HARVEY NASH / KPMG

CIO SURVEY 2018

THE TRANSFORMATIONAL CIO

HARVEY NASH
The Power of Talent

KPMG

The transformational CIO

Twenty years is a long time, but in the fast-moving world of technology it can seem like an eternity.

Take a look at our infographic on page 6 of this report and you'll be reminded of just how far technology has advanced in the last two decades. And as technology has changed, so too has its focus: once it was all about internal operations, now it's more about the customer; once the budget was controlled by one or two executives, now spend is undertaken by a broader range of stakeholders; once the IT leader was called 'CIO' or 'IT Director', now technology leadership is found in a wide range of places.

Against this backdrop of change the CIO role remains as strong as ever. But that is because the CIO role is also changing. IT leaders are not only helping transform organisations, but the leaders themselves are being transformed, and for many there is a real opportunity to grow and extend their influence. From helping 'shadow IT' step out of the shadows, to handling data privacy and security, to getting the balance right between governance and driving innovation - the CIO has a unique perspective on it all.

So welcome to this year's CIO Survey, the world's largest survey on IT leadership. Whether you are a CIO, CEO, CTO, CDO or any other executive who cares about business technology, this report shines a bright light on the key issues that affect all of us in the technology sector.

We trust you will find it as useful as we have, and can use the data in your business and career planning.

Albert Ellis, ACA CA(SA)
Chief Executive
Harvey Nash Group

Lisa Heneghan
Global Head of Technology
Management Consulting
KPMG International

About the Survey

In its 20th year, the 2018 Harvey Nash/KPMG CIO Survey is the largest IT leadership survey in the world in terms of number of respondents. The survey of 3,958 IT Leaders was conducted between 20th December 2017 and 3rd April 2018, across 84 countries.

Contents

The Harvey Nash / KPMG CIO Survey is the world's largest IT leadership survey. For 20 years it has been covering the issues that matter to technology leaders: from board priorities, to technology strategy, to careers.

www.hnkpmgciosurvey.com

84
countries represented

12% female IT leaders

3,958
IT leaders surveyed across a wide range of industries and geographies

17% other C-level roles

6% CEOs

42% CIOs or IT Directors

BUDGETS, OUTLOOK & PRIORITIES

IT INVESTMENT GROWS

49%
Budget increases at their highest level since tracking began

47%
expect IT headcount to increase

COULD INFLUENCE BE STALLING?

Fewer CIOs on executive boards this year (down 9%)

Fewer IT leaders report CIO influence is growing (down 8%)

OPERATIONAL PRIORITIES

Top 3

1 Improving business process

2 Delivering stable IT

3 Increasing operational efficiencies

Top 3 priorities for 'digital leaders'*

1 Developing innovative new products

2 Delivering stable IT

3 Enhancing customer experience

Top 3 priorities that have grown

1 Improving cyber security **(+23%)**

2 Managing operational risk & compliance **(+12%)**

3 Improving business process **(+5%)**

THE TRANSFOR

MAKING STRATEGY HAPPEN

55%
of organisations rate their IT/business alignment '*moderate*' or *worse*

The successful ones

1 Favouring customer/revenue growth over inward-facing activities

2 An acting or dedicated CDO makes organisations more effective at leveraging customer data

General Data Protection Regulation

38% do not expect to be compliant by the May deadline

CIO CAREERS

46%
of IT leaders enjoyed salary rises in the last year

Leisure, Professional Services and Construction sectors report biggest rises

78%
are either quite or very fulfilled in their jobs

Digital leaders are the most fulfilled in their roles*

13% less are 'very fulfilled' this year

Digital leaders rated the organisation 'very' or 'extremely' effective at using digital technologies to advance their business strategies.

MANAGING TECHNOLOGY
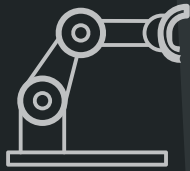
69% have, or expect to implement, intelligent automation within IT and **60%** within customer support

Cyber crime

33% report major cyber attack in the last 2 years

9% increase in concern over organised cyber crime
Education sector worst affected

68% report their boards are supportive

DIGITAL LEADERS MUCH MORE LIKELY TO BE INVESTING SIGNIFICANTLY IN NEW TECHNOLOGIES COMPARED TO OTHERS

6x more virtual reality

5x more blockchain

2.5x more robotic process automation

PEOPLE, SKILLS & TALENT

SKILLS SHORTAGE CONTINUES

65% report a lack of talent holding their organisation back

67% plan to use automation to remove the need for additional headcount

46% use outsourcing to access skills. Cost savings is a lower priority

OUTSOURCING

32% plan to increase outsourcing spend

Big drop on last year *(from 48%)*

35% of IT leaders believe their country's work visa legislation is holding their organisation back

18% have been unsuccessful at promoting diversity, and only **19%** very successful

ALL ABOUT DIGITAL

MAKING DIGITAL EFFECTIVE IS TOUGH

78% of CIOs believe their digital strategy is only moderately effective, or worse

32% of organisations have an enterprise-wide digital strategy
This is down on last year, suggesting IT leaders are rethinking their approach on digital

DIGITAL STRATEGIES STILL IN THEIR INFANCY

Most digital investment is focused on "front-end," rather than deeper operational activities

SUCCESSFUL ORGANISATIONS

Organisations with a CDO, either in a dedicated or acting role, are over twice as likely to have a clear and pervasive digital strategy than those without one (**44%** versus **21%**).

38% think their digital strategy would fail without an innovative and experimental culture

RMATIONAL **CIO**

20
YEARS
OF THE
CIO SURVEY

WORLD
POPULATION

% OF WORLD
POPULATION WITH
ACCESS TO THE
INTERNET

TOP 3
COUNTRIES
BY GDP

TOP 3 MOST
VALUABLE
COMPANIES IN
THE WORLD

NUMBER
OF DEVICES
CONNECTED TO
THE INTERNET

MOST POWERFUL
COMPUTER

INFLUENTIAL
TECHNOLOGY
TRENDS

HARVEY NASH / KPMG **CIO SURVEY** 2018

1998

5.9BN

3.6%

1	**2**	**3**
USA	JAPAN	GERMANY

1	**2**	**3**
GENERAL ELECTRIC	MICROSOFT	EXXON MOBIL

500M
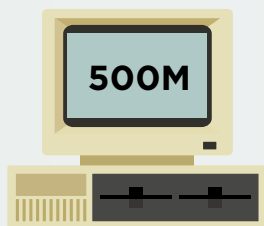
INTEL ASCI RED/9152, USA

1.3 TRILLION
CALCULATIONS PER SECOND

2018

7.4BN

54%

1	**2**	**3**
USA	CHINA	JAPAN

1	**2**	**3**
APPLE INC.	ALPHABET INC.	MICROSOFT

8BN

SUNWAY TAIHULIGHT, CHINA

93,000 TRILLION
CALCULATIONS PER SECOND

1998	2018
MOBILE PHONE	SMARTPHONE
CLIENT SERVER	SOFTWARE AS A SERVICE
DOT COM BOOM	DIGITAL TRANSFORMATION
MANAGEMENT INFORMATION	BIG DATA
BUSINESS PROCESS DESIGN	AUTOMATION/AI
VIDEO CONFERENCING	FACETIME/SKYPE
EMAIL	EMAIL
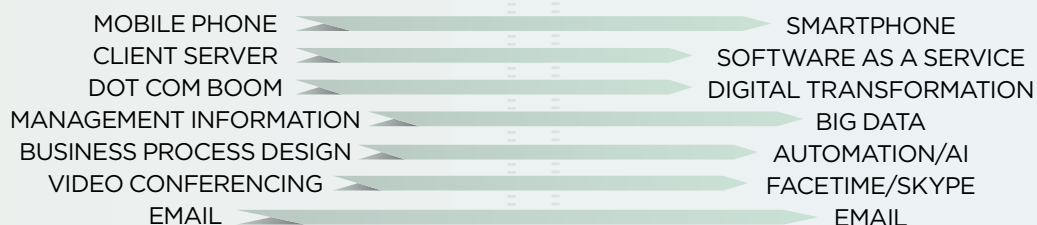
Executive Summary

Back into Action

In last year's survey, Harvey Nash and KPMG reported how CIOs were holding a steady line in the face of global uncertainty, cutting costs and refining business processes. Whilst much of this geopolitical instability remains, this year's report shows how CIOs are benefiting from bigger budgets and headcount growth. Indeed, more IT leaders are enjoying budget increases than we have seen in the last thirteen years of reporting.

This move back into action has been driven by a combination of factors. Investment in digital and cloud continues at a pace, but this year we also see data privacy, governance and security draw the attention of boards. Not all technology budget now sits within IT. Investment in 'shadow IT' is growing and as more business functions take control of their own IT spend, CIOs must adjust and think smart about how they control and influence technology within the business.

Driving Digital

Last year more organisations than ever put in place a digital strategy. This year, we see that growth falter. Making a success of digital is proving complex: almost eight in ten CIOs feel their digital strategy as only moderately effective, or worse. And digital strategies are still in their infancy, with most investment focused on the 'front end', rather than deeper operational activities.

CIOs rate themselves strongly on traditional IT competencies, like understanding the business, selecting the right technologies and building the associated capabilities, but many recognise there is more work to do in applying this in the digital context. Smart CIOs are recognising lots of organisations are struggling in this area and are focusing their efforts to gain competitive advantage. Perhaps the true complexity and pervasiveness of digital can only become clear with the passage of time and truly effective strategies are those that remain flexible and support pragmatic change.

Customer is Key

The good news is that some organisations are making a success of digital. Having a Chief Digital Officer, either in a dedicated or acting role, helps; organisations are over twice as likely to have a clear, enterprise-wide digital strategy if they have one. So too does having an innovative and experimental culture – four in ten of the CIOs surveyed believe their digital strategy would fail without it.

But ultimately this report shows that the most influential and successful organisations are fanatical about delivering value both to and from their customers. And it shows in the figures – 'Customer centric' organisations are 38 per cent more likely to report greater profitability than those that are not.

Investing in the Future

Last year we tracked how cloud investment continues to grow, and this year we see no let-up, with almost three-quarters of IT leaders reporting moderate or significant investment. Investment in mobile technologies is not far behind. Newer technologies, like blockchain, virtual reality and robotic process automation, whilst much talked about, are the focus of only a small proportion of organisations' investment spend in niche sectors and have yet to 'break out' into wider adoption.

New technologies, in themselves, do not improve performance: it also requires the ability to incorporate new technologies into existing or redesigned business processes.

One technology area rapidly developing wider adoption is artificial intelligence, with seven in ten featuring this technology as part of their investment plans, and one-quarter of organisations making at least a moderate investment right now. It is early days of course, and there is still opportunity and value that IT leaders could drive by accelerating their technology adoption.

Trust – The New Battleground

How organisations leverage data is increasingly becoming a source of competitive advantage. But it is also a risk; consumers are only just beginning to wake up to what information organisations hold on them, and high-profile court cases around data misuse, as well as the introduction of stringent privacy legislation in Europe (GDPR), have focused the minds of both the board and the CIO.

It's no surprise then that this year's survey reveals that operational risk and compliance, alongside data security, are the two biggest growth areas of concern for the board. Whilst data security has been high on the agenda for some time, data privacy and trust are increasingly a concern, and, at least when it comes to GDPR, many organisations are only just beginning to address it.

The Changing Shape of Resourcing

It won't be a surprise to any IT leader that there is a skills shortage: 65 per cent are reporting a lack of skills holding back their strategies – the highest we have recorded since 2008. But CIOs are getting smarter at how they manage their resources. Outsourcing is increasingly being used as a skills enhancer rather than cost saver; and many CIOs are experimenting very successfully with automation, especially in testing, service desk and development.

But this hasn't stopped CIOs hiring: in fact this year almost half expect to increase their headcount. And, this is combined with a big drop in plans to outsource. In an environment where innovation and being close to the customer and driving insight from data are becoming increasingly important, CIOs are making more considered judgements about what skills they want inside, and outside.

Keeping Safe & Secure

A major cyber attack is big news and inflicts damage not only on operations but also, in a world of fickle consumers and broadcast media, on a business's brand and reputation. This hasn't gone unrecognised by boards. Protecting the business from a cyber attack has jumped further up the boardroom agenda than any other item and IT leaders are being supported and encouraged to make their defences the best that they can be.

CIOs are increasingly worried about defending themselves against organised cyber crime, but the good news is their efforts seem to be working – CIOs reporting major attacks appears to have levelled out this year.

The Transformational CIO

In many ways IT leaders have had a good year. Technology has never been more important to organisations, and with almost half of IT leaders reporting salary increases and budget growth, it is clear that boards are investing in technology.

But at the same time there are pressures: IT leaders are reporting less job fulfilment, and this year we report a potential flattening out in the strategic influence of the CIO role. The incessant rise of shadow IT, the explosive growth of the Chief Digital Officer role and changing nature of technology have removed many of the certainties that previously fuelled the importance of the CIO role.

But for many this is proving to be a unique opportunity. Successful CIOs are swapping control for influence and finding new ways to navigate through an uncertain environment. Many are taking an active role in embracing shadow IT, leading it out into the 'light' of active governance and support.

Whilst no other executive role is undergoing so much change as the Chief Information Officer, no other executive role has the opportunity to be truly transformational, both for the organisation, and for the person occupying it.

1.0 Global Results

1.1 Budgets, Outlook & Priorities

Key insight: *IT budgets and headcount are growing, but is CIO influence levelling out?*

49%
of IT leaders enjoyed budget increases in last year, highest levels in over a decade

47%
reported headcount increases, highest levels in over a decade

8%
fewer IT leaders report CIO influence is growing

This year more IT leaders are enjoying budget increases than we have seen in the last thirteen years of reporting this factor. But just because technology is becoming more important it does not mean the technology leader is as well - our survey this year reports a potential flattening out in the strategic influence of the CIO role. The incessant rise of shadow IT, the explosive growth of the Chief Digital Officer (CDO)

and changing nature of technology have removed many of the certainties that have fuelled the importance of the CIO role. But paradoxically, it has never been a better time to be a CIO. Successful ones are swapping control for influence and finding new ways to navigate through an uncertain environment. Many are taking an active role in embracing shadow IT, leading it out into the 'light' of active governance and support.

> **We are seeing a new breed of successful IT leaders emerging, people who are 'giving up' the control they have, in favour of growing influence.**
> *Natalie Whittlesey, director, Harvey Nash UK*

> **IT as a cost function is dead. The role of the CIO needs to evolve to reflect this reality if they want to remain a strategic partner to the business.**
> *Denis Berry, partner, KPMG in the U.S.*

Budgets & Outlook

Budget increases at a record high since tracking began

In a positive message that builds on the picture we painted last year, our research shows that the proportion of IT leaders experiencing budget increases is at its highest level since we began tracking this factor 13 years ago. Almost half of our CIO research respondents (49 per cent) have experienced a budget increase in the last 12 months.

In 2017, 18 per cent experienced a budget decrease; this year that figure has fallen to just 16 per cent.

Year	Increased	Stayed the same
2018	49%	35%
2017	46%	33%
2016	45%	33%
2015	44%	32%
2014	46%	31%
2013	42%	30%
2012	43%	29%
2011	39%	31%
2010	28%	29%
2009	25%	33%
2008	36%	44%
2007	42%	42%
2006	47%	34%
2005	43%	34%

- Increased
- Stayed the same
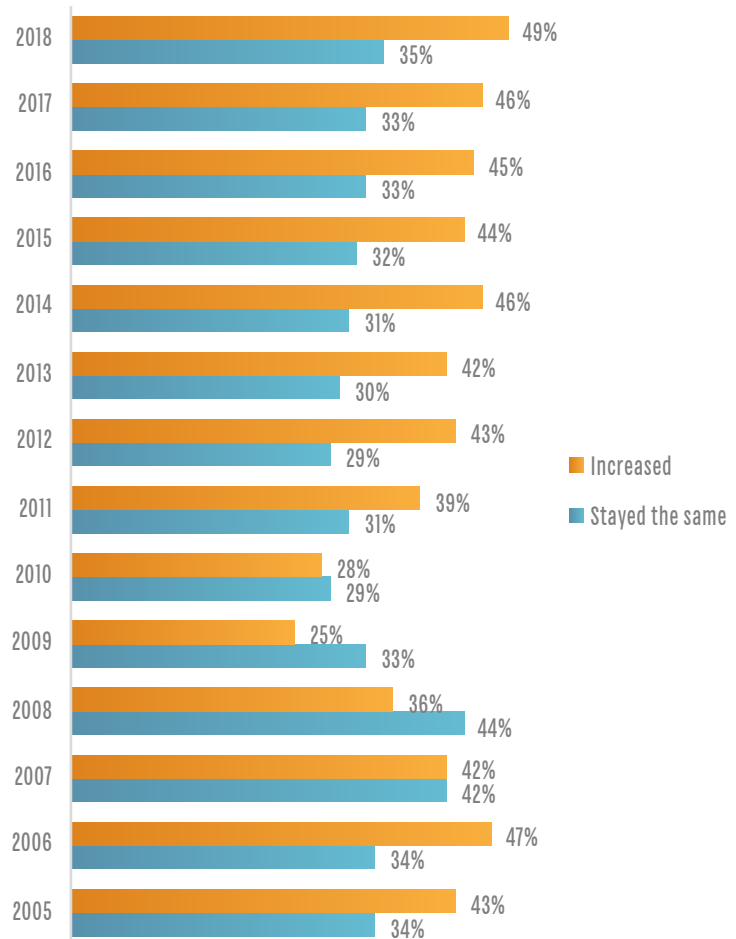
Figure 1. Please indicate if your budget has increased, decreased or stayed the same over the past 12 months? 2005–2018

How is technology changing?

Just as Boards have become more technically aware, the onus is on IT to become more business aware. IT needs to partner with the business and move up the value chain from being a service.

Kevin Robins,
EVP & CIO, Sage, UK

There is no distinct technology function any more. Keeping control of the enterprise architecture is key – we must bring technology to all parts of the organisation. The boundaries between the departments are becoming increasingly blurred. Today, it is imperative to work in integrated teams with people from all units to focus on specific topics or technical components.

Markus Sontheimer,
CIO, Deutsche Bahn Schenker, Germany

The technology lifecycle is not just becoming shorter but it has become a continuously evolving part of the fabric of our business. There is an industry wide shift towards Agile Operating models and ways of working, designed to make technology and the business one and the same. Multi-year IT projects that also take years to deliver any value are dead.

