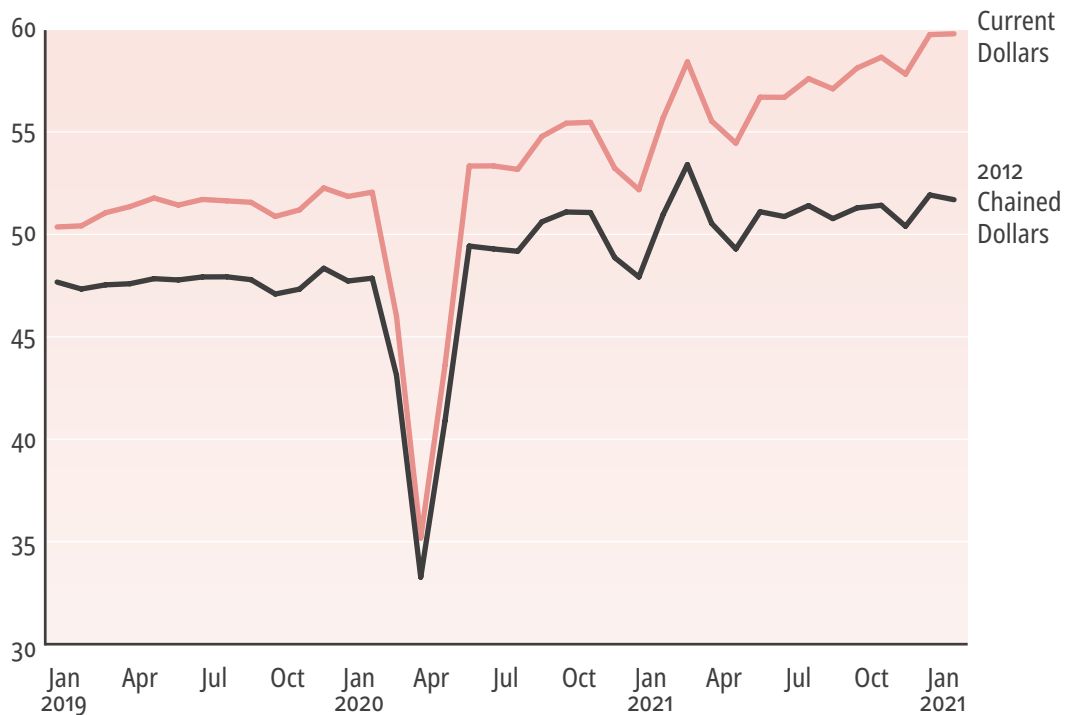
Retail Sales (billions of dollars)

Figure 4 Retail sales in Canada. Source: Statistics Canada, 2022.

Retail Closures

Similarly, the effect of the pandemic on bankruptcy rates in the retail sector seems to have been concentrated in the first few months of the pandemic. Figure 5 shows the peak in retail trade business closures from January 2020 to January 2022, with a noticeable increase from 4,704 to 10,258 between March and April 2020.[51] By July 2020, retail business closures had effectively returned to their pre-pandemic total. Of note is that retail closure rates are considerably lower than the closure rates of Canadian businesses as a whole. Data from 2015 and 2019 indicate that on average, 1.3% of retail trade businesses exited Canada each year between 2015 and 2019, while overall, business exits averaged 2.9% in the same period.[52] These rates were actually lower one year into the pandemic: in May 2021, 1.1% of retail trade businesses exited Canada.[53] Bankruptcy rates were also more intense in certain subsectors; for example, transportation and warehousing saw a large difference between May 2021 (2.1%) and the historical rate (1.6%).[54]

[51] *"Table 33-10-0270-01 Experimental estimates for business openings and closures for Canada, provinces and territories, census metropolitan areas, seasonally adjusted," Statistics Canada, 2022, https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3310027001*

[52] *"Monthly estimates of business openings and closures, November 2021," Statistics Canada, 2022, https://www150.statcan.gc.ca/n1/daily-quotidi-en/220221/dq220221c-eng.htm.*

[53] *"Monthly estimates of business openings and closures, November 2021," Statistics Canada, 2022, https://www150.statcan.gc.ca/n1/daily-quotidi-en/220221/dq220221c-eng.htm.*

[54] *"Monthly estimates of business openings and closures, November 2021," Statistics Canada, 2022, https://www150.statcan.gc.ca/n1/daily-quotidi-en/220221/dq220221c-eng.htm.*
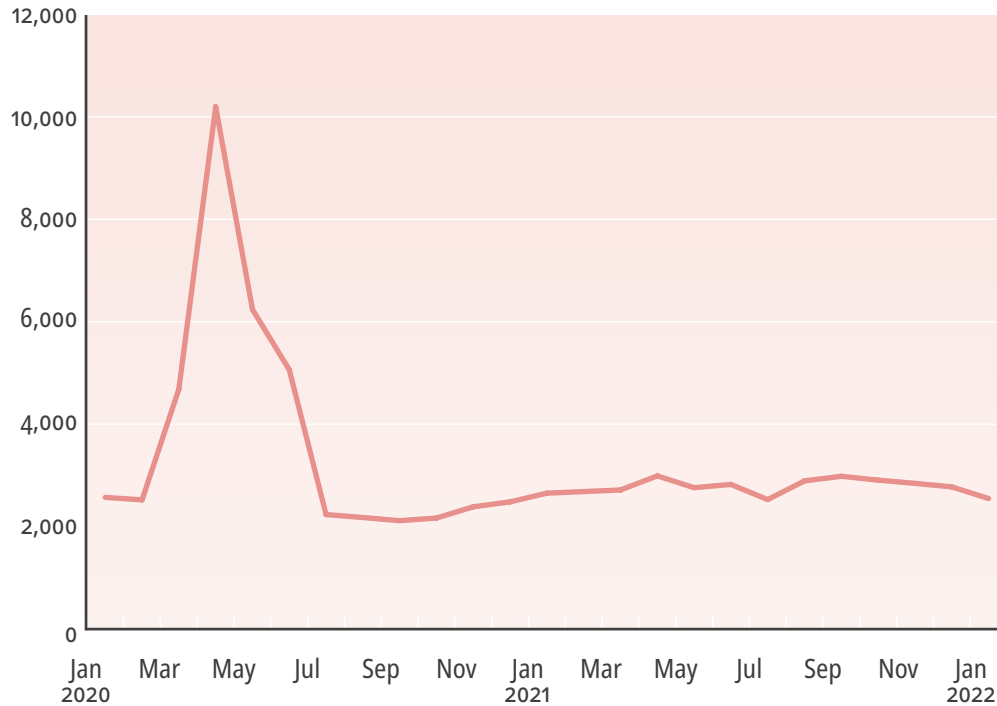
Retail Trade Business Closures

Figure 5 *Canadian Retail trade business closures between January 2020 to January 2022. Source: Statistics Canada*

When looking at how the pandemic affected retailers, people must remember that closure is not equivalent to permanent closure. Indeed, many retailers that closed in Canada returned to business after revamping their customer experience and making necessary adjustments. Statistics Canada data shows that closures and exits (closures of more than six months) spiked to close to 10% of all businesses in the first months of the pandemic before dropping rapidly down to pre-pandemic levels.[55] Meanwhile, reopening of businesses rose to around 6% of total businesses before declining more gradually.[56] As of January 2022, there were 85,616 active businesses in Canada's retail trade sector, and 2,985 new retail trade businesses opened in the same month.[57] Many businesses were supported through the pandemic through federal measures. As of 2021, 54.3% of Canadian businesses had received the Canada Emergency Business Account, 34.6% had received funding from the Canada Emergency Wage Subsidy, and 20.4% had received a temporary 10% wage subsidy for employees.[58]

[55] *"Chart 4: Monthly temporary closures and exists as a percentage of active businesses, business sector, Canada, January 2019 to April 2021, seasonally adjusted series,"* Statistics Canada, 2021, https://www150.statcan.gc.ca/n1/daily-quotidien/220125/cg-c004-eng.htm.

[56] *"Chart 2: Monthly reopenings and entrants as a percentage of active businesses, business sector, Canada, January 2019 to October 2021, seasonally adjusted series,"* Statistics Canada, 2021, https://www150.statcan.gc.ca/n1/daily-quotidien/220125/cg-c002-eng.htm.

[57] *"Table 33-10-0270-01 Experimental estimates for business openings and closures for Canada, provinces and territories, census metropolitan areas, seasonally adjusted,"* Statistics Canada, 2022, https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3310027001

[58] *"Businesses that were approved for or received various sources of funding or credit due to COVID-19 in Canada as of 2021,"* Statista, 2021,https://www.statista.com/statistics/1227567/funding-or-credit-due-to-pandemic-among-businesses-in-canada/.

According to TD Economics, retail trade also fared well when analyzing insolvency claims data year-over-year. That said, insolvency claims on their own should not be taken as definitive indicators of business health.[59] During the pandemic, some SMEs that were forced to lay off employees have not yet recovered to their pre-pandemic levels of employment. In fact, many SMEs faced difficulty during the pandemic in part because they are "less likely to have the resources and infrastructure needed to sell goods online."[60] Overall, TD Economics reported that 59.5% share of businesses in retail trade were approved for the Canadian Emergency Business Account and loans from financial institutions due to the pandemic.[61] There is some worry that those who received this funding may face difficulty repaying it; the stress on businesses, coupled with high inflation, has made the cost of doing business more expensive.[62]

Although the overall ecosystem is dominated by SMEs, Canada possesses some major firms that are active in the intelligent retail field. First, Canada performs moderately well when considering investment in retail, compared to global counterparts. While Canada's economy is roughly 1.8% of the global economy,[63] the country is responsible for around 3% of global retail tech funding.[64]

Key examples of Canadian retail leaders include Lululemon Athletica Inc., Canada's fastest-growing retailer in 2020, increasing its revenue by 10.6% year-over-year.[65] Deloitte attributes Lululemon's recent success to its "Power of Three" growth strategy, which places great relevance on the digital market.[66] Despite recent declines, Shopify, another major intelligent retail organization, grew from revenues of $205 million USD in 2015 to $4.6 billion in 2021.[67] Shopify is also named the fifth-top business-to-consumer e-commerce company, according to the United Nations Conference on Trade and Development UNCTAD.[68] Beyond simply surviving the pandemic, many homegrown apparel brands have actively expanded and thrived. The presence of Aritzia stores remained stable in Canada between 2019 and 2021, after more than a decade of linear growth. During this time, Aritzia also continued to expand in the US, growing from 24 to 33 storefronts (30%).[69]

[59] Beata Caranci et al. "Assess the Stress: Checking in on the Health of Canadian Businesses," TD Bank (2021), https://economics.td.com/ca-assess-stress

[60] Beata Caranci et al. "Assess the Stress: Checking in on the Health of Canadian Businesses," TD Bank (2021), https://economics.td.com/ca-assess-stress

[61] Beata Caranci et al. "Assess the Stress: Checking in on the Health of Canadian Businesses," TD Bank (2021), https://economics.td.com/ca-assess-stress

[62] "Business Outlook Survey – First Quarter of 2022," Bank of Canada online, 2022, https://www.bankofcanada.ca/2022/04/business-outlook-survey-first-quarter-of-2022/

[63] "GDP (current US$) – Canada," The World Bank (2022), https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=CA

[64] "Smart Retail: World Market Report," StrategyR, 2022, https://www.strategyr.com/market-report-smart-retail-forecasts-global-industry-analysts-inc.asp.

[65] "Global Powers of Retailing 2022," Deloitte (2022), https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Consumer-Business/gx-global-powers-of-retailing-2022.pdf.

[66] "Global Powers of Retailing 2022," Deloitte (2022), https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Consumer-Business/gx-global-powers-of-retailing-2022.pdf.

[67] "Form 40-F: Shopify Inc." United States Securities and Exchange Commission (2021), https://d18rn0p25nwr6d.cloudfront.net/CIK-0001594805/99a0d08d-4015-4a0a-a8fb-fe6ec66553c4.pdf.

[68] "Estimates of Global e-commerce 2019 and preliminary assessment of COVID-19 impact on online retail 2020," UNCTAD Technical Notes on ICT for Development, Issue 18, 2020.

[69] "Aritzia: Annual Report 2021," Aritzia (2021), https://s21.q4cdn.com/489771965/files/doc_financials/2021/ar/Aritzia_Annual_Report_2021_FINAL-(web).pdf.
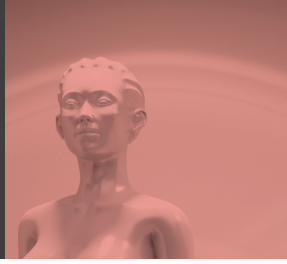
Prior to COVID-19, intelligent retail was in a state of confident growth. Deloitte estimated that as early as 2015, 64% of all money spent in retail stores was influenced by digital channels.[70] In 2019, many organizations made substantial investments in technology, and Forbes magazine noted that retail was one of the leading sectors investing in AI.[71] However, COVID-19 was unambiguously seen by industry experts as compressing a digital transformation process that might have taken 5 to 10 years into just a year or two. Strains were placed on retailers from multiple directions. Not only did customers' tastes shift rapidly toward the online experience, but many organizations also needed to find ways of adjusting to supply-chain disruptions and attracting a new workforce online.

Both external publications and ICTC's research for this study found that the retail industry is demanding digitally literate talent and is struggling to fill its tech positions. Numerous factors have contributed to the shortage of tech professionals in retail. First, as reported by Deloitte, interest in working in retail appears to be low among new entrants to the workforce. Only 34% of millennials indicated an interest in a retail field in 2015. This perspective was reinforced by retail professionals, who often struggled to communicate the benefits of working in the sector to new and recent graduates. One interviewee noted that "if Facebook finds it challenging to hire [software] engineers, imagine what retailers are challenged with."

COVID-19 had an immediate impact on Canada's retail employment. The wholesale and retail sector experienced greater job losses (-374,000) than even the accommodation and food services sector (-320,500) in April 2020. Half of retailers indicated they had to lay off staff, and even more (55%) indicated they had to reduce staff hours. In a similar vein, the April 2020 Labour Force Survey showed that 582,000 jobs were lost in wholesale and retail trade over the first two months of the crisis—equivalent to 20.2% of all jobs in the sector. Over the same period, there was a 31% decrease in total hours worked.[72]

In addition to bringing a massive change to the shopping experience, intelligent retail has profound implications for the retail workforce. Automation and AI technologies alone are anticipated to affect around 50% of the retail workforce.[73] The impacts of these technologies on the retail sector are both profound and diverse: they will make drastic changes to day-to-day tasks, which may gradually

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[70] "Navigating the new digital divide," Deloitte (2015),
https://www2.deloitte.com/us/en/pages/consumer-business/articles/navigating-the-new-digital-divide-retail.html.
[71] Michael Adair, "Why Retail is One of The Leading Sectors Investing in AI," Forbes online, 2019,
https://www.forbes.com/sites/forbestechcouncil/2019/03/29/why-retail-is-one-of-the-leading-sectors-investing-in-ai/?sh=1a6050901b4b.
[72] "COVID-19 Data and Research," Canadian Chamber of Commerce, 2022, https://chamber.ca/resource/cbrn/covid-19-data-and-research/
[73] Patrick Simon et al. "Closing the skills gap in retail with people analytics," McKinsey & Company (2020),
https://www.mckinsey.com/industries/retail/our-insights/closing-the-skills-gap-in-retail-with-people-analytics.

result in certain roles declining (such as cashiers, re-stockers, inventory analysts, and packers); monotonous or repetitive tasks are most easily impacted and augmented by automation and AI.[74] However, viewing intelligent retail as simply eliminating entry-level or low-wage jobs misses the bigger picture. Instead, intelligent retail has the potential to exert a large change on all levels of retail organizations, changing or augmenting existing roles, and creating entirely new ones. Key examples include the following:

- Developments are underway to create "consumer AI agents" or "retail AI agents" that would provide real-time knowledge and information for buyers.[75]

- Delivery and transportation sectors may eventually be affected by technological developments, such as automated cars.

