

IT.RENDS

VOL.04 / '20

IT TRENDS IN MEDIUM
AND LARGE-SIZED
CANADIAN COMPANIES



2020

The survey was conducted between September 23 and October 23, 2019, and involved 496 respondents from Canadian companies (300 IT decision-makers and 196 from other fields). The majority of respondents were men (70%) working full time (96%) in large (500 or more employees: 55%) or medium-sized businesses (100 to 499 employees: 43%).

INTRODUCTION

A raft of cyberattacks and data breaches recently exposed how vulnerable organizations are in terms of cybersecurity. Yet despite these alarming events, Canadian businesses have been slow to tighten up their practices and are struggling to respond to the growing threat.

Such is one of the main findings of this fourth annual NOVIPRO/Leger Portrait of IT Trends, a status report on information technology (IT) in medium and large Canadian companies.

Cybersecurity threats are among businesses' most pressing concerns. And yet the 2020 study found that fewer than half the companies (48%) reviewed their data security practices after the recent and widely publicized leaks in the banking sector.

Transparency remains the Achilles' heel for many organizations: Only 38% of respondents said they would notify their customers in the event of a cyberattack, down from nearly half (49%) in 2018. The study also revealed serious shortcomings in how businesses protect their data.

In addition to cybersecurity, the study looked at other hot topics in IT such as artificial intelligence and cloud computing. It also delved into the key sectors businesses plan to invest in.

Organizations' interest in artificial intelligence continued growing at a leisurely pace, while cloud computing kept expanding into more and more organizations. Security topped the list of planned investments (42%), reflecting how important the issue is to businesses.

PERCEPTION OF IT AND STATE OF TECHNOLOGICAL INFRASTRUCTURE

IT is now mainly perceived as a strategic partner, whereas in 2016 it was generally considered a mere investment.

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01

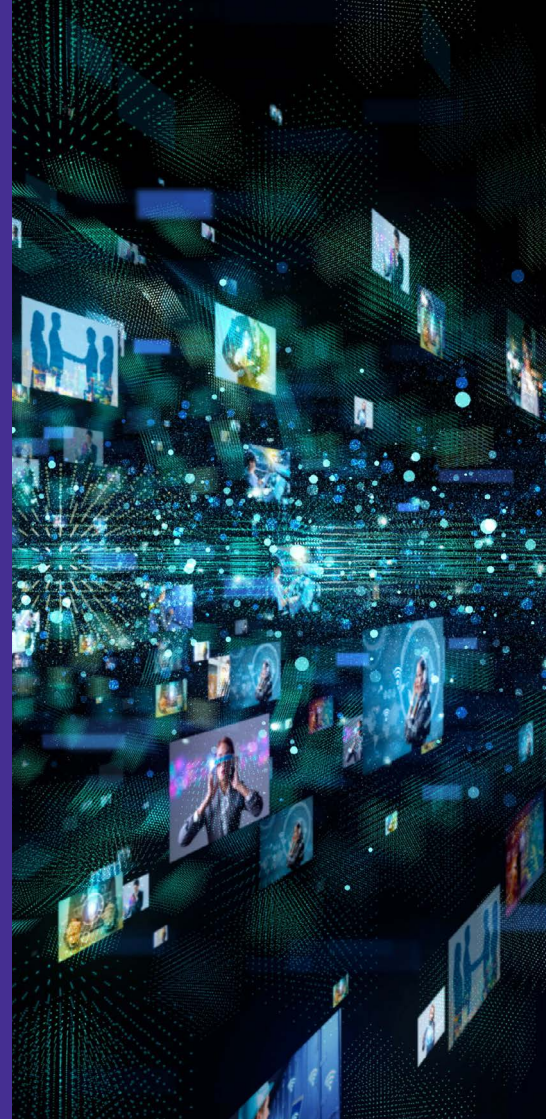


ARTIFICIAL INTELLIGENCE

No fewer than 92% of Canadian businesses felt they had a solid grasp of AI solutions. Quebec however lags on this issue (85%) despite its status as an AI hub.

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03



INVESTMENTS IN TECHNOLOGY

While infrastructure was businesses' priority investment in 2018, security topped the list (42%) this year.

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CLOUD COMPUTING

Cloud computing was still flying high. Just shy of one in two companies (47%) felt that cloud computing technology had made them more efficient than ever.

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CYBERSECURITY

Fewer than half of all Canadian companies saying they are very well protected against data loss (46%), data breaches (44%), and viruses (45%).

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02



BUSINESS DATA

Just over three in four businesses (76%) felt they had a solid grasp of the new North American and European data management regulations.

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04



HUMAN RESOURCES

Addressing the lack of IT training and skills development was the #1 priority for the decision-makers surveyed (64%).

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07

01

PERCEPTION OF IT AND STATE OF TECHNOLOGICAL INFRASTRUCTURE

IT IS NOW MAINLY SEEN AS A STRATEGIC PARTNER.

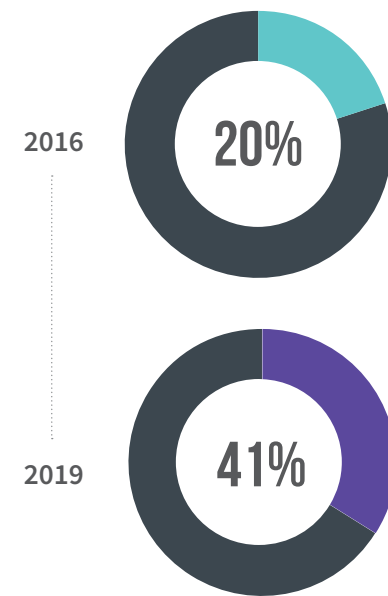
Canadian companies' perceptions of IT have evolved since 2016, although they were unchanged from 2018 to 2019. IT was most often lumped in with investments (47%) in 2016, but has since attained the status of a strategic partner (41%).

PERCEPTIONS OF IT IN CANADIAN COMPANIES

	2016	2019
A necessary evil	13%	15%
An investment	47%	28%
An expense	19%	16%
A strategic partner	21%	41%

ONE IN FIVE COMPANIES (20%) CONSIDERED ITS TECHNOLOGICAL INFRASTRUCTURES TO BE STATE-OF-THE-ART IN 2016. THAT NUMBER HAS SINCE IMPROVED TO 41%.