Claudine Ogilvie,
CIO, Jetstar Airways, Australia

Almost half of IT leaders expect a budget increase over the next 12 months

Looking forward to the coming year, a similar proportion of IT leaders expect budget increases as those that received one last year – 49 per cent. Eleven per cent fewer IT leaders are expecting budgetary decreases this year (16 per cent) compared to last (18 per cent).

This positive outlook sees IT investment returning to 'business as usual' after the downturn and reflects organisations across the world investing in digital projects and wider transformation initiatives. Another factor has been the growth in business functions taking direct control of, and investing in, elements of IT. This is changing the dynamic of how IT leaders are controlling and influencing IT spend. For many IT leaders who work well with the business, there is more budget than ever to influence.

- Decrease: 16%
- Stayed the same: 35%
- Increase: 49%

Figure 2. Looking forward, over the next 12 months, do you expect your IT budget to increase, decrease, stay the same?

Respondents reporting budget increases outweigh those reporting decreases in all sectors

The top three sectors expecting a budget increase in the coming 12 months are: Leisure (60 per cent), Technology (53 per cent) and Professional Services (53 per cent). The board's top IT priority for Leisure is to 'enhance customer experience', suggesting that, in an increasingly competitive sector, organisations are investing heavily in technology to improve customer engagement and retention. For the Technology sector, the top IT priority is different – 'developing innovative new products and services'. Increasingly technology spend is focused on replacing and supplementing existing products and services as they reach their maturity. The Professional Services sector is prioritising 'improving business processes', and clearly technology is the driving force here, although the advent of robot lawyers and auditors doesn't seem to be on the near horizon – spend on automation is similar to the global average. The sectors most likely to be expecting a budget decrease in the coming 12 months are: Power & Utilities (23 per cent) which is being affected by deregulation and increasing price transparency and consumer choice, and Government (22 per cent), where there is ongoing pressure to manage costs.

Sector	Decrease	Stay the same	Increase
Leisure	9%	31%	60%
Technology	10%	37%	53%
Business / Professional Services	6%	41%	53%
Transport / Logistics	15%	33%	52%
Broadcast / Media	18%	31%	51%
Financial Services	15%	34%	51%
Construction / Engineering	14%	37%	49%
Healthcare	14%	37%	49%
GLOBAL AVERAGE	14%	38%	48%
Retail	15%	38%	47%
Pharmaceuticals	12%	42%	46%
Manufacturing / Automotive	15%	40%	45%
Power & Utilities	23%	33%	44%
Charity / Non-Profit	10%	49%	41%
Oil & Gas	12%	50%	38%
Government	22%	40%	38%
Telecommunications	16%	48%	36%
Education	21%	44%	35%

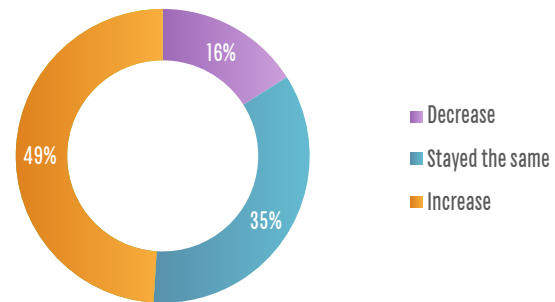Figure 3. Looking forward, over the next 12 months, do you expect your IT budget to increase, decrease, stay the same? By sector

IT leaders expect headcount to increase

Our research reflects a degree of optimism about increasing headcount compared to last year. Almost half (47 per cent) expect headcount to increase. Nineteen per cent fewer respondents are expecting their headcount to shrink in the coming 12 months (13 per cent down from 16 per cent last year).

In the years 2015 to 2017, growth in expected IT headcount remained static at 44 per cent of respondents; this year's research shows 47 per cent now expect an increase. The proportion of respondents reporting IT headcount decreases is the lowest it has been for seven years. Despite more IT being managed in the cloud and more businesses taking direct control for aspects of IT, this has not stopped growth in IT teams. Part of this may be down to organisations increasingly insourcing, which we cover later.
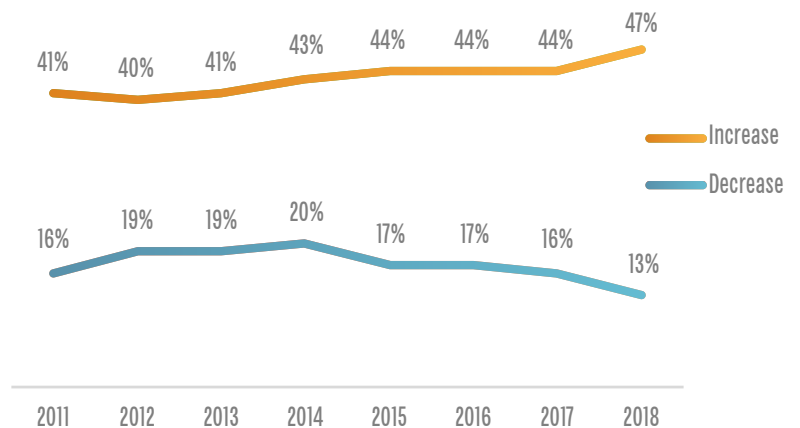
Figure 4. Over the next year how do you expect your IT/Technology headcount to change? Increase, decrease, 2011–2018

Operational Priorities

Cyber security takes a massive leap up the boardroom agenda

Last year our respondents were clear that 'delivering consistent and stable IT performance' was the number one priority boards were asking them to address. Given the geopolitical uncertainty surrounding 2016-2017, with a vocal administration in the US, Europe embracing 'Brexit' and political instability in parts of South America and Asia, it was understandable that IT leaders were asked to hold organisations steady whilst navigating stormy waters. It remains a top priority this year, with 62 per cent of respondents selecting it as a key business issue.

In 2018 boards are asking their CIOs to focus more on 'improving business processes' (up 5 per cent from last year to 62 per cent), whilst maintaining their previous levels of attention on 'increasing operational efficiencies' (62 per cent) and 'saving costs' which has risen slightly to 55 per cent. Given a continued climate of political, digital and market disruption, organisations need to be leaner and more agile in a world where survival of the fittest has never been so relevant.

Unsurprisingly, given the current geopolitical tensions and high-profile cyber attacks, 'improving cyber security' has shown the biggest increase in priority of all our business issues, jumping up 23 per cent from 40 per cent last year to 49 per cent in 2018. Our report examines this in more detail in a later section. Tied with this, and reflecting an increasingly unpredictable world, as well as new regulations like GDPR, 'managing operational risk and compliance' also grew as a priority, up 12 per cent in the last year.

The two biggest drops in priorities are 'driving revenue growth' and 'outperforming competitors with new business models' (both falling 5 per cent year on year). This year it appears boards are less interested in these top line measures of success and are looking to focus on more granular priorities that will drive the bottom line.

	2013	2014	2015	2016	2017	2018	Change 2017 - 18
Improving business processes	60%	60%	58%	57%	59%	62%	5%
Delivering consistent & stable IT performance to the business	70%	59%	57%	52%	63%	62%	-2%
Increasing operational efficiencies	68%	63%	61%	58%	62%	62%	0%
Saving costs	71%	57%	54%	50%	54%	55%	2%
Enhancing the customer experience						55%	
Developing innovative new products and services	51%	41%	41%	42%	51%	53%	4%
Improving cyber security				41%	40%	49%	23%
Delivering business intelligence/analytics	48%	41%	47%	46%	46%	48%	4%
Improving efficiencies through automation						45%	
Managing operational risk and compliance	41%	40%	39%	36%	34%	38%	12%
Driving revenue growth	42%	45%	42%	40%	40%	38%	-5%
Better engagement with customers/prospects	33%	36%	38%	38%	31%	32%	3%
Dealing with regulations						31%	
Improving efficiencies through technology estate simplification						29%	
Improving time to market	31%	29%	30%	26%	23%	24%	4%
Improving the success rate of projects	36%	30%	29%	26%	23%	23%	0%
Improving insights & decision making through AI						23%	
Outperforming competitors with new business models	26%	23%	24%	24%	22%	21%	-5%
Enabling mobile commerce	33%	24%	22%	19%	19%	19%	0%

Figure 5. What are the key business issues that your board is looking for IT to address?

Top 10 business issues facing customer-centric and digital leaders

We looked at how the board's priorities differ for two different types of organisation, both of which outperform their competitors in key capabilities:

• Digital leaders are defined within this report as organisations who consider themselves 'very effective' or 'extremely effective' at using digital technologies to advance their business strategies.

• Customer-centric leaders are defined within this report as organisations who consider themselves 'very effective' or 'extremely effective' at creating engaging customer experiences.

The operational priorities of customer-centric and digital leaders are considerably different from those of the global average. Almost half of customer-centric leaders (47 per cent) and 45 per cent of digital leaders are focused on 'driving revenue growth' in comparison to the global average of 38 per cent. They are also more likely to be 'developing innovative products and services' and 'improving their time to market'. This focus on meeting the needs of the customer and driving revenue is a key differentiator for these leaders and appears to come at a price; they are less likely to focus on 'improving business processes', 'saving costs' and 'increasing operational efficiencies'.

Customer-centric organisations	Digital leader organisations	GLOBAL AVERAGE
1. Developing innovative new products and services	1. Developing innovative new products and services	1. Improving business processes
2. Delivering consistent and stable IT performance to the business	2. Delivering consistent and stable IT performance to the business	2. Delivering consistent and stable IT performance to the business
3. Enhancing the customer experience	3. Enhancing the customer experience	3. Increasing operational efficiencies
4. Increasing operational efficiencies	4. Increasing operational efficiencies	4. Saving costs
5. Improving business processes	5. Improving business processes	5. Enhancing the customer experience
6. Saving costs	6. Saving costs	6. Developing innovative new products and services
7. Improving cyber security	7. Improving cyber security	7. Improving cyber security
8. Delivering business intelligence/analytics	8. Delivering business intelligence/analytics	8. Delivering business intelligence/analytics
9. Driving revenue growth	9. Improving efficiencies through automation	9. Improving efficiencies through automation
10. Improving efficiencies through automation	10. Driving revenue growth	10. Managing operational risk and compliance

Figure 6. What are the key business issues that your management board is looking for IT to address? Customer-centric & digital leaders

Fewer CIOs are part of the board or executive management team this year

Almost two-thirds (65 per cent) of CIOs are members of the board or part of the executive management team. However, this is down 9 per cent on last year. With respect to gender, 58 per cent of all male respondents indicated that they were members of the board or part of the executive management team, compared to only half of female contributors (50 per cent).
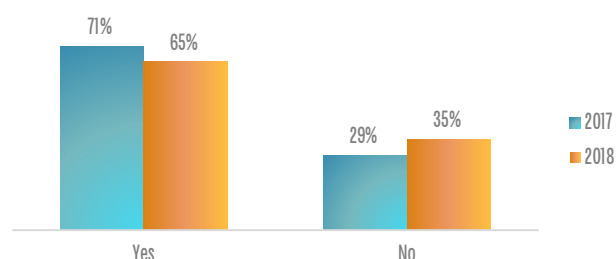
Figure 7. Are you a member of the operational board/executive management team? 2017–2018, CIO

Majority of IT leaders report that the role of CIO is becoming more strategic

Our research shows that the majority of respondents report that the role of CIO or IT Director is becoming more strategic (65 per cent). This is unexpected given the previous finding where fewer respondents are members of the board.
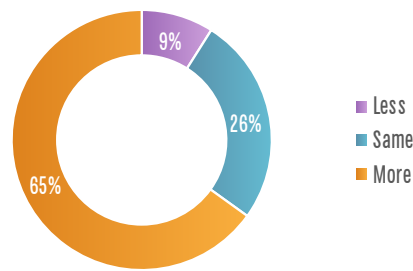
Figure 8. In your opinion, is the role of CIO/IT Director becoming more or less strategic within your organisation?

Legend:
- Less — 9%
- Same — 26%
- More — 65%

Strategic beliefs return to previous levels after a jump in 2017

Whilst comparable to trend levels viewed across several years, the belief that the CIO role is becoming more strategic is down significantly from 71 per cent last year where it had shown a distinct jump up. Almost one in ten (9 per cent) feel that the CIO role is becoming less strategic, which could be attributable to a feeling that their function is 'keeping the lights on' as opposed to creating dramatic changes to the business. Whether the fall in status is a blip or the beginning of a trend is difficult to tell.

With the growth in Chief Digital Officer (CDO) appointments and more budget being managed outside the IT department, IT leaders are certainly under pressure to deliver strategic value. But

for every dollar leaders give up in funding, they are receiving the potential for more influence throughout the business. For many IT leaders the emphasis is moving from 'control' to 'influence'.

The sectors where respondents most see the CIO role becoming more strategic are Leisure, Transport, Financial Services and Non-Profit. IT leaders from the Telecommunications and Government sectors are those most often reporting the CIO role becoming less strategic. The CIO is significantly more likely to become more strategic if an organisation has an enterprise-wide digital strategy and in organisations that are 'very effective' or 'extremely effective' at using digital technologies to advance business strategy.
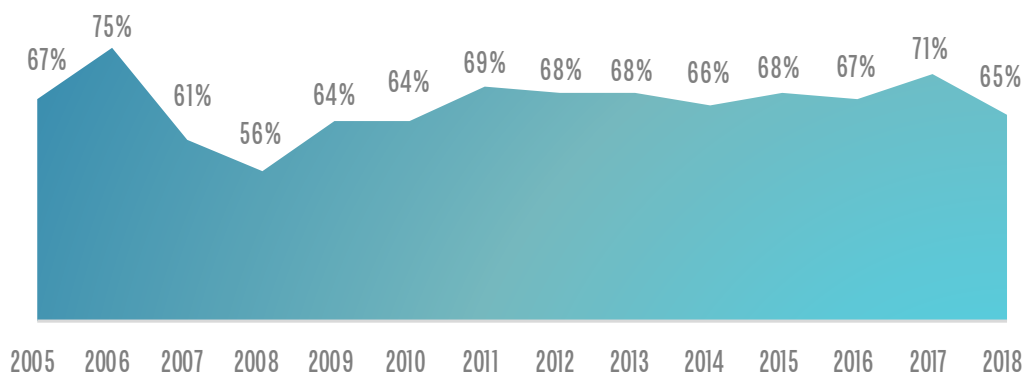
Figure 9. Is the role of CIO/IT Director becoming more or less strategic within your organisation? More strategic

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
67%	75%	61%	56%	64%	64%	69%	68%	68%	66%	68%	67%	71%	65%

1.2 Making Strategy Happen

Key insight: *Many organisations are struggling to turn their strategies into reality. The successful ones are focussing on the customer*

55%
of organisations rate their IT / business alignment 'moderate' or worse

38%
'Customer centric' organisations are 38% more likely to report greater profitability than those that are not

REVENUE GROWTH
top priority for customer centric organisations, compared to 'Improving business processes' for global average

Perhaps more than any other executive role, the CIO is dealing with a growing range of challenges and pressures: the need to be increasingly agile; an unpredictable and disruptive business environment; a board asking more questions about digital transformation and data integrity.

How can an IT leader make strategy happen with such a bewildering set of priorities and interest groups?

This report shows that the most influential and successful CIOs are focusing on revenue creation much more than any other priority. Ultimately customers are the ones with the answers. They are also, ultimately, the ones with the money.

> CIOs today are more commercial, outward looking and more customer focused than ever before.
> *Mark Hayes, MD, Harvey Nash Germany*

> A CIO who doesn't have a forensic understanding of who the customer is, and what drives them, is doing their job with one hand tied behind their back.
> *Guy Holland, partner, KPMG in Australia*

Traditional vs. Digital Goals

IT leaders see the big picture, but implementation remains a challenge

In this year's research we questioned our respondents on how effective their IT function was across some key areas.

Unsurprisingly, respondents rated their IT function strongly in the more traditional areas of IT such as 'understanding business requirements and processes', 'selecting appropriate technologies and architecture' and 'aligning IT and business strategy'.

Perhaps more surprising is that in other traditional areas, IT leaders rated their effectiveness relatively poorly. Only three in ten respondents said their 'using the right governance model' was 'very effective' or 'extremely effective'. As the IT estate becomes increasingly complex, faster-moving and involving more stakeholders, governance becomes increasingly difficult. In a desire to innovate and become more agile, some IT leaders we talk to are evolving their approach to governance and risk.

Whilst leaders rated their IT functions quite highly on 'understanding the impact of digitisation on their industry' (48 per cent indicating 'very/extremely effective'), they were less positive about responding to digital. 'Integrating core business systems into digital' and 'relying on an overall digital vision' proves elusive for many.

'Hiring the right digital skills' is also a challenge for many IT leaders. This is a perennial struggle we pick up elsewhere in this report.

At this time digital strategies are at an early stage of maturity compared with the more established IT activities of business process and architecture. Is it simply a matter of time before digital becomes a traditional skill, easily learnt and implemented by the technology leader, or does digital follow an entirely different path of learning? Perhaps organisations are waiting for the right use case to exploit digital technology?

Capability	Not at all effective	Slightly effective	Moderately effective	Very/extremely effective
Understanding business requirements and processes	3%	12%	33%	52%
Understanding the impact of digitisation on your industry	5%	16%	32%	48%
Selecting the most appropriate technologies and architectures	3%	12%	38%	47%
Aligning IT and business strategy	4%	13%	38%	45%
Leveraging the expertise of partners and suppliers	4%	15%	41%	39%
Relying upon an overall digital vision to guide decisions	10%	21%	36%	32%
Integrating core business systems with newer digital solutions	7%	22%	39%	32%
Using the right governance model	6%	19%	45%	30%
Hiring and developing people with digital skills	9%	26%	42%	24%

■ Not at all effective ■ Slightly effective ■ Moderately effective ■ Very/extremely effective

Figure 10. How effective is your IT organisation in each of the following capabilities?

What is the impact of technology change?

Technology has evolved from something which happens in the Data Centre to something that happens on people's desks through cloud and SaaS apps.

Amitabh Apte,
Director - Digital Foundations Integration, Mars, UK

The pace of development is the biggest difference compared to five years ago. IT and its corresponding technical functions is in a serious transformation from a cost oriented IT department to a recognised business value enabler.

Dirk Ramhorst,
CIO / CDO, WACKER Chemie AG, Germany

We view disruption very much as one would the food chain. Eat, or be eaten. We are not rushing out to the cloud. We've become the cloud. By building a private cloud and provisioning it to like-missioned organisations, we have cut every participant's costs while focusing on student success, and avoided entanglements with vendors that are not invested in us.

Bill Thirsk,
CIO, Marist College, US

Scaling agile methods is an organisational weakness

We also asked respondents how effective their organisation is beyond IT.

