2022 CanadianCIO Census

The Way Forward: Building the Digital Enterprise

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ABOUT VMware

VMware is a leading provider of multi-cloud services for all apps, enabling digital innovation with enterprise control. As a trusted foundation to accelerate innovation, VMware software gives businesses the flexibility and choice they need to build the future.

Headquartered in Palo Alto, California, VMware is committed to building a better future through the company's 2030 Agenda. For more company information, please visit www.vmware.com/company and www.vmware.com/ca to learn more about its products and services.

Thank you, VMware, for supporting this research.

FOREWARD

The world is awash in research studies. It seems that each day brings new surveys and studies. It can be difficult to keep up with it all. It is daunting to make sense of it all.

What makes IT World Canada's research different? Our research is not just about facts or statistics. We try to put all of this in context – a Canadian context.

Why is this so important?

While we share a lot in common with our colleagues around the world, Canadian CIOs are unique. It's not easy to pinpoint precisely what makes us different.

Part of my job has been to explain the Canadian CIO to companies from around the world who want to do business in Canada and, frankly, even to some Canadian companies.

Here's what I tell them. Don't mistake caution for lack of innovation. The CIO that wants to make sure that his or her company will get a return on investment is the same one who moved thousands of employees from the office to remote work in a matter of days.

Canadian CIOs might not brag. But they have done amazing things. If our data is correct, Canadian CIOs are increasingly seen as trusted strategic partners by their business partners.

We are different. Sometimes we might seem like a bit of an enigma.

How do you understand the Canadian CIO? You listen. And that's what we try to do with our Canadian CIO Census. We listen to what technology leaders from companies across Canada tell us in a very comprehensive set of questions. We thank them for the time they spend on this every year.

And we publish our findings and more to help everyone, including ourselves, understand the mind of this unique technology leader – the Canadian CIO.

Jim Love, FCMC
CIO, IT World Canada (ITWC) and ITWC Research Fellow

FOREWARD

The CIO Association is pleased to partner with *IT World Canada* and *CanadianCIO* once again on the annual CIO Census. This unique report is a comprehensive look at the plans, attitudes and even the aspirations of the Canadian CIO community.

Philippe Johnston
President, CIO Association of Canada

EXECUTIVE SUMMARY

In 2022, pandemic restrictions have lifted, and supply chain issues are easing. But economic uncertainty hangs on the horizon.

How are Canada's IT leaders doing?

They remain optimistic. They're buoyed by an increase in both their budgets as well as their strategic influence within their organizations. Ninety-eight per cent believe that the level of influence they gained during the pandemic will not be rolled back in the coming years.

Digital transformation (DX) is moving full steam ahead. CIOs expect progress on digital transformation to continue to accelerate, but perhaps not at the same dizzying pace as when the pandemic began.

Security threats are, as always, top of mind. At the same time, IT executives are turning greater attention to improving the customer experience. While gaining business value from data analytics is still a challenge, they're determined to address it in their quest to offer more user-friendly services.

IT skills shortages pose the greatest risk to achieving these goals. Despite recent layoff announcements, difficulties persist in finding the right skills to support things like digital transformation. Here are other key findings from the *2022 CanadianCIO Census* survey:

- Data analytics and business intelligence will have the biggest impact on business over the next five years.
- More CIOs than ever before currently believe that customer experience is the number one driver for digital transformation.
- Security remains a top day-to-day concern and the top priority over the next 12 months.
- The preferred return to work strategy is a hybrid workplace. It's expected that almost half of employees will continue to work remotely. IT employees are much more likely to work remotely than the general employee workforce.
- The best DX investments were video conferencing and collaboration tools. Analytics, artificial intelligence, and outsourcing showed the greatest degree of disappointment.
- Cloud adoption is expected to increase significantly within the next two years.

ITWC discussed the survey numbers with IT leaders to gain additional insights into our findings. We've shared their thoughts throughout this latest edition of the *CanadianCIO Census Report.*
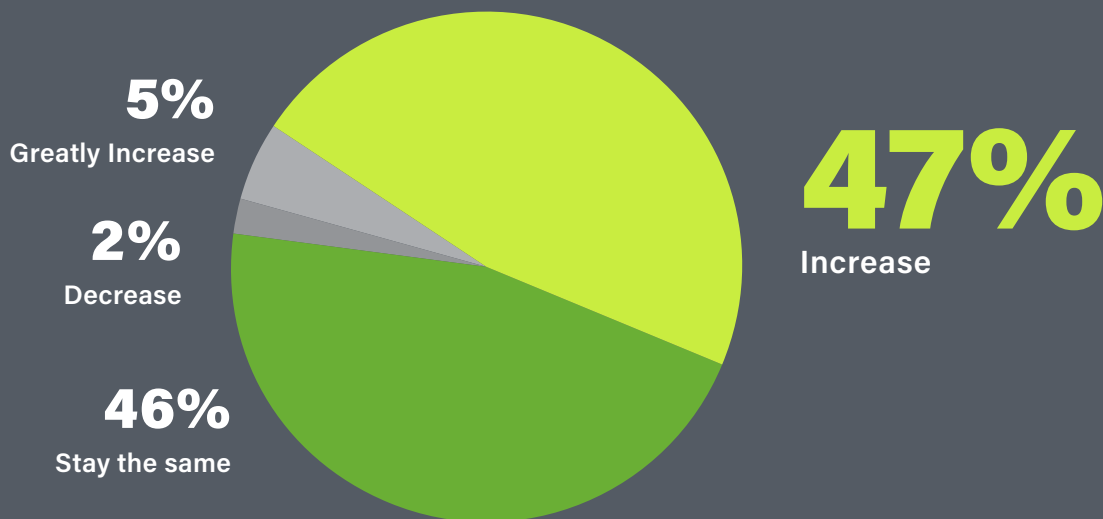
CIO INFLUENCE

It was no surprise that 62 per cent of CIOs saw their roles become significantly more influential at the onset of the pandemic in 2020. They were successful in converting entire organizations to a remote work model in a matter of days. Despite that, the number of IT leaders who said their level of influence had increased fell by nine per cent in 2021.