Financial sector IT infrastructure was mainly described as “functional” (72%) despite the sector’s resources. A mere 25% of financial industry respondents described their company’s infrastructure as “state-of-the-art.” Tech and media sector respondents were the most inclined to see their infrastructure as state-of-the-art (67%), while those in agriculture were least likely (0%). Another finding was that fewer and fewer organizations reported using obsolete infrastructure overall (6% in 2016 vs. 1% in 2019).



CHANGES IN THE STATE OF IT INFRASTRUCTURE

	2016	2017	2018	2019
STATE-OF-THE-ART	20%	30%	34%	41%
FUNCTIONAL	69%	65%	60%	53%
MINIMAL	5%	0%	1%	4%
OBSOLETE	6%	5%	5%	1%

“Finance is a conservative, tightly regulated field with rigorously enforced standards, which may explain why the IT infrastructure of so many financial sector companies was described as merely functional.”

Yves Paquette
Cofounder and CEO
NOVIPRO

02

CYBERSECURITY

“Companies mistakenly think they’re prepared to deal with security issues. They seem to relate security problems to infrastructure issues. A holistic approach would be much more effective. Security issues must be built into the entire development cycle, from the start of production of IT systems to their use.”

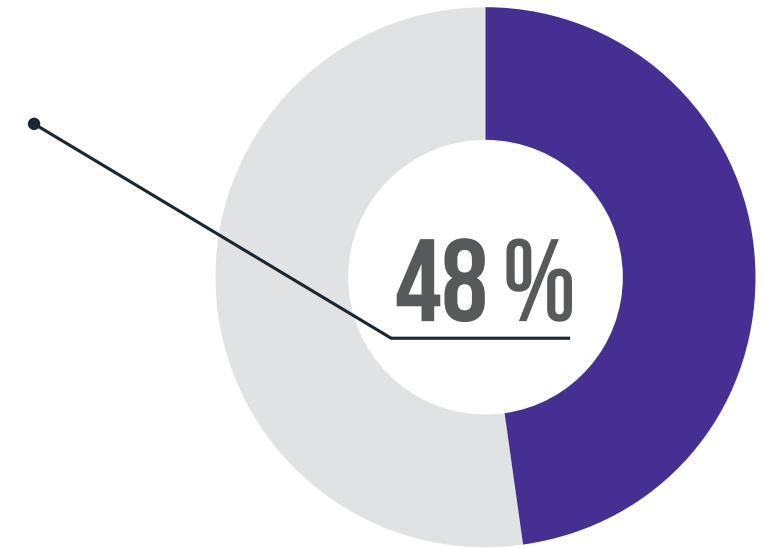
Foutse Khomh

Associate Professor, Department of
Computer and Software Engineering
POLYTECHNIQUE MONTRÉAL

AN ARRAY OF CYBERSECURITY HORROR STORIES MADE HEADLINES IN THE MONTHS BEFORE THE STUDY, BUT CANADIAN BUSINESSES DIDN'T SEEM TO SEE THE URGENCY OF PROTECTIVE MEASURES TO KEEP THEIR DATA SECURE.

The survey found that not quite half the companies (48%) had reviewed their data practices in 2019, despite recent breaches in the banking sector.

Those that reviewed their policies did the following:



49%

adopted a crisis management plan



48%

updated their software



45%

hired security experts



44%

upgraded their infrastructure

“Organizations in the health sector must tackle security issues. Quebec lacks the standardized patient files used in other Canadian provinces, making systems more vulnerable by forcing each institution to protect itself individually from threats.”

Éric Cothenet

Director, Technology Solutions
NOVIPRO

Particularly affected by security issues, not all players in the financial sector reacted in the same way to the leaks that made the headlines: 38% maintained their existing practices. Nevertheless, the financial sector was more responsive than health care organizations, the latter at 39%. Businesses in the agriculture sector are at the top of the list: 60% have revised their existing processes.

QUEBEC A STAR STUDENT AS THE MARITIMES FALL SHORT

Quebec had the highest number of companies that had reviewed their cybersecurity practices (52%), while British Columbia (43%) and the Atlantic provinces (36%) brought up the rear.

Quebec	52%
Ontario	50%
Prairies	50%
British Columbia	43%
Atlantic Provinces	36%

These numbers are particularly alarming given that more than one in three Canadian companies (37%) had fallen prey to a cyberattack in the previous year—a significant increase over the previous year’s 28%.

Security remains a constant concern, with fewer than half of all Canadian companies saying they are very well protected against data loss (46%), data breaches (44%), and viruses (45%).

ARE BUSINESSES SUFFICIENTLY TRANSPARENT?

This vulnerability made it all the more troubling to find that 61% of the organizations were holding critical customer data (credit card number, social insurance number, confidential information), up slightly from 2018 (57%).



Organizations' lack of transparency remains a problem. Just over a third (38%) of respondents would notify their customers in the event of a cyberattack, whereas just under half (49%) would have done so in 2018. Organizations in Quebec (39%) and Ontario (40%) were the most likely to reach out to their customers, although even that percentage is dismal.

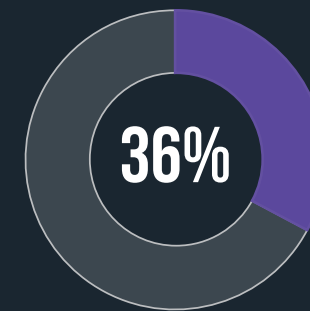
With whom do companies communicate in the event of a cyberattack?

Would notify IT team	60 %
Would notify senior management	54 %
Would notify law enforcement	44 %
Would notify customers	38 %
Would notify suppliers and partners	38 %

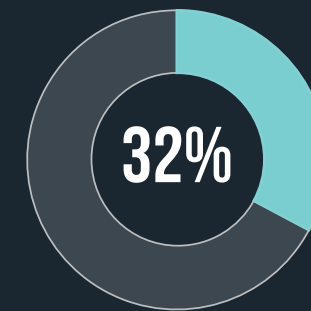


Faulty protection of critical customer data, increasing lack of transparency: a troubling combination.

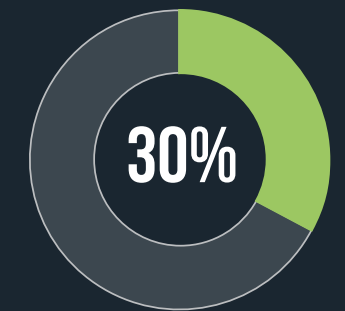
WHERE DO THREATS COME FROM?