Whilst organisations are increasingly using methodolgies to speed up project delivery (62 per cent indicated they were 'moderately', 'very' or 'extremely' effective at this), almost one in five respondents (22 per cent) report that

their organisations are 'not at all effective' at 'scaling agile methods enterprise-wide', with an additional 30 per cent indicating that they are only 'slightly effective'. Organisations need to find the best-use case that can be their digital lighthouse and scale the transformation from that foundation; scaling agile is not a one-size -fits-all approach.

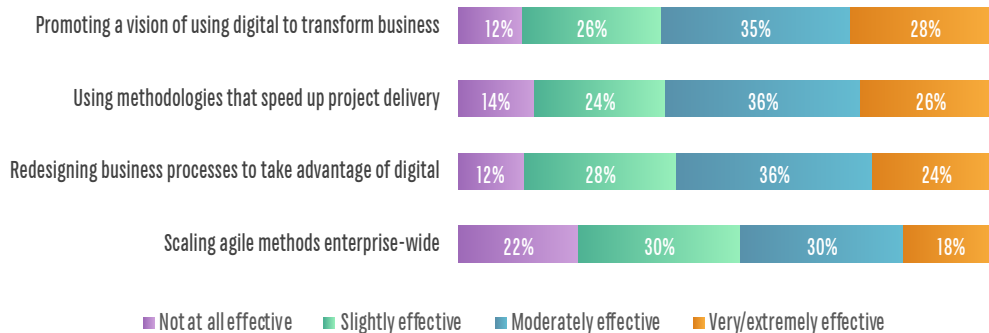|	Not at all effective	Slightly effective	Moderately effective	Very/extremely effective
Promoting a vision of using digital to transform business	12%	26%	35%	28%
Using methodologies that speed up project delivery	14%	24%	36%	26%
Redesigning business processes to take advantage of digital	12%	28%	36%	24%
Scaling agile methods enterprise-wide	22%	30%	30%	18%

Figure 11. How effective is your organisation in the following capabilities?

Customer-centric Organisations

Only a quarter of organisations are creating engaging customer experiences

While most organisations aspire to enhance the customer experience, many struggle with managing customer-focused capabilities. Twenty-seven per cent, or fewer, view themselves as 'very effective' or 'extremely effective' across five key capabilities.

The evidence that customer-centricity directly supports revenue and profit growth is compelling: 57 per cent of customer-centric organisations (those 'very effective' or 'extremely effective' at 'creating engaging customer experiences') reported revenue growth exceeding that of their competitors in the last year, versus 46 per cent

for the global average. A similar picture is painted with profitability – with 52 per cent of customer-centric organisations enjoying greater profitability than their competitors versus 41 per cent globally.

Earlier in the report we showed how digital leaders and customer-centric leaders have a different set of priorities to the global average, focused around revenue growth and new products and services. Clearly understanding the customer and having the systems and processes that create one view is a key factor in this.

	Not at all effective	Slightly effective	Moderately effective	Very/extremely effective
Measuring profitability by customer	17%	25%	31%	27%
Creating engaging customer experiences	11%	27%	37%	26%
Generating actionable insights from customer data	14%	28%	35%	23%
Leveraging customer data to deliver personalised customer experiences	18%	31%	32%	19%
Having a single view of customer interactions across all service channels	21%	29%	31%	19%

Figure 12. How effective is your organisation in the following capabilities?

Larger organisations have more customer-centric IT leaders

Our research shows that the larger the organisation, when measured through the size of its IT budget, the greater its effectiveness at customer-focused capabilities.

	Less than $50m	$50m-$250m	More than $250m	Global Average
Measuring profitability by customer	27%	26%	35%	27%
Creating engaging customer experiences	25%	24%	33%	26%
Generating actionable insights from customer data	23%	21%	25%	23%
Having a single view of customer interactions across all service channels	18%	19%	25%	19%
Leveraging customer data to deliver personalised customer experiences	19%	18%	23%	19%

Figure 13. How effective is your organisation in the following capabilities? Very/extremely effective, by IT budget

GDPR

More than two-thirds of organisations are affected by GDPR

On 25 May 2018, the European Union (EU) began enforcing the most stringent regulations to date on how EU citizens' personal data is lawfully collected, processed and stored. The European Union General Data Protection Regulation (GDPR) is a sweeping data protection law that not only affects European businesses but all organisations handling the personal data of EU citizens. Moving forward, if a data breach is the result of non-compliance, companies will face unprecedented fines of up to €20 million or 4 per cent of global annual revenue for the previous financial year, whichever is higher. Essentially, if organisations process the data of EU citizens, wherever they are in the world, then they must comply. Our research shows that more than two-thirds (68 per cent) of our respondents are affected by GDPR.
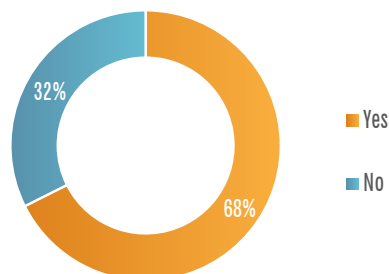
Figure 14 . Does GDPR affect your organisation?

Ninety per cent of European IT leaders are affected by GDPR

Predictably, almost all (90 per cent) IT leaders from Europe are affected by GDPR, but also almost half (45 per cent) of North American IT leaders and more than a third (34 per cent) of their peers in Asia Pacific.

Figure 15. Does GDPR affect your organisation? By region

Many organisations will not be compliant by the GDPR deadline

On publication we expect that a significant proportion of organisations will not be compliant with GDPR, as 38 per cent of our research respondents identified as still being on the journey.
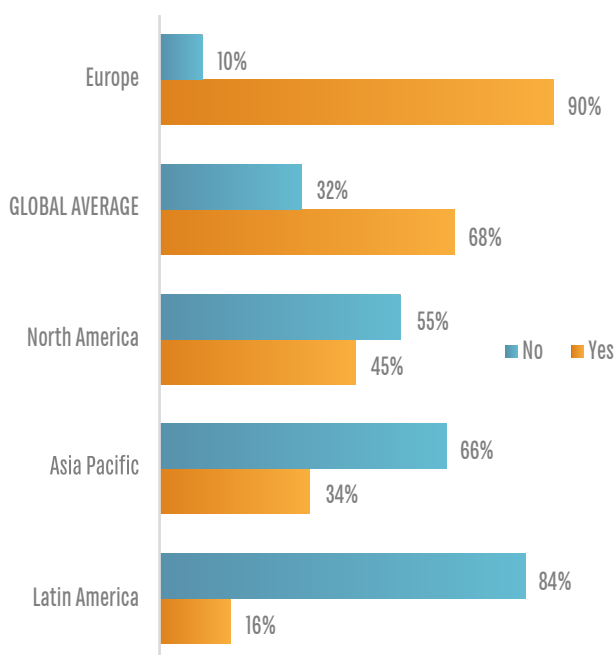

- Complete
- Mostly complete (80-90%)
- We will still be on the journey
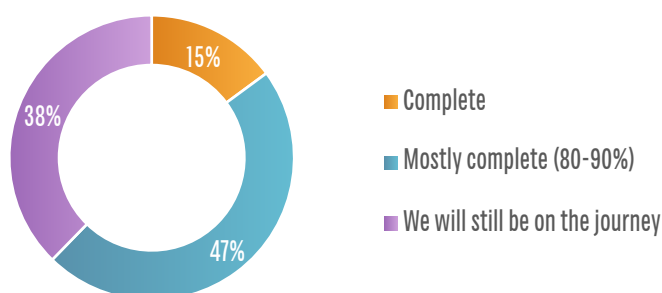
Figure 16. How far advanced do you expect your GDPR compliance programme to be at the end of May 2018?

As the use of shadow IT becomes more prevalent, ensuring and maintaining compliance will also become more complex for the CIO who must ensure that sensitive information is not being stored in third-party systems without proper oversight.

	Complete	Mostly complete	Still on the journey
Latin America	11%	35%	54%
Europe	15%	48%	37%
GLOBAL AVERAGE	15%	47%	38%
Asia Pacific	15%	38%	46%
North America	17%	42%	40%

Figure 17. How far advanced do you expect your GDPR compliance programme to be at the end of May 2018? By region

Many industry sectors will still be on the GDPR journey after the deadline

Sector	We will still be on the journey	Mostly complete (80-90%)	Complete
Telecommunications	26%	45%	29%
Pharmaceuticals	29%	63%	8%
Technology	30%	43%	27%
Business/Professional Services	31%	54%	15%
Healthcare	33%	53%	14%
Financial Services	34%	51%	15%
GLOBAL AVERAGE	38%	47%	15%
Power & Utilities	40%	48%	13%
Leisure	41%	50%	9%
Retail	41%	50%	9%
Transport/Logistics	42%	49%	9%
Oil & Gas	42%	31%	27%
Manufacturing/Automotive	44%	45%	11%
Charity/Non-Profit	45%	50%	5%
Construction/Engineering	47%	50%	3%
Government	49%	43%	8%
Education	53%	38%	10%
Broadcast/Media	57%	28%	15%

- We will still be on the journey
- Mostly complete (80-90%)
- Complete

Figure 18. How far advanced do you expect your GDPR compliance programme to be at the end of May 2018? By sector

1.3 All About Digital

Key insight: *Making a success of digital is proving tough, but CIOs have a unique and important role in making it happen*

32%
of organisations have an enterprise-wide digital strategy

61%
of organisations that are effective at using digital technologies see higher revenue growth than their competition

ROI
Digital investment should be driven by the ROI at the heart of transformation objectives

Organisations that are making a success of digital are firmly putting the customer at the heart of their strategies, and finding ways to link technology investment to the overall profitability of their transformation goals. They recognise the possibility of new technology innovations and are adept at scaling them up and integrating them into the business.

CIOs who focus on these activities are in a much stronger position to define and articulate the digital strategy and gain the support of the board and wider organisation.

> Digital is everywhere. And so should the CIO be. Few executives have such a complete view of the enterprise, or the wide trust of their peers.
>
> *Bob Miano, president & CEO, Harvey Nash USA*

> CIOs need to go beyond the technology and position digital as a business transformation accelerator and revenue generator.
>
> *Phil Crozier, partner, KPMG in the UK*

Vision and Strategy

Fewer than a third of organisations have a clear digital vision and strategy that is enterprise-wide

Our research shows that almost a third of respondents (32 per cent) report that there is an 'enterprise-wide' digital vision and strategy in place, and a further 28 per cent report it apparent 'within individual business units'. Similarly, almost a third (31 per cent) report it as work in progress but almost one in ten (9 per cent) think that there is no clear digital vision or strategy at all.
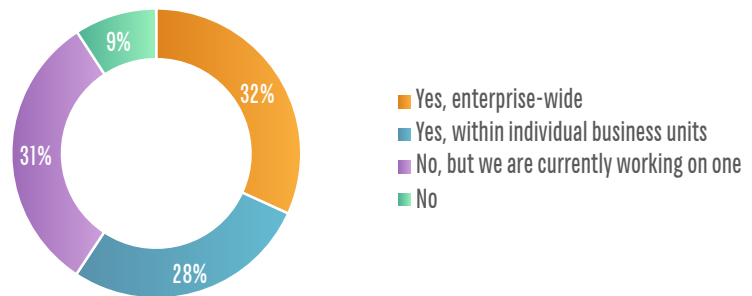
Those IT leaders who expect IT budget increases next year are more likely (36 per cent) than the global average (32 per cent) to have an enterprise-wide vision and strategy.

- Yes, enterprise-wide
- Yes, within individual business units
- No, but we are currently working on one
- No

Figure 19. Does your organisation have a clear digital business vision and strategy?

Big budgets allow wider digital strategy and vision

Our research shows that IT budget matters when it comes to delivering a clear digital strategy across the enterprise. Almost half (46 per cent) of organisations with budgets over $250m have one, compared to fewer than a third of their smaller counterparts. In fact, the research responses when cross-tabulated by IT budget show quite a clear life-cycle for digital strategy. Smaller organisations do not appear to have their strategy well-defined from the outset, and strategy seeps outwards and matures from business units to the enterprise as budgets and understanding increase.

	Across the enterprise	Within individual business units	Work in progress	No
Less than $50m	30%	26%	33%	10%
$50m – $250m	30%	32%	32%	6%
More than $250m	46%	27%	21%	6%

Figure 20. Does your organisation have a clear digital business vision and strategy? By IT budget

What is disrupting your industry?

Technology start-ups are trying to heavily disrupt the logistics market. We do not see these new companies as a threat, but instead as an opportunity to learn. We are closely monitoring their activities and are looking for possibilities to work or cooperate with them.

Markus Sontheimer,
CIO, Deutsche Bahn Schenker, Germany

Like all tech or tech-focused companies, the need for talent is a "disruptive" force. Our solution is twofold: One is investment in the Chicago tech community to help get and keep people here versus going to the coasts. The other is to make our candidate pool as diverse as possible – looking for mothers returning to the workforce, supporting minority and returning veterans, coding bootcamps, and offering apprenticeships.

John Higginson,
Chief Technology Officer, Enova International, US

Artificial intelligence, biometrics and potentially longer-term, distributed ledger technologies (DLT) are just some of the technologies transforming the travel industry. There isn't one way to address disruption and innovation. So we are engaging start-ups, scale-ups and other disruptors through the Qantas Group Avro Accelerator program. Innovation and change need to be an integral part of our modus operandi.

Claudine Ogilvie,
CIO, Jetstar Airways, Australia

Organisations are less confident this year that their digital strategy is truly enterprise-wide

Last year's research indicated that enterprise-wide strategies were growing year on year. This year's results show a hiccup, with 32 per cent of respondents reporting them compared to 41 per cent last year. There was, however, a corresponding increase in clear digital strategy being within individual business units. Perhaps our research reflects that there has been a reassessment of digital as organisations mature in its use. In such a fast-moving environment what might have felt like an enterprise-wide strategy may, in retrospect, not be.

Yes, enterprise-wide
- 27% (2015)
- 35% (2016)
- 41% (2017)
- 32% (2018)

Yes, within individual business units
- 26% (2015)
- 24% (2016)
- 22% (2017)
- 28% (2018)

No, but we are currently working on one
- 31% (2015)
- 29% (2016)
- 27% (2017)
- 31% (2018)

No
- 16% (2015)
- 13% (2016)
- 10% (2017)
- 9% (2018)

Legend: 2015, 2016, 2017, 2018
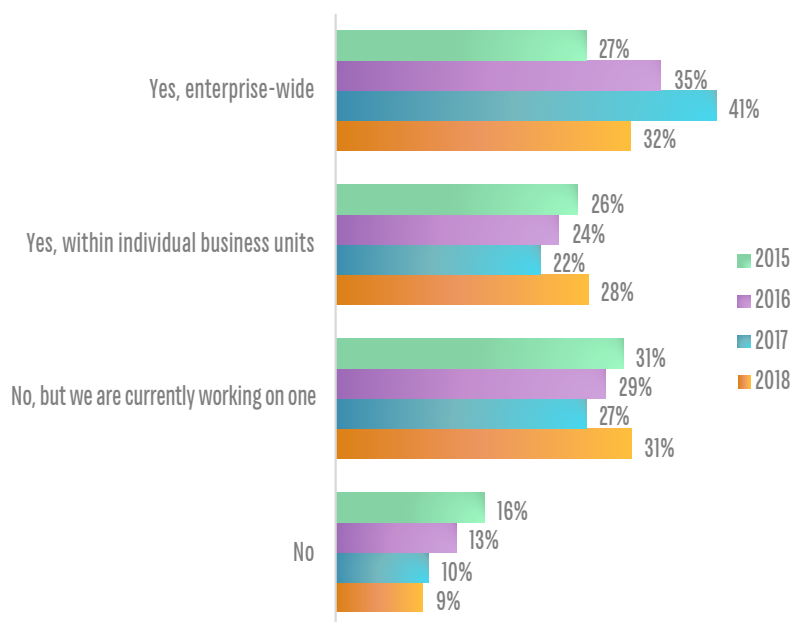
Figure 21. Does your organisation have a clear digital business vision and strategy? 2015–2018

CDOs are enabling the bigger picture for digital strategy

Fifty per cent of organisations with a dedicated CDO and 41 per cent of those with an acting CDO believe they have a clear and pervasive digital strategy 'enterprise-wide', compared with only 21 per cent of organisations without.

Yes, enterprise-wide
- 50% (Yes, Dedicated CDO)
- 41% (Yes, Acting CDO)
- 21% (No CDO)

Yes, within individual business units
- 30% (Yes, Dedicated CDO)
- 28% (Yes, Acting CDO)
- 27% (No CDO)

No, but we are currently working on one
- 18% (Yes, Dedicated CDO)
- 27% (Yes, Acting CDO)
- 38% (No CDO)

No
- 3% (Yes, Dedicated CDO)
- 4% (Yes, Acting CDO)
- 15% (No CDO)

Legend: Yes, Dedicated CDO; Yes, Acting CDO; No CDO

Figure 22. Does your organisation have a clear digital business vision and strategy? By CDO role

Education sector is unclear on how digital can be best used to support its business objectives

Unsurprisingly, the Technology sector is leading the way with 47 per cent having a clear enterprise-wide digital vision and business strategy. The Retail sector that has arguably borne the brunt of disruption through the stellar increase in digital channels is significantly under the global average when it comes to definitive digital strategy.