- E-commerce fulfillment centres can become fully automated, leaving robots to collect and execute delivery orders.

- Call centres and customer-care centre roles have already seen the impact of AI technology, with chatbots responding to customer inquiries and tracking data for better decision making.[76]

As mentioned by one interviewee, even many tasks associated with the executive level have potential for automation:

"Technology can supplant labour. Not that our goal is to replace people, but I think the retail industry has been too manual for too long. Some of our clients might have a thousand people in the merchandizing department. A lot of that work could be automated because it's very manual and labor intensive. I think the stock market is a good proxy for what's going to happen down the road: now more than 70% of stock trades are executed by the computer. [Eventually], I think even complex decision making within organizations will be executed by technology with human oversight."

Retail CEO

[74] Ryan McLaughlin and Trevor Quan, "On the Edge of Tomorrow: Canada's AI-Augmented Workforce," ICTC Digital Think Tank, December 2019, https://www.digitalthinktankictc.com/reports/on-the-edge-of-tomorrow.
[75] George Krasadakis, "Artificial Intelligence: The Impact on Employment and the Workforce," Medium (2018), https://medium.com/innovation-machine/artificial-intelligence-3c6d80072416.
[76] George Krasadakis, "Artificial Intelligence: The Impact on Employment and the Workforce," Medium (2018), https://medium.com/innovation-machine/artificial-intelligence-3c6d80072416.

Some interviewees for this study felt that job satisfaction or work quality is a major benefit that will emerge with the introduction of automation processes, especially in roles where "jobs are very monotonous" and where "technology could free up time to do more compelling things." That said, without additional training and support, some workers may feel ill-equipped to adapt to the pace of change. Interviewees acknowledged the disruptive impact of technology on the labour force, suggesting that the industry has paid insufficient attention to helping its workforce adapt.

> **"If you're taking away 50% of their job and doing that with technology, it feels to them that they're being displaced. How do you deal with the displacement that happens or settle fears and create new jobs for those people impacted? That human technology relationship is a challenge to figure out. I don't think anybody's really figured that out yet, because it's early days. But we don't want to unemployment to rise."**

Retail CEO

Interviewees noted retailers must balance creating efficiencies with the human impact. That is, when adopting automation technologies to manual processes, it must be done without isolating the workforce and further driving the inaccurate but popular narrative that technology will replace all roles. At the height of the pandemic, many forms of workforce inequity have come to light, and the rapid restructuring of the retail workforce is not without concern. The pandemic hit low-wage workers the hardest, many of whom are still looking for new opportunities in a post-COVID era. According to research by McKinsey & Company, automation also disproportionately impacts vulnerable communities, people of colour, and lower-income workers.[77] At the same time, many industry representatives and subject-matter experts believe that the digitalization of the workforce has the potential to drive inclusive growth by increasing productivity. A 2018 report by the International Labour Organization states that "…new, AI based digital technologies may allow larger segments of the labour market to improve their productivity and to access better paying occupations and, thereby, may help promote (inclusive) growth".[78] Interviewees in this study emphasized that employers must have a clear strategy to help ease the transition, including awareness-building, training, and other talent development programs.

Surveying the Intelligent Retail Landscape

[77] *What 800 executives envision for the postpandemic workforce," McKinsey & Company (2020), https://www.mckinsey.com/featured-insights/future-of-work/what-800-executives-envision-for-the-postpandemic-workforce.*
[78] *Ekkehard Ernst et al. "The economics of artificial intelligence: Implications for the future of work," International Labour Organization (2018), https://www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/publication/wcms_647306.pdf.*

Several firms note that labour market tightness may limit the number of workers available in the coming years. The Bank of Canada's business outlook survey found that one-third of firms report labour shortages that are constraining their sales.[79] Most businesses expect labour shortages—mainly those linked to structural changes—to persist until at least 2023.[80] Interviewees frequently mentioned Canada's historical ability to attract talent from other regions, such as Europe and India. However, some stated that this capacity was being increasingly hampered by the high cost of living in many Canadian cities, particularly Vancouver and Toronto.

Recruitment as a whole is a major challenge for retailers. Retail executives told ICTC that talent shortages are a major challenge for growth and innovation, and the relatively small pool of talent in Canada means that many retailers are competing against each other for qualified, skilled workers. Some firms are using employee-centric models to attract workers, including focusing on improving workplace culture by prioritizing diversity, equity, and inclusion policies (DEI), automating tasks, and offering better working conditions to attract and retain workers.[81] As one interviewee told ICTC, "Every company is trying to bring in smart people or more knowledgeable and experienced people…past a certain point, Canada just doesn't have [enough of] those people." Overall, the small size of the Canadian retail market was linked to difficulties in attracting and developing talent. To mitigate these challenges and continue to drive their businesses forward, many retail executives are looking internationally for workers. Interviewees in this study mentioned the following:

> **"We had to hire from outside Canada…the biggest Canadian firms are hiring abroad or using big US consultancies to help them upgrade their supply chain because the expertise simply does not exist in Canada."**

Retail consultant

[79] *"Business Outlook Survey – First Quarter of 2022," Bank of Canada online, 2022, https://www.bankofcanada.ca/2022/04/business-outlook-survey-first-quarter-of-2022/*

[80] *"Business Outlook Survey – First Quarter of 2022," Bank of Canada online, 2022, https://www.bankofcanada.ca/2022/04/business-outlook-survey-first-quarter-of-2022/*

[81] *Marty Weintraub et al. "Focus on customers, brand, and agility vital to retail success: 2022 Canadian retail outlook," Deloitte (2022). https://www2.deloitte.com/content/dam/Deloitte/ca/Documents/consumer-industrial-products/ca-en-consumer-retail-outlook-fy22-aoda.pdf?i-cid=heroDownloadEN*

> **"[The] dean and academic director at [a Canadian university] will often tell business leaders that their American counterparts are outbidding them. They know where our students are going. It's an issue. If you want to have a data scientist with a Master's in Analytics coming to work with you, you're going to have to pay more than you're used to paying, because that talent is very much in demand."**

Retail chief strategist & executive advisor

In addition, the need for specific skills and experience has constrained many retailers further. Interviewees participating in this study often recommended that employers forge stronger relationships with educational institutes to source top talent or invest in targeted training programs internally to build their talent pipeline.

> **"In the US these big brands will sponsor or even run a supply chain program with the explicit interest that those people will start to work for them after they come out of school. And they need to do it that way to get the level of skill for programs that they need."**

Retail consultant

However, interviewees also acknowledged that part of the journey includes education and awareness-building. Specifically, retailers felt that the retail sector needs to do a better job of engaging young people and showcasing the multitude of high-quality career and job-mobility opportunities within the sector. In a survey of retail executives, Deloitte found that employers recognized the "need to offer employees meaningful routes from the floor to HQ," or in other words, upskill or reskill people as a means to fill the talent gap with individuals who already have experience in the sector.[82] Such training and upskilling programs should include a transition plan that responds to future skills and labour needs that will emerge with the broader introduction of automated technologies.

All in all, workforce and hiring data paints a picture of an industry rapidly digitalizing its workforce and facing a crunch for skilled workers to drive this transition. ICTC's intelligent retail survey found that technical roles dominate the list of jobs most

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[82] Marty Weintraub et al. "Focus on customers, brand, and agility vital to retail success: 2022 Canadian retail outlook," Deloitte (2022).

frequently sought among retailers. Close to half of respondents hired **UX/ UI designers** or **software developers.** Almost as many respondents hired **communications** or **social media** experts, both interdisciplinary roles combining digital skills with a heavy emphasis on strategy and public engagement. The next most hired jobs were also related to technology: **web developers, data roles, e-commerce specialists, project managers,** and **digital marketers.** The roles seeing the least hiring tended to be manual or cyclical in nature, including warehouse and delivery staff or salespeople.

Which roles has your organization hired for the most over the past 12 months?
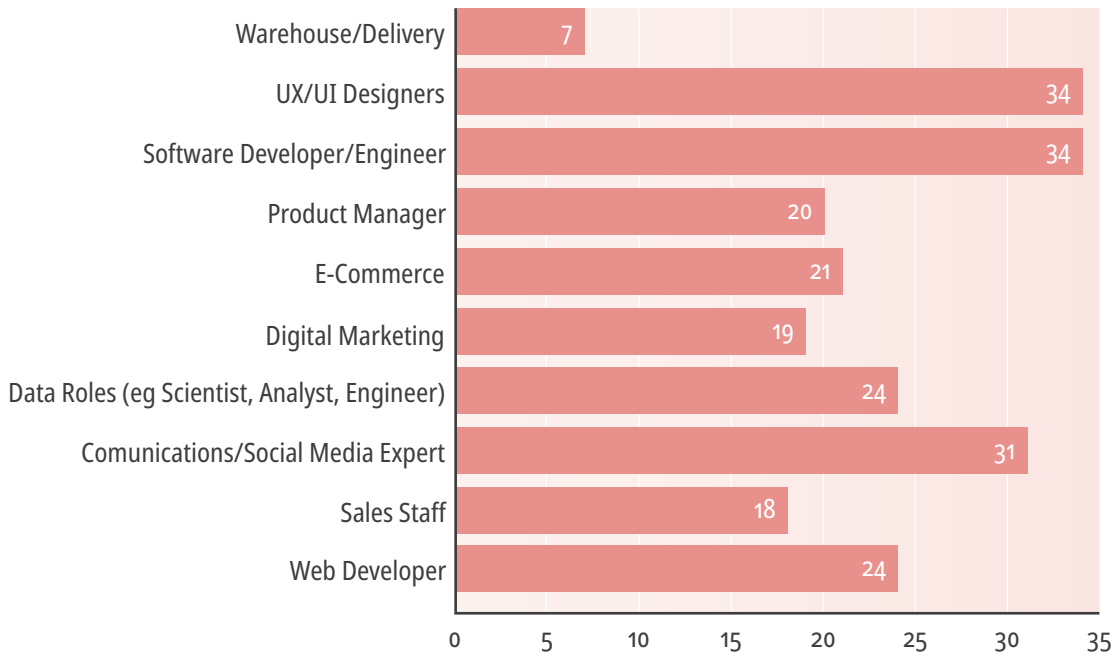

Figure 6 Roles most frequently hired for in the past 12 months. Source: ICTC, 2022.

The survey also found that the future mimics the present in terms of demand for jobs. Employers identified software developers, UX/UI designers, data roles, and communications and social media experts as being most in-demand in the next two-to-three years. By contrast, sales staff, web developers, project managers, and warehouse and delivery roles were projected to decline.

What roles do you expect will be the most sought-after at your organization over the next 2–3 years?
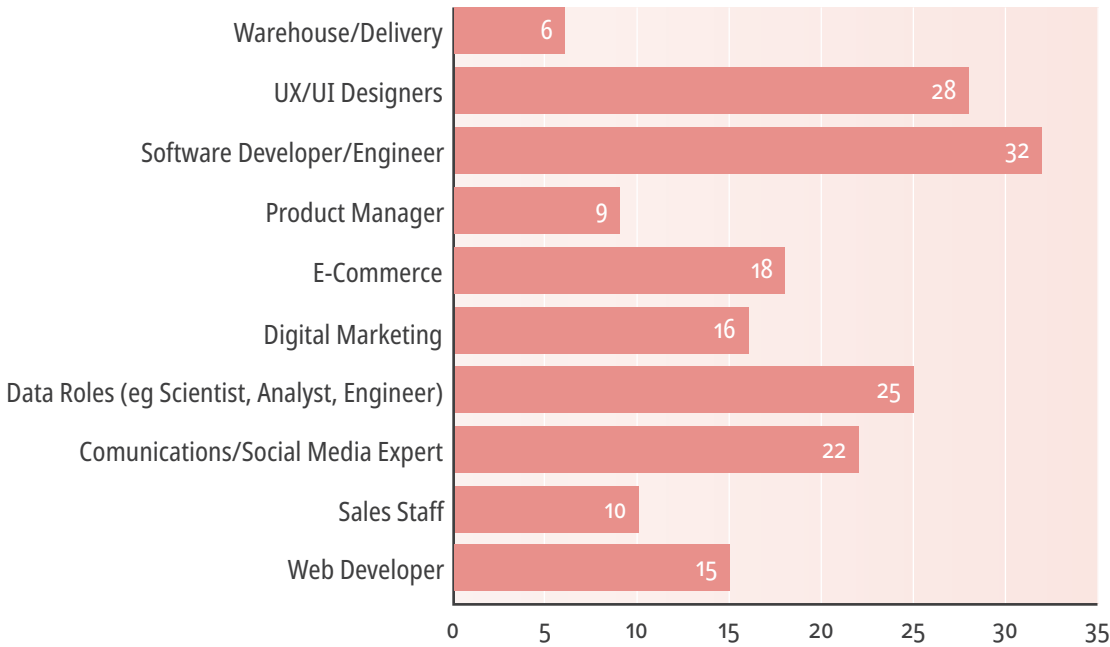

Figure 7 *Roles seen as most likely to be sought-after in the next 2-3 years, according to Canadian retail organizations. Source: ICTC, 2022.*

ICTC's survey data corroborates the general sense of a lack of quantity of digitally savvy personnel. When asked which roles they perceived to be most in-demand, relative to the number of currently available jobs, interviewees responded with predominantly digital roles, particularly data and e-commerce. Interestingly, UX/UI designers and software developers/engineers were in the middle of the pack, despite being the most frequently hired roles in the previous question. This may attest to more established talent pipelines for these roles, which are not unique to the retail sector.

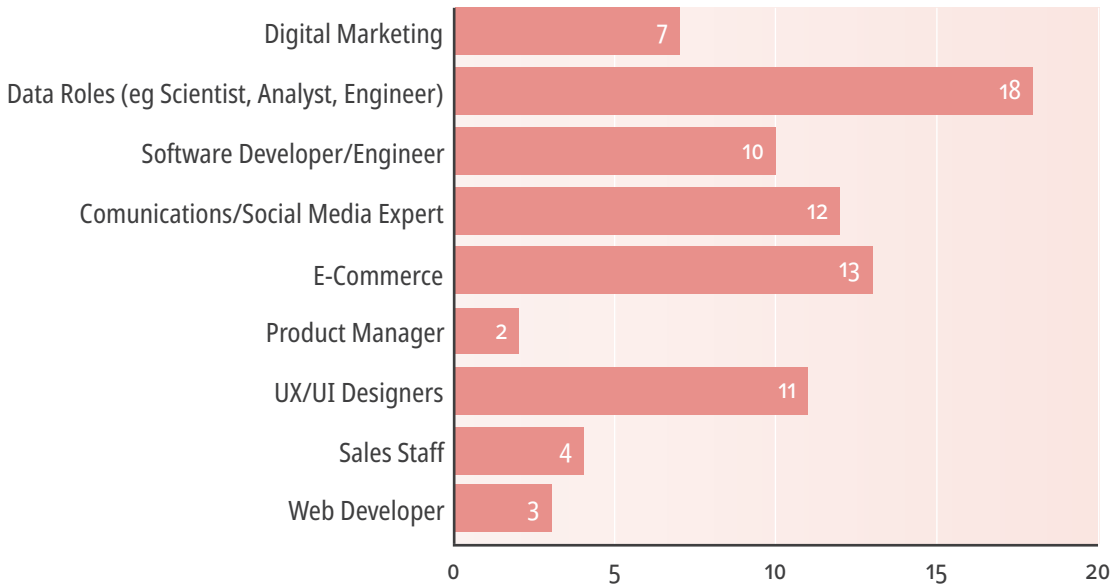**What role do you perceive to be the most in-demand, compared to the number of currently available jobs?**

Figure 8 *In-demand jobs compared to current available jobs. Source: ICTC, 2022.*

Interviewees in this study also agreed on the importance of digital skills for transitioning retailers into an intelligent retail paradigm.