In 2022, things have changed. CIOs are more confident than ever before about the strategic role they play in their organizations.

Seventy-six per cent now say their influence increased or greatly increased during the pandemic. Even more striking is that fact that 98 per cent say their level of influence will not be rolled back in the coming years. Indeed, 52 per cent expect to become more influential. This was especially the case in the Atlantic provinces where 75 per cent of CIOs expect their influence to rise.

THE CIO'S STRATEGIC INFLUENCE IN FUTURE WILL:

5%
Greatly Increase

2%
Decrease

46%
Stay the same

47%
Increase

It's a remarkable shift in the survey results. But it wasn't news to most IT leaders.

"What's happened in Canada is that the shift to a digital experience during the pandemic has stuck. Digital has now become the primary experience for the vast majority of Canadians," said Peter Near, National Director of Technology for VMware Canada. "The role of the CIO to support that digital experience is vital."

" There is nothing you can do without technology. So how can you advance if you don't have the help or counselling of the CIO?

IT Director, Financial Sector

As well, CIOs say they're playing a greater role in business development. "We've evolved," said Ryan Rossman, Director of IT for the Essex Region Conservation Authority. "We're increasingly seen as members of the business community."

Philippe Johnston, the President of the CIO Association of Canada agreed. "As CIOs improve the business value of what they deliver, I can see that sphere of influence increasing," he said.

EXECUTIVE DECISION-MAKERS

It's clear that CIOs have a seat at the table at executive meetings. Almost all respondents say they're involved in decision-making at the highest levels. Thirty-five per cent say they're always consulted, which is about the same as last year. Forty-two per cent say their involvement depends on the subject and 22 per cent say they participate only in IT-related matters.

As well, the majority of IT leaders (92 per cent) are involved in technology buying decisions. Fifty-seven per cent say they approve all IT purchases. Twelve per cent say they set the purchasing policy but don't directly vet individual buying decisions.

A LEADERSHIP ROLE

CIOs feel they are taking charge of digital transformation, a top priority for all organizations. Almost two-thirds of them say they're leading this initiative. Only 15 per cent state that their CEO is taking a hands-on role in this regard.

CIOs are also ultimately responsible for security, according to 72 per cent of the respondents. That's because the CISO either reports to them, or the CIO is the top security officer in the organization. Of those who say that the two positions share equal rank, the majority say there are no issues with the relationship.

It would also appear that IT projects are less likely to be controlled by the business side of the organization. Only 16 per cent say that more than half of IT projects are managed by business. That's a decline from 30 per cent last year, a significant reversal of what was a trending increase in business control. This may be another area where CIOs are exerting more influence.

If reporting structure is an indicator of influence, 64 per cent of the survey respondents report directly to the top, specifically to the Chief Executive Officer, Chief Financial Officer or president of the organization.
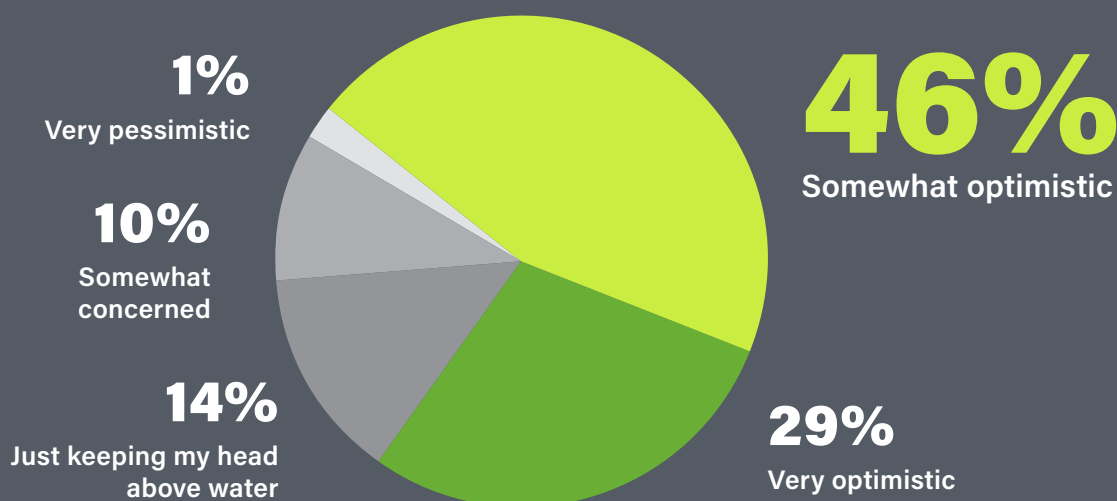
A POSITIVE OUTLOOK

The survey shows, once again, that CIOs have a decidedly optimistic outlook on the future. Seventy-four per cent of respondents say they're somewhat or very optimistic about how their organizations will fare over the next 12 months. This is just slightly below last year's level of optimism. This was consistent across Canada, with Quebecers being the most optimistic. In that province, 82 per cent said they're somewhat or very optimistic about the future.

The increase in influence and IT budgets may contribute to this level of optimism. Indeed, 71 per cent of IT leaders had a budget increase in the last year, compared to 58 per cent the year before. Among those, almost 23 per cent saw their budgets rise by more than 15 per cent, which is more than twice as many in 2021.

However, our commentators expressed concern that a shift in the economy since the survey was taken may dampen budgets or optimism. The Conference Board of Canada's outlook calls for economic output to slow to a near standstill over the next three quarters. Given the strategic importance of technology, IT leaders may only just be starting to feel the pinch. "I suspect we will see more of those nice-to-have projects deferred until Canadian organizations have a bit of a better feeling of what the economy is going to look like in the next year or two," said Near.

As economic challenges increase so will the pressure on CIOs to deliver a return on investment. "The pandemic created greater business expectations about technology," said one IT leader. "But miracles happen with a lot of hard work."