Sector	No	No, but we are currently working on one	Yes, within individual business units	Yes, enterprise-wide
Technology	4%	21%	28%	47%
Telecommunications	6%	21%	29%	43%
Healthcare	5%	35%	22%	39%
Power & Utilities	9%	33%	19%	38%
Business/Professional Services	10%	28%	26%	36%
Broadcast/Media	11%	18%	35%	35%
Financial Services	6%	28%	34%	32%
GLOBAL AVERAGE	9%	32%	27%	32%
Government	11%	37%	22%	29%
Manufacturing/Automotive	16%	38%	21%	26%
Transport/Logistics	8%	41%	27%	24%
Construction/Engineering	10%	43%	23%	23%
Charity/Non-Profit	13%	39%	25%	23%
Retail	7%	43%	27%	23%
Pharmaceuticals	21%	28%	28%	23%
Oil & Gas	14%	34%	31%	22%
Leisure	9%	30%	40%	21%
Education	17%	40%	26%	17%

■ No ■ No, but we are currently working on one ■ Yes, within individual business units ■ Yes, enterprise-wide

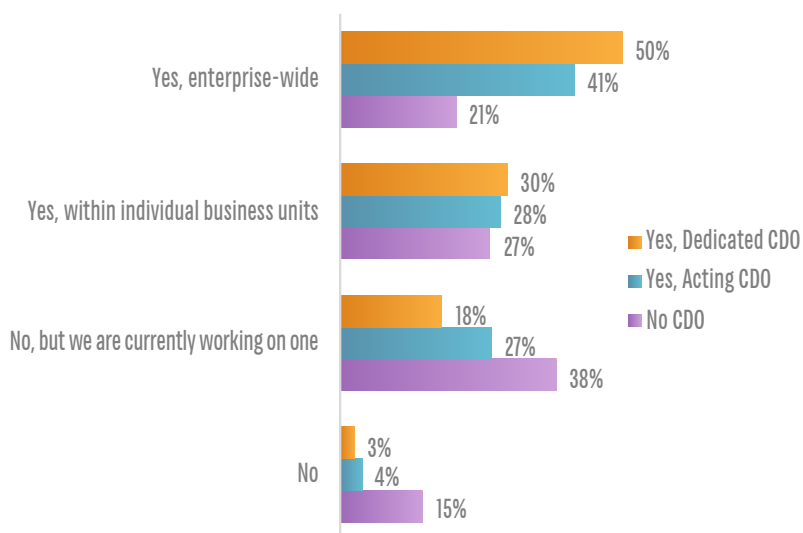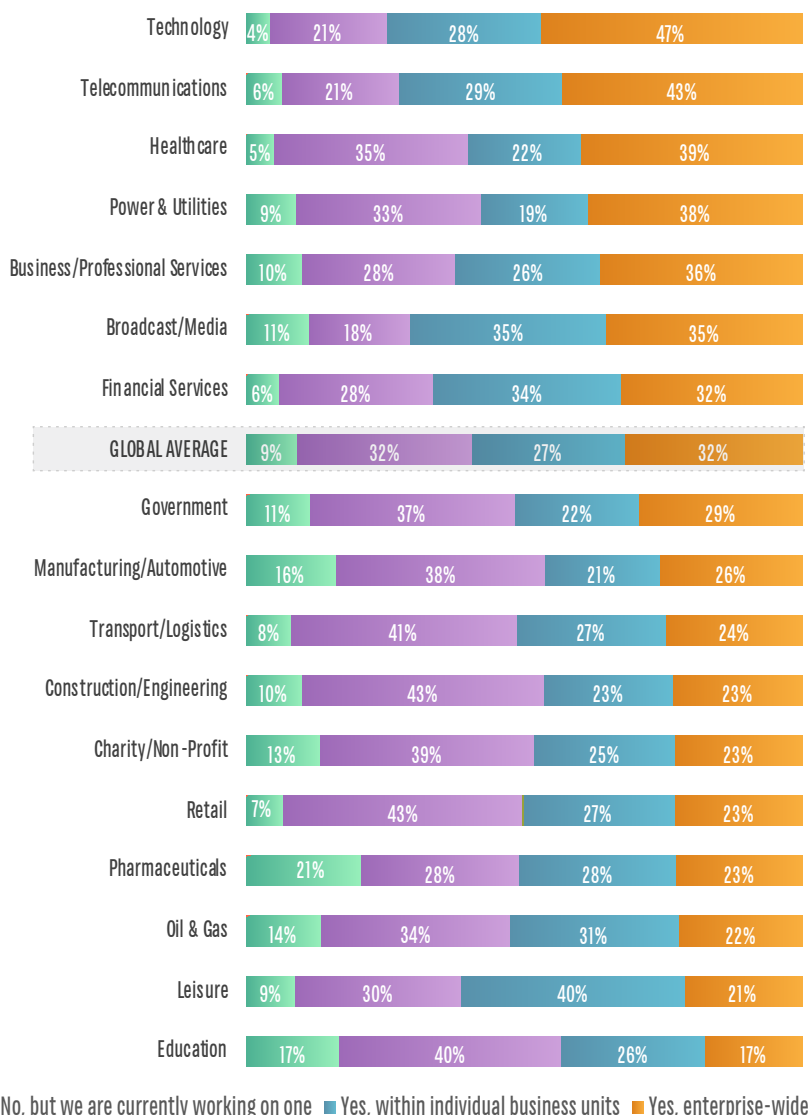Figure 23. Does your organisation have a clear digital business vision and strategy? By sector

Digital could be more effectively used to support business strategy by more than three-quarters of IT leaders

We asked IT leaders how effectively their organisations were using digital to advance business strategy. Only a small proportion (22 per cent) reported that it was being used 'very' or 'extremely' effectively. The majority (42 per cent) reported that digital was being used only 'moderately effectively' and 36 per cent reported that digital was only 'slightly' or 'not at all effectively' supporting business strategy.

Executing a digital vision is tough, especially when technologies and business models are evolving at the same time.

7% — Not effective
29% — Slightly effective
42% — Moderately effective
19% — Very effective
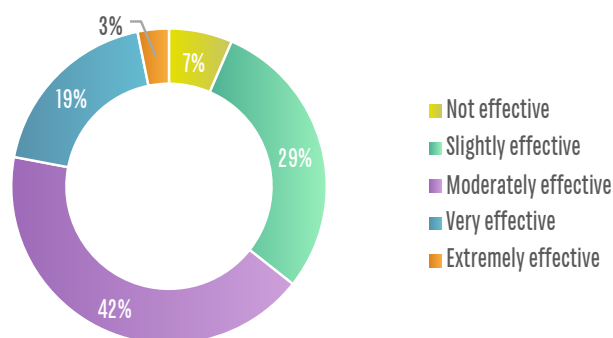3% — Extremely effective

Figure 24. Overall, how effective has your organisation been in using digital technologies to advance its business strategy?

Organisations want customers to have a good experience

Above all, the focus of organisations' digital strategies is about the customer: 'enhancing the customer experience' and 'attracting new customers' are the top two priorities. That said, both priorities are focused on the front-end sales/marketing/UX aspect of digital. Organisations that reported a rise in profit greater than that of competitors were much more likely to target 'deeper' more operational priorities like 'revenue growth from existing customers' (which was the second-highest priority, just behind 'enhancing the customer experience').

Last year we discussed how digital is moving quickly into the heart of organisations, and over time we expect other factors, such as 'growing revenue from existing customers' and 'developing new products and services', to grow in importance as organisations get to grips with digital.

Enhancing the customer experience	60%
Attracting new customers	55%
Improving business process efficiency	54%
Growing revenue from existing customers	52%
Developing new products and services	49%
Developing new delivery/distribution methods	27%
Promoting employee collaboration	22%

Figure 25. Which are the top three most important goals when prioritising digital technology initiatives in your organisation?

Innovation & Experimentation

Organisations support fostering an experimental and innovative culture

We asked our research contributors about the importance of having an innovative experimental culture to support their digital strategy. Overall, four in ten (38 per cent) organisations see culture as an essential part of their digital strategy, and that if they don't have the right people and cultural values, their digital plans will fail. The importance of culture increases with the size of organisation – half of large organisations (those with budgets over $250m) reported that it was essential.

- Very important – our digital strategy would fail without it
- Quite important – our digital strategy would be affected, but not fail
- Not important – our digital strategy does not require an innovative culture
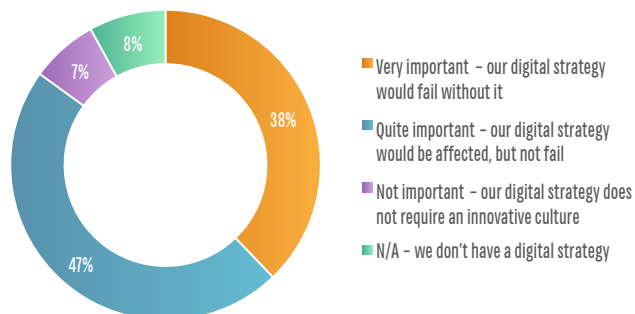- N/A – we don't have a digital strategy

Figure 26. How important is it to have an innovative, experimental culture in your organisation to ensure its digital strategy is a success?

Customer-centric and digital leaders have an emphasis on an innovative, experimental culture

When it comes to digital leaders (organisations that are 'very effective' or 'extremely effective' at using digital to support business strategy) and customer-centric leaders (organisations that are 'very' or 'extremely' effective at creating engaging customer experiences) the importance of culture is even more marked.

Fifty-nine per cent of digital leaders and almost half of customer-centric leaders believe their digital strategy would fail without the appropriate culture in place. Technology and strategy alone are not enough to achieve a digital vision; IT leaders need to pay just as much attention to having the right people and culture to drive through innovation.

Very important – our digital strategy would fail without it: 49%, 59%, 32%

Quite important – our digital strategy would be affected, but not fail: 43%, 35%, 51%

Not important – our digital strategy does not require an innovative culture: 5%, 4%, 8%

N/A – we don't have a digital strategy: 3%, 2%, 10%

- Customer-centric leaders
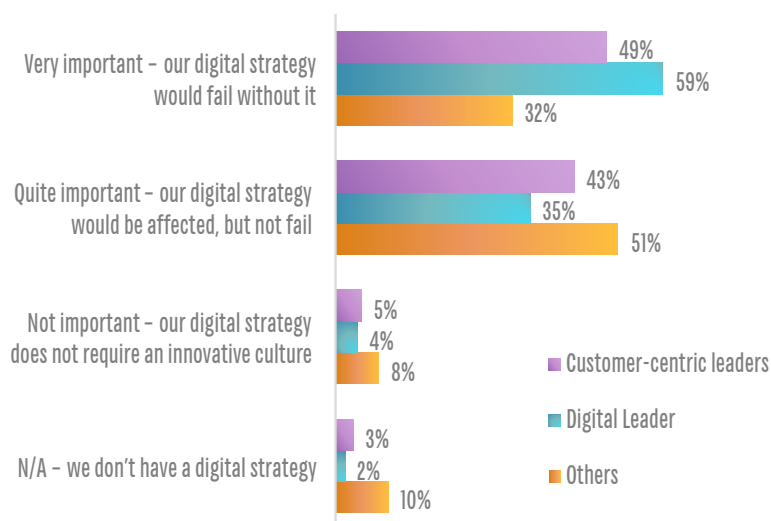- Digital Leader
- Others

Figure 27. How important is it to have an innovative, experimental culture in your organisation to ensure its digital strategy is a success? Customer-centric leaders, digital leaders

Low confidence in the effective use of digital to address common business goals

When looking at how effective the digital strategy is at achieving specific objectives, fewer than three in ten organisations are 'very effective' or 'extremely effective'. Whilst it's relatively good news that the top priority for digital strategies – 'enhancing the customer experience' – is also one of the top areas of effectiveness, it's also worth noting that IT leaders are reporting much less effectiveness at other customer-focused priorities, like 'growing revenue' and 'attracting new customers'.

Digital is a key area for IT to deliver value to the business, but it is also one of the most difficult. IT leaders who are able to outperform in this area can expect increasing influence.

	Not effective	Slightly effective	Moderately effective	Very effective	Extremely effective
Improve business process efficiency	7%	24%	40%	24%	4%
Enhance the customer experience	8%	26%	40%	22%	4%
Develop new products and services	14%	26%	34%	21%	5%
Promote employee collaboration	10%	28%	38%	20%	4%
Grow revenue from existing customers	15%	27%	39%	17%	3%
Attract new customers	13%	29%	38%	16%	3%
Develop new delivery/distribution methods	15%	30%	36%	16%	3%

Figure 28. How effective has your organisation been in using digital technologies to advance the following goals?

The Chief Digital Officer

Half of all organisations identify as having a dedicated or acting CDO

The position of CDO has a mandate to drive the value of digital in a business, across technology and operations. As a relatively new role, it has less legacy and baggage than more traditional roles like the CIO, although many CIOs would argue that they are CDOs in everything but job title.

Half of all IT leaders now report having either a dedicated or acting CDO. Our view is that whilst some of this will have been driven by entirely new CDO appointments, much of it will be coming from existing people in the organisation formally identifying the CDO role within their own remit. It's worth noting that CIOs serving as CDOs dwarf the number of dedicated CDOs by over two to one. Forty-four per cent do not have a CDO and are not indicating that they have plans to change the situation. The size of the IT budget is directly proportional to the likelihood of having a dedicated CDO, with larger organisations much more likely to have one.
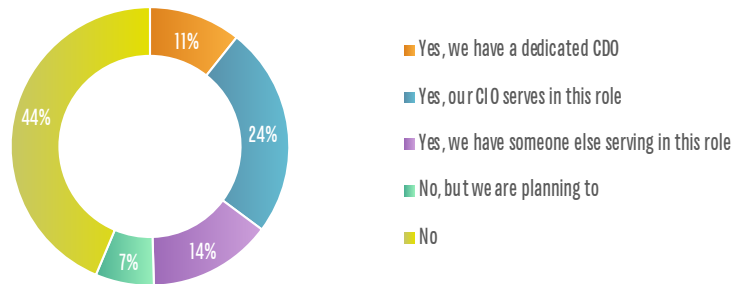

- Yes, we have a dedicated CDO
- Yes, our CIO serves in this role
- Yes, we have someone else serving in this role
- No, but we are planning to
- No

Figure 29. Does your organisation have a Chief Digital Officer or someone serving in that capacity?

Digital leaders are more likely to have appointed an acting or dedicated CDO

Digital leaders (IT leaders whose organisation is 'very effective' or 'extremely effective' at using digital technologies to advance their business strategies) are more likely to have appointed an acting or dedicated CDO, which suggests that the role may be crucial to success.

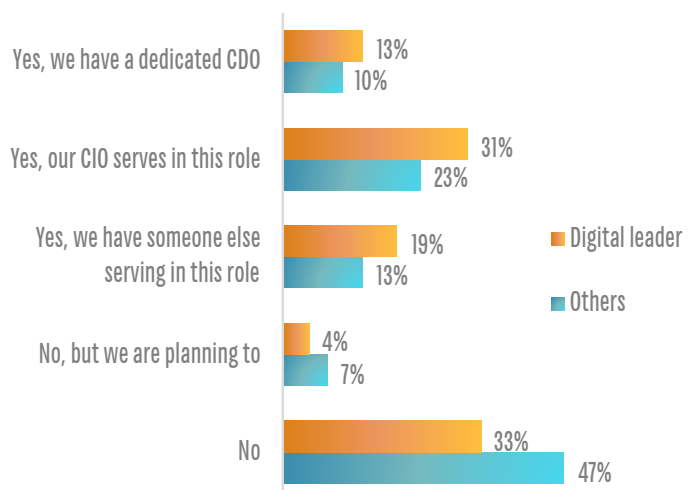|	Digital leader	Others
Yes, we have a dedicated CDO	13%	10%
Yes, our CIO serves in this role	31%	23%
Yes, we have someone else serving in this role	19%	13%
No, but we are planning to	4%	7%
No	33%	47%

Figure 30. Does your organisation have a Chief Digital Officer or someone serving in that capacity? Digital leaders

Organisations with CDOs are more effective in 'digital' competencies

Our research shows that having a dedicated or acting CDO ensures that organisations are better placed to take advantage of digital, both in 'redesigning business processes to take advantage of digital' and 'promoting a vision for digital to transform the business'. By singling out the digital remit formally, whether as a separate role or as a formal additional responsibility for an existing leader, digital transformation has been accelerated and gained the attention and sponsorship of the board. Larger organisations (those with IT budgets more than $250m) are the most likely to have appointed a dedicated or acting CDO, indeed they are 53 per cent more likely than their smaller counterparts (with budgets less than $50m) to have done so.

Promoting a vision of using digital to transform business
- Dedicated CDO: 37%
- Acting CDO: 35%
- No CDO: 20%

Redesigning business processes to take advantage of digital
- Dedicated CDO: 25%
- Acting CDO: 30%
- No CDO: 19%

Legend:
- ■ Dedicated CDO
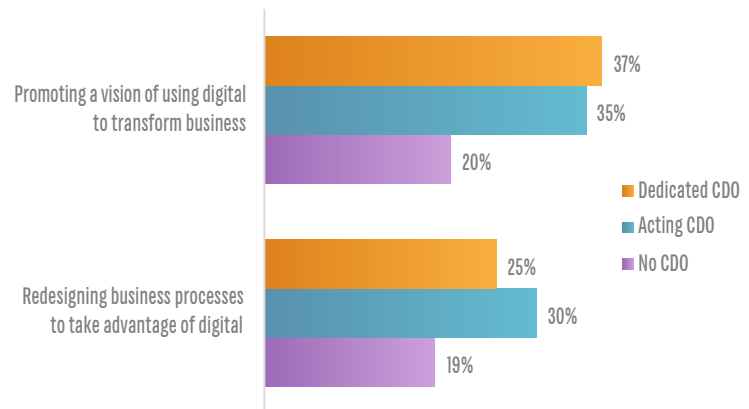- ■ Acting CDO
- ■ No CDO

Figure 31. How effective is your organisation in the following capabilities? Very effective

1.4 Managing Technology

Key insight: *Balancing openness and innovation with proper governance, especially around data privacy and security, is a key battleground*

70%
of organisations are making a significant or moderate investment in cloud

44%
of organisations have at least one tenth of their tech spend controlled outside IT and this is an upward trend

70%
of organisations have a governance model that is only 'moderately' effective, or worse

CIOs have a difficult tight rope to walk. On one side the board is asking them to promote innovation, creativity and an open, experimental culture. On the other the board is asking for due diligence reports on security, data integrity and resilience, as governments and consumers alike become more demanding on personal data.

But there are ways through this quagmire. The CIOs we talk to are getting smarter about governance and are recognising that a one size fits all approach not only doesn't work but may hold their organisation back.

Creativity and governance are not easy bedfellows. But much of the strength of the CIO role will come from balancing the two.
Bridget Gray, MD, Harvey Nash Australia

Protecting the business from a cyber attack has jumped further up the boardroom agenda than any other item and IT leaders are being encouraged to make their defences the best that they can be
Akhilesh Tuteja, partner, KPMG in India

Investment & Emerging Technologies

Cloud technology business cases appear to be stacking up

Continuing a theme from last year's report we questioned our respondents about their investment plans for key technology initiatives. Last year we tracked how cloud investment continues to grow, and this year we see no let up, with almost three-quarters of IT leaders reporting moderate or significant investment. Cloud has now reached a level of maturity, and broadly the IT leaders we speak with are no longer concerned by security or resilience. Another factor that has driven cloud usage has been business functions directly investing in and managing IT. Investing in mobile follows a similar pattern to cloud and is increasingly seen as a natural part of the IT landscape.

Looking at robotic process automation, virtual reality and blockchain, at least half of our IT leaders have no plans to invest. Whilst all three have grabbed the headlines recently, their application at this stage in their maturity is more sector-specific, for example: 14 per cent of financial services have a moderate or significant investment in blockchain technology compared to the global average of 9 per cent. IT leaders appear to be focusing on other areas of investment unless specific-use cases have been identified.