PARTNERS, SUPPLIERS, CUSTOMERS



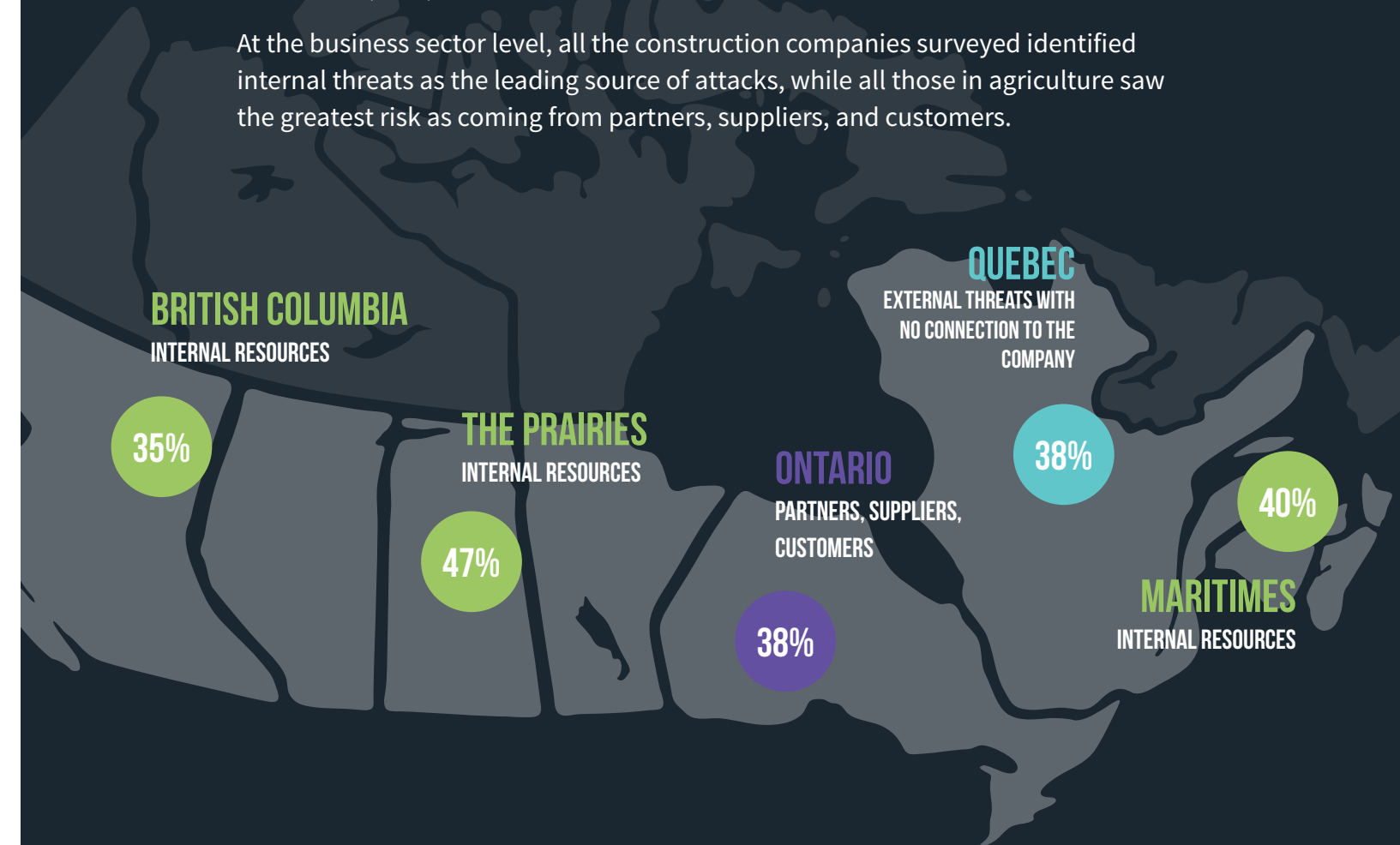
INTERNAL RESOURCES



EXTERNAL THREATS WITH NO CONNECTION TO THE COMPANY

Quebec is the province most prone to being the victim of external threats (38%), while Ontario predominantly associates attacks with partners, suppliers and customers (38%).

At the business sector level, all the construction companies surveyed identified internal threats as the leading source of attacks, while all those in agriculture saw the greatest risk as coming from partners, suppliers, and customers.



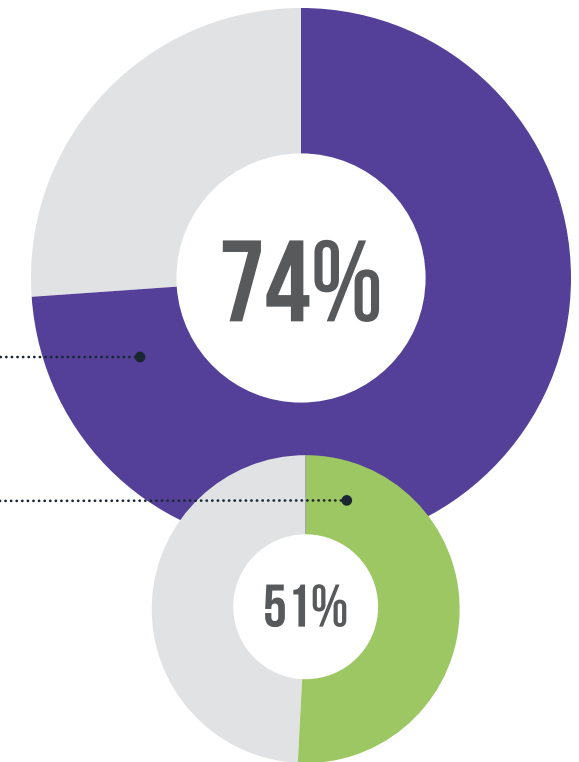
“Threats from inside an organization are very real. Problems often occur unintentionally, with too few employees trained to identify risk. Organizations need to bring in sound processes and methods of governance to make employees aware of IT threats.”

Roger Ouellet

Solutions Designer and Security Practices Manager
NOVIPRO

Nearly three in four Canadian companies (**74%**) trained their employees on cybersecurity in 2018.

One in two (**51%**) want to do so again next year.



NOT ALL DOOM AND GLOOM

While one in two organizations didn't review its practices after the year's high-profile data breaches and theft, virtually all (98%) took at least one action during the year to prevent data breaches. In Quebec, 94% did so.

Mechanisms adopted to prevent data breaches:

Malware protection	38%
Data encryption	38%
Network intrusion monitoring	34%
Preventive solutions	22%

Companies also tended to be model students in terms of security audits and recovery tests, with 38% of the organizations doing them in 2019 and 40% in 2018. Results were consistent across all provinces and sectors.