> **"Definitely in the digital world, the skills are completely different than in the retail world, like in the store world. But they're cross-merging so much that I think you will still see a need for an in-store presence, but with digital enablers. So, take the iPad application you use while you're upselling product: application itself is developed by somebody who's very tech-savvy, but the sales are still done by an experienced salesperson."**

E-commerce and Digital Marketing Specialist

> **"[We're] always looking for the right skill set, the right talent. And digital is an important piece, but we are an omnichannel business at the end of the day. So, our stores are equally important...We need the digital skill sets, but it's also people who have experience when it comes to running a successful store operation."**

Marketing Specialist

E-commerce platforms were seen by survey respondents as the most important technologies for online operations. This was followed by customer behaviour prediction, customer satisfaction tracking, and smart delivery and fulfillment tools (Figure 9). While all technologies were seen as either "very important" or "somewhat important" by a large majority of respondents, virtual reality, chatbots, shopatainment (live commerce), and data science, while trendy, were seen as "not important" by the largest share of respondents.

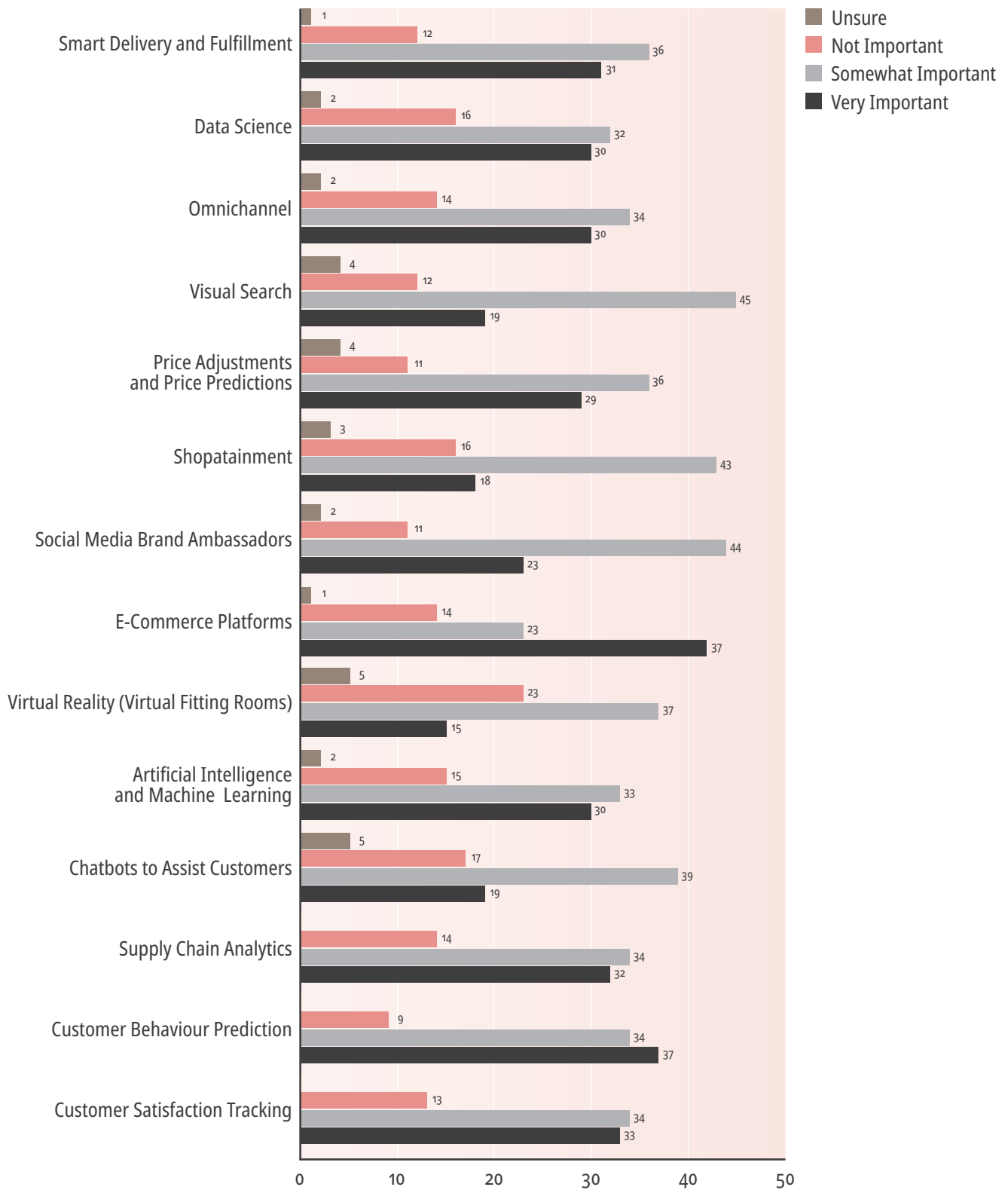# Ranking Importance of "Must-Have" Techonlogies

Figure 9 *Classing importance of various intelligent retail technologies, according to Canadian retailer organizations. Source: ICTC, 2022.*

Hard Skills

data science

Technical knowledge about how their product or service impacts the invornment (specically around climate change), and what initiatives their company is taking to lesson those.

digital messaging platforms—Salesforce Marketing Cloud, Trillio

time management coaches

learning facilitators

marketing analytics & insights

CX

Tech Arch Integration

experience with data/ report tools: tableau, sql

(for smaller companies) "in house" marketing skills—use of Canva/ Email Platforms (e.g. sendgrid), UX/UI experience, Upfluence (influencer management).

growth marketing

paid digital platform experience—FB, Google Ad Words, Programmatic

customer experience

analytical

+6

+5

Soft Skills

Interpersonal communications, time management and knowledge of how to learn (smartly).

Flexible in role (not a singularly defined role but happy to define own role)

Strategic thinking informed by how data-oriented deliverables can be met, shifting from more traditional views on roles. Building and leading effective privacy/ data protection programs

Sales skills still important for associates. Also customer relationship management. Also leadership/operational management skills

Problem Solving

Creativity & Innovation

+5

adaptability

+5

+4

empathy. ability to quickly build rapport with customers, regardless of the primary job function.

Test and learn mindset

collaboration

+3

customer-centric mentality

Figure 10 Top hard and soft skills as noted by ICTC's Advisory Committee, Jamboard, April 2021.

Subject-matter experts engaged in this study identified the exemplary intelligent-retail employee as one who is familiar with retail analytics and is comfortable with data interpretation and reporting. Retail employers also looked for individuals with experience with Salesforce, marketing, cloud technology, customer experience (CX), UX/UI, and a large range of digital marketing tools (Figure 10). Among the soft (or human) skills, communication, time management, empathy, and customer-centric mentality stood out as most important, alongside creativity and innovation.

In-Demand Intelligent Retail Skills

Software Roles

Example software roles: software developer, web developer, software engineer

TOP TECHNICAL SKILLS	TOP HUMAN SKILLS
C++	Design Thinking
Java	General Communication
C#	Problem Solving
AWS	Flexibility
Linux	Leadership
Python	Innovation
Agile	Written Communication
Data Structures	Planning
Algorithms	Teamwork
System Security Knowledge	Responsibility

Data Roles

Example data roles: data analyst, data engineer, data scientist

TOP TECHNICAL SKILLS	TOP HUMAN SKILLS
SQL	Design Thinking
Python	General Communication
AWS	Leadership
Excel	Responsibility
Extract, Transform, Load (ETL)	Planning
Big Data	Innovation
Spark	Written Communication
C++	Decision Making
Azure	Flexibility
Java	Guide Others

Project Management Roles

Example project manager roles: project manager, technical project manager

TOP TECHNICAL SKILLS	TOP HUMAN SKILLS
Project Management Professional (PMP)	General Communication
Operations Knowledge	Planning
Excel	Leadership
Microsoft Office	Design Thinking
Scrum	Responsibility
Jira	Time Management
Research	Teamwork
Project Management Office Knowledge (PMO)	Guide Others
MS Project	Flexibility
Confluence Software	Negotiation

Logistics Roles

Example logistics roles: logistics specialist, logistics analyst

TOP TECHNICAL SKILLS	TOP HUMAN SKILLS
Warehouse Knowledge	General Communication
Transportation Knowledge	Planning
Supply Chain Knowledge	Responsibility
Freight Knowledge	Design Thinking
Excel	Negotiation
Third-Party Logistics (3PL)	Leadership
Microsoft Office	Oral Communication
SQL	Written Communication
Transportation Management System (TMS)	Problem Solving
Warehouse Management System (WMS)	Work Independently

Cloud Roles

Example cloud roles: cloud architect, cloud engineer

TOP TECHNICAL SKILLS	TOP HUMAN SKILLS
Python	Design Thinking
Kubernetes	General Communication
Linux	Leadership
Jenkins	Written Communication
C++	Responsibility
AWS	Planning
SQL	Time Management
Agile	Flexibility
Azure	Guide Others
Docker	Problem Solving

E-commerce Roles

Example e-commerce roles: e-commerce operations specialist, e-commerce associate

TOP TECHNICAL SKILLS	TOP HUMAN SKILLS
Merchandising	General Communication
Microsoft Office	Planning
Excel	Design Thinking
Adobe Creative Cloud/Suite	Time Management
Google Analytics	Written Communication
Search Engine Optimization (SEO)	Leadership
User Experience (UX)	Guide Others
Amazon Marketplace	Listening
Digital Marketing	Oral Communication
Social Media	Responsibility

Social Media Roles

Example social media roles: social media co-ordinator, social media specialist, social media marketer

TOP TECHNICAL SKILLS	TOP HUMAN SKILLS
Instagram	General Communication
Facebook	Listening
Twitter	Design Thinking
Pinterest	Planning
TikTok	Creativity
Excel	Written Communication
Google	Guide Others
Adobe Creative Cloud/Suite	Time Management
LinkedIn	Leadership
Google Analytics	Responsibility

Digital Marketing Roles

Example digital marketing roles: digital marketing specialist, digital marketing associate

TOP TECHNICAL SKILLS	TOP HUMAN SKILLS
Social Media	General Communication
Analytics	Planning
E-commerce	Design Thinking
Excel	Time Management
TikTok	Written Communication
Facebook	Leadership
Google Analytics	Guide Others
Microsoft	Listening
Search Engine Optimization (SEO)	Oral Communication
Instagram	Responsibility

UX Roles

Example UX roles: UX designer, UX developer

TOP TECHNICAL SKILLS	TOP HUMAN SKILLS
Figma	Design Thinking
Sketch	General Communication
User Interface Knowledge (UI)	Leadership
Android	Guide Others
Human Computer Interaction Knowledge (HCI)	Planning
Axure RP	Creativity
Solid	Persuasion
iOS	Brainstorming
InVision	Responsibility
HTML	Work Efficiently
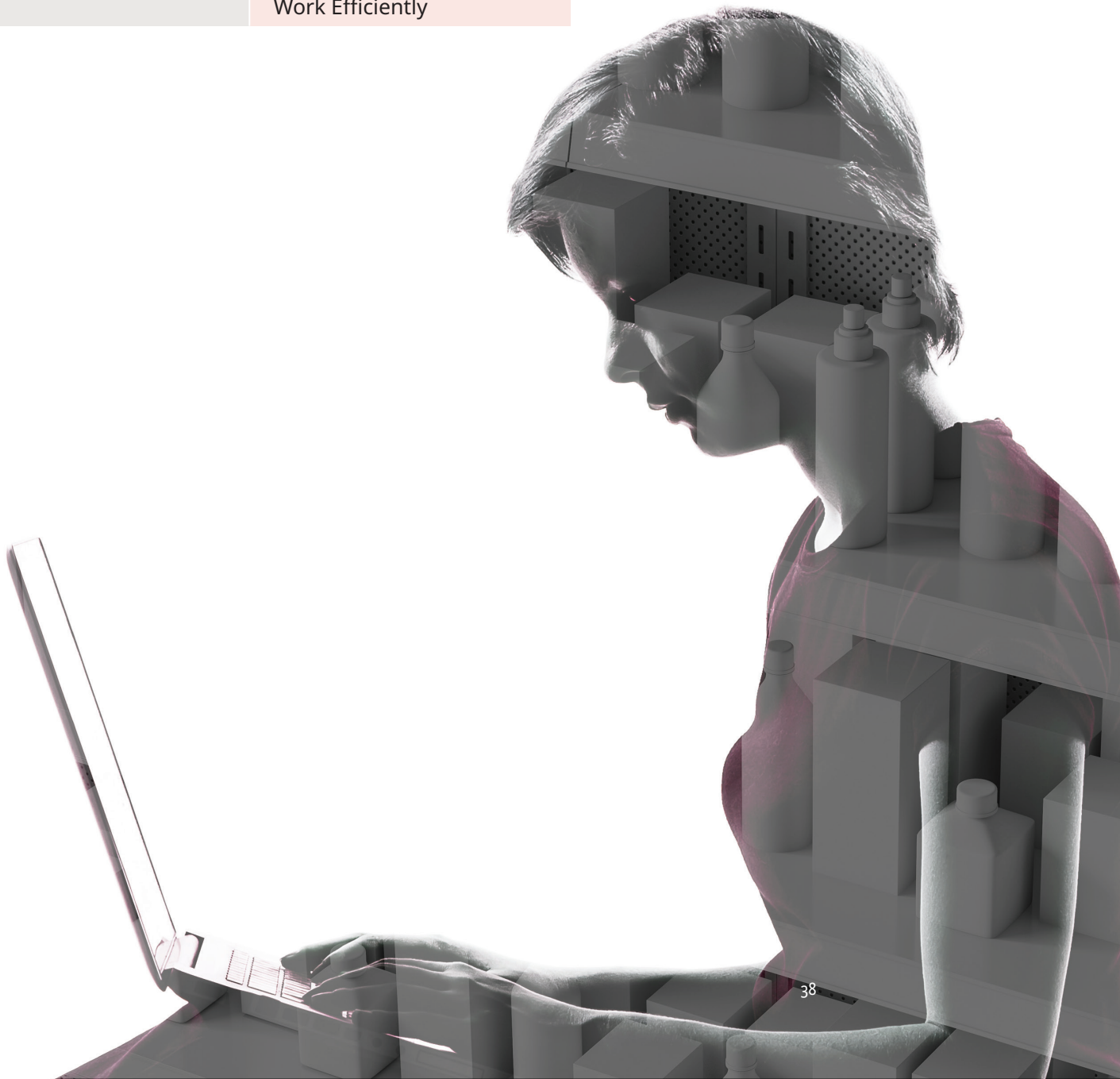
National Adoption

Although the retail sector was experiencing a noticeable shift toward digitalization before the pandemic, COVID-19 galvanized Canadian retailers into adopting more digital tools. The movement of retailers adapting to a digital mindset is largely due to the mobile-driven changes in consumers' attitudes and behaviours, and retailers having to build new capabilities to avoid losing market share.[83] This adoption of technological advances for the retail sector can be traced back to the early 2010s; however, it was not completed in unison by the whole sector. In 2020, retailers adopted digital technologies at unprecedented rates under the pressures of the COVID-19 pandemic. The Retail Council of Canada, for example, notes that during the pandemic, more retailers were applying various technologies, including augmented reality, virtual reality, and smart logistics.[84] The Canadian Chamber of Commerce reports that 30% of Canadian retailers introduced virtual business connections, work from home, and e-commerce into their business process because of the COVID-19 pandemic.[85]

However, retailers in Canada have not simply adopted technologies to serve short-term needs. Many are making technology an integral part of their organizational strategy. This digital evolution and retailers' focus on advancing their digital footprint to meet customers' evolving needs is at the forefront of dialogue between retail executives in the US as well. For example, in recent research examining the practices of more than 200 retail IT executives, more than half note prioritizing continual upgrades to their digital customer experience, expanding the use of analytics-backed decision making, and increasing overall investments in AI.[86] The traditional relationship between retailers and technology is focused on enhancing the customer experience, but it has since evolved to offer options that battle inflationary measures.[87] With ongoing supply-chain disruptions retailers will increasingly adopt deflationary technologies. These deflationary technologies will vary, but the emerging trends of smart shelves, cashier-less shopping, and increased integration of omnichannel marketing technologies will become increasingly present. Additionally, the ongoing advancements in technology within the retail

[83] Stefan Niemeir "Why retailers must adopt a technology mind-set," McKinsey, 2013, https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/bto/pdf/mobt32_10-13_niemeierinterview_r5.ashx
[84] "In-store technology to transform Canadian retail experience," Retail Council of Canada, 2019, https://www.retailcouncil.org/community/technology/in-store-technology-to-transform-canadian-retail-experience/.
[85] "COVID-19 Data and Research," Canadian Chamber of Commerce, 2022, https://chamber.ca/resource/cbrn/covid-19-data-and-research/
[86] "Retail trends report: CX driving digital adoption and connectivity needs," Comcast Business, 2022, https://www.bizjournals.com/sanfrancisco/news/2022/02/08/retail-trends-report-cx-driving-digital-adoption.html
[87] Daniel Newman, "Can Digital Technologies Help Retailers Battle Inflation?" Forbes, 2022, https://www.forbes.com/sites/danielnewman/2022/05/25/can-digital-technologies-help-retailers-battle-inflation/?sh=522916db7e39

sector means that retailers must develop strategies to safeguard customer data and privacy. Recent research by Massachusetts Institute of Technology (MIT) found that retailers which effectively adopt emerging technologies, while effectively communicating their value and respecting customer privacy rights, will outperform competitors and capitalize on the increasing dynamism of the retail marketplace.[88]

ICTC's survey of Canadian retailers found that intelligent retail is a firmly entrenched concept in the sector, with over two-thirds (68%) of respondents self-identifying as intelligent retailers (Figure 11).