Investment	Cloud	Mobile	Artificial Intelligence	On-demand	Internet of Things	Robotic Process Automation	Virtual Reality	Blockchain
Significant	34%	20%	7%	6%	6%	4%	2%	2%
Moderate	36%	37%	17%	17%	15%	13%	8%	7%
Minimal	18%	25%	18%	19%	19%	15%	15%	11%
Planning	8%	11%	29%	21%	20%	18%	17%	21%
No plans	4%	8%	29%	37%	40%	50%	59%	59%

Figure 32. How would you characterise your investment in the following technologies?

How pivotal is the customer to your organisation?

It's critical to always view our technology through our customers' eyes. Everything from testing on the devices they're likely to use, to UX testing our apps with everyday consumers to make sure it's intuitive. In every industry a competitor is just a click away so being attuned to your customers is the only way to survive and grow.

John Higginson,
Chief Technology Officer, Enova International, US

At Sage our customers are at the centre of everything we do. They are the heroes of our economy and we have to ensure that they are successful. Engaging with our customers is key and their feedback is our lifeblood.

Kevin Robins,
EVP & CIO, Sage, UK

At Jetstar, we pride ourselves in making the world more accessible to our customers. Technology underpins the customer experience but also our ability to provide low cost-fares, through innovation, intelligent technology and integrating technology into the fabric of our business. Being customer centric is more than just a strategy, it's also a way of working and thinking.

Claudine Ogilvie,
CIO, Jetstar Airways, Australia

Digital leaders are more likely to be significantly investing in technology than others

Digital leaders are more likely to be investing in technologies across the board compared to others and often vastly so. More than half (52 per cent) have invested in cloud compared to less than a third (29 per cent) of others. Seventeen per cent of digital leaders have significantly invested in artificial intelligence (AI) compared to only 5 per cent of others.

Investment and deployment of cognitive and AI technologies are accelerating. Across all the technology measured, we are seeing higher adoption rates than we have in the past. But there is still a lot of opportunity and value that IT leaders could potentially drive, by accelerating technology adoption. But unless they fix the foundations, and modify that foundation infrastructure, their ability to really adopt technologies such as artificial intelligence and automation will be constrained.
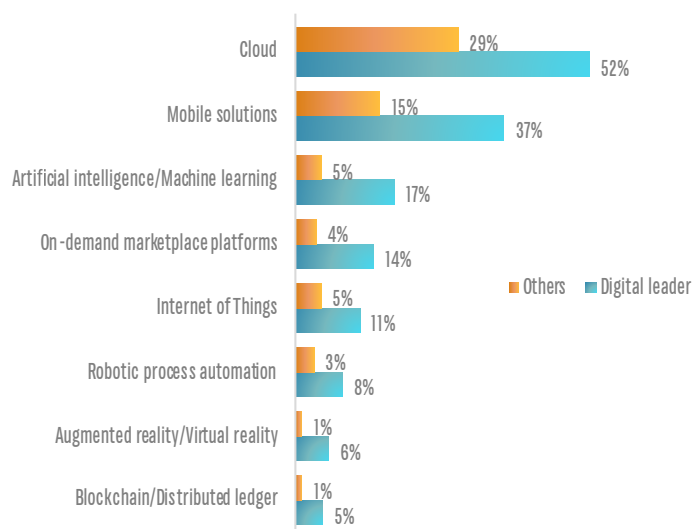
Figure 33. How would you characterise your investment in the following technologies? Significant

Technology	Others	Digital leader
Cloud	29%	52%
Mobile solutions	15%	37%
Artificial intelligence/Machine learning	5%	17%
On-demand marketplace platforms	4%	14%
Internet of Things	5%	11%
Robotic process automation	3%	8%
Augmented reality/Virtual reality	1%	6%
Blockchain/Distributed ledger	1%	5%

Few plans to replace lawyers with robots

Robotic process automation technology is designed to automate rules-based, repetitive tasks performed by humans, with the potential to cut labour costs, increase accuracy and improve compliance with relatively modest investment compared with other major software deployments. Given the media hype on the rise of the robots, we questioned our IT leaders about their plans to implement intelligent automation within different areas of their organisation. More than two-thirds (69 per cent) have implemented, or expect to implement, intelligent automation within IT and 60 per cent within customer support functions. The legal department is the only area where plans to invest are limited, with 80 per cent of IT leaders saying they have no plans to implement intelligent automation.

It is unsurprising that intelligent automation investment is targeted close to home, within the IT team itself. But it is also showing growing prevalence in other functions, less directly under the control of the IT leader, such as Customer Support and Finance.

Spending more on new technologies, in itself, does not improve performance: it also requires the ability to incorporate new technologies into existing or redesigned business processes. Companies that are effective at redesigning business processes are far more likely to report success in their digital transformation efforts. There is no point automating a bad process, it will still be a bad process. The companies that are seeing the benefits of digital technology are those that are incorporating it in conjunction with business process redesign.
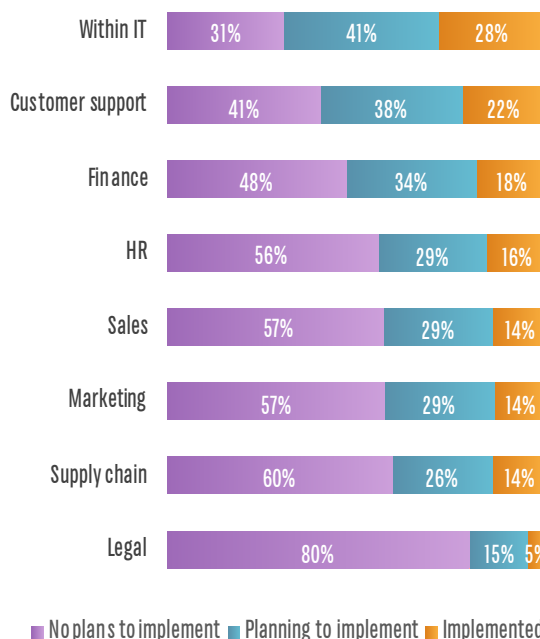
Function	No plans to implement	Planning to implement	Implemented
Within IT	31%	41%	28%
Customer support	41%	38%	22%
Finance	48%	34%	18%
HR	56%	29%	16%
Sales	57%	29%	14%
Marketing	57%	29%	14%
Supply chain	60%	26%	14%
Legal	80%	15%	5%

Figure 34. Are you planning to or have you implemented intelligent automation in any of the following functions in your organisation?

Cyber Security

Boards acknowledge the importance of an effective cyber security strategy

Following major viruses such as WannaCry and Petya striking across the world, fraud and cyber security risks continue to cause concern. With a high-profile attack having the ability to damage organisations in such a breadth of fundamental ways, our research shows how much further up the boardroom agenda cyber security has been pushed. Thankfully, the majority of our respondents (68 per cent) report that their boards are supporting them in their cyber security strategies.

IT leaders in the Financial Services sector are receiving the highest levels of support from their boards, as are their peers in the Leisure industry. The Oil & Gas sector also has strong board support around cyber security, perhaps unsurprising given the international nature of the sector and how energy networks are often sourced and distributed across different countries.
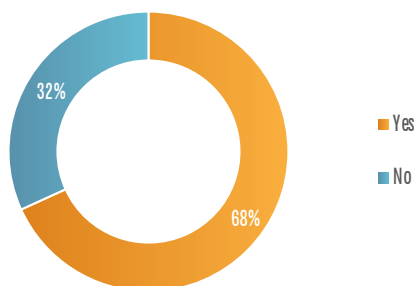

Figure 35. Do you believe your board is doing enough to support your organisation's cyber security strategy?

IT leaders feeling more threatened by everyone except the competition

Our research suggests that threats from foreign powers are not top of the list when it comes to concerns over cyber security. For the third year running, and with a 9 per cent jump up, the threat of organised cyber crime remains the primary concern of our IT leaders.
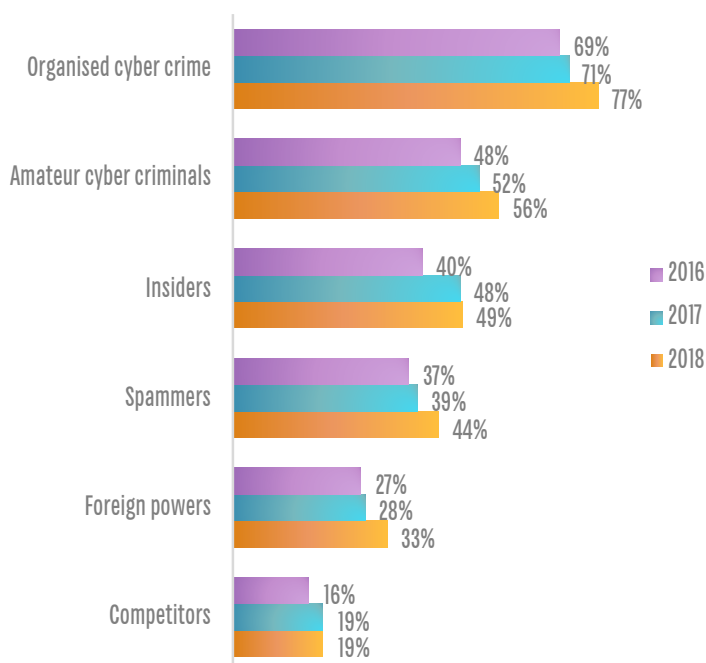

Figure 36. Which type of threats give you most cause for concern in terms of a cyber attack? 2016–2018

IT leaders confident about their ability to defend a cyber attack

Our research clearly shows that a large majority of IT leaders feel 'well positioned to identify and deal with any imminent cyber attack'. More than one in five (22 per cent) are confident that 'all reasonable risks are covered' and almost two-thirds (64 per cent) believe 'most reasonable risks are covered', despite exposure in some specific areas. Worryingly, 14 per cent report being insufficiently prepared and 'exposed to a cyber attack in multiple areas'.

14%

22%

64%

■ Not well – we are exposed in multiple areas

■ Quite well – most reasonable risks are covered, although we are exposed in some specific areas

■ Very well positioned – we are confident that all reasonable risks are covered
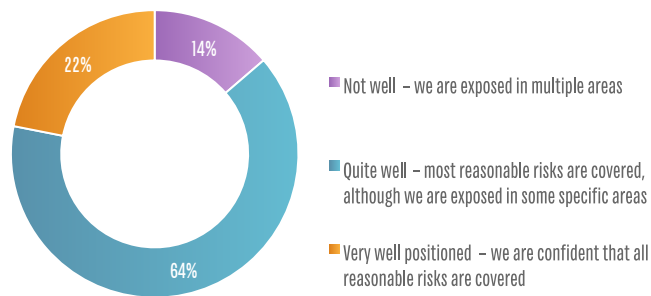
Figure 37. To what extent do you feel your organisation is positioned to identify and deal with current and near future cyber attacks?

The previously downward trend in IT leaders feeling well prepared for cyber attacks has flattened out

Past years' research showed a downward trend in IT leaders feeling well prepared for a cyber attack as awareness of the potential threats grew. This year that trend appears to be flattening out, with 22 per cent of respondents claiming to be 'well prepared' compared to a year-on-year low of 21 per cent in 2017.

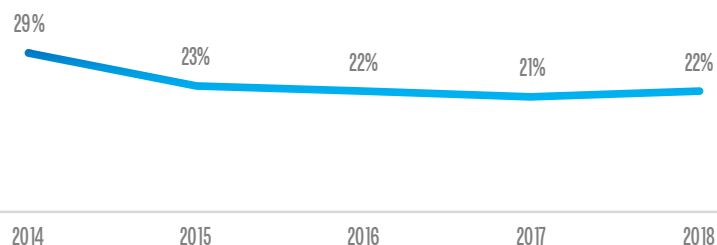29% 23% 22% 21% 22%

2014   2015   2016   2017   2018

Figure 38. To what extent do you feel your organisation is positioned to identify and deal with current and near future cyber attacks? Very well prepared

Education and Oil & Gas are the sectors least confident about cyber security

Our research looks in more detail at those IT leaders that are not feeling well prepared for a cyber attack and are exposed in multiple areas. IT leaders in the Education sector feel most exposed, possibly due to their extended, highly educated and less governable user population of students. A significant proportion of respondents from the Oil & Gas sector feel anxious about their ability to defend against an attack despite being one of the most well supported by the board in their endeavours. This sense of vulnerability is possibly fuelled by their interconnectivity to smaller third-party networks which may create an area of weakness that they feel could cause knock-on effects for their organisations. The Pharmaceutical industry (4 per cent) and IT leaders from the Telecommunications sector (6 per cent) are the least likely to report not being well prepared.

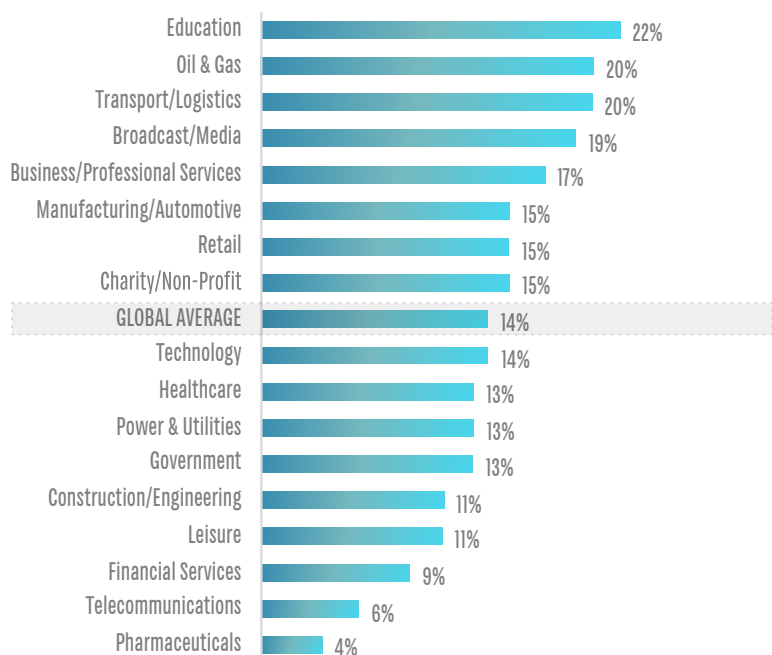| Sector	Value
Education	22%
Oil & Gas	20%
Transport/Logistics	20%
Broadcast/Media	19%
Business/Professional Services	17%
Manufacturing/Automotive	15%
Retail	15%
Charity/Non-Profit	15%
GLOBAL AVERAGE	14%
Technology	14%
Healthcare	13%
Power & Utilities	13%
Government	13%
Construction/Engineering	11%
Leisure	11%
Financial Services	9%
Telecommunications	6%
Pharmaceuticals	4%

Figure 39. To what extent do you feel your organisation is positioned to identify and deal with cyber attacks? Not well prepared, by sector

Frequency of major attacks appearing to slow

Our research shows that the upward trend for organisations being subjected to a major cyber attack appears to be slowing. This year a third of our IT leaders (33 per cent) reported this as occurring within the last two years – only a small rise from 32 per cent in 2017.

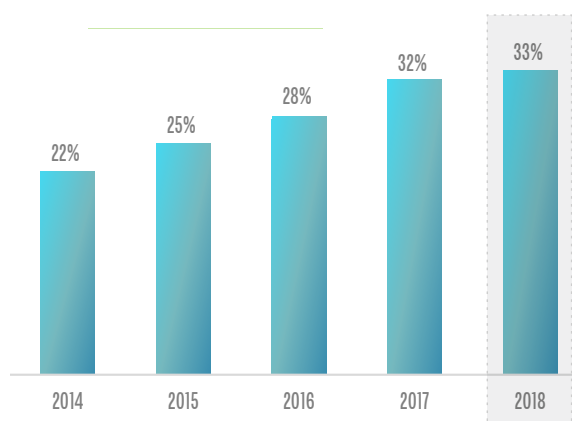| 2014	2015	2016	2017	2018
22%	25%	28%	32%	33%

Figure 40. Has your organisation been subjected to any major IT security or cyber attacks in the last two years? Yes, 2014–2018

More than half of IT leaders in Education have experienced a major attack in the last two years

Several sectors appear more vulnerable to serious cyber attack than others. Fifty-four per cent of respondents in the Education sector reported a serious breach of cyber security in the last two years, the Manufacturing sector reported 43 per cent and the Construction industry 41 per cent.

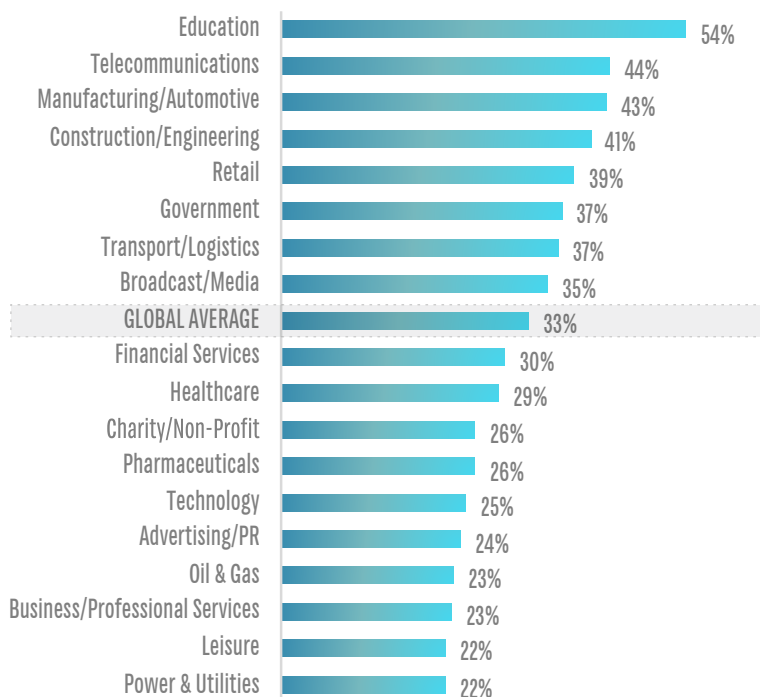| Sector	
Education	54%
Telecommunications	44%
Manufacturing/Automotive	43%
Construction/Engineering	41%
Retail	39%
Government	37%
Transport/Logistics	37%
Broadcast/Media	35%
GLOBAL AVERAGE	33%
Financial Services	30%
Healthcare	29%
Charity/Non-Profit	26%
Pharmaceuticals	26%
Technology	25%
Advertising/PR	24%
Oil & Gas	23%
Business/Professional Services	23%
Leisure	22%
Power & Utilities	22%

Figure 41. Has your organisation been subjected to any major IT security or cyber attacks in the last two years? Yes, by sector

Shadow IT

Shadow IT is the new normal for two-thirds of IT leaders

This year's research shows that shadow IT continues its pervasive growth, with two-thirds (67 per cent) of all respondents having 'more than 5 per cent' of their IT spend managed outside their department. Cloud has highlighted the new ways that IT leaders need to think around how the technology and business functions work effectively together. Employees increasingly want consumer-focused solutions that solve their specific business needs, and the upward trend for at least some proportion of shadow IT within most organisations is perhaps both necessary and required to be successful?