03

ARTIFICIAL INTELLIGENCE

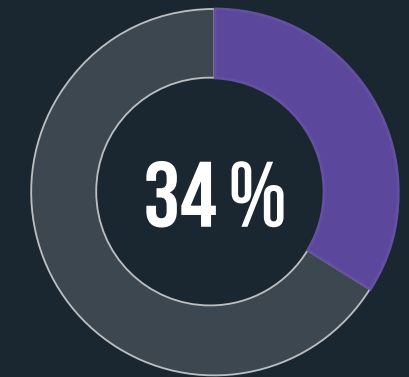
THE UPSWING IN COMPANIES' ENTHUSIASM FOR ARTIFICIAL INTELLIGENCE (AI) IN 2018 SEEMED TO RUN OUT OF STEAM IN 2019.

A little over one in three Canadian companies (36% vs. 34% in 2018) wanted to invest in AI in the next two years.

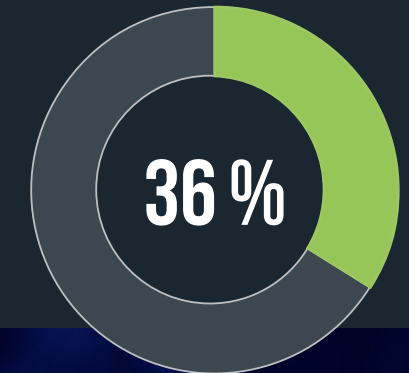
"Companies are using artificial intelligence more than they think. Cybersecurity is the issue of the day and most of the tools we use to fight off cyberattacks are AI driven."

Éric Cothenet
Director, Technology Solutions
NOVIPRO

2018



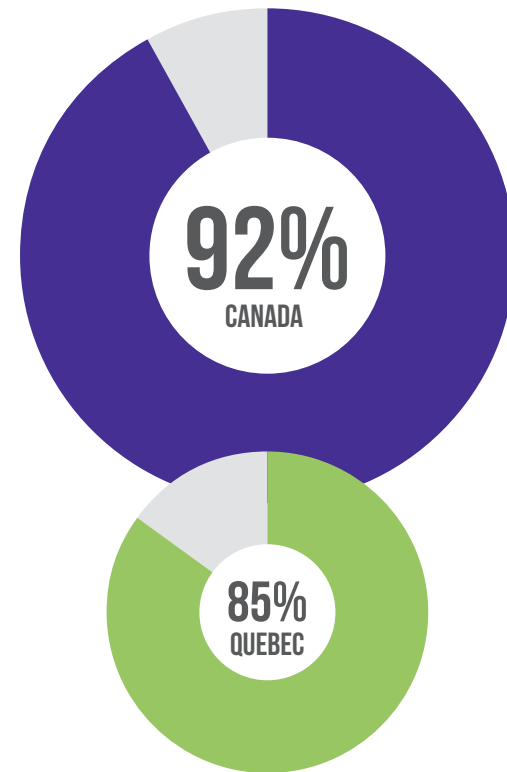
2019



HOW MUCH DO YOU KNOW ABOUT AI?

No fewer than 92% of Canadian businesses reported having a solid grasp of AI-based solutions.

Quebec organizations however trailed the pack (85%) despite Montreal's status as an AI research hub. McGill University and Université de Montréal alone have more than 250 AI researchers and doctoral candidates—the world's largest academic community dedicated to AI.



Companies know that artificial intelligence will affect their business.

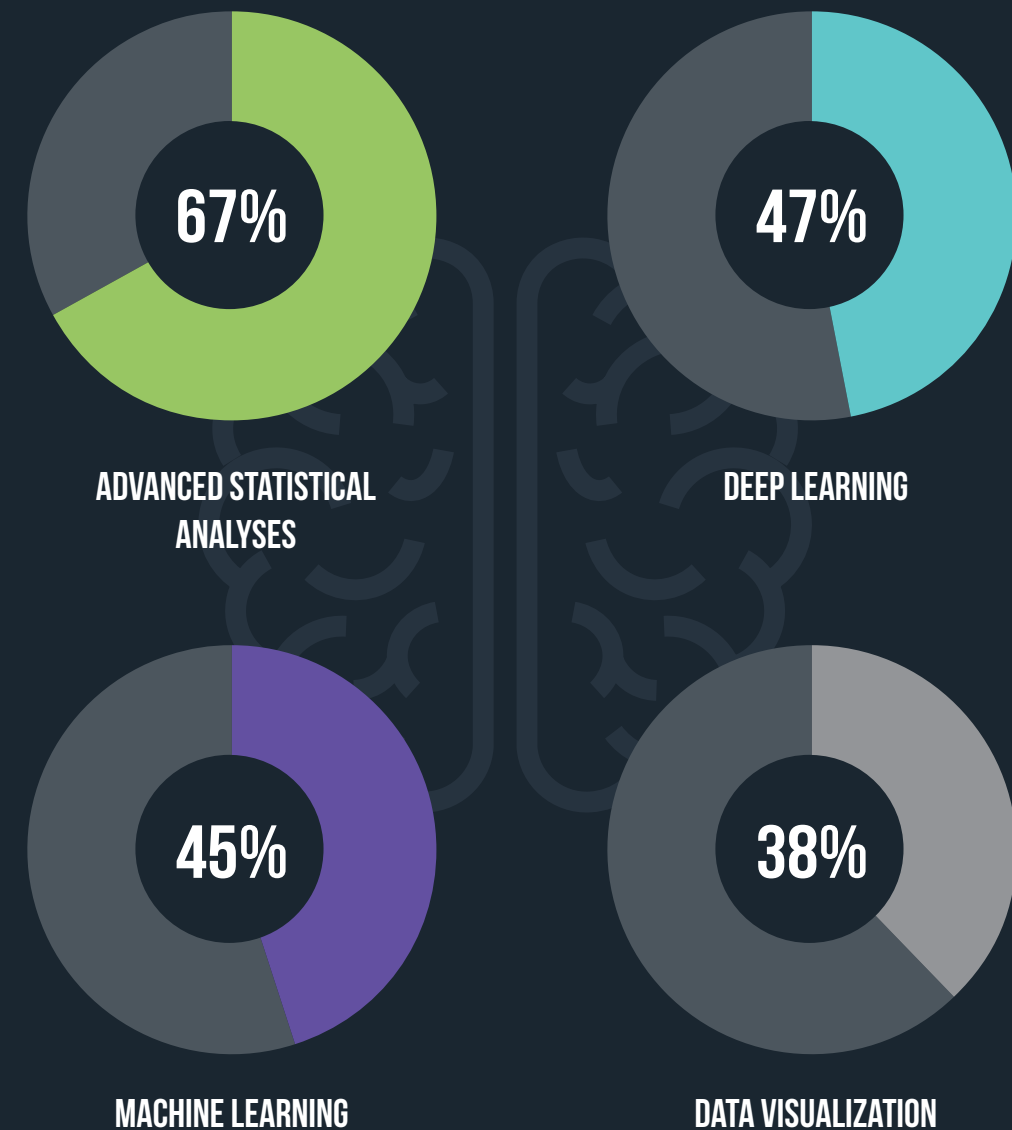
Barely 1% of companies think that AI will not affect their business or sector. One in four (24%) reported that AI had already begun transforming their industry. Just under a third (31%) expected IA-related transformation within a year or two,