THE CIO'S STRATEGIC INFLUENCE IN FUTURE WILL:

1%
Very pessimistic

10%
Somewhat concerned

14%
Just keeping my head above water

46%
Somewhat optimistic

29%
Very optimistic
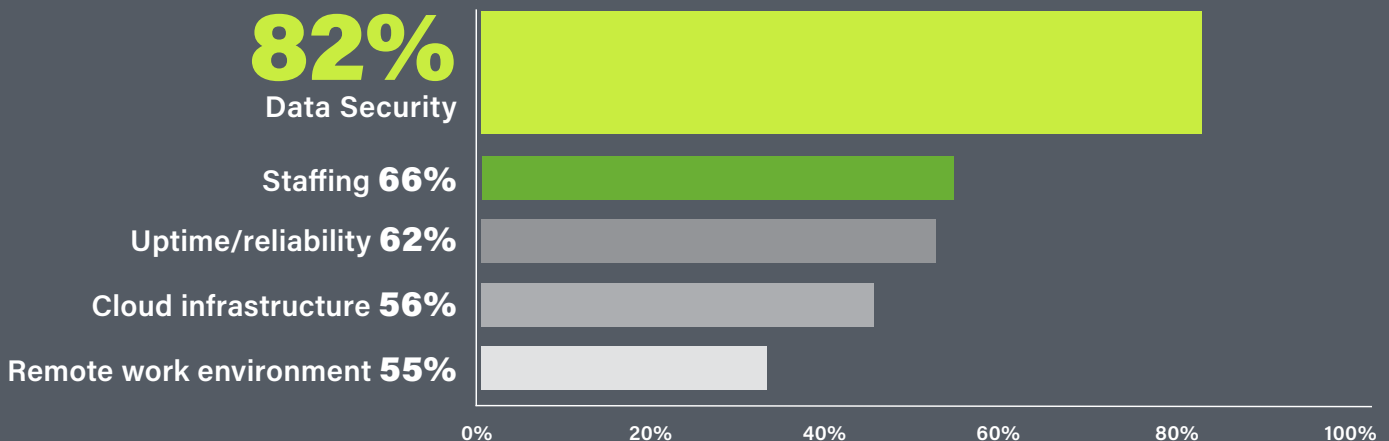
DAY-TO-DAY CONCERNS

What worries CIOs on a day-to-day basis?

The most pressing concern is data security and privacy. Eighty-two per cent of respondents ranked it high or very high as a daily issue. That's up slightly from last year. However, fewer CIOs ranked security as their top concern as compared to last year. Forty-three per cent said it was their biggest concern, down from 58 per cent in 2021.

All our commentators agree that data security continues to be top-of-mind on an ongoing basis. "The biggest challenge on security is the fact that we collect public data, and we always worry about that. It's going to continue to be a priority every hour of every day," said Rossman.

According to the latest cybersecurity report by the [Canadian Internet Registration Authority (CIRA)](), the pandemic has had a profound impact on how organizations protect themselves from cyberthreats. It found that three in ten organizations in Canada experienced a breach of customer or employee data in the past year.

DAY-TO-DAY CONCERNS

82%
Data Security

Staffing **66%**

Uptime/reliability **62%**

Cloud infrastructure **56%**

Remote work environment **55%**

0%   20%   40%   60%   80%   100%

Why then, would fewer CIOs see security as their top concern? Security concerns spiked last year as organizations reviewed their hastily created remote work environments. Johnston suggested that it may be seen as less of a daily concern as it has become more fully operationalized.

The skills shortage is a more significant issue this year. Staffing moved up from fifth to second place on the list of daily concerns. It was ranked high or very high as a concern by 66 per cent of the respondents. It's now seen as the biggest threat to achieving digital transformation.

Uptime and reliability, an issue that closely relates to security, was ranked high or very high as a daily concern by 62 per cent of survey participants. Cloud infrastructure and the remote work environment rounded out the list of the top day-to-day concerns.

CHALLENGES & PRIORITIES – NEXT 12 MONTHS

THE TOP FIVE CHALLENGES FOR THE COMING YEAR

While concerns about data security remain constant, the struggle to turn data into competitive advantage is the top challenge for IT leaders this year. This is the first time that this issue, closely related to data analytics, ranked in first place.

Given this significance, why is it proving to be such a challenge to gain business intelligence from data?

For many, the journey toward this goal is in the early stages. According to the survey, only 5 per cent of CIOs say their organizations have a data-driven culture. Forty-five per cent said they're making progress, while 47 per cent said they're still at the beginning of this journey.

"It's a moving target," said Near. He noted that the challenge for many organizations is that their data is stored in a data centre, while the most advanced tools are in the cloud. "So, how do you connect that data to the most advanced analytics," he asked. What's more, a tool alone doesn't solve the problem, Near said. "The tool has to be leveraged by data scientists, who are few and far between right now in Canada."
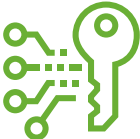
To address that issue, organizations are going to have to find ways to democratize data so that the users can conduct the analyses, said an IT Director from the financial sector. "Real-time analytics is about to explode, and this is the only way to make it work," he said.

Defending the organization against cyber security threats remains a challenge, occupying second place on the list of top challenges for the coming year. CIOs are concerned about balancing security with accessibility. They know that employees who are frustrated by security hurdles will simply go around them. Innovative solutions that can combine security and ease of use will be in high demand.

Technical debt and dealing with legacy systems rank much higher on the list of challenges this year. IT leaders may be concerned that they've pushed these old systems to the brink.

But wholesale replacement is still an enormous and perhaps insurmountable challenge. To address the problem, CIOs are looking at new strategies, such as low or no code alternatives or cloud "refactoring."

The challenge of finding appropriate talent also ranks higher this year, a consistent theme in this report. See the section on HIRING AND THE SKILLS GAP for more on this subject.