Are you an Intelligent Retail Org, by Org Size
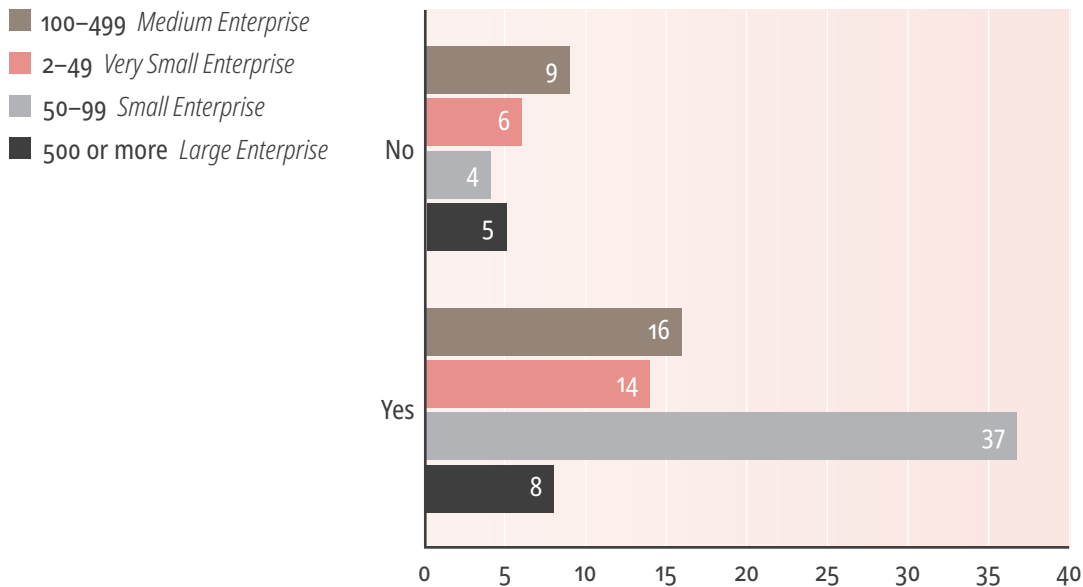
Figure 11 Self-identification as an "Intelligent Retailer" among Canadian retail by size of organization. Source: ICTC, 2022.

How Long Has your Organization Been Active in Intelligent Retail?
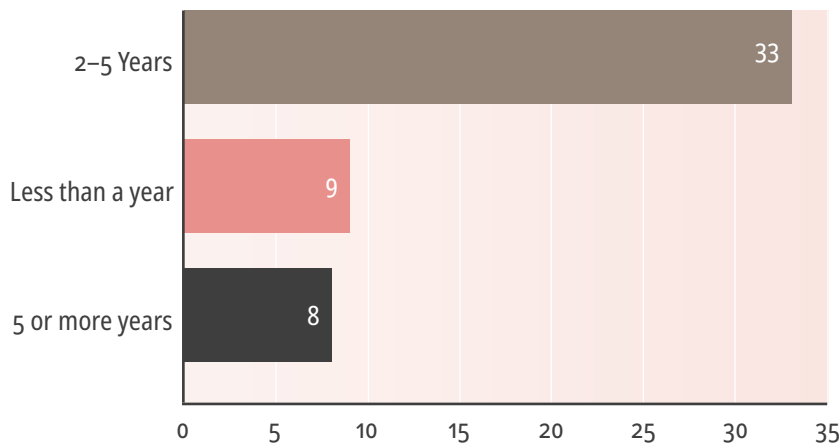
Figure 12 Length of involvement in intelligent retail, among Canadian retail organizations that self-identify as 'intelligent retailers.' Source: ICTC, 2022.

[88] Selena Zhu, Maxime Cohen, Saibal Ray, "How In-Store Tech Will Transform Retail," MITSloan Management Review, 2021, https://sloanreview.mit.edu/article/how-in-store-tech-will-transform-retail/

Among respondents who identified their organizations as intelligent retailers, 72% responded that the COVID-19 pandemic increased their organization's involvement with intelligent retail, while another 24% answered that they were already adopting intelligent retail (Figure 13). In a study conducted by SAP, 32% of Canadian enterprises reported having a strategic approach to digital transformation in 2021, and 20% of enterprises invested in innovative technologies in 2020, while 31% did so in 2021.[89]

Did the COVID-19 pandemic increase your organization's involvement in intelligent retail?
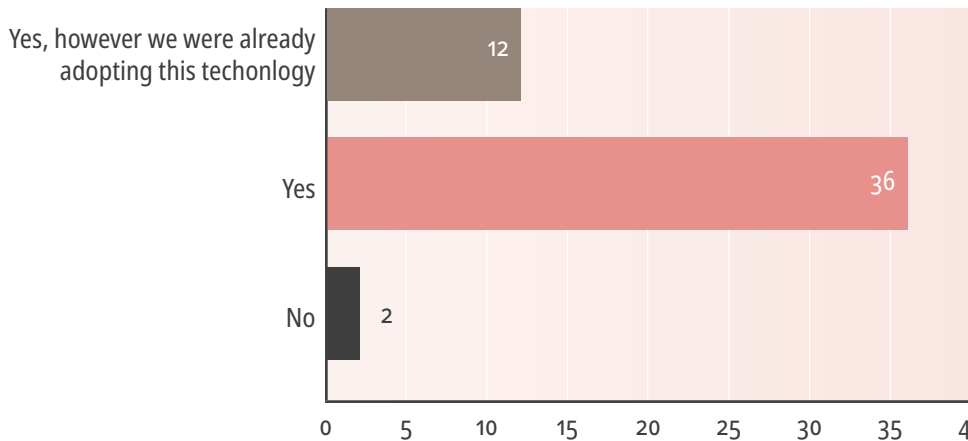
Figure 13 *Effect of the COVID-19 pandemic on Canadian retail organizations' involvement in Intelligent Retail. Source: ICTC, 2022.*

Even retail organizations that do not self-identify as intelligent retailers acknowledge the large-scale impact that intelligent retail is having on the retail ecosystem. They generally see intelligent retail as relevant for both themselves and their industry. On a scale from one to seven, with one being "irrelevant" and seven denoting "completely revolutionary," organizations rated intelligent retail as a 4.9 for their organization, and a 5.4 for the retail industry. (Figure 14).

Average rank—intelligent retail impactfulness on (Rank: 7 — Completely, 1 — Irrelevant)
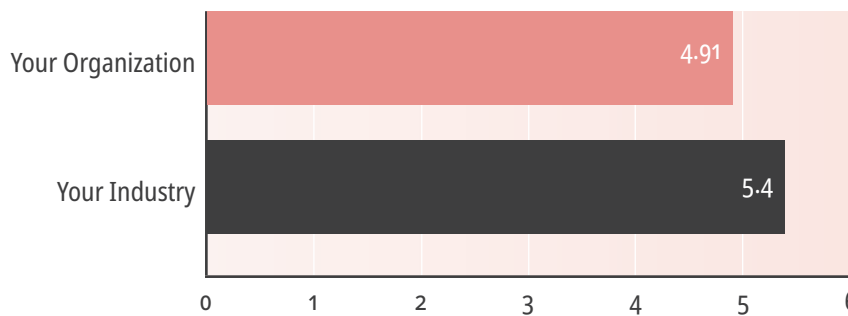
Figure 14 *Scale of the impact of intelligent retail on retail organizations and the retail industry as a whole. Source: ICTC, 2022.*

[89] Megha Kumar, "Innovation Readiness: Canadian organizations striving for digital leadership," IDC iMag, sponsored by SAP Canada, December 2021, https://www.sap.com/canada/registration/protected/default-overlay.html

Whether or not they specifically identify themselves as intelligent retailers, retail organizations in Canada have already adopted a large variety of digital tools. Over half of respondents to ICTC's survey said that their organization used e-commerce platforms on a day-to-day basis. Close to half of respondents reported that their organization used AI and supply-chain analytics, and between a quarter and a third used smart fulfillment, omnichannel, and data science. The least reported technologies were VR, shopatainment (live commerce), and pricing technologies.

Do You Use These Technologies/Applications
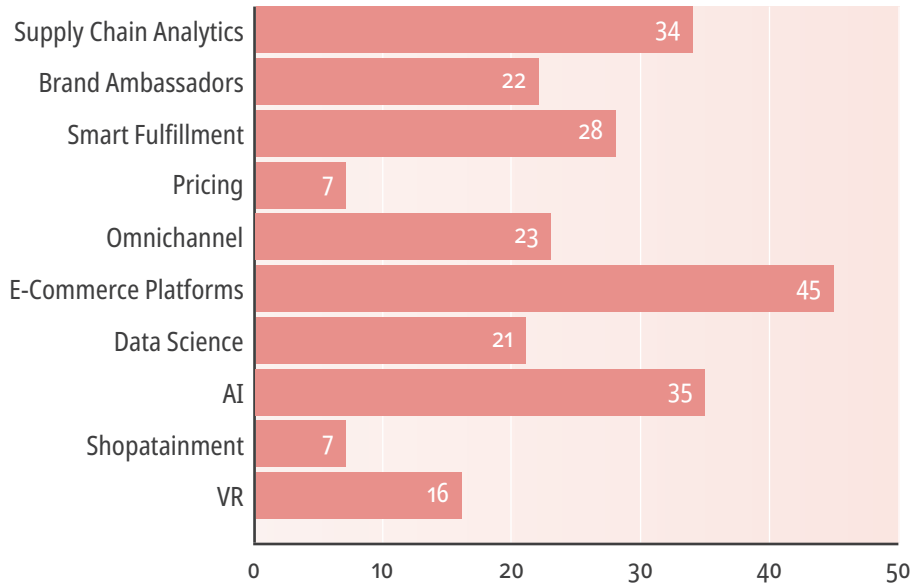
Figure 15 *Intelligent Retail technologies employed by organizations on a day-to-day basis. Source: ICTC, 2022.*

Adoption rates of other digital tools are also high. More than half of retailers used digital marketing and more than one-third used chatbots, brand ambassadors, and smart delivery/fulfillment in the last year. Less than 10% of survey respondents indicated that none of these intelligent retail tools applied to their business, emphasizing yet again that even retailers who do not specifically identify themselves as "intelligent retailers" still use a number of digital tools.

Which of the following intelligent retail tools has your organization used in the last year?
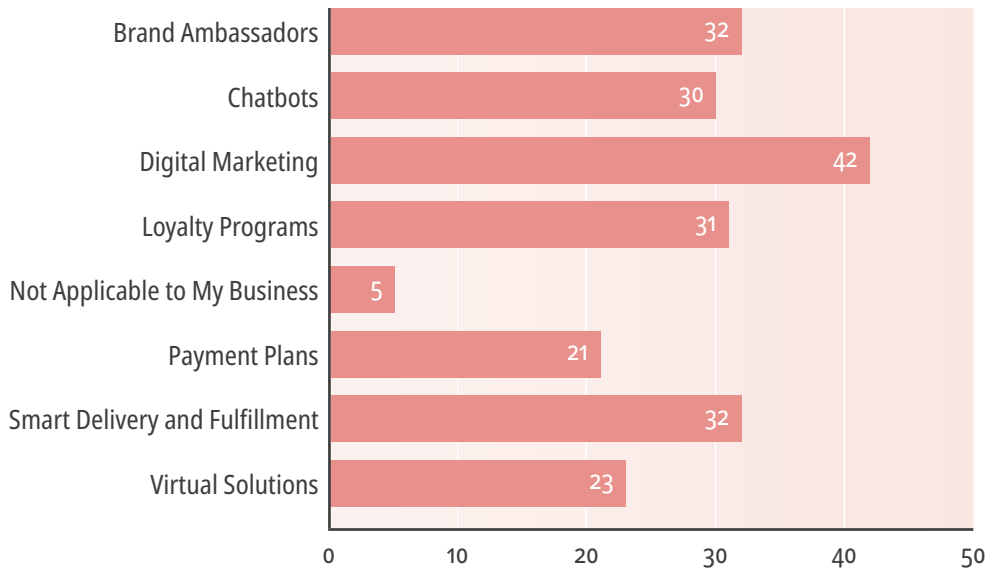

Figure 16 Intelligent retail tools employed by organizations in the last year, Source: ICTC, 2022.

Rapid technology adoption appears to be driven in part by what retailers perceive to be the expectations of their customers. More than half of respondents to ICTC's survey feel that competitive pricing was most important to their customers. This was followed by brand loyalty and a personalized shopping experience. Companies experimented with dynamic pricing strategies and offered flexible payment terms during the pandemic, focusing on the long-term advantage.[90] Dynamic pricing strategies have been proven to help retain customer loyalty—value remains one of the top considerations for consumers today.[91] A study by Deloitte found that retailers are investing more in their supply chains and fulfillment process due to the disruptions in supply chains, with the end goal being to reduce supply chain interruptions and improve organizational adaptability.[92] Some retailers have also begun experimenting with drone technologies to meet fulfillment promises.[93]

[90] Alex Abdelnour, Todd Babbitz, and Stephen Moss, "Pricing in the pandemic: Navigating the COVID-19 crisis," McKinsey & Company, May 1, 2020, https://www.mckinsey.com/business-functions/growth-marketing-and-sales/our-insights/pricing-in-a-pandemic-navigating-the-covid-19-crisis.
[91] Nidhi Arora et al., "A global view of how consumer behaviour is changing amid COVID-19," McKinsey & Company, July 7, 2020, https://www.mckinsey.com/business-functions/growth-marketing-and-sales/our-insights/a-global-view-of-how-consumer-behavior-is-changing-amid-covid-19
[92] Marty Weintraub et al. "Focus on customers, brand, and agility vital to retail success: 2022 Canadian retail outlook," Deloitte (2022).
[93] Marty Weintraub et al. "Focus on customers, brand, and agility vital to retail success: 2022 Canadian retail outlook," Deloitte (2022).