with 34% predicting it to come in three to five years. In Quebec, 25% of respondents reported seeing the effects of AI in their workplace already, with the barely same percentage (27%) expecting effects one or two years down the road.

LOOKING FOR PRODUCTIVITY INCREASES

As in the previous year, companies' main reason for investing in AI in 2019 was to increase productivity (51%), followed by cutting costs (38%), replacing manual tasks (36%), deciphering market trends (32%), and improving customer experience (31%), which fell from second place in 2018 to dead last in 2019.

TECHNOLOGICAL INVESTMENTS PLANNED IN ANALYTICS AND AI



04

BUSINESS DATA

RECENT CHANGES IN EUROPEAN AND NORTH AMERICAN DATA MANAGEMENT LEGISLATION CAUSED COMPANIES TO REVIEW CERTAIN PRACTICES. THE GOOD NEWS IS THAT JUST OVER THREE IN FOUR OF THEM (76%) FELT THEY HAD A SOLID GRASP OF THE NEW REGULATIONS AND THEIR IMPACTS.



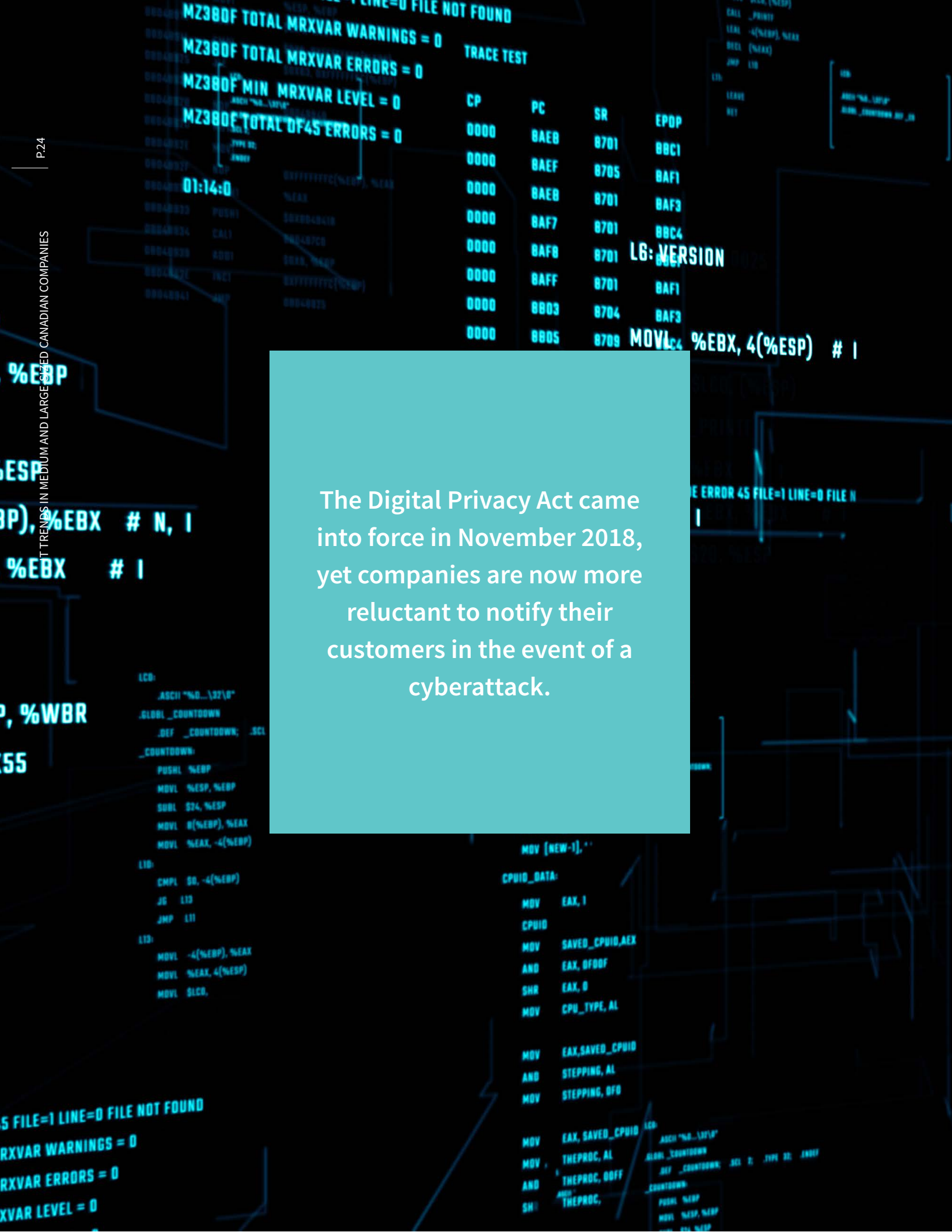
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The Digital Privacy Act came into force in November 2018, yet companies are now more reluctant to notify their customers in the event of a cyberattack.

REASONS FOR CANADIAN COMPANIES TO PUT DATA GOVERNANCE PROCESSES IN PLACE:

 Security topped the list for the first time.



Companies continued to acknowledge the importance of using external data flows. They did so for essentially the same reasons as in 2018.

A large majority (82%) of companies used or planned to use an external data flow. Of those, 38% saw it as a way to better understand market needs.