Legend:
- Less than 5%
- 5-10%
- 11-25%
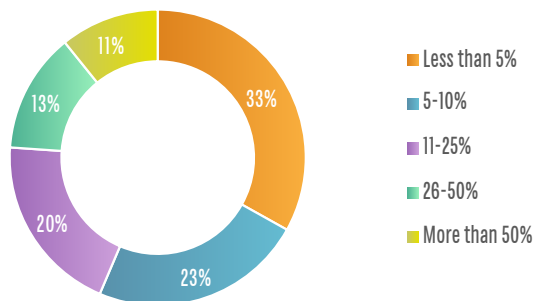- 26-50%
- More than 50%

Values: 33%, 23%, 20%, 13%, 11%

Figure 42. What proportion of the overall spend on IT is controlled by/managed outside the IT organisation/department?

Upward trend for shadow IT continues for fourth year running

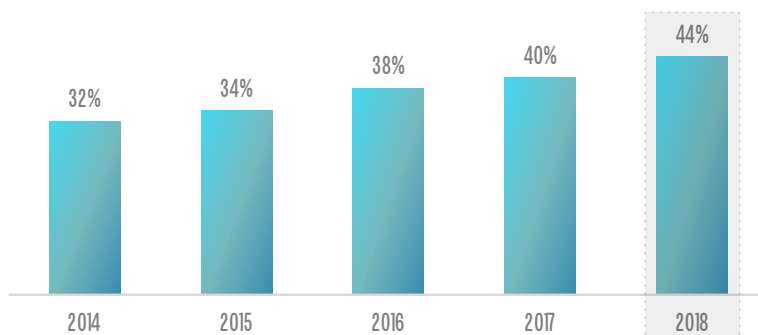| 2014	2015	2016	2017	2018
32%	34%	38%	40%	44%

Figure 43. What proportion of the overall spend on IT is controlled by/managed outside the IT organisation/department? More than 10%, 2014–2018

1.5 People, Skills & Sourcing

Key insight: *As the technology rapidly expands from enterprise to digital, and the role of IT evolves, the skills shortage grows. IT leaders need to look beyond the usual suspects to fill the talent pipeline*

65%
reporting skills shortages

67%
using automation to remove the need for additional headcount

21%
only one fifth of the tech team are women: an untapped resource

CIOs plan to grow their teams in the coming year, but a yawning skills gap is emerging where two thirds of IT strategies are being held back by lack of skills.

Smart leaders are embracing this 'new normal' and increasingly looking at ways around it. They are creating a core permanent team focused on innovation, and supplementing this with a wide range of non-employed labour. Flexible labour and outsourcing are increasingly being used as skills enhancers rather than cost savers; and many CIOs are experimenting very successfully with automation, especially in testing, service desk and development.

But there is an underlying challenge. The technology industry is too focused on formal technical experience, and technical experience is too often the focus of men, rather than women.

> **The skills gap is a long-term issue for the sector. Successful IT leaders recognise an IT strategy isn't complete unless there are the people to make it happen.**
> *Åza Skoog, MD, Harvey Nash Nordics*

> **Our sector needs to work harder at bringing in people from the outside. Technology teams are stronger, more creative and more responsive when they reflect customers' diversity.**
> *Gernot Gutjahr, partner, KPMG in Germany*

The Skills Gap

IT leaders expect headcount to increase

After two years of flatlining, almost half of this year's respondents (47 per cent) expect their headcount to increase in the next 12 months, up from 44 per cent last year.
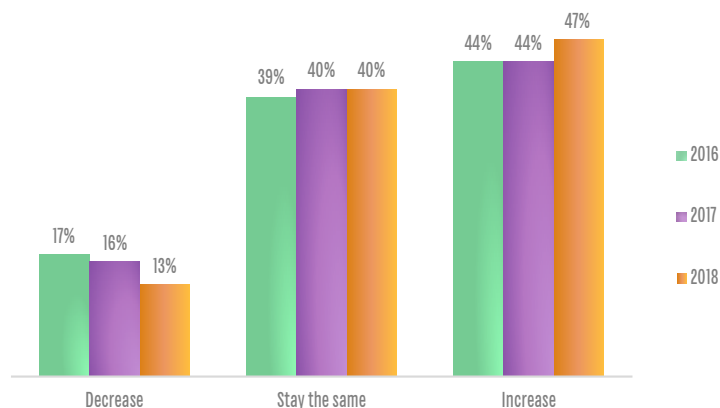
	Decrease	Stay the same	Increase
2016	17%	39%	44%
2017	16%	40%	44%
2018	13%	40%	47%

Figure 44. Over the next year how do you expect your IT/Technology headcount to change? 2017–2018

Almost two-thirds of organisations are hampered by a skills shortage

This almost guarantees that IT leaders can expect to suffer ever more prevalent skills shortages. This year almost two-thirds (65 per cent) of our respondents report that 'a lack of people with the right skills is preventing their organisation from keeping up with the pace of change'. This is an upward trend that has been in evidence since 2011. Larger organisations, with budgets over $250m, are slightly less likely to be experiencing a shortage (60 per cent) than the global average.
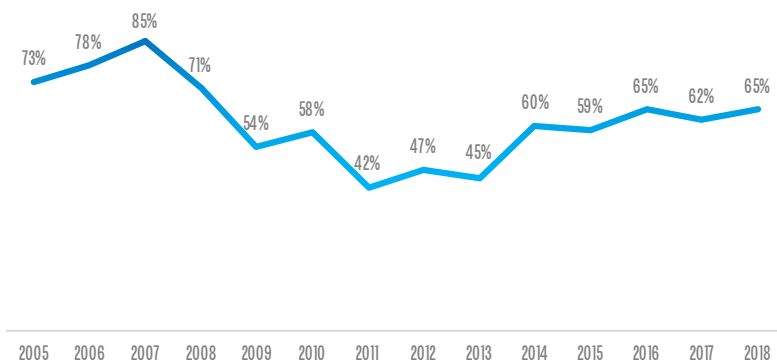
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
73%	78%	85%	71%	54%	58%	42%	47%	45%	60%	59%	65%	62%	65%

Figure 45. Does a skills shortage prevent your organisation from keeping up with the pace of change? Yes

What makes a great leader?

A good leader is a person able to change the organisation. A great leader is a person able to change the mindset of people.

Vivien Resdat,
*Director Central IT,
Röchling Automotive
SE & Co. KG, Germany*

Great leaders can articulate the vision and translate it into the reality of their team. Influence is more important than authority, and the ability to truly listen, inspire and empower people to a common goal.

Claudine Ogilvie,
*CIO, Jetstar Airways,
Australia*

Great leaders ensure that they stand at the back in times of success but stand at the front in times of trouble. How a leader behaves sets the tone and spirit of the organisation.

Kevin Robins,
EVP & CIO, Sage, UK

IT leaders continue to think creatively about how to plug the skills gap

Using contractors and external consultants remains the most popular way to fill the skills gap, with more than half (51 per cent) of IT leaders using them to 'some extent' and more than a third (34 per cent) using them 'to a great extent'. However, almost half of our respondents (48 per cent) are looking to 'use automation to remove the need for additional headcount' to 'some extent' and almost two in ten (19 per cent) are using automation to achieve this to a 'great extent'.

The Technology, Telecommunications and Financial Service sectors are leading the charge into automation where their scale can justify the investment. As automation continues to improve, especially around automated testing, support and software development, we can expect more sectors to invest.

	Little/no extent	Some extent	Great extent
Using contractors/consultants to fill the gap	15%	51%	34%
Using outsourcing or offshoring to supplement the internal team	30%	45%	26%
Using automation to remove the need for headcount	33%	48%	19%
Apprenticeships	50%	40%	10%
Proactively targeting under-represented groups	57%	34%	9%
Cross-training non-technology people into technology roles	50%	42%	7%
Acquiring small companies with needed expertise	79%	16%	5%

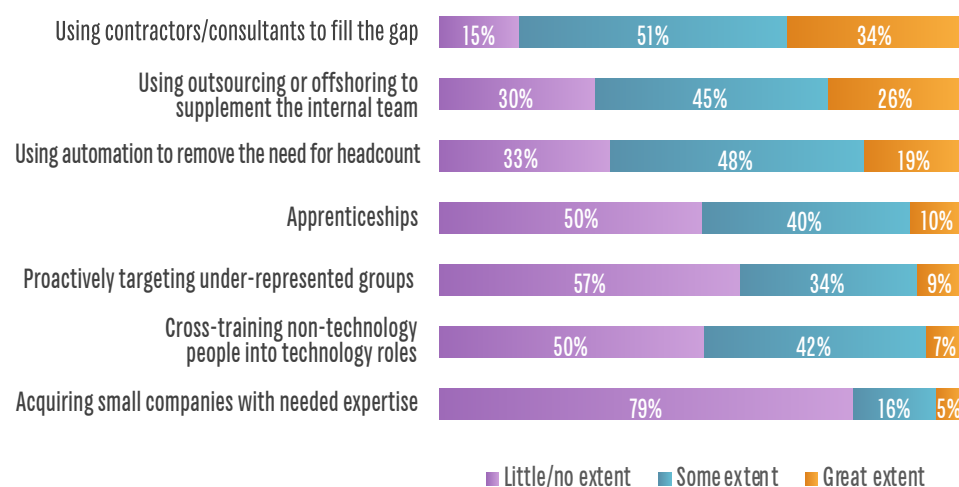■ Little/no extent   ■ Some extent   ■ Great extent

Figure 46. To what extent are you using the following methods to find the right skills?

Situations vacant: analytics, architecture and security specialists

For the fourth year running 'big data and analytics' expertise remains the number one skill in short supply, with almost half (46 per cent) of respondents placing it first on their list. The skill with the biggest year-on-year change is 'security and resilience' with a dramatic 25 per cent increase, from 28 per cent reporting a skills shortage in 2017, to 35 per cent this year. This echoes the acceleration in importance for cyber strategy that we see through other areas of this year's research. The demand for 'business analysis' appears to have tailed off, falling from second place and 34 per cent last year to fifth place and 31 per cent in 2018.

The demand for big data and analytic skills remains a real hot-spot for all shapes and sizes of organisation, and demand for architecture skills, whether technical or enterprise, continues to increase. Larger organisations would appear to be seeking significantly more artificial intelligence experts than smaller ones, with more than half (56 per cent) of respondents with IT budgets over $250m listing it as a priority in comparison to 45 per cent of respondents with budgets under $50m. A similar picture is drawn with automation/robotics experts. Both technologies are currently early in their development and will attract investment from the organisations with the scale, and budgets, to experiment.

Smaller organisations are more likely to struggle to fill traditional IT roles such as business analysis, project management and development. Sometimes smaller organisations lack the structure and career paths to attract the right talent into traditional roles.
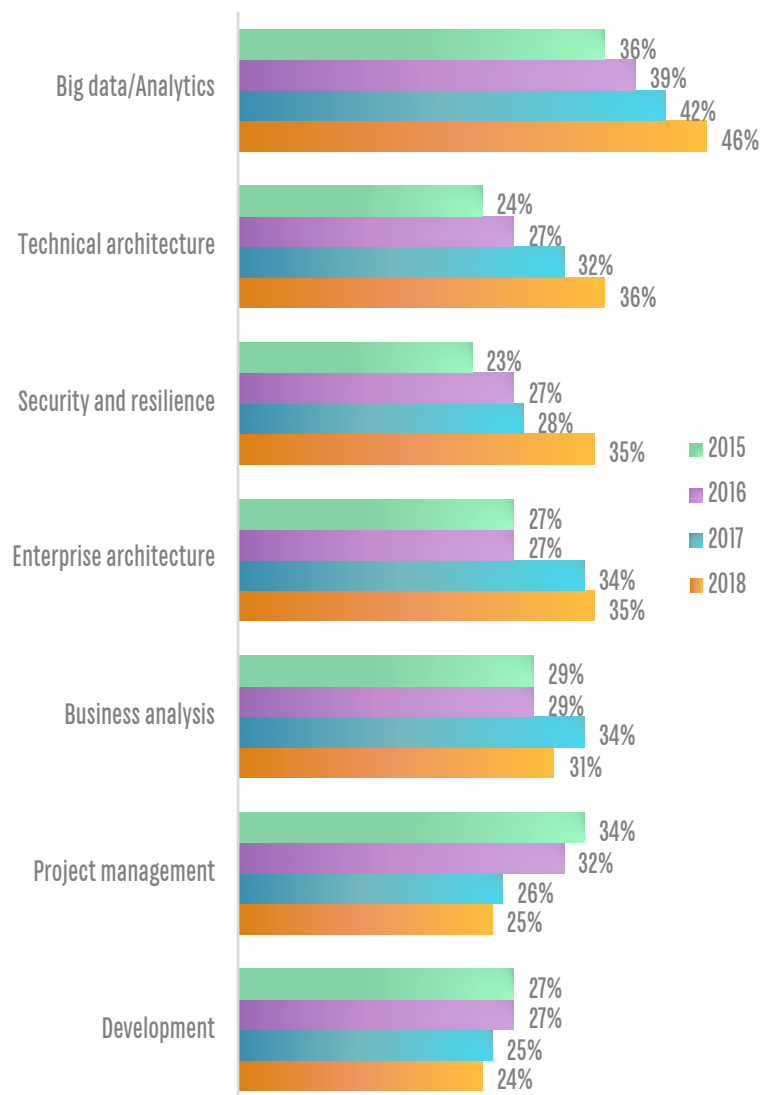
Figure 47. Which functions do you feel suffer from a skills shortage? 2015–2018

Flexible Labour, Outsourcing & Offshoring

Bigger budgets mean more flexible labour

The use of flexible or contingent labour is directly proportional to the size of our IT leaders' budgets. Eighteen per cent of large organisations with budgets over $250m are using more than 50 per cent flexible labour within their IT departments compared to only 11 per cent of their peers with budgets under $50m.
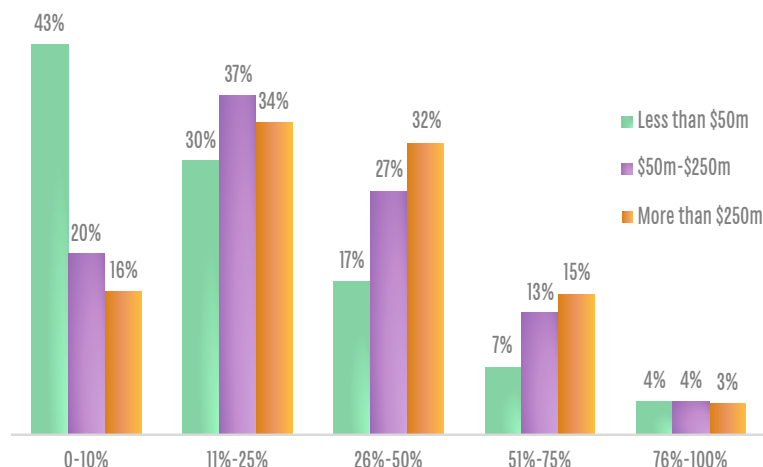

Figure 48. What proportion of your IT department is flexible/contingent? By IT budget

Slight increase in organisations using more than 10 per cent flexible labour

Looking across the four years we have been tracking responses to this question, we can see that heavy use (more than 50 per cent) of contingent workers in the IT department has remained broadly static. Whilst there has been much talk of increasingly flexible workforces, the data suggests that IT leaders are still highly reliant on their permanent employees.
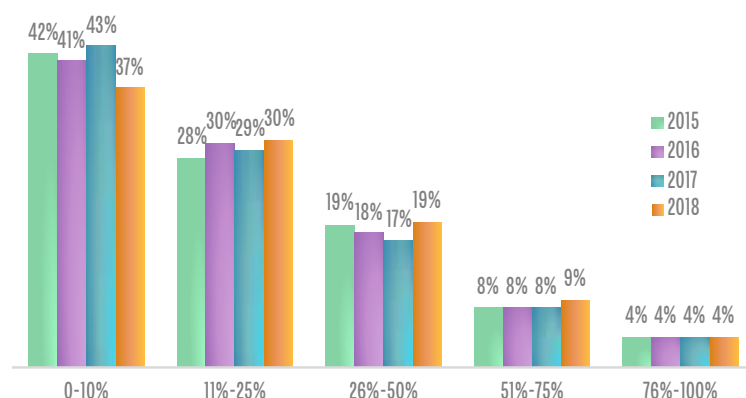
Figure 49. What proportion of your IT department is flexible/contingent labour? 2015–2018

Bigger budgets mean more outsourcing and offshoring

IT leaders from larger organisations are also more likely to be outsourcing or offshoring, with 87 per cent of organisations with IT budgets over $250m stating they do so in comparison with only 58 per cent of their peers who have a budget of less than $50m.
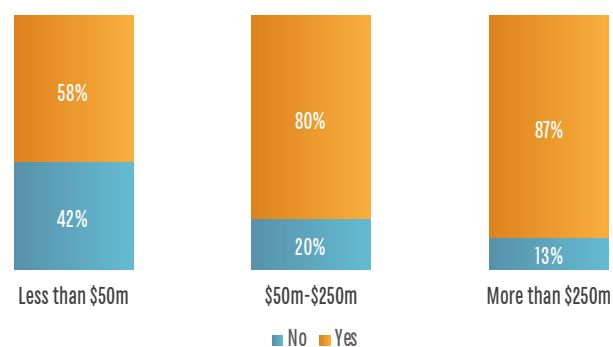
Figure 50. Do you currently outsource or offshore? By IT budget

APAC region more likely than others to outsource

Outsourcing and offshoring is broadly similar across all geographies, however APAC (69 per cent) is more likely to outsource compared to the global average. There were no significant differences between sectors, with only Financial Services, Telecommunications and Pharmaceuticals marginally more likely to be outsourcing or offshoring.