What issues are becoming increasingly more important to your customers?
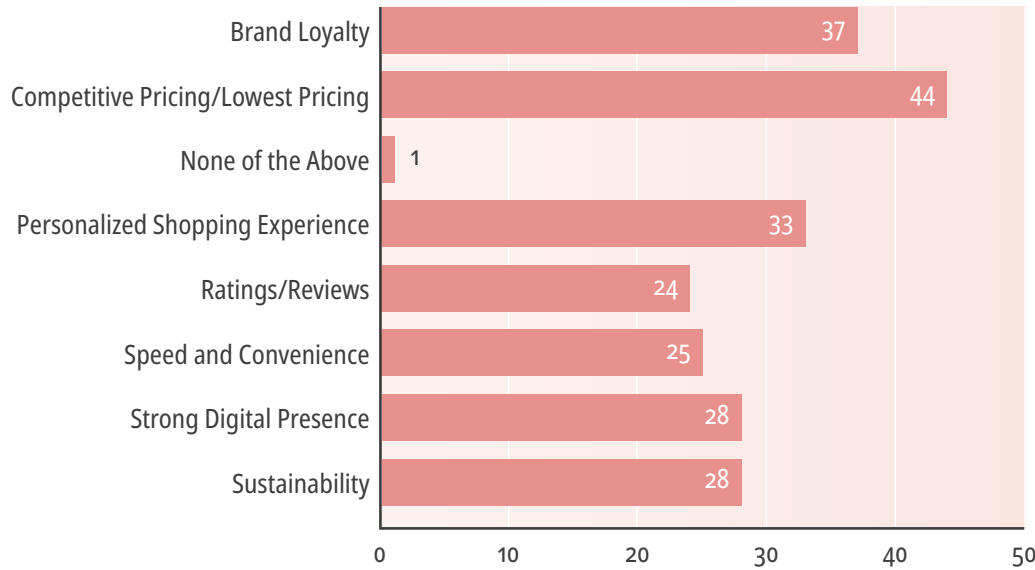

Figure 17 *Issues increasingly important to customers of Canadian retailers. Source: ICTC, 2022.*

Anticipating the future, respondents to ICTC's survey expect more adoption of intelligent retail tools in the next five-to-ten years. More than half expect that smart checkouts and smart shelving will become widespread. Another third believe that technology will permeate brick-and-mortar stores even further, suggesting that contactless shopping and fully cashier-less stores will become widespread. Customers are also looking for a unique touch and are loyal to brands that provide them with the option of personalizing products and services. As a result, branding and engagement has become crucial, with brands having to find new avenues to interact with shoppers to improve loyalty.[94]

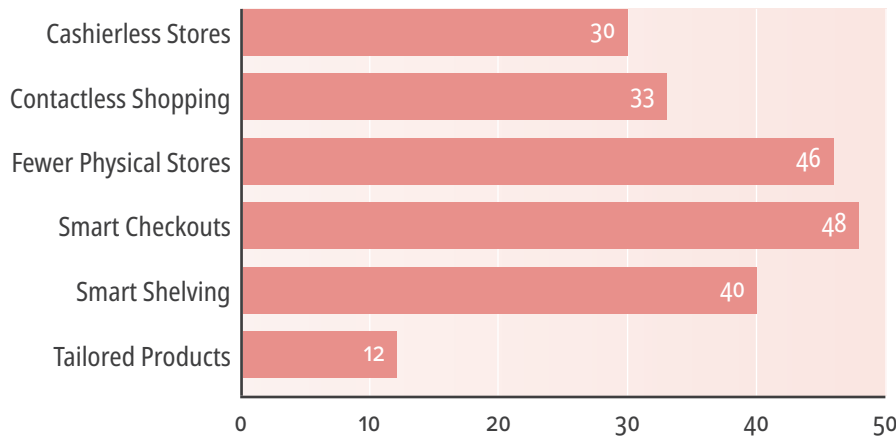**Which technologies do you expect to be widespread in 5–10 years?**

Figure 18 *Expectations for intelligent retail technologies to become widespread in the next 5–10 years, according to Canadian retailers. Source: ICTC, 2022.*

[94] Ramya Murali, Randy Crooks, and Mary Hahn, "The orthodoxies that COVID-19 broke: Reimagining customer loyalty strategy in a postpandemic world," Deloitte, https://www2.deloitte.com/us/en/pages/consulting/articles/the-orthodoxies-of-loyalty.html.

Adopting technological solutions is not always straightforward, especially for SMEs in the early stages of this transition. Survey respondents selected most technology transitions as "significant," with predictive and data analytics topping the significance ranking. Overall, nine out of ten challenges were ranked with at least a five out of seven (with seven denoting a "most significant" challenge and one being "least significant").

**Average rank for Intelligent Retail challenges
(Rank 7 — Most Significant, 1 — Least Significant)**
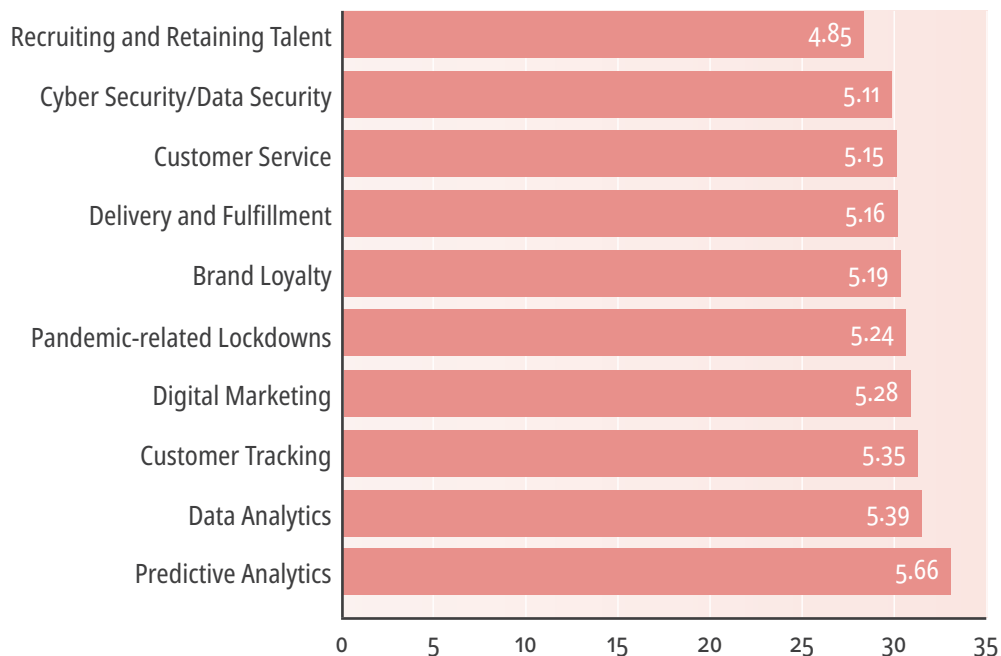
Figure 19 *Ranking significance of challenges in Intelligent Retail, among Canadian retailers. Source: ICTC, 2022.*

Interviewees participating in this study identified Canada's smaller market size and culture of comradery as a barrier to adopting technology that would make them competitive. One interviewee described the Canadian retail industry as more communitarian, compared to the US. Comparing Canada to global leaders often led retail experts to describe Canada as a follower in the intelligent retail field: some interviewees felt that Canada often takes cues from other market leaders, and businesses are generally more risk-averse.

> **"I would say in my experience, Canada is a follower in the digital [retail] world. In general, heavier risk items are being done outside of the country. Now we have a vibrant tech ecosystem, which helps. Toronto and Montreal have become huge tech hubs. So, I think from that perspective, the advancements are vibrant, but in terms of the more traditional retail piece, the innovation is elsewhere."**

E-commerce specialist

> **"We follow what other major brands are doing elsewhere. If it's a major international brand, the head office in Canada will watch what the US is doing and adapt it to us, rather than finding our own way."**

Omnichannel project manager specialist

Drivers of Intelligent Retail Adoption

Understanding the evolution of intelligent retail requires a sense of the societal and economic forces affecting the entire retail sector. Although some tech adoption had occurred prior to the global pandemic, many experts interviewed by ICTC agreed that COVID-19 was a catalyst for tech adoption in the sector. Retailers used the pandemic as a time to further their digital strategies and implemented digital tools like chatbots, brand ambassadors, and smart delivery/fulfillment.

COVID-19 pushed intelligent retail forward by 10 years

"Obviously the pandemic made everything go faster. We moved ahead by about 10 years since it began."

Omnichannel Project Manager Specialist

"COVID accelerated what could have been another five-to-10-year process to a couple of years."

Retail Consultant

"The pandemic accelerated the digitalization of retail. I think the pandemic probably created 10 years of change in the last year and a half."

Retail CEO

"COVID has accelerated our adoption of online commerce more than anyone had anticipated. You see so many people writing that we've come further in the last year than we would have expected ourselves to come in 10 years, if not for COVID."

Retail Digital Transformation Specialist

Retail experts interviewed for this study also hinted that the COVID-19 pandemic had not just accelerated the digitalization of firms that were already pursuing digital transformation, but had galvanized many firms into adopting digital solutions for the first time. Given the transformative impact of the pandemic, it is important to explore how the pandemic shaped retail trends, including the changing consumer, the rise of live commerce, and the phygital. For 9% of Canadians, 2020 was the first time they bought physical goods online, and 13% said it was the first time they ordered groceries online.[95] Generational patterns were evident; 55% of those aged 65 years and older noted they shopped online in the past year,[96] compared to 90% of those aged 15 to 24. In other words, online shopping increased in all age groups,[97] as did the volume of online shopping.[98] The main difference was that consumers expected more from their online experiences.

Customer Expectations

Customer tastes played a major role in pushing the retail sector towards digitalization in the pre-COVID period. In 2015, Deloitte noted that as customers became more and more accustomed to certain digital experiences, such as Netflix and Uber, they became more discerning and demanding in their taste for all kinds of retail experiences.[99] In 2018, consumer analytics research firm Incisiv echoed these findings, publishing a brief presentation titled Why and How Retailers Must Become an Intelligent Enterprise. The presentation identified eight key expectations for contemporary customers: efficiency, transparency, seamlessness, empowerment, immersion, curation, expression, and belonging.[100]

Consumer Expectations of the Modern Retail Experience

CUSTOMER EXPECTATIONS	EXAMPLES
Efficiency	Customers expect firms to reduce friction (e.g. both cost and time) across the entire customer experience, from research to checkout to fulfillment.
Transparency	Customers want to know more about their product, such as how it was made, where it was made and sourced, why it is priced the way it is, etc.
Seamlessness	Customers expect retailers to embrace their platforms of choice and to be wherever they are—on social media, with delivery services, and at marketplaces.

95 "Let's go (online) shopping!" Statistics Canada, 2021, https://www.statcan.gc.ca/o1/en/plus/183-lets-go-online-shopping.
96 "Online shopping by Canadians in 2020: Results from the Canadian Internet Use Survey," Statistics Canada (2021),
    https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2021048-eng.htm.
97 "Online shopping by Canadians in 2020: Results from the Canadian Internet Use Survey," Statistics Canada (2021),
    https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2021048-eng.htm.
98 Rana Mostaghel, Pejvak Oghazi, Vinit Parida, and Vahid Sohrabpour (2022). "Digitalization driven retail business model innovation: Evaluation of
    past and avenues for future research trends," Journal of Business Research, 146, https://doi.org/10.1016/j.jbusres.2022.03.072.
99 https://www2.deloitte.com/us/en/pages/consumer-business/articles/retail-talent-disrupted.html
100 "Why and How Retailers Must Become an Intelligent Enterprise" Incisiv (2018), https://www.avanade.com/-/media/asset/point-of-view/
    why-and-how-retailers-must-become-an-intelligent-enterprise.pdf?la=en&ver=1&hash=7B98BB1A1A68AE109DFDD6407DFBCAE6.

Empowerment	Customers want to be in control of their relationship with their retailers. They want to speak with their retailers at their pace and in their own time.
Immersion	Customers want to be entertained and to have brands engage with all their senses to create and maintain an emotional bond with their brand.
Curation	Customers expect customized experiences. They expect their choice brands to learn from their style of engagement and provide personalized experiences.
Expression	Customers want to buy from brands whose values reflect their own. Customers also want their brands to help them express their own identity and stand out in a "sea of sameness."
Belonging	Customers want to buy from brands that help them connect and be surrounded by other like-minded people.

Table 2: Expectations of the modern customer. Source: Avanade, 2022.

Customer Values

Consumer values are also changing. During the pandemic, PricewaterhouseCoopers (PWC) found that Canadian consumers were willing to pay a premium for items that were locally sourced and were sustainably developed.[101] Canadian consumers are looking for more transparency when buying, wanting to know where products are purchased, including information about environmental impact.[102] Environmental concerns are top of mind for many Canadians, with people living in British Columbia (49%) and New Brunswick (53%) most concerned about avoiding plastic packaging.[103] Consumers are willing to spend more to buy organic, local, and sustainable products.[104] Although this trend was noted during the pandemic, experts agree that sustainability will continue to be a requirement for businesses to invest in "to identify solutions that are scalable and cost-effective."[105]

In contrast, although environment, social, and governance (ESG) were important to Canadian consumers,[106] price consideration is still the most important indicator

[101] *"Environmental sustainability becoming a business imperative," PWC, 2022,*
   https://www.pwc.com/ca/en/industries/retail-consumer/environmental-sustainability-becoming-a-business-imperative.html
[102] *"Environmental sustainability becoming a business imperative," PWC, 2022,*
   https://www.pwc.com/ca/en/industries/retail-consumer/environmental-sustainability-becoming-a-business-imperative.html
[103] *"Environmental sustainability becoming a business imperative," PWC, 2022,*
   https://www.pwc.com/ca/en/industries/retail-consumer/environmental-sustainability-becoming-a-business-imperative.html
[104] *"Saveurs 2019: A recipe for building customer trust," PWC (2019),*
   https://www.pwc.com/ca/en/retail-consumer/assets/Saveurs2019/saveurs-2019.pdf.
[105] *"Environmental sustainability becoming a business imperative," PWC, 2022,*
   https://www.pwc.com/ca/en/industries/retail-consumer/environmental-sustainability-becoming-a-business-imperative.html
[106] *Marty Weintraub et al. "Focus on customers, brand, and agility vital to retail success: 2022 Canadian retail outlook," Deloitte (2022).*

of a customer's purchase habits.[107] The nature of brand loyalty shifted during the pandemic, with many households looking to cut costs and find the best value for their money. Expert interviewees for this study stressed that the post-COVID-19 customer is considerably more fickle and harder to please than before.

> **"Previously, people would go to a store with a high propensity to buy. Not many people would just browse. But now, fewer people who go to the store actually have an intention to buy. People are fickle-minded, so you need to do a lot more to grab their attention. And getting their attention is becoming very expensive. I have to do a lot more content marketing; I have to do a lot more in content creation and expensive engagement to keep them engaged with my brand."**

Omnichannel specialist

Digitalization seems bound to continue in the future. As customers develop an affinity for online experiences, retailers are increasingly supplementing their in-store experiences with digital components. In the *Future of Shopping: Canada Market Report 2021,* interactive virtual technologies like smart mirrors are believed to drive more consumers into stores, with 3 in 10 saying so.[108] Canadian shoppers also indicate that they would use scanning technology to locate information about products, virtual customization of products, and virtual testing, if available in stores.[109] In the same report, it is said that in about five years, Generation Z shoppers will use AR before buying a product; 46% of today's Canadian shoppers who have used AR said that it led them to buy the product or service.[110]

Efficiency and Ease

Retail experts identified efficiency and ease of shipping as major concerns for Canadian consumers. Despite major disruptions to supply chains, consumers continued to hold companies to their fulfillment promises. One interviewee mentioned that "customers are expecting to get whatever they want, whenever they want it." This expectation by the consumer is becoming increasingly difficult to uphold.