Reasons that motivate companies to use an external data flow are:

Better understand market needs	38%
Better understand customer behaviour	37%
Identify opportunities	34%
Quantify customer satisfaction with products or services	32%

05

INVESTMENTS IN TECHNOLOGY



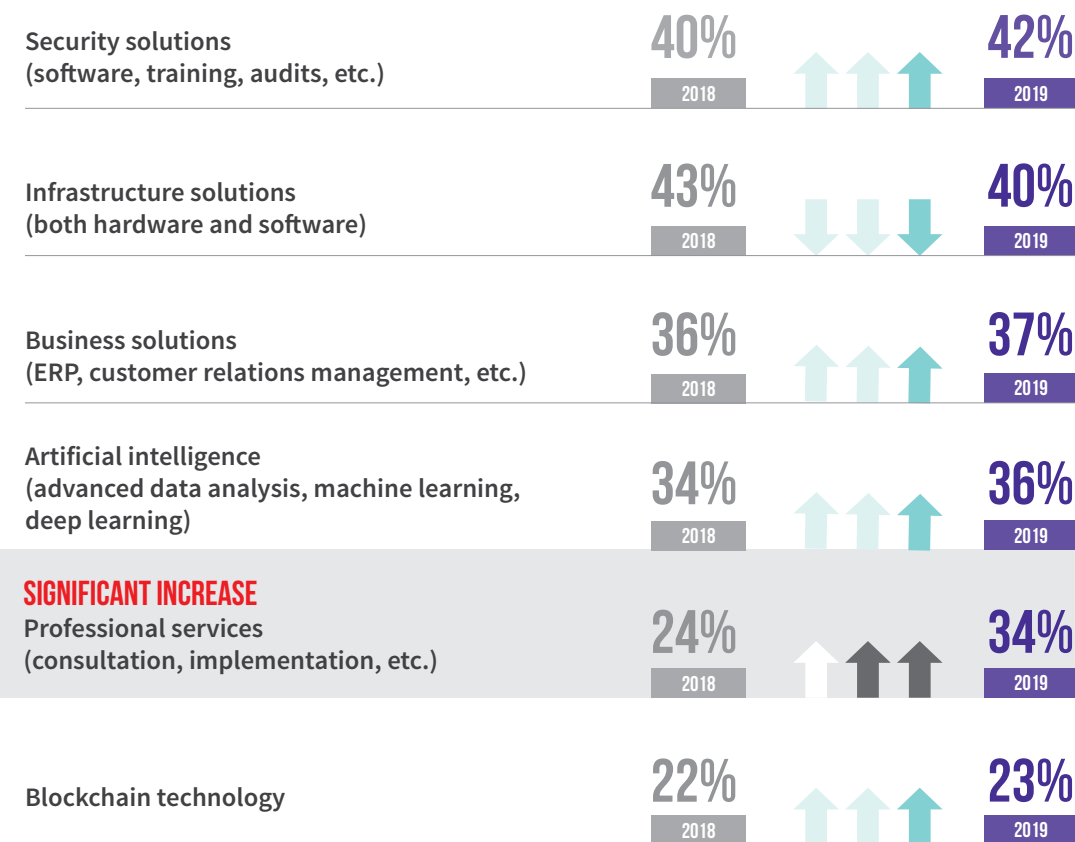
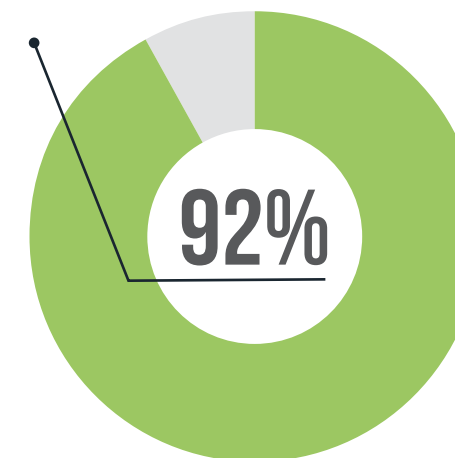
DID YOU KNOW...

Regarding infrastructure suppliers, companies stated they preferred or mainly expected to do business with IBM? IBM was cited by 81% as their most trusted brand.

SECURITY: THE NAME OF THE GAME FOR COMPANIES

As in 2018, a hefty majority of the companies surveyed (92%) were expecting to invest heavily in technology in the next two years.

Security led the pack (42%), ahead of infrastructure (40%) and business (37%). Security thus rose from second priority in 2018 to top-of-mind for 2019's decision-makers.



06

CLOUD
COMPUTING

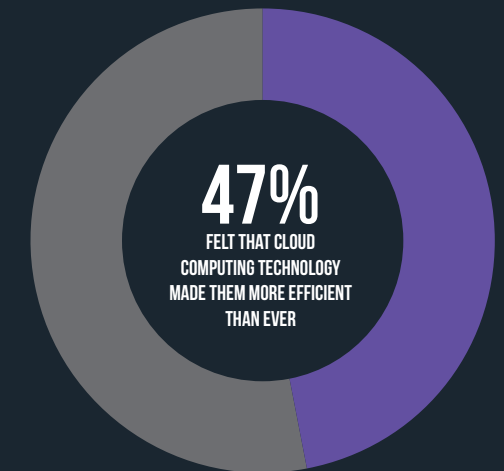
“Most companies have their own infrastructure and rely on their own people to do maintenance and management. It looks like that’s going to continue for the time being, with most businesses planning to stick with their own infrastructure and in-house IT support.”

Foutse Khomh

Associate Professor, Department of Computer and Software Engineering
Polytechnique Montréal

COMPANIES MORE AND MORE LIKELY TO
OPT FOR CLOUD COMPUTING

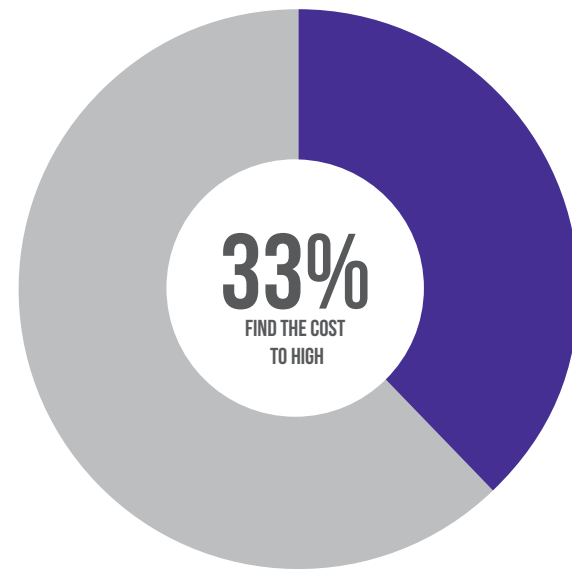
Close to one in two companies (47%) felt that cloud computing technology made them more efficient than ever. The road to implementing it however varies from one organization to the next. And yet one respondent in three (33%) said that, although the future was in the cloud, their company wasn’t ready to go there yet.