①	②	③	④	⑤
Turning data into competitive advantage *(ranked 3rd last year)*	**Balancing security with accessibility** *(ranked 1st last year)*	**Merging old and legacy systems** *(ranked 8th last year)*	**Finding the appropriate talent** *(ranked 6th last year)*	**Security** *(ranked 2nd last year)*

The top five priorities for the coming year

Despite increased concern about the challenge of obtaining business intelligence, security is still entrenched as the number one priority for the next 12 months. Indeed, three out of the five highest priorities are related to security.

It's worth noting, however, that despite its importance, there was a decrease in the number of respondents who said security is their *highest* priority this year. Forty-four per cent of IT leaders ranked security as their top priority, down from 60 per cent last year. Seventy-four per cent rank security as high or very high on their list, down from 89 per cent last year. Related items, disaster recovery as well as risk and compliance also made it into the top five priorities.
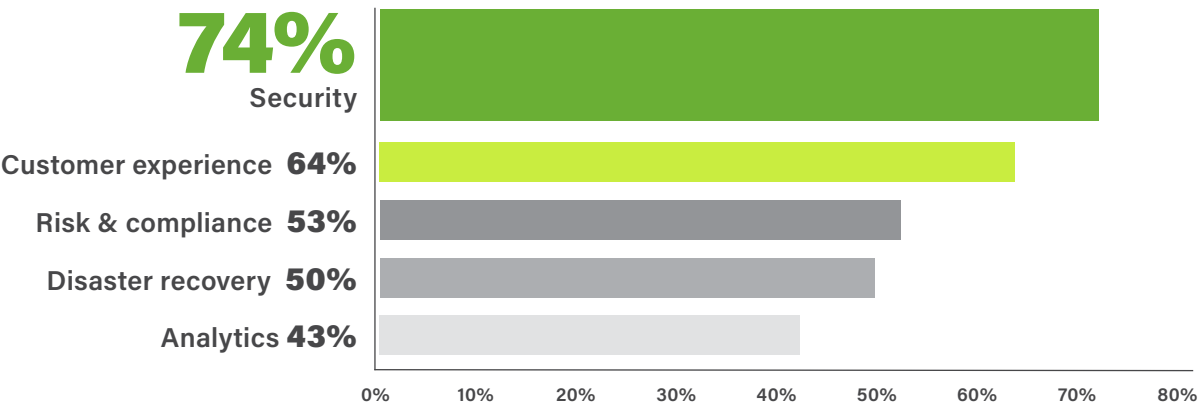
"We have definitely seen an increase in the last year in cyber threats directed at the Canadian economy. So, it's important that this remains a top priority for Canadian organizations," said Near. Near said he's concerned that mid-sized companies have struggled to put sufficient funding in place to support a comprehensive plan.

Customer experience moved up from *fourth to second* place on the list of priorities. This year, 64 per cent ranked customer experience as a high or very high priority. "Everybody talks about customer experience, so it's no surprise that it's a high priority," said one of our commentators. "But the way we implement it with "bots" doesn't mean we do it well."

Although CIOs worry about how to make better use of their data, analytics is in fifth place as a priority for the next twelve months. Forty-three per cent say it's a high or very high priority.

A high priority from last year's list, the remote work environment, no longer ranks in the top five. It would suggest that IT leaders have this in hand, and perhaps, as we see in the next section, they're shifting their focus to the new hybrid work environment.

TOP FIVE PRIORITIES OVER THE NEXT 12 MONTHS

74% Security

Customer experience **64%**

Risk & compliance **53%**

Disaster recovery **50%**

Analytics **43%**

0% 10% 20% 30% 40% 50% 60% 70% 80%

THE HYBRID WORKPLACE IS HERE TO STAY

The survey findings confirm that, going forward, there will be a mix of employees working from home and the office.

In fact, 81 per cent of CIOs say their organizations' return to work strategy will offer hybrid options to employees. Of those, 55 per cent said employees will be asked to spend some time on-site, while working remotely at other times. Twenty-six per cent said some functions will be required to return to the office. Thirteen per cent will allow employees to choose their own approach. The western provinces are less likely to offer flexible working arrangements. This has emerged as a complex strategy with no "one-size-fits-all" answer.

While it's anticipated that some workers will want to return to the office, almost half are expected to continue to work from home. The number of those likely to continue to work from home is higher among IT staff. It's anticipated that 55 per cent of them will continue to work from home, as compared to 41 per cent of those on the business side.

Working from home is expected to be more popular in Ontario than in other provinces. Fifty-four per cent of Ontario workers are expected to do so, followed by Quebec (40 per cent), the western provinces (39 per cent), and the Atlantic provinces (37 per cent).

"I don't see why we wouldn't continue in this mode," said Rossman. "It's turning into a something really saleable, especially with younger professionals. It's allowing them to work in enviable locations." It also helps employers address the scarcity of resources by hiring people in other places, added an IT leader from the financial sector.

IT WORKFORCE

81%
Worked from home
during the pandemic

55%
Expected to continue
working remotely

BUSINESS WORKFORCE

71%
Worked from home during the pandemic

41%
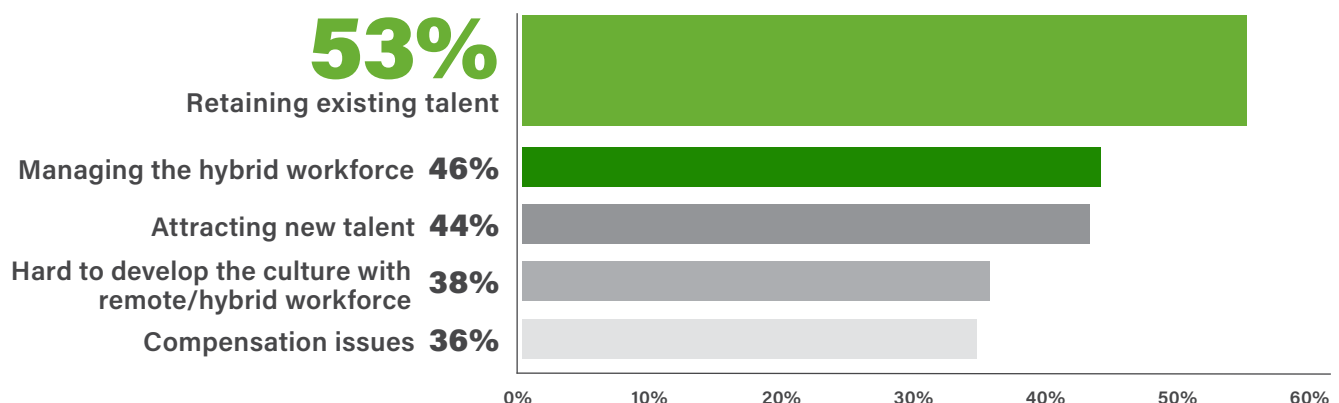Expected to continue working remotely