[107] Nidhi Arora et al., "A global view of how consumer behaviour is changing amid COVID-19," McKinsey & Company, July 7, 2020, https://www.mckinsey.com/business-functions/growth-marketing-and-sales/our-insights/a-global-view-of-how-consumer-behavior-is-changing-amid-covid-19
[108] "Future of Shopping: Canada Market Report 2021," Snap Inc. (2021) , https://assets.ctfassets.net/inb32lme5009/6Jx23D3GjiKF5klvvYLHkT/63ec7fb8a65099148c9ec77a7bf430fd/Snap_-_Final_Canada_Report.pdf
[109] "Future of Shopping: Canada Market Report 2021," Snap Inc. (2021) , https://assets.ctfassets.net/inb32lme5009/6Jx23D3GjiKF5klvvYLHkT/63ec7fb8a65099148c9ec77a7bf430fd/Snap_-_Final_Canada_Report.pdf
[110] "Future of Shopping: Canada Market Report 2021," Snap Inc. (2021) , https://assets.ctfassets.net/inb32lme5009/6Jx23D3GjiKF5klvvYLHkT/63ec7fb8a65099148c9ec77a7bf430fd/Snap_-_Final_Canada_Report.pdf

Global firms like Amazon were frequently mentioned by interviewees in this study. They felt that the pandemic consolidated the retail market in favour of the largest firms and essentially culled any businesses that were not able to adapt in time. Part of the issue for many smaller firms is the significant cost of digitalization, as well as limited capacity—financial or human—to sustain such systems in the long term.[111] Interviewees described SMEs as often having ad hoc or patchwork digital processes in place. As one interviewee put it, "A lot of retailers came up with duct tape-style solutions, and have been able to just survive through the pandemic." The other issue, as noted in a recent study by the Brookfield Institute, is that many SMEs lack an understanding of the impact of digitalization or do not fully understand how digital solutions would benefit their business processes.[112]

Stating that "balancing experimentation with consistent execution is a tightrope not many can walk," Incisiv argues that retailers' only hope of satisfying the rapidly complexifying and rising demands of their customers is to digitalize. Digitalization is a means of gathering the necessary data to stay connected to customers, as well as deploying the most effective solutions to attract their business.[113] Smaller firms should not necessarily try to emulate larger firms, but rather focus on creating unique experiences. Indeed, one interviewee cautioned retailers against overextending themselves to adopt the same digital strategies of large retailers.

> **"You need to start by asking where your consumer is. Why are they coming to you? And then you need to be realistic about who else is in your space. Who do you really compete with? Who are your potential customers going to go to if not you? I think that reframes the problem tremendously. A lot of people just think they have to offer free shipping because Amazon offers free shipping. But are you even competing with Amazon? Chances are, you're not. Consumers aren't necessarily looking for you to have an online offer that mimics a low-cost everything store like Amazon. They're looking for you to create an experience which is additive or new to them."**

Futures specialist

[111] Thomas Goldsmith, "Picking up speed: Digital maturity in Canadian SMEs and why increasing it matters," Brookfield Institute, June 2021, https://brookfieldinstitute.ca/wp-content/uploads/BIIE-WTC-Digital-Maturity-report-FINAL-1.pdf
[112] Thomas Goldsmith, "Picking up speed: Digital maturity in Canadian SMEs and why increasing it matters," Brookfield Institute, June 2021.
[113] "Why and How Retailers Must Become an Intelligent Enterprise" Incisiv (2018), https://www.avanade.com/-/media/asset/point-of-view/why-and-how-retailers-must-become-an-intelligent-enterprise.pdf?la=en&ver=1&hash=7B98BB1A1A68AE109DFDD6407DFBCAE6.

Notwithstanding these or other difficulties ahead, interviewees generally agreed that there was no going back to the retail paradigm that preceded COVID-19 for several reasons. The pandemic represented a massive shock to consumers' habits and expectations of retailers. These habits and expectations are likely to stay, as indicated in a study conducted by McKinsey & Company: 73% of consumers said they intended to continue using their new shopping methods after the pandemic.[114] In other words, consumers expect retailers to have digital tools that enable them to make informed shopping decisions and engage with the products and brand that are cost effective.

The Emergence of Live Commerce: A Wind from the East

Live commerce (commonly known as shopatainment) has rapidly grown during the pandemic. Live commerce offers many advantages to retailers, including real-time inventory, speedier responses, and adjusted supply-chain models to respond to all scenarios, including a global pandemic.[115] Live commerce events also appear to customers, offering an immersive shopping experience in which they can see merchandise in use, ask questions in real-time, and perhaps interact with one of their favourite influencers—all without having to leave the house.[116] One of the main factors driving the rapid rise in video-based shopping content is an extraordinarily high conversion rate, estimated by some sources to be as high as 32%.[117]

"Buyers get excited by people they believe could be their friends or who they aspire to be, and influencer marketing has really opened up that avenue for brands to reach and find new customers."[118]

Live Commerce was pioneered in China, and China continues to be the largest market.[119] Even by tech industry standards, the adoption of live commerce has been furiously rapid. Live commerce in China grew from a $3 billion USD market in 2017 to an estimated $171 billion USD in 2020, and is predicted to reach $423 billion USD in 2022.[120] The US, which has lagged behind China in the adoption of live commerce for several years, is also in the midst of rapid growth. In 2020, the US live-commerce market was estimated to be $6 billion USD and was predicted to reach $35 billion

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[114] Tamara Charm et al. "The great consumer shift: Ten charts that show how US shopping behavior is changing," McKinsey & Company (2020), https://www.mckinsey.com/business-functions/growth-marketing-and-sales/our-insights/the-great-consumer-shift-ten-charts-that-show-how-us-shopping-behavior-is-changing

[115] Tim Denman, "30th Annual Retail Technology Study: Investing in the Data-Fueled Future," Retail Info Systems online, 2020, https://risnews.com/retailtechstudy2020.

[116] MacDonald, "Is Live Shopping the Future of Ecommerce?"

[117] Rhea Liu, Dannie Li, "The Pulse of Live Streaming in China: Understanding the new Chinese lifestyle and the business behind it," China Tech Insights (2016), http://mat1.gtimg.com/chinatechinsights/file/20160926/The_pulse_of_live_streaming_in_China.pdf

[118] Ashley Carmen, "Influencers' next frontier: Their own live shopping channels," The Verge online, 2020, https://www.theverge.com/2020/10/22/21526535/live-shopping-instagram-facebook-amazon-influencers.

[119] https://www.ft.com/content/c704482e-ca38-4e5f-b01d-b77c507f0e18

[120] "It's showtime! How live commerce is transforming the shopping experience," McKinsey & Company (2021), https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/its-showtime-how-liveCommerce-is-transforming-the-shopping-experience.

USD by 2024.[121] Major retailers like Nordstrom[122] and Walmart[123] have helped normalize live commerce by hosting live streaming events.

In an era when big data analysis is dramatically shifting the retail sector, live commerce provides companies with a source of consumer data that can help support strategic planning and decision making.[124] Within live commerce, firms can track customer decisions from awareness to the time of purchase. Big data analytics enable firms to provide more dynamic pricing, improve customer satisfaction, and offer tailored data points to enhance the personalization and experience for the consumer. Although many firms use social media to measure customer purchase intentions, live streaming is seen as a more fruitful endeavor; a study conducted by Zheng et al. notes that "likes" do not translate into purchases.[125] Live streaming is a better predictor when evaluating purchasing behaviours; it is said that "live streaming is beneficial to improve sales performance, both in the immediate and long-term sales performance."[126] However, where live streaming falls short is acquiring new customers.[127]

The below example explores emerging digital strategies used by retailers to access more customers and maintain existing customers during and post-COVID.

The Rise of Phygital[128]

Although the pandemic accelerated the move to online shopping, physical retail had been undergoing a challenging decade leading up to COVID-19; the "death of retail" is often mentioned in business publications pre-dating the pandemic.[129] Aiming to maintain physical operations while expanding digital services, many retailers adapted their physical retail experiences by investing in self-checkouts, contactless payments, in-store robots, and virtual reality-based experiences, in the hope that customers would return.[130]

In the first few months of the pandemic, retail sales fell by $640 billion globally, forcing some stores to adapt or to make the tough decision to close their physical

[121] Nicole Silberstein, "Livestreaming Update: Coresight Debunks 5 Common Myths," Retail Touch Points online, 2021, https://www.statista.com/statistics/1276120/livestream-eCommerce-sales-united-states/
[122] "Nordstrom Introduces Livestream Shopping," Nordstrom online, 2021, https://press.nordstrom.com/news-releases/news-release-details/nordstrom-introduces-livestream-shopping.
[123] Kaarin Vembar, "Walmart moves further into livestream shopping," Retail Dive, 2022, https://www.retaildive.com/news/walmart-moves-further-into-livestream-shopping/619558/
[124] "It's showtime! How live commerce is transforming the shopping experience," McKinsey & Company (2021), https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/its-showtime-how-liveCommerce-is-transforming-the-shopping-experience.
[125] Run Zheng, Zhuyuan Li, Sanggyun Na, "How customer engagement in the live-streaming affects purchase intention and customer acquisition, e-tailer's perspective," Journal of Retailing and Consumer Services volume 68 2022, https://doi.org/10.1016/j.jretconser.2022.103015
[126] Run Zheng, Zhuyuan Li, Sanggyun Na, "How customer engagement in the live-streaming affects purchase intention and customer acquisition, e-tailer's perspective," Journal of Retailing and Consumer Services, volume 68 2022.
[127] Run Zheng, Zhuyuan Li, Sanggyun Na, "How customer engagement in the live-streaming affects purchase intention and customer acuqisition, e-tailer's perspective," Journal of Retailing and Consumer Services, volume 68 2022.
[128] Phygital is a play on the physical and digital spaces, or the bending of physical and online shopping channels.
[129] Bobby Marhamat, "The exaggerated death of retail (and what brick-and-mortar stores should do)," Forbes online, 2020, https://www.forbes.com/sites/forbesbusinessdevelopmentcouncil/2020/04/09/the-exaggerated-death-of-retail-and-what-brick-and-mortar-stores-should-do/?
[130] Marty Weintraub et al. "COVID-19: Voice of Canadians and impact to retailers," Deloitte (2020), https://www2.deloitte.com/global/en/pages/about-deloitte/articles/covid-19/gx-covid-19-voice-of-canadians-and-impact-to-retailers.html

store.[131] In the first six months of 2020, 18 retailers filed for bankruptcy in the US, including recognizable retailers such as J.Crew, Neiman Marcus, JCPenney, and Brooks Brothers.[132] Other top retailers closed 50 or more stores during the same period, with Inditex announcing 1,000 store closures and Starbucks closing 400 stores in the US.[133] Some interviewees in this study spoke of retailers moving away from physical stores:

> **"A lot of retailers have basically refocused a lot of their sales away from the store, more online. And the same goes for manufacturers. I'll give you an example – so CCM's e-commerce website now you can buy hockey sticks, and skates, not just from Canadian Tire and Sports Chek, but directly from CCM. And so that's something that wasn't possible a month ago. Even food companies are thinking about how to sell certain specialty items direct to consumers. So we think tomorrow's retailers are today's manufacturers."**

Strategy and marketing specialist

But even as the spectre of closure hangs above many brick-and-mortar retailers and e-commerce rapidly asserts itself, sales at physical retailers are on the rise. The Tech and Media Outlook predicts that physical retail will grow from $19.1 trillion USD to $22 trillion USD from 2021 to 2025 (15%). And notwithstanding the well-publicized struggles of retail giants such as JCPenny[134] and Macy's,[135] the number of retail establishments in the US was essentially unchanged between 2015 and 2020: there were 1.04 million brick-and-mortar retail establishments in 2015 and 1.04 million such establishments in 2020.[136]

Customers seem to value some aspects of the physical store experience. As of 2022, more than half of all US customers (54%) said they prefer to shop in-store over using mobile phones (41%) or computers (18%), according to Emarsys.[137] Motivations for preferring the in-store shopping experience are diverse. Radiant found that a third

[131] Filippo Bianchi et al. "Fashion's big reset," BCG online, 2020, https://www.bcg.com/publications/2020/fashion-industry-reset-covid.
[132] "Retail in the red: BDO bi-annual bankruptcy update," BDO (2020), https://www.bdo.com/getattachment/e65dafaf-cb96-401a-b251-cdfea4d0c2ef/attachment.aspx?RCP_Retail-In-The-Red-1H2020_WEB.pdf.
[133] "Retail in the red: BDO bi-annual bankruptcy update," BDO (2020), https://www.bdo.com/getattachment/e65dafaf-cb96-401a-b251-cdfea4d0c2ef/attachment.aspx?RCP_Retail-In-The-Red-1H2020_WEB.pdf.
[134] "J.C. Penney to permanently shut about 242 stores as part of bankruptcy plan," Reuters online, 2020, https://www.reuters.com/article/us-jc-penney-bankruptcy-idUSKBN22U2EK
[135] Lauren Thomas, "Macy's is closing stores nationwide because of coronavirus," CNBC online, 2020, https://www.cnbc.com/2020/03/17/macys-is-closing-stores-nationwide-because-of-coronavirus.html.
[136] "Number of Establishments in Private NAICS 44-45 Retail trade for All establishment sizes in U.S." US Bureau of Labour Statistics, 2022, https://www.statista.com/statistics/1079239/brick-and-mortar-retail-store-count-us/.
[137] "Building blocks: physical stores remain the most popular shopping method for US consumers," Emarsys online, 2022, https://emarsys.com/press-release/building-blocks-physical-stores-remain-the-most-popular-shopping-method-for-us-consumers/.

of respondents (33%) prefer the physical stores because they can view, touch, and interact with products, a quarter (26%) enjoy the overall shopping experience that a physical location provides, and 13% like the immediacy that in-store shopping provides.[138] When it comes to Canadians, two-thirds (68%) report that they value department stores for the variety they offer, while 20% like the extra service. Only a small minority are critical of department stores: 13% feel that the department store concept is dated, 11% feel as though they are too big, and 9% prefer to buy high-end brands in their stores rather than in department stores.[139]

As COVID-19 health restrictions loosen, shoppers are returning to stores in 2022 with expectations that retailers will offer tools that connect digital and physical shopping experiences.[140] Many retailers still see the physical shopping experience as their biggest source of revenue and are excited about the blurring of the lines of the physical and digital:

> **"Many direct-to-consumer brands that have started online have gone physical: take Warby Parker, they went from just online shopping to building physical stores. And lo and behold, the physical stores are more profitable than sending you stuff. I think we're going to see a much more integrated experience, more of the physical and the digital stuff coming together. You're going to see some really cool experiences, things that give people the opportunity to experience the brand. Take Dick's Sporting Goods, they have stuff like climbing walls in the store. Bring back cooking demonstrations in homeware stores! And maybe we're a ways off from this, but bring back sampling in grocery stores. Create an experience where people can engage with the product."**

Futures specialist

Experts warn retailers to think less about sales-per-square-foot, as the future of stores will require investing in customer service by changing their stores to feel more like a community, being able to answer customer questions, and using technology to enhance the in-store experience.[141] In short, the physical stores must

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[138] *Ibid.*
[139] *https://www.statista.com/statistics/800017/attitudes-towards-department-stores-in-canada/*
[140] *Meaghan Yuen, "Retail trends: 2022 retail industry stats, trends, and forecasts," Insider Intelligence online, 2022, https://www.insiderintelligence.com/insights/future-retail-trends-industry-forecast/.*
[141] *Richard Kestenbaum, "How Retail Stores Need To Change And Adapt In 2021 And Beyond," Forbes online, 2021, https://www.forbes.com/sites/richardkestenbaum/2021/01/25/how-retail-stores-need-to-change-and-adapt-in-2021-and-beyond/?sh=32e083946844.*

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offer something that the customer cannot get online and something unique or memorable. Some firms like Saatva[142] are equipping customers with technologies to guide them through the store; rather than having employees bombarding customers with questions, customers are given their own tablets and can interact with the products at information stations.[143]

> **"There's a business [that has] brought tech into their store in a way that's properly additive so you can engage with the store. You can request certain styles to be available in the fitting room for your budget when you arrive. You've got personal shoppers with things to help you with. And then inside the fitting rooms, you have active mirrors, which you can interact with things like request new items or different sizes from within the fitting room."**

Retail specialist

> **"I think the hybrid model has life. Take a guitar, for example. You want to touch it. You want to feel it. You want to try it out. It's really difficult to want to buy something like that online just after reading the specs. I think you'll see a lot of organizations doing something like what Best Buy does, which is basically using the store as a showroom. You let people come into the store to try the thing out, buy online, and maybe even offer delivery. That to me is the Holy Grail retail model."**

Retail specialist

In place of traditional showrooms and in-store shopping, many retailers during the pandemic adopted AR/VR or extended-reality technologies that would help their customers experience the product before buying. For example, Etsy used AR to demonstrate how products would look in their house,[144] and the jewellery brand Kendra Scott also used AR to allow customers to virtually try on their jewellery.[145]

[142] Jamie Grill-Goodman, "Stores of the Future: Insights from Saatva's Chief Strategy Officer Ricky Joshi," Retail Info Systems, 2021. https://risnews. com/stores-future-insights-saatvas-chief-strategy-officer-ricky-joshi?utm_source=PushEngage&utm_medium=push&utm_campaign=PushEngage.
[143] Grill-Goodman, "Stores of the Future: Insights from Saatva's Chief Strategy Officer Ricky Joshi."
[144] Eric Wagatha, "Inside the mids of the cross realities (XR) consumer," Growth from Knowledge, 2021, https://www.gfk.com/blog/inside-the-minds-of-the-cross-realities-xr-consumer.
[145] Helen Papagiannis, "How AR is redefining retail in the pandemic," Harvard Business Review online, 2020, https://hbr.org/2020/10/how-ar-is-redefining-retail-in-the-pandemic.