CANADIAN ENTERPRISES’ PERCEPTIONS
OF CLOUD COMPUTING

	2016	2019
Has made us more efficient than ever	20%	47%
Has created more and more problems since implementation	13%	9%
My company isn’t there yet	54%	33%
Not a solution for our company	14%	10%

AS IN 2018, 33% OF RESPONDENTS SAID THAT CLOUD COMPUTING WAS STILL TOO EXPENSIVE FOR THE BENEFITS IT MIGHT PROVIDE.

That said, business confidence in cloud computing showed a marked improvement. While 43% of respondents saw it as not secure in 2018, only 27% thought that in 2019.



THE OTHER REASONS GIVEN FOR NOT CONSIDERING THIS TECHNOLOGY WERE:

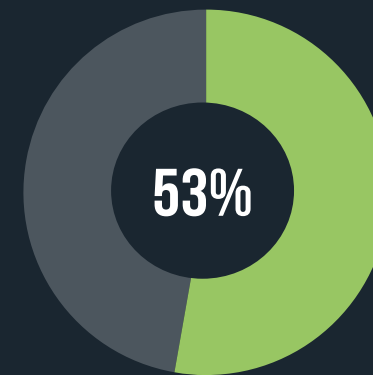


DID YOU KNOW...

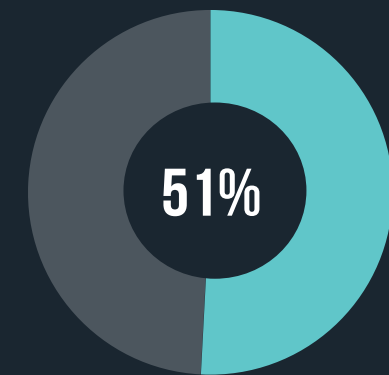
49% of companies plan to use cloud computing for data backup, vs. 42% for analytics?

WHY DO COMPANIES GO WITH CLOUD COMPUTING?

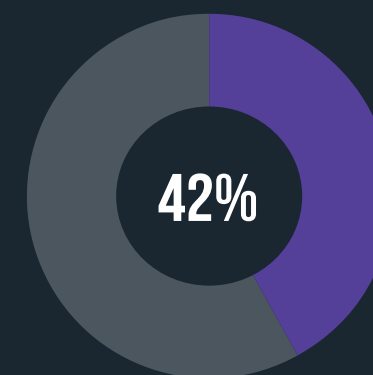
The question of cost continues to divide respondents. While 33% see cloud computing as too costly, 53% are mainly using it to cut costs.



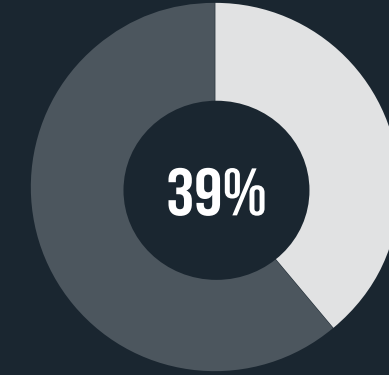
TO REDUCE COSTS



FOR AGILITY AND FLEXIBILITY



FOR SECURITY



TO MODERNIZE THEIR IT ENVIRONMENTS

Fifty-five percent of Quebec companies choose cloud computing because of its agility and flexibility. Fifty-six percent of Ontario companies agree that cloud computing is more agile and flexible and also prefer it because it reduces costs (56%).

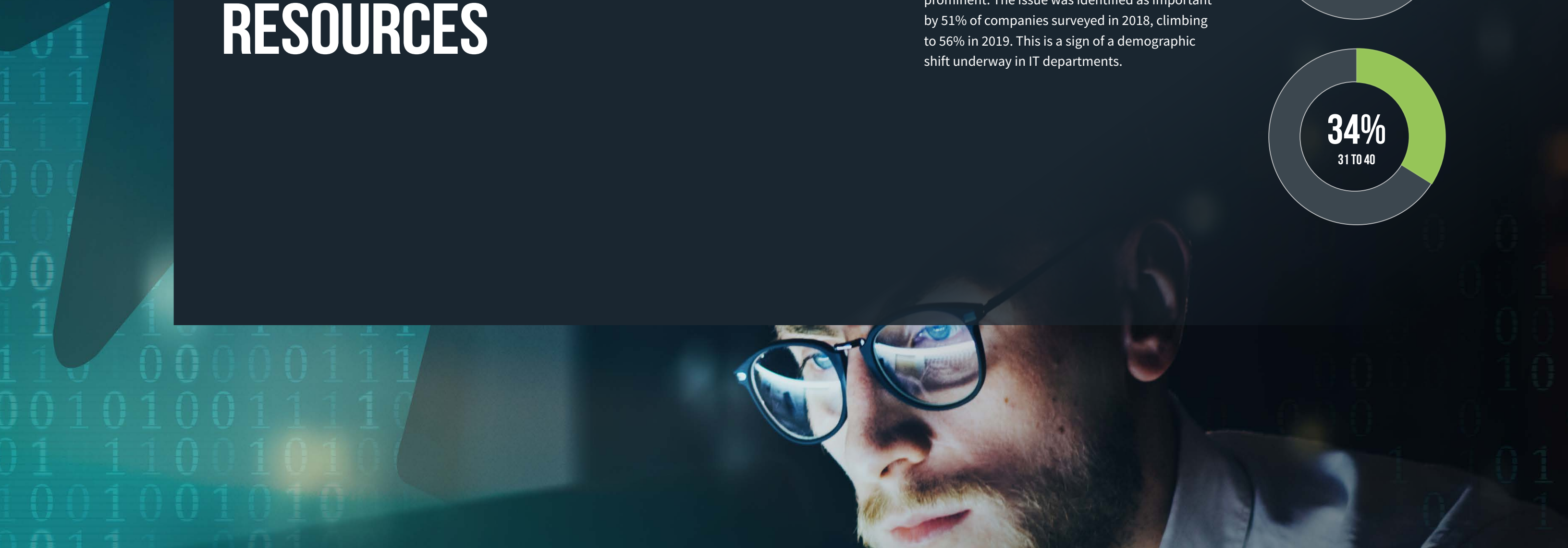
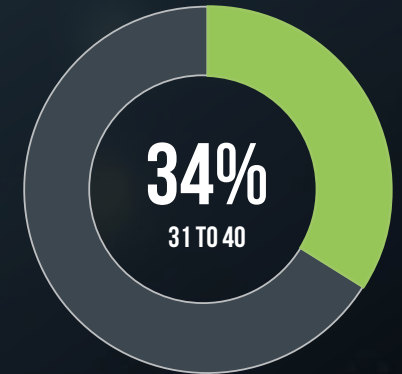
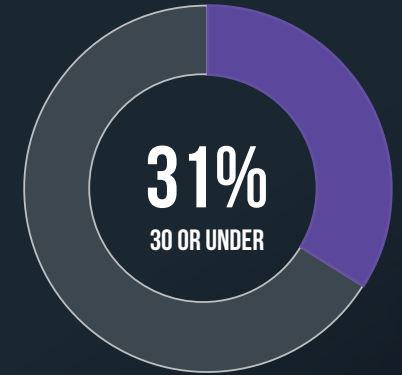
07