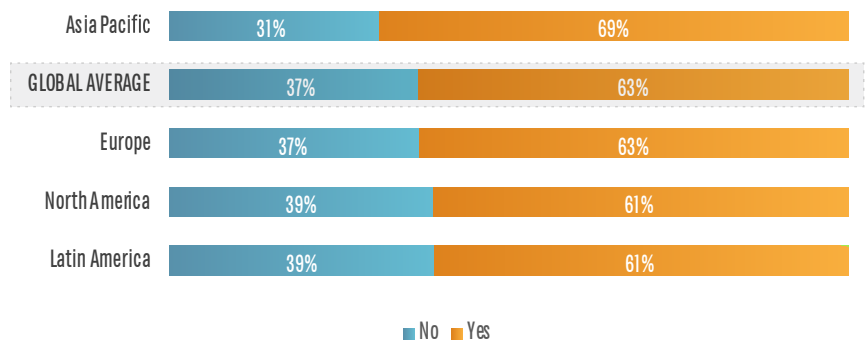|	No	Yes
Asia Pacific	31%	69%
GLOBAL AVERAGE	37%	63%
Europe	37%	63%
North America	39%	61%
Latin America	39%	61%

■No ■Yes

Figure 51. Do you currently outsource or offshore? By region

IT leaders do not rely on outsourcing when it comes to innovation

The primary reason for IT leaders to outsource or offshore is to bridge the skills gap, with 46 per cent of IT leaders citing this as their primary reason, and saving money – a key reason to outsource in the past – came a distant second with just over a third (36 per cent) of respondents.

Provides access to skills not available in-house	46%
Saves money	36%
Frees up resources to focus on core business	35%
Adds scale to my IT organisation	33%
Improves flexibility in use of resources	29%
Improves our ability to innovate	10%

Figure 52. What are the two main reasons you choose to outsource? (Choose up to two)

Planned increases in outsourcing spend fall to lowest levels since tracking began

Planned increases in outsourcing spend have fallen dramatically to their lowest recorded levels, and at only 32 per cent are on a par with those seen after the global financial crisis in 2008. This is the first time we have seen a divergence between technology spend growth and outsourcing spend growth in the last decade, suggesting that many organisations are choosing to keep, or bring back, technology in-house. As organisations drive their digital strategies, many are seeing value in keeping business-critical or innovation-led activities close to home.

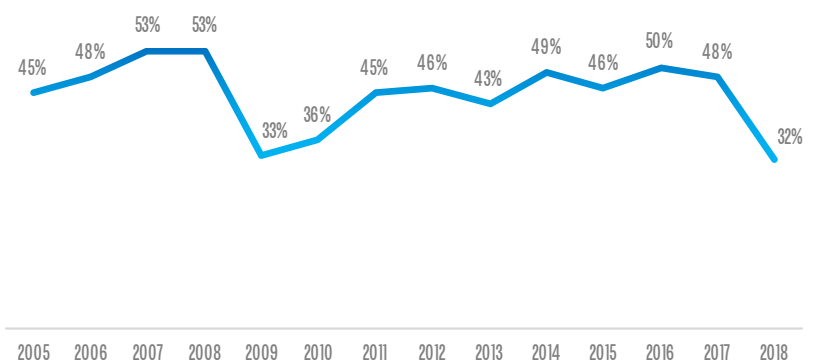| Year	%
2005	45%
2006	48%
2007	53%
2008	53%
2009	33%
2010	36%
2011	45%
2012	46%
2013	43%
2014	49%
2015	46%
2016	50%
2017	48%
2018	32%

Figure 53. Outsourcing spend to increase over the next 12 months? 2005–2018

Financial Services set to increase spend across the full range of external resourcing options

Financial Services is the only sector that appears to be planning to increase spending across the board – on outsourcing, offshoring, nearshoring and onshoring – by more than the global average. The Retail, Healthcare and Oil & Gas sectors all plan to increase spend by less than the global average across all options. IT leaders within Pharmaceuticals marginally top the leader board of increased spend on outsourcing at 43 per cent.

	Outsourcing spend	Offshoring	Nearshoring	Onshoring
Leisure	40%	11%	29%	33%
Financial Services	36%	19%	21%	31%
Technology	28%	21%	25%	33%
Manufacturing/Automotive	36%	24%	23%	23%
Transport/Logistics	39%	17%	22%	26%
Pharmaceuticals	43%	13%	16%	26%
GLOBAL AVERAGE	32%	17%	19%	28%
Power & Utilities	33%	17%	23%	23%
Business/Professional Services	30%	16%	22%	25%
Telecommunications	25%	17%	21%	26%
Government	36%	5%	9%	37%
Education	30%	15%	14%	27%
Broadcast/Media	25%	13%	19%	27%
Retail	30%	16%	13%	23%
Construction/Engineering	35%	17%	7%	21%
Charity/Non-Profit	29%	13%	6%	28%
Healthcare	23%	15%	18%	18%
Oil & Gas	29%	11%	9%	20%

Key: ▢ Above GLOBAL AVERAGE ▢ Below GLOBAL AVERAGE

Figure 54. How do you expect your spend to change over the next 12 months for the following activities? Increase, by sector

The closer the better

When it comes to outsourcing the proximity of the resource plays a part. Twenty-eight per cent of IT leaders plan to increase their onshoring spend in the next 12 months, in comparison with only 17 per cent who plan to increase offshoring.

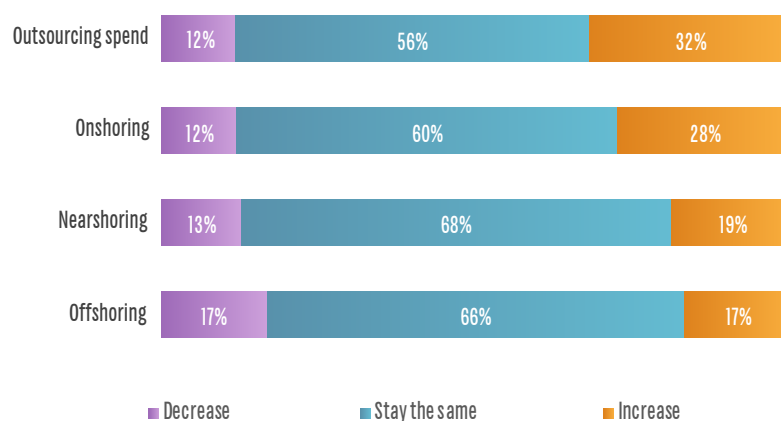|	Decrease	Stay the same	Increase
Outsourcing spend	12%	56%	32%
Onshoring	12%	60%	28%
Nearshoring	13%	68%	19%
Offshoring	17%	66%	17%

■ Decrease ■ Stay the same ■ Increase

Figure 55. How do you expect your spend to change over the next 12 months for the following activities?

North Americans most likely to feel unsupported by work visa legislation

More than a third (38 per cent) of all IT leaders are unsure about whether their region's work visa legislation supports their talent and hiring strategies. In Europe, the impact of the UK's planned departure from the EU is likely to have an effect – 42 per cent of European respondents are uncertain of work visa effects.

The US administration is proposing a hard-line tightening of the legislation surrounding the H-1B visa which allows US companies to employ foreign workers in speciality occupations that require theoretical or technical expertise. IT leaders depend on it to hire tens of thousands of employees each year from countries like India and China. At 45 per cent, our research shows that North American respondents are the most likely to report that their work visa legislation impacts them negatively.

Given the skills shortages reported elsewhere, these results paint a picture of IT leaders being frustrated with their country's legislation potentially holding back innovation and progress. This is particularly apparent in the US.

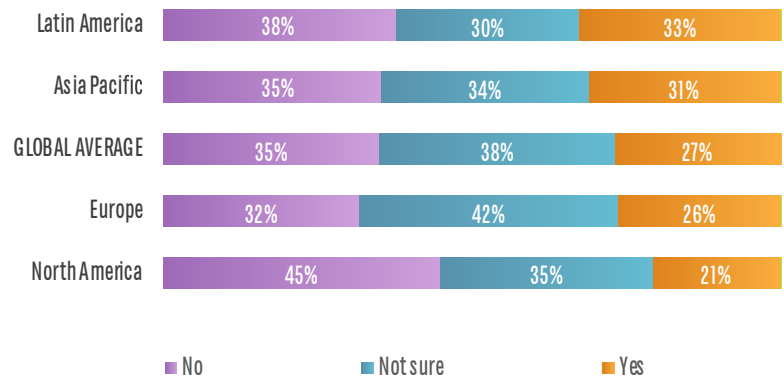| Region	No	Not sure	Yes
Latin America	38%	30%	33%
Asia Pacific	35%	34%	31%
GLOBAL AVERAGE	35%	38%	27%
Europe	32%	42%	26%
North America	45%	35%	21%

Figure 56. Do you feel that work visa legislation in your region is beneficial to your talent strategy? By region

Encouraging Inclusion & Diversity

Proportion of female IT leaders continues slow upward trend

Our research shows that the slow upward trend for female IT leaders continues, with 12 per cent of respondents being female. According to Harvard Business Review (HBR), when an organisation's executives are at least 30 per cent female, it leads to 15 per cent gains in profitability and can be an advantage to recruiting and retention. Given this, organisations should really be doing more to encourage gender diversity.
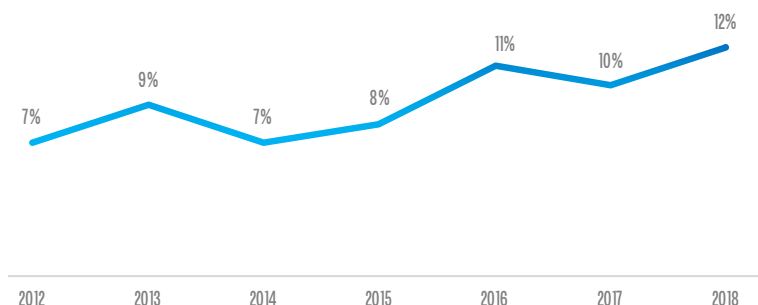
Figure 57. What is your gender? Female, 2012–2018

IT leaders feel good about their diversity and inclusion initiatives

Our IT leaders appear to be happy with their record for promoting inclusion and diversity in the technology team, with 19 per cent reporting that they are 'very successful' and a further 63 per cent 'moderately successful'. Only 18 per cent feel that they could do much better. Given the slow progress in female participation, it appears there is a disconnect between what is being done and the results.

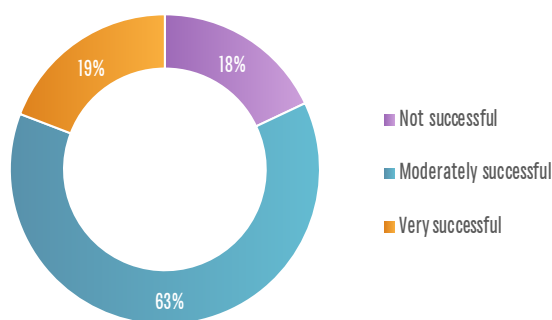- Not successful
- Moderately successful
- Very successful

Figure 58. How successful has your current organisation been at promoting inclusion and diversity in the technology team?

One in five members of the tech team are female
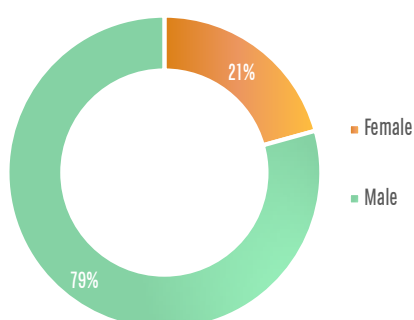
- Female
- Male

Figure 59. What percentage of your employed technology team is female (approximately)?

Opinion split over whether diversity and inclusion can support business goals

Almost a quarter (24 per cent) of IT leaders report that inclusion and diversity have no bearing on achieving their business and technology objectives. Given that such practices have proved to improve diversity of thought and provide richer perspectives on traditional problems, this is a concern. Is the board doing enough to foster positive cultures by leading through example?

- Little/no extent
- Some extent
- Great extent

Figure 60. To what extent is inclusion and diversity in the technology team important to achieve your business and technology objectives?

Smaller organisations are much less likely to value diversity and inclusion compared to larger organisations

IT leaders from larger organisations are most likely to acknowledge the benefits of diversity and inclusion at least to some extent. Whether this response is driven by simple experience or because formal initiatives are in place is a matter of debate.

	Less than $50m	$50m – $250m	More than $250m
Little/no extent	26%	18%	13%
Some extent	47%	48%	44%
Great extent	27%	34%	43%

Figure 61. To what extent is inclusion and diversity in the technology team important to achieve your business and technology objectives? By IT budget

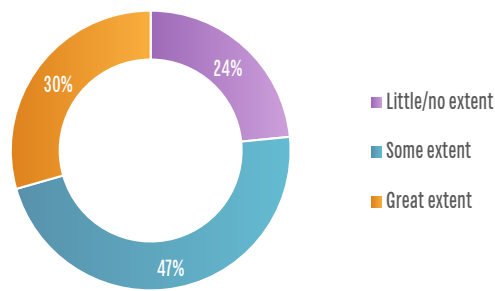## Customer-centric and digital leaders are more likely to say inclusion and diversity is very important
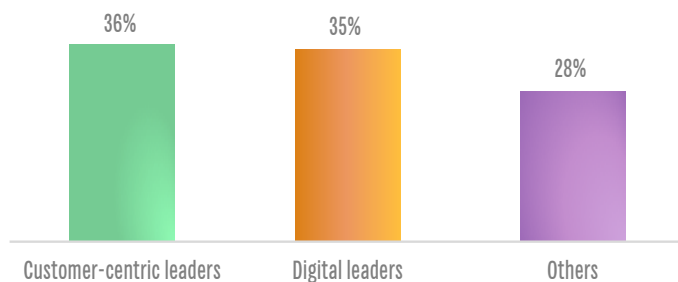

Figure 62 . To what extent is inclusion and diversity in the technology team important to achieve your business and technology objectives? Very important

1.6 CIO Careers

Key insight: *Almost half of respondents had salary increases last year, but job satisfaction drops from its highs of last year*

46%
had a salary rise

38%
receive generous benefits packages

13%
fewer IT leaders feel very fulfilled in their roles this year

No-one becomes a CIO expecting an easy life - but it still came as a surprise when this year's survey revealed job fulfilment has taken a dip, and this is despite almost half of IT leaders getting (presumably pleasing) salary rises.

The challenge for many CIOs is one they will be all too familiar with in their day job – scope creep. There has been an explosion in activities such as data management, digital transformation and shadow IT that may, or may not, be under the CIO's remit. And some CIOs report frustration that responsibilities are blurred or, worse, presumed without consent.

Of course, the answer lies in spending time agreeing those responsibilities. And in this new world it doesn't much matter whether they are allocated according to 'traditional' job responsibilities. The CIO role is changing, and the IT leader has a wonderful chance to drive these discussions.

> There are few executive roles undergoing so much change, or have so much opportunity, as the CIO.
> *Sonya Curley, MD, Harvey Nash Ireland*

> Now, more than ever, CIOs have a fantastic opportunity to broaden their influence and value in their organisation. They must act on this or risk missing the train.
> *Lisa Heneghan, partner, KPMG in the UK*

Longevity & Satisfaction

IT leaders more likely to still be in their role

It would appear that IT leaders are sticking around for at least the medium term. Slightly fewer respondents (14 per cent) have been in their roles for less than a year compared to 2017 (15 per cent). Perhaps given geopolitical uncertainty and business disruption it is a case of 'better the devil you know'.

	2015	2016	2017	2018
More than 10 years	19%	21%	23%	21%
5-10 years	22%	20%	19%	19%
2-5 years	29%	28%	26%	29%
1-2 years	17%	16%	17%	17%
Less than 1 year	12%	15%	15%	14%
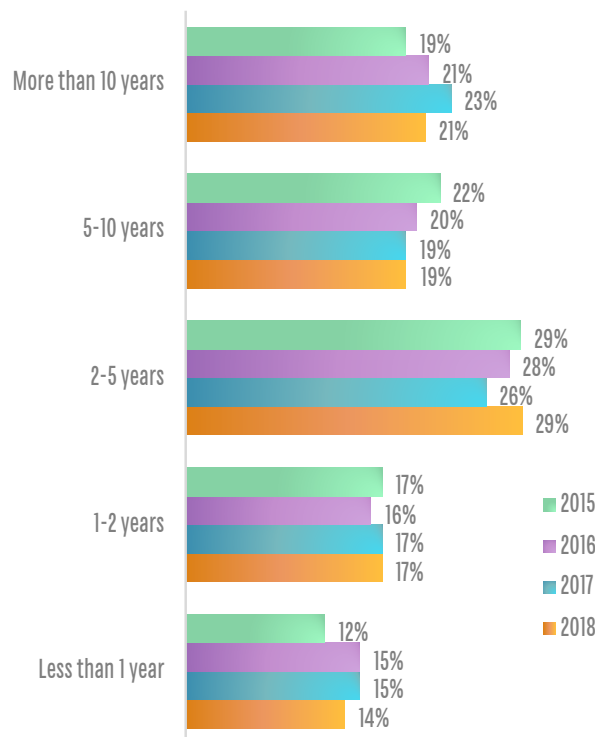
Figure 63. How long have you worked for your current employer? 2015–2018

Three-fifths of IT leaders plan to stick by their organisations for at least another year or two

Looking to the future, our research shows that IT leaders have similar plans for imminent moves this year (21 per cent) as those last year, compared to almost a quarter (24 per cent) back in 2015.

	2015	2016	2017	2018
More than 10 years	9%	10%	11%	11%
5-10 years	12%	14%	17%	16%
2-5 years	31%	32%	31%	32%
1-2 years	24%	22%	20%	21%
Less than 1 year	24%	22%	21%	21%

Figure 64. How long, from this point onwards, do you expect to stay with your current employer? 2015–2018

A third of IT leaders working in the Pharmaceuticals industry are looking for a change

IT leaders working in the Professional Services sector appear to have the most contentment in their current role. Only 15 per cent are planning an imminent move compared to almost a third (31 per cent) of their peers working in Pharmaceuticals.