Some brands like Burberry are using gamification to connect with their customers. Burberry launched the "B Surf" racing game that customers can download on their mobile device and win prizes.[146] At times, AR/VR helped brands stay afloat during the pandemic and gave them opportunities to venture into new markets without having to spend on a physical store. Others have introduced AR/VR options in stores to give shoppers a unique experience, often leading to social media posts or sharing the experience with friends, ultimately used to attract more customers, both in stores and online.

Intelligent Retail Adoption by Technology

E-commerce Takes Off

As already noted, consumers are embracing digital spaces when making purchases. Globally, e-commerce represented 17.8% of sales in 2020, rising to 19.6% in 2021. In 2025, e-commerce is predicted to reach 24.5% of total sales.[147] McKinsey predicts that the global e-commerce market will become between two and five times larger in the wake of the COVID-19 pandemic.[148]

E-commerce sales as percentage of total sales
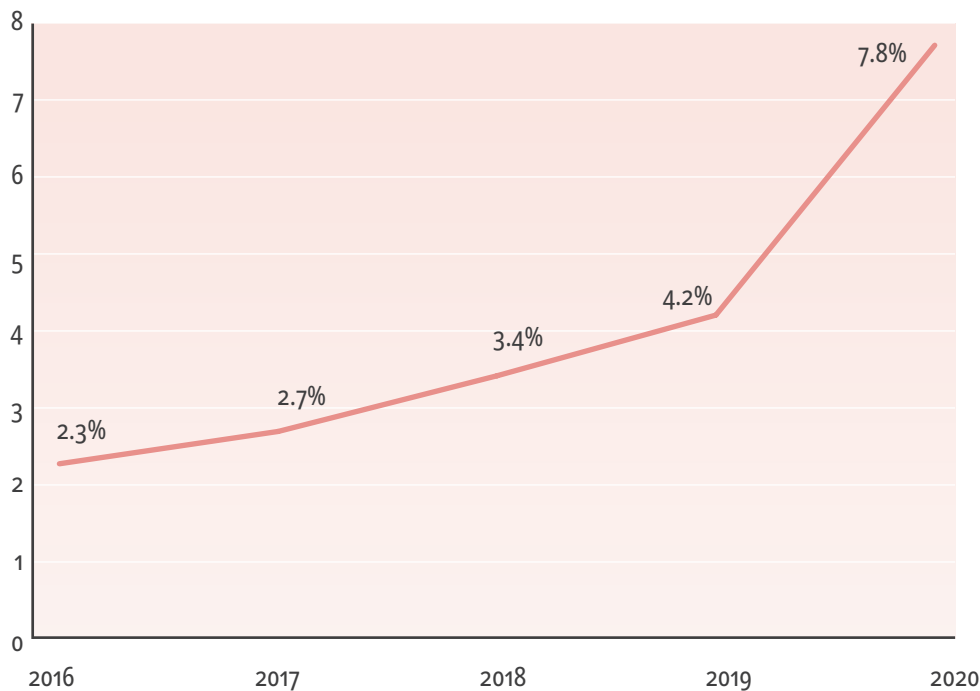
Figure 20 *E-commerce sales as a percentage of total sales, e-commerce sales increased from 2.3% in 2016 to 7.8% in 2020 (up 3.6% since 2019). Data Source: Statistics Canada, 20-10-0065-01.*

[146] Helen Papagiannis, "How AR is redefining retail in the pandemic," Harvard Business Review online, 2020, https://hbr.org/2020/10/how-ar-is-redefining-retail-in-the-pandemic.
[147] Sara Lebow, "Worldwide ecommerce continues double-digit growth following pandemic push to online," eMarketer, 2021, https://www.emarketer.com/content/worldwide-ecommerce-continues-double-digit-growth-following-pandemic-push-online.
[148] Susan Lund et al.,"The future of work after COVID-19," McKinsey Global Institute, 2021, https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19

Numerous statistics attest to the rapid digitalization of the payment processes. As shown in Figure 20, Canadian e-commerce increased rapidly in the wake of the pandemic, with 7.8% of all retail sales in 2020, up 3.6% since 2019 and up 5.5% points since 2016. However, as health restrictions lifted, e-commerce sales in February 2022 dropped by 2.0% since February 2021.[149] Although there has been some levelling out of e-commerce sales, it seems likely that e-commerce has become durably more popular in Canada, with one-quarter of Canadian businesses having "at least some e-commerce sales" today.[150] Canadian businesses often use a website for sales and to conduct business; however, among small retailers, 17% were more likely to use social media, compared to larger businesses.[151] Of those businesses that do not have any web presence, 74% say that their products or services cannot be sold online.[152]

Consumer behaviours are shifting in Canada. More Canadians are using self-checkout, and some even avoided going into stores altogether during the pandemic.[153] Payments Canada notes that digital payments made up 79% of all transactions in 2020.[154] Just shy of half of Canadians reported using e-commerce platforms to make purchases, growing from $47 billion in value in 2019 to $56 billion in 2020.[155] Canadians also were more likely to use alternative payment tools like smart watches, mobile payments, digital wallets, or online transfers in 2020.

Expert interviewees for this study agreed that recent years have led to rapid growth in e-commerce importance. For many Canadians, e-commerce is a new development in the industry, despite it being around for many years. As one interviewee put it, "More people are now online who would have never ordered online at all." The adoption of e-commerce also benefited less established businesses in the marketplace.

> **"Just six years ago, there was still a lot of skepticism about e-commerce. Lots of people wouldn't even buy from an independent brand's website. They were very fearful of buying online and they only trusted big brand websites, right? But now I would say there's very little fear about buying online now. It's not even really a topic."**

Retail consultant

[149] "Retail trade, February 2022," Statistics Canada, April 2022, https://www150.statcan.gc.ca/n1/daily-quotidien/220422/dq220422a-eng.htm
[150] "One-quarter of Canadian business had at least some eCommerce sales in 2019," Statistics Canada, December 2020, https://www150.statcan.gc.ca/n1/daily-quotidien/201123/dq201123a-eng.htm
[151] "One-quarter of Canadian business had at least some eCommerce sales in 2019," Statistics Canada, December 2020.
[152] "One-quarter of Canadian business had at least some eCommerce sales in 2019," Statistics Canada, December 2020.
[153] Marty Weintraub et al. "COVID-19: Voice of Canadians and impact to retailers," Deloitte (2020), https://www2.deloitte.com/global/en/pages/about-deloitte/articles/covid-19/gx-covid-19-voice-of-canadians-and-impact-to-retailers.html
[154] Stephen Yun and Pooja Paturi, "Payments Accelerated: Global pandemic accelerates the rise of digital payments," Canadian Payment Methods and Trends Report, Payments Canada, 2021, https://www.payments.ca/sites/default/files/payments_canada_canadian_payment_methods_and_trends_report_2021.pdf.
[155] Stephen Yun and Pooja Paturi, "Payments Accelerated: Global pandemic accelerates the rise of digital payments," Canadian Payment Methods and Trends Report, Payments Canada, 2021.

The surge of digital payment structures throughout COVID-19 also prompted many consumers and firms to reflect on the nature of their relationship with major e-commerce providers and the implications of their supply chains.

Artificial Intelligence (AI)

AI is one of the key technologies driving the transition towards intelligent retail. In a report published by KPMG, 85% of retailers "believe AI has the potential to significantly improve organizational efficiencies for their company."[156] Retail investment in AI is nothing new and was noted even before COVID-19,[157] but the pandemic has accelerated adoption in recent years, with AI investment happening at a CAGR of 30% or more.[158]

AI is changing retail in almost innumerable ways, including automated chatbots and the use of data science for all types of organizational data.[159] The size of the global AI market in retail was $3.01 billion USD in 2019 and is predicted to grow to $23.3 billion USD in 2027.[160] AI technologies in retail will speed up the restocking process, monitor inventory, adapt to changing customer needs, and provide for the personalization of the end-to-end shopping experience. AI is also providing a range of functions to the retail sector, such as the data and technology to create an individualized experience by tracking preferences, real-time assistance with virtual agents and bots, and VR to connect customers with products. Mulberry is using gamification to link customer social media handles with prizes that provide the company with customer data.[161] IKEA uses AI to allow people to see how their furniture and décor will look in their space.[162] Advancements in AI provide opportunities for retailers when planning and forecasting supplies and customer engagement; however, AI adoption has come with some concerns over data security and privacy, including a call by some to update regulations to protect consumers.[163] Compared to international counterparts, Canadian retailers can struggle to understand the solutions that AI provides for their businesses, or are hesitant to adopt such technologies due to ethical concerns.

[156] Traci Gusher and Bill Nowacki, "Living in an AI World 2020 Report: Retail Insiders," KPMG (2020), https://advisory.kpmg.us/content/dam/advisory/en/pdfs/2020/retail-living-in-an-ai-world.pdf.
[157] Michael Adair, "Why retail is one of the leading sectors in investing in AI," Forbes online, 2019, https://www.forbes.com/sites/forbestechcouncil/2019/03/29/why-retail-is-one-of-the-leading-sectors-investing-in-ai/?sh=19bb56321b4b.
[158] "Market Research Report," Fortune Business Insights online, 2020, https://www.fortunebusinessinsights.com/artificial-intelligence-ai-in-retail-market-101968.
[159] Mike Alva, "As AI adoption increases in the retail industry, AI preparedness increases – is it moving too fast?" KPMG, 2021, https://info.kpmg.us/news-perspectives/technology-innovation/thriving-in-an-ai-world/ai-adoption-retail.html
[160] Tugba Sabanoglu, "Global AI in retail market size, 2019-2027," Fortune Business Insights online, 2020, https://www.statista.com/statistics/1256646/ai-in-retail-market-size/.
[161] Larissa Gomes, "8 brands deploying vending machines as smart retail solutions," The Current Daily online, 2019, https://thecurrentdaily.com/2019/01/22/8-brands-deploying-vending-machines-as-a-smart-retail-solution/.
[162] Gloria Omale, "Gartner Says 100 Million Consumers Will Shop in Augmented Reality Online and In-Store by 2020," Gartner, April 1, 2019, https://www.gartner.com/en/newsroom/press-releases/2019-04-01-gartner-says-100-million-consumers-will-shop-in-augme.
[163] Sreekar Krishna et al. "Thriving in an AI world," KMPG (2021), https://info.kpmg.us/content/dam/info/en/news-perspectives/pdf/2021/Updated%204.15.21%20-%20Thriving%20in%20an%20AI%20world.pdf.

Cashier-less Stores: The Example of Amazon Go
and the Privacy-for-Convenience Trade-Off

Often referred to as the "just walk out" shopping experience, Amazon is a leader among cashier-less and register-less stores. As of 2021, there were over 42 Amazon Go and Fresh stores in the US and the UK. Using the Amazon Go app, which is linked to an Amazon billing account, shoppers can seamlessly take items, leave stores, and be automatically billed for their purchases. These stores use technology, including computer vision and deep learning, that detects when shoppers take products or when products are returned to shelves—all these actions are recorded and tracked in a shopper's virtual cart.

While this level of convenience may be in line with consumer demand, questions of data security and privacy come into play. In summer 2021, the CNPD (Luxembourg national data protection commission) slapped the retail giant with the largest-ever GDPR-imposed fine, valued at EUR 746 million.[164] Although the fine was not specifically tied to the Amazon Go service, the stores are ultimately dependent on surveillance and constant data collection to track purchases and accurately bill for the seamless and convenient experience. Amazon asserts that facial recognition is not leveraged to aid the process,[165] but it nevertheless walks a fine line, asking consumers to trade some privacy for convenience. As described in 2018 by CNN journalist Matt McFarland, "Hundreds of cameras track your every move, keeping tabs on everything you put in your basket… Amazon says it keeps the data just long enough to provide you with an accurate receipt, although a small subset of the info might be retained to further train the algorithms that make everything work…customers will also have to get used to stores knowing more about them, and decide if they're comfortable trading privacy for convenience."[166]

One of the most common applications of AI is using machine learning algorithms to analyze massive datasets from within organizations to derive insights; this can then be harnessed to streamline processes, create new ones entirely, or enhance the relationship between brands and their customers. Big data use can drive up margins of retailers by 60% or more in some cases.[167]

[164] Stephanie Bodoni, "Amazon Gets Record $888 Million EU Fine Over Data Violations", Bloomberg, July 30, 2021,
      https://www.bloomberg.com/news/articles/2021-07-30/amazon-given-record-888-million-eu-fine-for-data-privacy-breach
[165] Drew Harwell, Abha Bhattarai, "Inside Amazon Go: The camera-filled convenience store that watches you back", The Washington Post, January 22, 2018,
      https://www.washingtonpost.com/news/business/wp/2018/01/22/inside-amazon-go-the-camera-filled-convenience-store-that-watches-you-back/
[166] Matt McFarland, "I spent 53 minutes in Amazon Go and saw the future of retail", CNN, October 3, 2018,
      https://www.cnn.com/2018/10/03/tech/amazon-go/index.html
[167] Nick Schwalbach, "The importance of big data in retail," SPS Commerce, 2022, https://www.spscommerce.com/blog/big-data-in-retail/.

"Our goal is providing a unique customer experience, whether it be on any of our platforms, through our personal shopping assistance to our website, or on our app... To do that we have to be super data-driven. We need to make sure every single decision we take was intentional and backed by data."

E-commerce and customer experience specialist

Automation is another way in which AI can be applied to give retailers a competitive edge. It is anticipated that more than half of all activities in retail will be automated, making a significant mark on consumer experience and the workforce.[168]

"Retailers have more work on their plate than ever, now that the e-commerce channels have grown. There is a more significant part of the businesses. And so they're having to plan their in-store activities and their e-commerce activities and they're having to do consumer safety and all of the operational things. So being overloaded, I think this is really pushed the case for more automation now because there's just not enough people who work in retail and they're not about hiring more labour because they're already there."

Retail CEO

"The big names are trying to automate in every way they can find for various reasons—reduced human effort, faster returns, faster turnaround times. For example, I worked on a [collaborative project between a robotics company and a major international retailer]. They examined the efficiency improvements of stocking the shelves with an AI-augmented solution to have the product on the shelves. They found that an associate on their own took about four hours to restock the shelves, but with this technical solution, it was reduced to an hour's work."

E-commerce specialist

[168] Patrick Simon, Caroline Tufft, and Pierpaolo Zampella, "Closing the skills gap in retail with people analytics," McKinsey & Company (2020), https://www.mckinsey.com/industries/retail/our-insights/closing-the-skills-gap-in-retail-with-people-analytics.