HUMAN RESOURCES

IT'S POSITIVE!

One bright spot is that the IT workforce is getting younger, defying the general national trend. The study found that 65% of IT employees are under 41, an increase of 3% over 2018.

Intergenerational conflicts have also become more prominent. The issue was identified as important by 51% of companies surveyed in 2018, climbing to 56% in 2019. This is a sign of a demographic shift underway in IT departments.



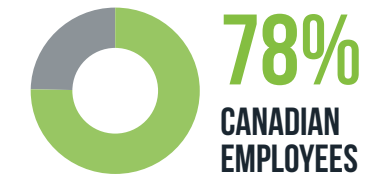
Toronto, Ottawa, Vancouver, Waterloo and Montreal are among the top 5 Canadian cities that generate talent in the technology sector.

Source:
2019 Scoring Canadian Tech Talent
CBRE Research

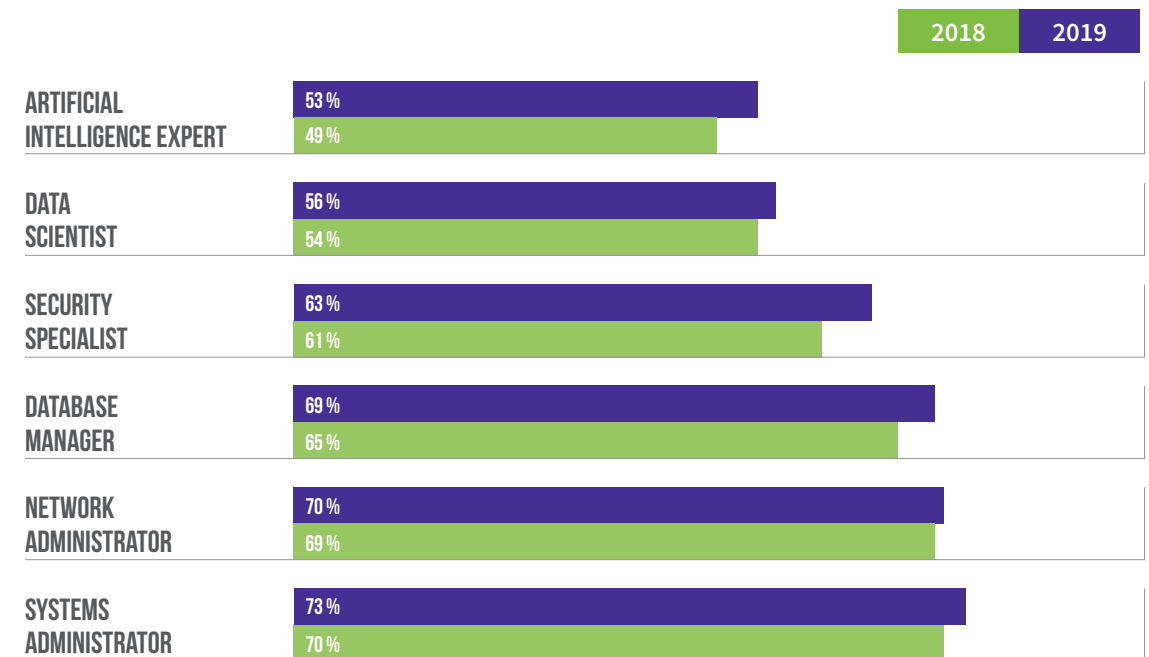
PROFILE OF IT WORKERS

Staff retention seemed to cause managers fewer headaches in 2019. In 2018, 56% said they had little difficulty hanging on to data scientists. 64% said so in 2019.

All the same, data scientist and AI expert positions remained the toughest positions to fill and the hardest professionals to retain in 2019.



ABILITY OF COMPANIES TO ATTRACT EMPLOYEES BASED ON DIFFERENT TYPES OF JOBS:



Regarding their greatest human resources concern, respondents mainly cited lack of training and skills development (64%). It is an increase (57%) over 2018.

Work-life balance was another issue of the day. It was given as an important problem for 59% of the companies in 2019 and 52% in 2018.

CONCLUSION

Everyone was talking about cybersecurity in 2019, but NOVIPRO/Leger's 2020 IT Portrait still found many organizations spinning their wheels. The study spotlighted the main areas companies need to work on to protect data and improve security.

The threats are very real, and IT needs to be used properly and optimally to keep business data secure. To offset the increasingly advanced, complex, and numerous risks, companies have no choice but to improve their governance and technology practices.

Companies also need to keep an eye on the rapid advances in artificial intelligence and consider AI-based solutions that could help them grow and develop.

This year once again the study offered organizations with 100 or more employees a chance to compare and measure the progress of their own IT deployments. The portrait can also support decision-making by those managing an organization's core business lines.

“Organizations have become more cognizant of IT security risks. A mere 11% recognized them in 2016, versus 41% in 2019. But awareness is not enough. Concrete action must be taken to protect against cyberattacks.”

Yves Paquette
Cofounder and CEO
NOVIPRO

“Companies need to quit thinking of information assets as a sunk cost. Information assets are actually a strategic investment that helps them achieve their business objectives. Not only that, but companies would benefit from doing more to make their employees, and even business partners, stronger links in the information-asset protection chain by raising their awareness of security risks.”

Alina Dulipovici
Associate Professor
Department of Information Technologies
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ABOUT NOVIPRO

A technology partner since 1993, NOVIPRO's mission is to guide companies in achieving their business objectives by leveraging its wealth of human capital, its range of expertise and the power of its network. With a team of over 135 employees, NOVIPRO stands out for the excellence of its business, technology and cloud solutions.