CHALLENGES IN MANAGING THE HYBRID WORKFORCE

Managing a workforce of employees in varying locations poses additional challenges for IT leaders. Two of the biggest challenges relate to a clear issue emerging in this year's survey findings — the skills shortage. Managers anticipate that it will be harder to both attract and retain talent with a hybrid workforce. This seems counterintuitive in that the hybrid work environment is noted as a preference of employees. But it may also give them a higher degree of mobility in a competitive market for talent.

CIOs are also concerned about how to develop the right culture with remote or hybrid workers. Compensation issues, surprisingly, ranked fifth on the list of challenges. This raises a question as to whether salary expectations are cooling somewhat or if they are just one more concern in a long list of issues with the new workplace.

Although not yet a top concern, it is worth noting that there is greater awareness among IT leaders about mental health issues among their employees. The impact of the remote environment on employee well-being is clearly identified as a cause for concern.

TOP CHALLENGES IN MANAGING THE HYBRID WORKFORCE

53% Retaining existing talent

Managing the hybrid workforce **46%**

Attracting new talent **44%**

Hard to develop the culture with remote/hybrid workforce **38%**

Compensation issues **36%**

0% 10% 20% 30% 40% 50% 60%

BEST WAYS TO MANAGE REMOTE TEAMS

IT Managers have gained valuable experience in managing remote workers in the past two years. The survey shows they'll continue to use similar techniques or tools to support workers in the hybrid world.

Although video meeting burnout is an issue, regular team video meetings are still seen as the most effective way to keep in touch with remote team members. Document collaboration is also an increasingly valuable tool. Web conferencing and chat software are useful as well. Clear work from home policies ranked fifth on the list. Twenty-nine per cent see these policies as necessary to avoid ad hoc actions that may impact morale.

"We're also going to have to change the opportunities for employees to collaborate in person," said Near. "There's less of a need for individual workstations and more of a need for group collaboration settings. The way we work needs to accommodate both approaches in a flexible way."

MOST EFFECTIVE WAYS TO MANAGE REMOTE TEAMS

71%
Hold regular team
video meetings

48%
Document
collaboration

39%
Web conferencing
software

36%
Chat software

29%
Clear work from
home policies

IT HIRING & THE SKILLS SHORTAGE

IT leaders are bullish about their plans to hire new staff this year, reflecting, perhaps, their previously noted high degree of optimism. At the same time, they see the skills shortage as a more serious threat to their organizations than ever before.

Thirty-seven per cent of respondents expect to be increasing their IT headcount over the coming year. That's up from 33 per cent last year. Another 35 per cent plan to focus on retaining existing talent. Only 8 per cent are expecting to downsize or to freeze hiring. A higher number of CIOs in the Atlantic (50 per cent) and prairie provinces (39 per cent) expect to be hiring as compared to Ontario (36 per cent) and Quebec (9 per cent). In Quebec, 72 per cent of managers were focused on retaining existing staff and keeping IT headcount stable

Can these positive hiring plans hold in a cooling economy? The bulk of the survey responses were collected during the summer and ended September 30, 2022. There have been several layoff announcements in the tech sector since then. Both Near and Rossman said they expect that more respondents might say they're "not sure" about hiring plans if they were answering today. "We're in a shift right now," said Near. "I think certain skill sets remain in demand. However, in this economy, organizations will be making decisions about which projects will move forward and which will go on hold. The impact on hiring decisions is to be determined."

IT HIRING PLANS FOR THE NEXT 12 MONTHS

	2022	2021	2020
Hiring/increasing	37%	33%	17%
Retaining talent	35%	N/A	N/A
Keeping IT stable	17%	42%	37%
Hiring freeze	7%	17%	30%
Downsize	2%	2%	12%
Not sure	4%	6%	5%

THE JOBS THAT ARE HOT OR NOT

Despite any shift in the economy, certain job categories continue to be high in demand. Reflecting the increasing interest in turning data into a competitive asset, 35 per cent of organizations expect to hire experts in business intelligence and data analytics. Another 30 per cent are looking for business analysts.

As in previous years, cybersecurity expertise is in demand with 32 per cent seeking to hire these specialists. Skills in agile, DevOps and SecOps are sought by 30 per cent of IT leaders, consistent with a finding that organizations are pushing ahead with these process improvements. Twenty-six per cent want to hire IT staff to support applications.

Which roles are most likely to be downsized? These include data centre management, database development and telecom specialists, presumably reflecting a greater move to cloud based architectures (see CLOUD IS ON THE RISE later in this report).

THE SKILLS GAP

Clearly, the skills shortage is an issue that is weighing more heavily on the minds of IT leaders this year. More of them than ever before believe this problem has the potential to undermine their digital transformation plans.

An Information and Communications Technology Council report estimates that the country's employers would need to fill an additional 250,000 technology jobs by 2025. A KMPG study found that two-thirds of businesses struggle to find the tech talent they need to foster growth.

IT leaders can help to address the problem by putting more focus on developing their internal teams, rather than hiring consultants, said an IT Director from the financial sector. "The best consultants can solve short-term problems but will never address your long-term needs.

The advent of remote work may also help to alleviate the skills gap, said Near. "There's going to be more tech talent available in the global marketplace to be leveraged in Canada."