Supply Chains: Resilience and Independence

One of the most disruptive and enduring impacts of the COVID-19 pandemic has been felt in supply chains. The surge in freight rates and issues with supply chains were top stories during 2020 and 2021. According to the Global Container Freight Index, global rates of containers went from $1,515 USD in January 2019 to a peak of $11,109 USD in September 2021.[169] Shipping prices climbed substantially, in some cases by as much as 500%.[170] Analysis conducted by Federico Suárez Ricaurte found that Canada is among the most expensive supply-chain routes for producers and consumers who rely on freight shipping.[171]

Supply-chain issues have affected the entire economy, causing shortages in products ranging from electronics, jewellery, clothing, pet supplies, and garden items.[172] Statistics Canada's Canadian Survey on Business Conditions, conducted from January to February 2022, found that 32.1% of businesses expect to have issues acquiring products and supplies in the next three months. Among retail trade, 67.6% of retailers expect difficulty acquiring products or supplies from abroad in the next six months, and 48% of retail businesses expect difficulty acquiring products and supplies within Canada in the next six months.[173] Respondents also rank supply-chain issues as one of the most pressing for their business. More businesses are developing a plan for supply-chain disruptions that include more communication with suppliers and wholesalers, and monitoring shortages, delays, or disruptions.[174] For transportation and logistics-focused companies, the challenges with supply chains were an opportunity to build the infrastructure and tools that would shape the industry going forward:

> **"Transportation had a big COVID boom for sure, and we benefited from that massively. Everything in the supply chain came to the forefront and probably made the news more in 2020 as a sector or an industry than it ever has. So we really hunkered down and just built the rest of the functionality that our customers had asked us for."**

Retail CEO

[169] "Freightos Baltic Index (FBX): Global Container Freight Index," Freightos, accessed June 24, 2022, https://fbx.freightos.com/#https://fbx.freightos.com.
[170] Roslan Khasawneh and Muyu Xu, "China-US container shipping rates sail past $20,000 to record," Reuters, August 5, 2021, https://www.reuters.com/business/china-us-container-shipping-rates-sail-past-20000-record-2021-08-05/.
[171] Federico Suarez Ricaurte, "Understanding supply chain disruptions during the COVID-19 pandemic," McGill Business Law Platform, 2022, https://www.mcgill.ca/business-law/article/understanding-supply-chain-disruptions-during-covid-19-pandemic.
[172] Rachel Layne, "Electronics and jewelry top list of products in short supply, new data shows," Moneywatch, 2021, https://www.cbsnews.com/news/online-and-out-of-stock-missing-retail-items-in-october-double-amid-supply-chain-snags/.
[173] Stephanie Tam et al. "Analysis on supply chains in Canada, first quarter of 2022," Statistics Canada, 2022, https://www150.statcan.gc.ca/n1/pub/11-621-m/11-621-m2022006-eng.htm.
[174] Federico Suarez Ricaurte, "Understanding supply chain disruptions during the COVID-19 pandemic," 2022.

The third party logistics (3PL) industry grew from $663.5 billion USD in 2010 to $961.8 billion USD in 2020.[175] Interviewees for this study mentioned numerous motivations that retailers have for working with 3PL organizations, including autonomy, supply-chain stability, and protecting market share.

> **"Many firms are rethinking their relationship with Amazon in particular. I've heard of many companies talk about how their products are at the whimsy of the Amazon algorithms. Whether you get knocked off the top 10 or your item is suddenly featured at top of the category, both circumstances can have horrible effects on inventory management. Let's say you have a product that typically sells 100 units per week, and then you get featured, and then your sales go up by 10 times or 100 times. Well, do you have enough units in the warehouse to cope with that sharp rise in demand? Probably not, so suddenly you're cleaned out. And once you're sold out, the algorithm doesn't like you anymore."**

Retail consultant

Some retailers may be rethinking their supply chain due to the ongoing supply crisis. In a survey of retail executives, 87% of retailers said that supply-chain issues were a top risk for their company.[176] In the same survey, retailers said they were focusing on expanding distribution capacity and infrastructure (75%), recruitment (55%), and process improvements (50%) to improve efficiencies in their supply chains. Although optimizing supply chains is an important area of investment, especially after the disruptions during the pandemic, retailers are encouraged not to "invest too much or too quickly, as the shifts in demands over the past two years might prove an unreliable guide for the future."[177] What was true for retail leaders interviewed for this project was the need to have systems in place to track packages and monitor inventory, and develop a strategy that would predict supplies with more certainty. According to one interview in this study, having a lean inventory was once seen as an effective strategy for cost savings, but during the pandemic, companies that used this strategy ran into shortages in their supply chains. Retailers are taking supply chains into their own hands, as opposed to relying on airlines and cargo companies;

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[175] *"Global 3PL Market Size Estimates," Armstrong & Associates, INC., 2021, https://www.3plogistics.com/3pl-market-info-resources/3pl-market-information/global-3pl-market-size-estimates/.*

[176] *Marty Weintraub, "Focus on customers, brand, and agility vital to retail success," Deloitte , 2022, https://www2.deloitte.com/content/dam/Deloitte/ca/Documents/consumer-industrial-products/ca-en-consumer-retail-outlook-fy22-aoda.pdf?icid=heroDownloadEN*

[177] *Marty Weintraub et al. "Focus on customers, brand, and agility vital to retail success: 2022 Canadian retail outlook," Deloitte (2022). https://www2.deloitte.com/content/dam/Deloitte/ca/Documents/consumer-industrial-products/ca-en-consumer-retail-outlook-fy22-aoda.pdf?icid=heroDownloadEN*

this project's advisory committee noted that more retailers are developing their logistics in-house to avoid any future disruptions. An advisory committee member noted that direct-to-consumer logistics is important for retailers who want "to win the battle for the knowledge of the consumer, to understand consumer behaviour, purchase behaviour better"; as a result, in-house logistics should be part of a retailer's strategy to understand their customers better.

There remain challenges for companies looking to integrate smart logistics technology. For one, data warehousing is predicted to be an expensive business cost to cover the price of updating infrastructure and data processing. While businesses do save on labour costs, their labour force will likely be reorganized to enhance the logistic process, analyze data, and implement improvements for warehouse efficiency.[178]

Social Media

While social media is not generally seen as high tech or cutting edge by today's standards (Facebook was founded in 2004), it is a digital technology with considerable untapped value to the economy. Facebook, the world's largest social network, has 2.8 billion active users[179] and ranks third in global internet usage.[180] YouTube, an online video sharing and social media platform, is the world's second-most visited website (after a Google search) and has over 2.5 billion monthly users.[181]All in all, there are at least 17 social networks with at least 300 million active monthly users.[182] Close to half of the world's population is on at least one platform,[183] and the average person is active on seven different ones per month.[184] When used well, social networks effectively magnify a brand rapidly and tap into markets that would have been unattainable otherwise. Per a survey by Digital Information World, nearly 72% of organizations are planning on boosting their social media budgets for 2022.[185] In February 2021, 8 in 10 US businesses were selling or anticipating selling on social media commerce platforms.[186] Social media does not just offer a marketplace for products; it also allows retailers to gather vast amounts of information on their customers and hone their marketing. As mentioned by one study participant:

[178] "Enabling smart warehousing for an intelligent enterprise," PWC (2019),
    https://www.pwc.com/us/en/services/alliances/assets/pwc-intelligent-enterprise-smart-warehousing.pdf
[179] Deborah Crawford and Ryan Moore, "Meta Reports First Quarter 2022, Results," Meta Investor Relations, 2022,
    https://investor.fb.com/investor-news/press-release-details/2022/Meta-Reports-First-Quarter-2022-Results/default.aspx.
[180] "Top websites ranking," Similar Web, 2022, https://www.similarweb.com/top-websites/.
[181] Simon Kemp, "Digital 2022: April Global Stathot Report," DataReportal, April 21, 2022,
    https://datareportal.com/reports/digital-2022-april-global-statshot.
[182] Simon Kemp, "Digital 2022: April Global Stathot Report," DataReportal, April 21, 2022.
[183] Dixon, S. "Number of global social network users 2018-2027," Statista Key Market Indicators, June 2022,
    https://www.statista.com/statistics/278414/number-of-worldwide-social-network-users/.
[184] Chase Buckle and Shuana Moran, "Social: GWI's flagship report on the latest trends in social media," GWI, 2022,
    https://www.gwi.com/reports/social.
[185] Dr. Hura Anwar, "Social media hailed as the fastest growing digital channel of 2022," Digital Information World, 2022,
    https://www.digitalinformationworld.com/2022/06/social-media-hailed-as-fastest-growing.html.
[186] Ronnie Gomez, "What is social commerce? The stats, examples and tips you need for 2022," Sprout Social (blog), 2021,
    https://sproutsocial.com/insights/social-commerce/.

"Gone is the situation from ten years ago, where if a brand wants to launch a product, they use a pollster like Nielsen and Ipsos, spend a few hundred thousand dollars to conduct a study on a few thousand people. Now with the digital intelligent people system, I can get ten times stronger intelligence from a global audience in a fraction of the time."

E-commerce and customer experience specialist

And beyond simply paying for space for advertisements on social media or using networks to research their market, many organizations have actively cultivated unique experiences based on social media. Live commerce, or shopatainment (detailed above), which allows customers to order from an e-commerce platform while watching live-stream videos related to the product, has become a massive area for growth. The gross merchandise value of live commerce in China grew from 3 billion USD in 2017 to an estimated 171 billion in 2020.[187] Globally, the use of live commerce platforms shot up during the pandemic by an average of 76% growth.[188]

[187] Arun Arora et al, "It's showtime! How live commerce is transforming the shopping experience," McKinsey Digital (2021), https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/its-showtime-how-liveCommerce-is-transforming-the-shopping-experience.
[188] "Live commerce usage growth during COVID-19 worldwide 2021, by region." Astound Commerce, 2021, https://astoundcommerce.com/landing/2021-holiday-preparedness/.

CONCLUSION

The retail sector was one of the most challenged during the global pandemic. The initial shock of lockdowns impacted employment levels and outputs, but the sector quickly rebounded and performed relatively well when compared to the overall economy during 2020 and 2021. Its stability is in large part due to the greater propensity of Canadians to shop online and utilize e-commerce technology; the industry witnessed many shifts as a result of the global pandemic and early investments in intelligent retail, including disruptions to supply chains. At the same time, key changes in consumer behaviour and expectations, coupled with labour shortages, are critical considerations for companies shaping new engagement strategies.

Increasingly, retail companies must build their digital strategies by prioritizing technologies that provide solutions to an identified business problem and strengthen consumer relations in order to remain competitive in the marketplace. These strategies must include a concerted focus on talent, in terms of attracting, retaining, and transitioning workers. While the growth in automation and intelligent retail technologies have already created new and plentiful employment opportunities, for several digitally skilled roles such as UX/UI designers and software developers, more traditional retail occupations such as cashiers, warehouse personnel, or delivery people will require support to obtain the skills needed to remain competitive in the marketplace.
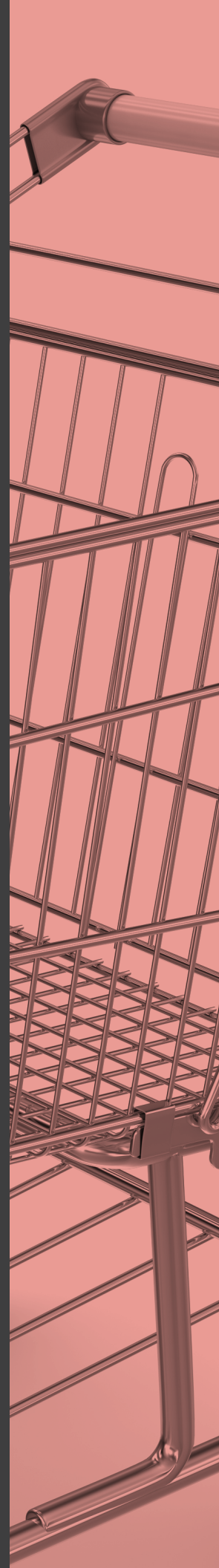
APPENDIX A
METHODOLOGY

This report leveraged mixed methods of a primary and secondary nature.

Primary Research

Advisory Committee

ICTC convened an advisory committee, made up of 11 retail experts, which met two times over the course of the project. Advisory committee members were presented with interactive activities using Jamboard. Advisory committee members held influential positions, such as CTO, CEO, CSO, and directors, in small-to-large retail companies. The majority of the advisory committee were from Canada, with one participant located outside Canada.

Key Informant Interviews

ICTC conducted 17 interviews for this study. These interviews varied in length from 30 minutes to one hour. Interviews were conducted with key demand- and supply-side actors with experience in the retail sector. Interviewees from retail businesses represent a wide cross-section of roles, including CTO, CEO, CSO, and other senior-level staff responsible for data analytics, digital transformation, e-commerce, supply chain and logistics, omnichannel, and digital strategy. Interviewees were sourced across Canada, with two interviewees sourced from the US and UK. Retail experts interviewed for this project had a diverse set of experiences working for small, medium, and large companies that had a diverse range of regions and markets in which they worked.

Employer Survey

ICTC developed and deployed an employer survey for retail companies. The purpose of the employer survey was to explore recent and anticipated trends in the industry, including evolving and anticipated business needs, in-demand jobs, emerging skills needs, new or accelerated training needs, and recruitment and retention practices. Although 165 responses were obtained by the survey, just 114 respondents completed the entire survey. Of the 114, 34 responses were voided due to a lack of data and/or spam. Respondents who answered all or the majority of survey questions totalled 80. These individuals held C-level roles (CTO, CEO, etc.) or other senior management positions.

Secondary Research

Secondary research was informed by a comprehensive and robust literature review on the intelligent retail ecosystem in Canada and worldwide. Publications were sourced from industry and academia, and some of those were provided to ICTC by key informant interviewees. The literature review helped shape the research methodology and questions and provided information to help further validate the findings in the report. In addition to the literature review, secondary data sources were assessed from credible sources, such as Statistics Canada.

Limitations

ICTC made a concerted effort to speak with a broad range of professionals in the intelligent retail ecosystem. While efforts were made to mitigate potential biases, certain limitations may be inevitably embedded in this study, given the limited number of interviews (17), combined with the broad scope of the project.

As with all research in a fast-changing pandemic environment, other limitations exist as well. First was reaching a diverse representation across the intelligent retail sectors; this resulted in an underrepresentation of experts in digital marketing and omnichannel. Here, where possible, ICTC used secondary research to fill gaps. Second, although ICTC made great efforts to increase response rates for the Intelligent Retail survey, ICTC only received 80 complete and legitimate responses, as many either partially completed the survey; 30 responses were removed due to spam or errors found in the data.

This report leverages global data in the place of studies from Canada. Given the lack of comprehensive studies in Canada, much of the secondary data sources were heavily representative of US studies that shed light on the current and emerging ecosystem trends. This report also lacks an in-depth analysis of retail job trends when accounting for gender, race, sexuality, and other equity-seeking groups. ICTC acknowledges that further attention to equity-seeking groups is required to get a complete understanding of labour market trends and outlooks. Additionally, as retail is an expansive sector, regional nuances were also left out of this report, due to time and space.

This report's authors acknowledge the difficulty of defining clear causal relationships in a system as complex as the global economy. This report ultimately makes several choices, such as addressing supply-chain issues and inflation in detail, as if they were phenomena separate from other impacts of COVID-19. In addition, other trends, such as the evolution of consumer tastes, may be discussed at times as if they were a separate, exogenous factor pushing the retail sector towards digitalization. These decisions were made in the interest of improving the readability and coherency of this report. This report should not be seen as speaking authoritatively on the nature of causal relationships driving the adoption of the digitalization economy. Rather, the researchers have sought to provide a snapshot of what the retail sector's adoption of technology looks like at present, what it may resemble in the future, and how Canada's digital labour force can be prepared for it.