" The fact that there's an IT skills shortage is not new, but what is new is that the pandemic really caused a power shift. In the past, it was an employers' market, whereas now it's more of an employees' market.

Nasheen Liu, partner and SVP, CIO program strategy, IT Media Group

In the survey, IT leaders were asked which skills they're finding the most difficult to hire. The answer was "just about everything." Responses were spread so evenly across all job categories that it was hard to pinpoint specific roles. Financial skills were one area where it seemed slightly more difficult to hire, according to the survey. This may be a new discipline needed for managing operating expenditures related to cloud usage.

Our commentators agreed that the hardest skill for them to find is in cybersecurity. "There remains a shortage of security experts who can live on the bleeding edge," said Near. It was also mentioned that it's a challenge to find well-rounded talent with the right mix of technical and "soft skills" related to problem-solving.

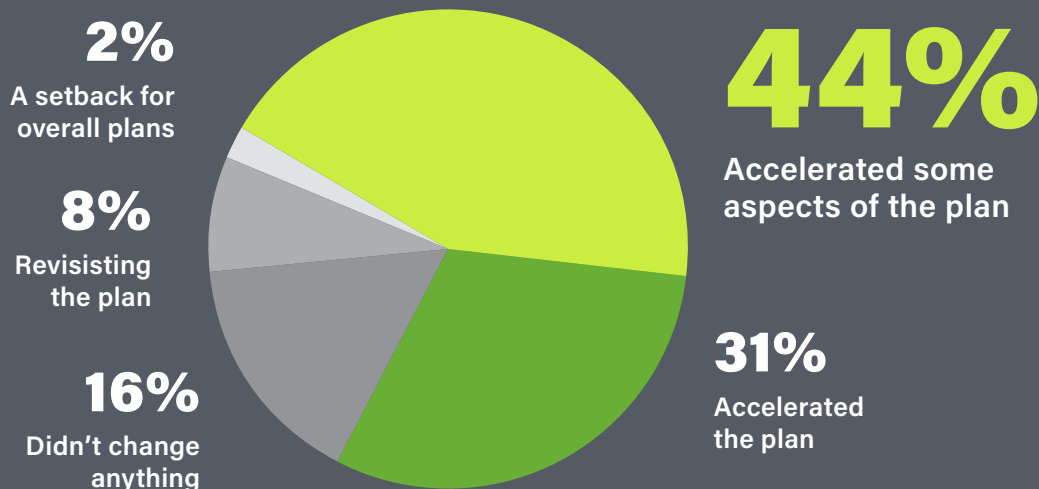# DIGITAL TRANSFORMATION (DX) CONTINUES TO HEAT UP

The Census showed widespread agreement that the pandemic had boosted the pace of digital transformation over the past two years. This year we asked: Can it continue to go faster? Surprisingly, the answer is yes.

Seventy-four per cent of IT leaders say their DX plans, or certain aspects of them, are accelerating in this post-pandemic restrictions world. That's up from 69 per cent last year. Sixteen per cent say nothing is changing, while eight per cent say they're revisiting the plan.

Our commentators were more circumspect. "You can only go as fast as how many people you have to make it happen," said Johnston. Similarly, Rossman expressed concern about the limits to how much harder people can work.

More organizations may actually be doing a "rethink" on their transformation, suggested Near. "When you do things because it's a pandemic necessity, you do them for speed. Now, we're asking how we would do it differently if we had the time."

PACE OF DIGITAL TRANSFORMATION PLANS GOING FORWARD

2%
A setback for overall plans

8%
Revisisting the plan

16%
Didn't change anything

44%
Accelerated some aspects of the plan

31%
Accelerated the plan

WHAT'S DRIVING DX?

Over the past two years, IT leaders have said that digital transformation will have the most significant impact on their organizations in the next five years. This year, they put big data and analytics in top spot as having the biggest impact in the future.

The emphasis on analytics could be explained by another finding — the biggest thing that's driving DX efforts is the need to respond to customer expectations. Sixty-five per cent of respondents said that offering a better customer experience is a major driver, up by more than 20 per cent over 2021. Analytics is clearly seen as a way to help provide smoother and more tailored service to consumers. "We want the customer experience to be one where it's a method of facilitation, not aggravation," said Rossman. "The omni-channel experience is a main driver," added an IT Director.

Creating greater innovation, lowering operating costs and the ability to get to market faster were also identified as drivers of digital transformation.
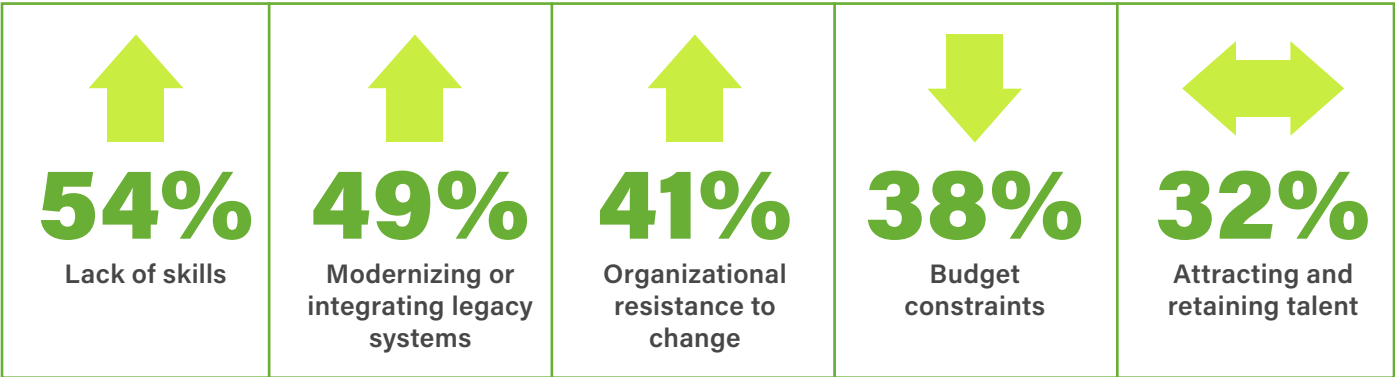
THE GREATEST RISK TO DX

More IT leaders than ever before see the lack of skills as a significant impediment to digital transformation. Fifty-four per cent said this poses a risk, up from 38 per cent last year. An additional 32 per cent say that attracting and retaining talent is a risk to DX progress.

"One of the big things about transformation is having the skills to make things happen and to bring in those skills at the right time," said Rossman. "We've had gaps where those skills were not available when we needed them and that sets things back. It's a domino effect."

The challenge of modernizing or integrating legacy systems is also seen as an obstacle to DX by a greater number of respondents this year. Forty-nine per cent identified it as a problem, as compared to 34 per cent last year. Other risks include organizational resistance to change and budgetary constraints.

THE TRENDING RISKS TO DX*

54%	49%	41%	38%	32%
Lack of skills	Modernizing or integrating legacy systems	Organizational resistance to change	Budget constraints	Attracting and retaining talent

Arrow indicates trending direction

THE BENEFITS OF DIGITAL TRANSFORMATION

We asked CIOs about the benefits they're seeing from digital transformation in real life. The top response is that it's improving productivity for workers. This reflects the massive transition to a remote work environment, along with subsequent fine-tuning to ensure that employees have access to the technology they need.

Competitive parity was the second most popular response to this question. It's interesting to note that almost twice as many respondents said a key benefit is the ability to *keep up* with competitors, as compared to the ability to *get ahead*. It may be, as one commentator noted, that organizations are taking time to rethink or fill gaps after the sudden acceleration at the start of the pandemic.

IT leaders said they're also seeing lower operating costs and the ability to rapidly introduce new products or services as benefits of their DX efforts.

Which technologies contributed most to these benefits? CIOs are always under pressure to demonstrate return on investment on digital transformation initiatives.

Not surprisingly, there's been a big shift in satisfaction with high marks going to technologies that support remote work. Ninety-seven per cent of respondents say investments in video conferencing met or exceeded their expectations. Ninety-four per cent were equally satisfied with their investment in collaboration tools. Investments in security and cloud also produced strong results.

Respondents gave the highest "thumbs down" ratings in terms of satisfaction to big data analytics, artificial intelligence, and outsourcing. This is consistent with prior years.

Given the high ratings of the potential impact of analytics on the business in the next five years, this is a problem that must be addressed. Many companies are early on in their analytics journey. But as already noted, resource challenges may affect progress in analytics for the near future. "It's disappointing because it's hard to find the right experts to leverage the tools," said Johnston. "To do the really complex data analysis with AI and ML, you need those experts who can organize the data and set it up

THE BEST, AND WORST, DX INVESTMENTS

	👍	👎	TOO EARLY TO TELL
Video Conferencing	97%	2%	.75%
Collaboration	94%	4%	2%
Security	86%	8%	5%
Cloud	81%	8%	11%
Enterprise Mobility	66%	8%	26%
Outsourcing	58%	20%	23%
Social Media	58%	19%	23%
App Modernization	58%	16%	26%
Analytics	44%	24%	32%
Internet of things	33%	16%	51%
Artifical Intelligence	26%	23%	51%
Blockchain	10%	14%	77%

PROGRESS ON AGILE AND DEVOPS

While Agile and DevOps don't make the list of highest priorities, the survey results indicate that Canadian organizations are starting to make progress on incorporating agile and DevOps into their digital transformation plans.

Thirty-seven per cent say they're pushing ahead with these process improvements. That's up from 23 per cent last year. Nine per cent say this is fully implemented. Twenty-five per cent say they're still exploring their options, and 21 per cent say it's simply not for them.

The biggest barriers to making greater use of agile and DevOps were a lack of skills and the need for cultural change.

CLOUD IS ON THE RISE

Canadian organizations have been slower to adopt the cloud compared to those in the U.S., but this year's Census results show that may be about to change. Respondents say that within 12 to 24 months they expect to leverage the cloud for 59 per cent of their infrastructure. That's up significantly from the estimates of 38 per cent last year.

While cloud will grow, it will not eliminate on premises computing in the near term. It's anticipated that about 30 per cent of their infrastructure will stay on premises, despite the rapid move to the cloud.

Our commentators said this is consistent with what they're seeing in the market. They also said that the fact that Canadian organizations have taken longer to move to the cloud is not necessarily a bad thing. "Yes, we're late," said one IT Director. "But you can't just rush in blindly. You need to know what you're doing, or you'll pay too much. It's a new set of skills to develop."

Canadians have had the opportunity to learn from the American experience, said Near. "They've learned more about more about controlling the costs as they go to the cloud," he said. "Canadian organizations have also learned that not everything makes sense in the cloud."

Indeed, Rossman predicted that Canadian organizations will hit a limit of about 60 to 65 per cent of their infrastructure being based in the cloud, at least in the near future. Although cloud is well-built from a safety perspective, not all Canadians are comfortable with having their personal data stored there, he said. He added that Canada's regulatory environment may also impact overall cloud adoption.

IT INFRASTRUCTURE MODEL IN THE NEXT 12 – 14 MONTHS

	2022	2021	2020
On-premises	30%	34%	37%
Traditional/dedicated hosting	10%	12%	9%
Managed services	14%	16%	13%
Colocation	12%	13%	9%
Cloud	59%	38%	32%

That doesn't mean that everything should stay the same for those workloads that remain on premises, said Near. "The on-premises people need to think more like cloud operators. That means standardizing things and breaking down organizational silos."

A FEW WORDS ABOUT SERVICE PROVIDERS

The move to the cloud and the growth in technology spending raises the importance of understanding the factors that influence the selection of service providers. For our respondents, security and compliance was the most critical factor. Reliability and ease of use, and cost also ranked highly in influencing their selection process.

Data sovereignty was also seen as a critical or important factor in choosing a cloud provider. Cloud providers in Canada are increasingly offering solutions that ensure data stays in the country.

As for their biggest frustration with cloud providers, IT leaders were clear. Close to half of them said they're annoyed *by confusing and unpredictable pricing models*. This also explains why organizations are looking for talent with financial skills. Nineteen per cent of the survey participants were frustrated with customer service and 16 per cent felt that cloud providers offer too many options.

CUSTOMER EXPERIENCE REIMAGINED

A major trend emerging from this year's survey results is an increased focus on customer experience. It's seen as the biggest driver behind digital transformation. With services now more accessible remotely, it's time to make them more user friendly.
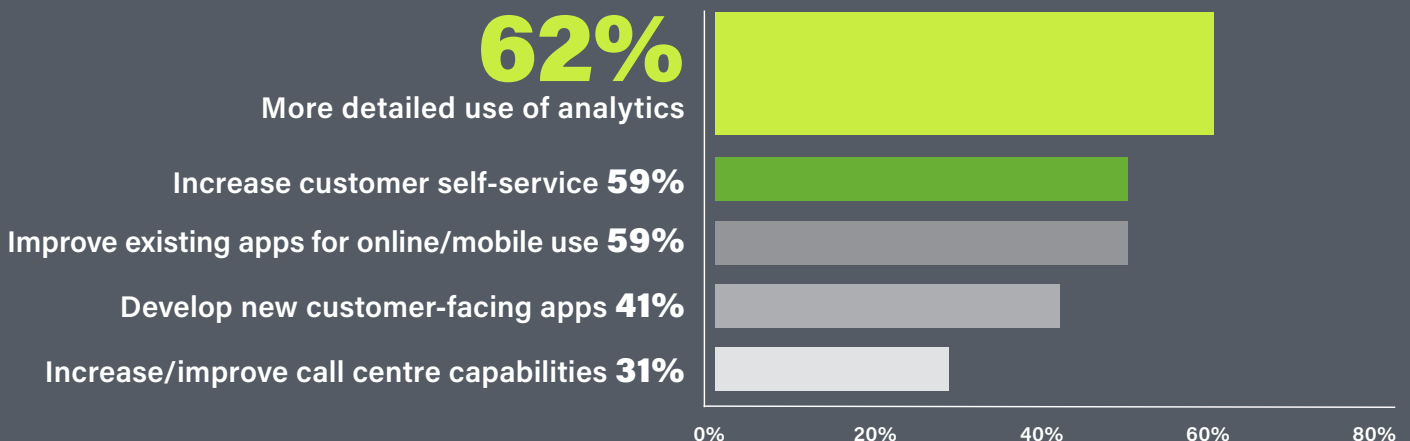
HOW DO CIOS PLAN TO REIMAGINE THE CUSTOMER EXPERIENCE?

The answer is found in another strong theme in this year's findings — data analytics. Sixty-two per cent say they want to make more detailed use of analytics to provide better and more reliable customer service. That's a big increase, up from 51 per cent in 2021. Fifty-nine per cent of respondents say they want to increase customer self-service. As noted by one IT leader, this initiative must be undertaken carefully to avoid greater customer frustration with automated service delivery and robotic process automation.

It's clear that, this coming year, CIOs plan to focus more on improving existing applications for online and mobile use, rather than creating new ones. Fifty-nine per cent want to work on existing apps, while 41 per cent plan to develop new ones.

CIOs may be sensing that while customers have grown accustomed to online and self-service, they still want the option to talk to a human being. Improving customer call centre capabilities ranks fifth on the customer experience "to do" list. This will be major initiative for just under one-third of the participants.

TOP FIVE WAYS TO REIMAGINE THE CUSTOMER EXPERIENCE

62%
More detailed use of analytics

Increase customer self-service **59%**

Improve existing apps for online/mobile use **59%**

Develop new customer-facing apps **41%**

Increase/improve call centre capabilities **31%**

0%   20%   40%   60%   80%

ABOUT THE SURVEY

The 2022 CanadianCIO Census presents the results of annual survey research by ITWC Research. It provides a unique perspective into the minds of Canada's IT leaders as they build our digital landscape.

This year's Census posed 42 questions to gather insights into the concerns and priorities of CIOs. The survey was conducted from August 8 to September 30, 2022. We received 133 responses.

The participants truly represent IT leadership across Canada. They include C-level executives, IT directors and managers. The majority (92%) have influence or involvement in technology purchasing decisions.

Leaders from all sectors contributed to the survey. They include financial services, manufacturing, retail, technology, and transportation. Representatives from the non-profit and public sectors also shared valuable input.

To gain additional insights, ITWC discussed the survey findings with four experienced Canadian IT leaders. We thank them for their valuable input to the report.

Based on
133 responses

Collected
**August 8 -
September 30 2022**

**Respondents are
IT leaders:**
CIOs & IT Directors

92 per cent have
influence over
technology-related
decisions

WHAT TO TAKEAWAY FROM THE 2022 CANADIANCIO CENSUS

If there is one observation to take away from the 2022 Census, it's that Canadian CIOs are a tenacious bunch.

They've successfully weathered two of the most turbulent years for organizations in Canada. Throughout this period, they've persistently built their level of influence, which they do not plan on letting go.

CIOs led digital transformation at a breakneck speed, and they intend to press on. Now, having established remote access to their services, they plan to make those services more customer friendly. To do that, IT leaders are ready to tackle one of their most elusive issues: to create more business value from their data.

Despite the obstacles, Canadian CIOs remain optimistic they will succeed.

ABOUT ITWC RESEARCH

ITWC Research provides peer and industry based research on issues of strategic interest importance in the application of information technology in business. We focus on the practical aspects of the application of information technology in real world settings.

Our research is done by experienced professionals, many of whom have strong academic credentials. Many have published in a wide range of academic and professional journals including the IEEE and other industry standards. We have partnerships with a number of universities in Canada and work with respected corporate groups such as the *CIO Strategy Council, CIOCanada, the Canadian Channel Chiefs Council (C4)* and the *MacKenzie Institute*, to name but a few.

Above all, we ensure the practical focus of our research by leveraging our readership and corporate contacts at the executive level across business, government and academia.