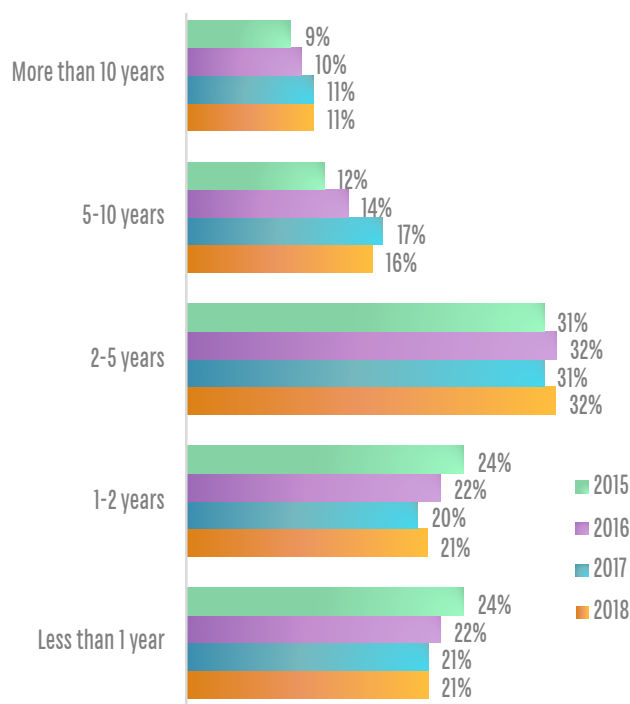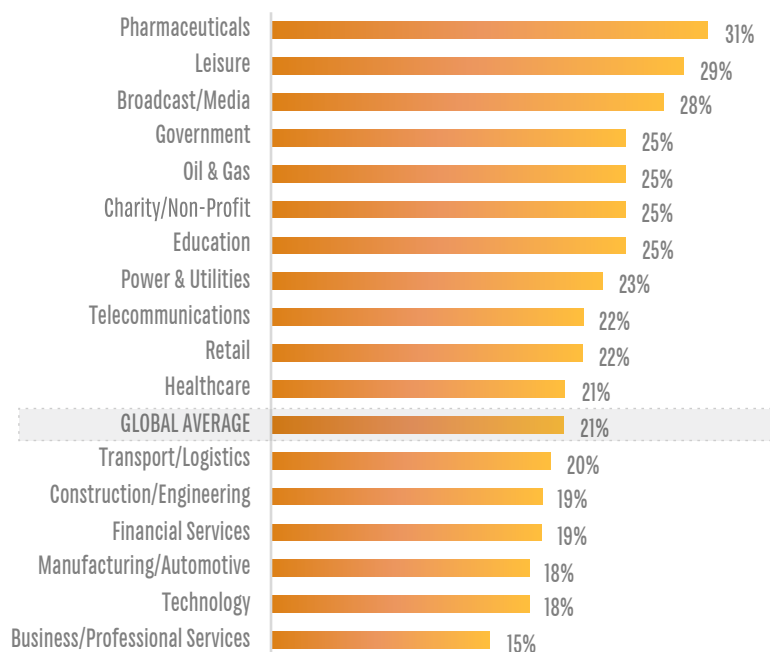| Sector	%
Pharmaceuticals	31%
Leisure	29%
Broadcast/Media	28%
Government	25%
Oil & Gas	25%
Charity/Non-Profit	25%
Education	25%
Power & Utilities	23%
Telecommunications	22%
Retail	22%
Healthcare	21%
GLOBAL AVERAGE	21%
Transport/Logistics	20%
Construction/Engineering	19%
Financial Services	19%
Manufacturing/Automotive	18%
Technology	18%
Business/Professional Services	15%

Figure 65. How long, from this point onwards, do you expect to stay with your current employer? Less than a year, by sector

IT leaders feeling the least fulfilled in their roles since 2015

Whilst they might be staying put, our IT leaders show an increasing dissatisfaction with the level of fulfilment they feel within their career. Thirteen per cent fewer respondents are feeling very fulfilled compared to our research results from last year and the upward trend in job satisfaction appears to be over. There is a corresponding rise in IT leaders feeling not very fulfilled, with 17 per cent selecting this category compared to 14 per cent in 2017.

	Very	Quite	Not very	Not at all
2015	33%	47%	17%	4%
2016	37%	47%	13%	3%
2017	39%	43%	14%	4%
2018	34%	44%	17%	5%
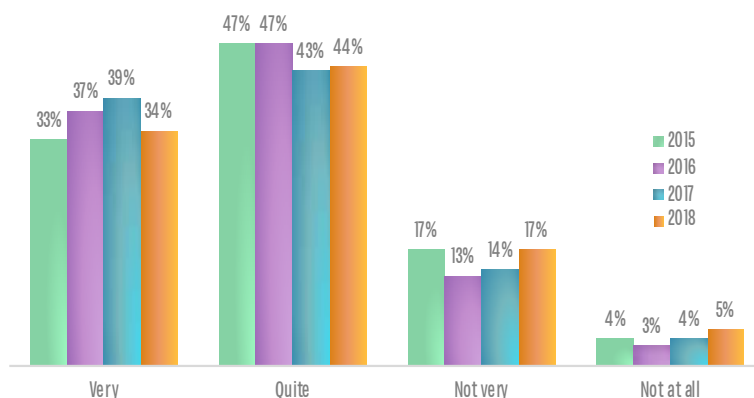
Figure 66. How fulfilling do you find your current role? 2015–2018

What advice would you give your younger self?

Firstly, life is too short to work for a bad boss – either like, change, or leave. Secondly, you spend a huge part of your life at work – so make sure you love what you are doing. And thirdly, focus on what is important in life and that is to enjoy every day.

Markus Sontheimer,
CIO, Deutsche Bahn Schenker, Germany

Stay yourself! Then you'll bring the best benefit for the company and for your personal life.

Vivien Resdat,
Director Central IT, Röchling Automotive SE & Co. KG, Germany

Don't fall in love with any particular technology. It's always evolving and you need to continually examine what is best for where your business is going versus where it is. Remember, we once thought VHS was the pinnacle of the home movie experience and someone bought all those albums on cassettes.

John Higginson,
Chief Technology Officer, Enova International, US

Being a digital leader increases job satisfaction

Fifty-two per cent more respondents who meet the definition of digital leader (using digital 'very effectively' or 'extremely effectively' to support business strategy), find their roles very fulfilling compared to other respondents, and two-thirds fewer are completely dissatisfied with their role.

	Digital leaders	Others
Very fulfilling	47%	31%
Quite fulfilling	40%	45%
Not very fulfilling	11%	18%
Not at all fulfilling	2%	6%

Figure 67. How fulfilling do you find your current role? Digital leaders

Most sectors report a slight decrease in job satisfaction

Happiest in their role are those working for Non-Profit Organisations. Along with Pharmaceuticals and Broadcast/Media, these are the only sectors where job satisfaction has improved in the last year. With so many pressures on the IT leader, it is clear this is impacting their sense of fulfilment. That said, IT leadership remains a rewarding career, with eight in ten respondents indicating they are quite or very fulfilled.

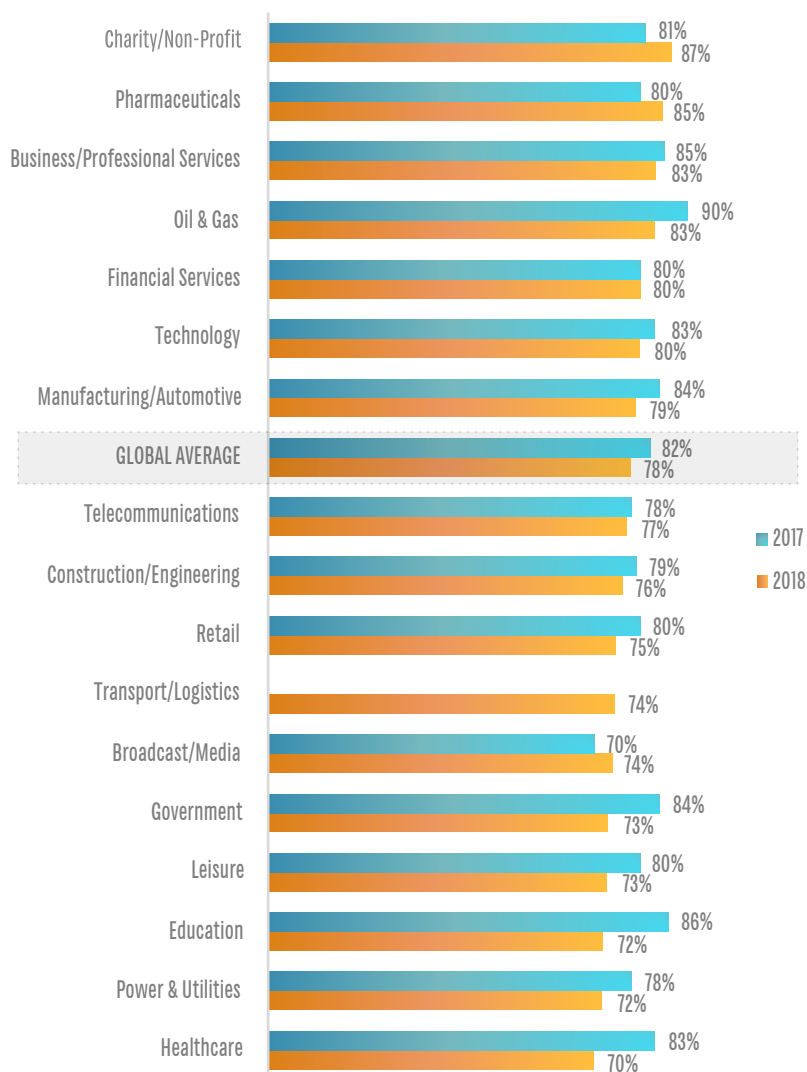| Sector	2017	2018
Charity/Non-Profit	81%	87%
Pharmaceuticals	80%	85%
Business/Professional Services	85%	83%
Oil & Gas	90%	83%
Financial Services	80%	80%
Technology	83%	80%
Manufacturing/Automotive	84%	79%
GLOBAL AVERAGE	82%	78%
Telecommunications	78%	77%
Construction/Engineering	79%	76%
Retail	80%	75%
Transport/Logistics		74%
Broadcast/Media	70%	74%
Government	84%	73%
Leisure	80%	73%
Education	86%	72%
Power & Utilities	78%	72%
Healthcare	83%	70%

Figure 68. How fulfilling do you find your current role? 'Very' + 'quite'.

Salary, Bonuses & Benefits

More changes in salaries since tracking began

This year's research shows more salary changes than last year, with just under half (48 per cent) of all IT leaders reporting no change compared to 62 per cent in 2017. We introduced more granularity into this year's question, allowing a response of plus or minus 5 per cent. Almost half (46 per cent) of our respondents received an increase this year but the majority of these were small, possibly in line with inflationary pressures at around 5 per cent. There was a slight rise in salary decreases as well, with 7 per cent of IT leaders seeing a decrease compared to just 5 per cent of respondents last year.
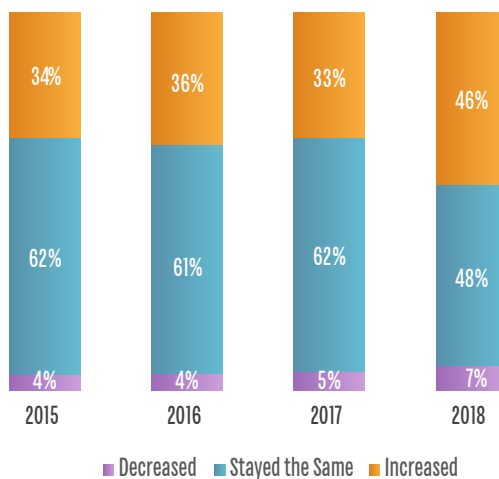
Figure 69. How has your base salary changed compared to last year?

Almost half of all IT leaders saw no change in their salary in the last year
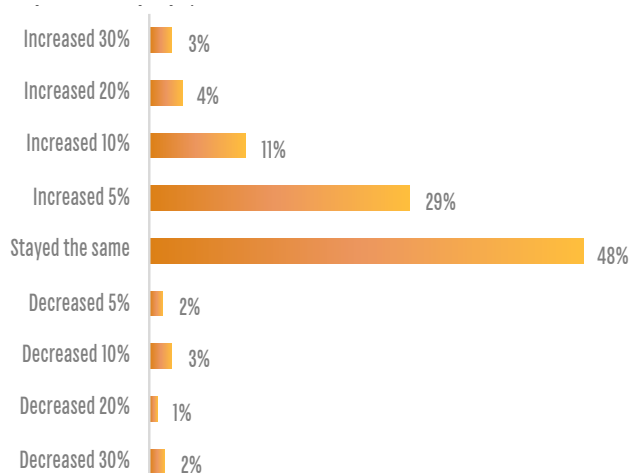
Figure 70. How has your base salary changed compared to last year?

CDOs significantly more likely to have had a salary increase than CIOs

CDOs were significantly more likely to have had a salary increase in the last 12 months (65 per cent) compared to their CIO (46 per cent) or senior IT management peers (45 per cent). IT leaders in the Telecommunications and Non-Profit sectors were the most likely to see their pay reduced, with 17 per cent and 15 per cent reporting a salary reduction respectively.

Figure 71. How has your base salary changed compared to last year? Increased by job role

IT leaders in Leisure sector are most likely to have had a salary increase

Sector	%
Leisure	56%
Business/Professional Services	54%
Construction/Engineering	54%
Charity/Non-Profit	52%
Financial Services	50%
Technology	50%
Manufacturing/Automotive	49%
Power & Utilities	49%
GLOBAL AVERAGE	46%
Pharmaceuticals	45%
Transport/Logistics	43%
Education	42%
Oil & Gas	41%
Retail	40%
Healthcare	38%
Broadcast/Media	36%
Telecommunications	31%
Government	31%

Figure 72. How has your base salary changed compared to last year? Increased

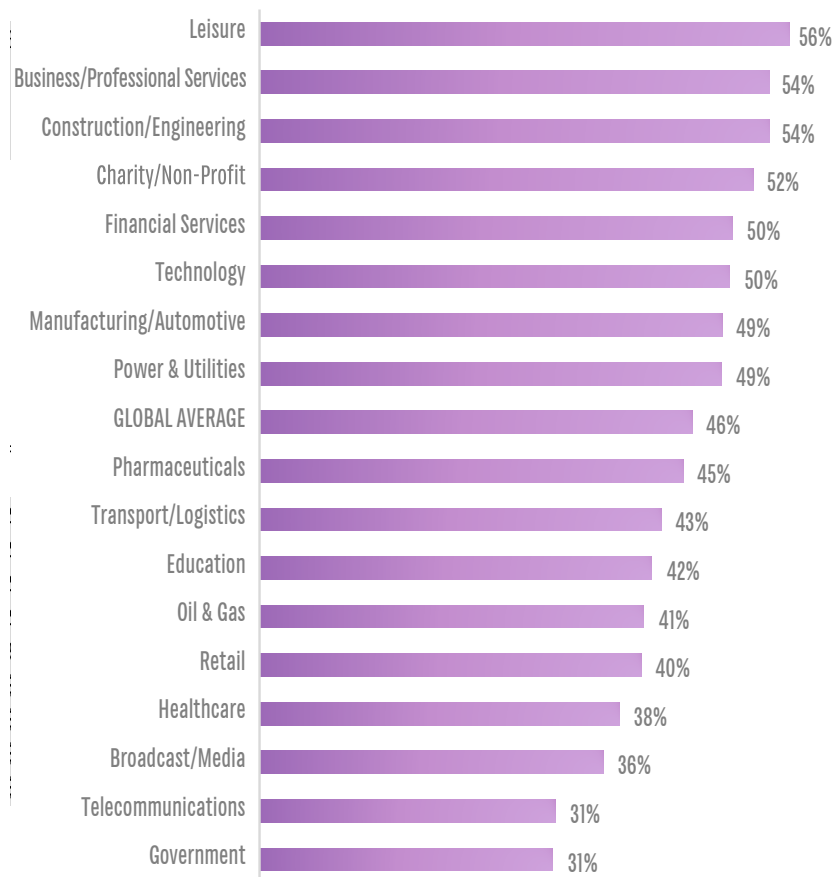## Almost a third of IT leaders do not receive a bonus as part of their package

Almost a third of our respondents (31 per cent) do not receive a bonus as part of their package but more than a third (36 per cent) receive a bonus between 11 and 50 per cent.

0 per cent	31%
10 per cent or under	27%
11 to 50 per cent	36%
51 to 100 per cent	5%

Figure 73. What bonus have you received in the last 12 months?

More than half of IT leaders do not receive a benefits package

The value of other benefits including a car, incentive plans, shares and equity can add significant value to IT leaders' remuneration. Whilst our research shows that almost a third get no extras (30 per cent), almost a third (30 per cent) of IT leaders are also in receipt of a benefits package worth in the region of 10 per cent of their base salary. Thirty-nine per cent are in receipt of more generous packages.

0 per cent	30%
10 per cent	30%
20 per cent	16%
30 to 50 per cent	16%
More than 50 per cent	7%

Figure 74. What is the value of all other benefits you receive expressed as a percentage of your base salary?

In the Digital Era, Digitally Savvy IT Units Pay Off

Stephanie L. Woerner and Peter Weill

Over 1,000 respondents to the Harvey Nash / KPMG CIO Survey provided additional information, including company name, to take part in further analysis by Massachusetts Institute of Technology Center for Information Systems Research. MIT CISR is one of the world's leading IT research organisations.

Enterprises use digital technologies to engage customers, connect partners and suppliers, create efficiencies, leverage employee talents, and more. But to get the most value from the potential of digital technology, leaders must create and communicate a vision and then guide the enterprise along the journey. The IT unit and the CIO are poised, but sadly often fail, to take that leadership role. IT professionals are well versed at using technology to help standardise business processes; they understand how to create scalable, secure, reusable digital services. This ongoing work is essential to become digitised. But now IT leaders must also articulate and execute a digital strategy.

In the organisations we study, we find chief data officers, chief digital officers, chief transformation officers, chief customer officers and many others leading major digital initiatives. How do CIOs and their IT units stay relevant in this context? They must build a digitally savvy IT unit: one that is knowledgeable, shrewd and able to make practical judgements around digital. In this research, carried out in conjunction with Harvey Nash, we aim to show that being one of these 'digital leaders' can make a 26 per cent difference in enterprise profitability.

IT units that are digital leaders are great at four reinforcing actions (see Figure 1):

- CIOs working with the executive committee on strategy and digital

- Building digital discipline into the business (e.g. reusable digital services, evidence-based decision-making)

- Focusing on great customer engagement

- Delivering operational efficiencies.

Get all four of these right and your IT unit in turn helps the whole enterprise be more digitally savvy – and those companies have 26 per cent higher profitability.

Let's look at these four actions in more detail.

Strategic CIO: CIOs in organisations that are digital leaders act more strategically. They work with the executive team to influence and guide the enterprise on the effective use of digital technologies. They help create a vision on how to use digital to transform the enterprise and grow. This point indicates that framing the benefits of digital transformation around revenue growth will be compelling to strategic CEOs. (CEOs in these top-quartile digital leaders have a 75 per cent

Figure 1: Four reinforcing actions build a digitally savvy IT unit and increased profitability
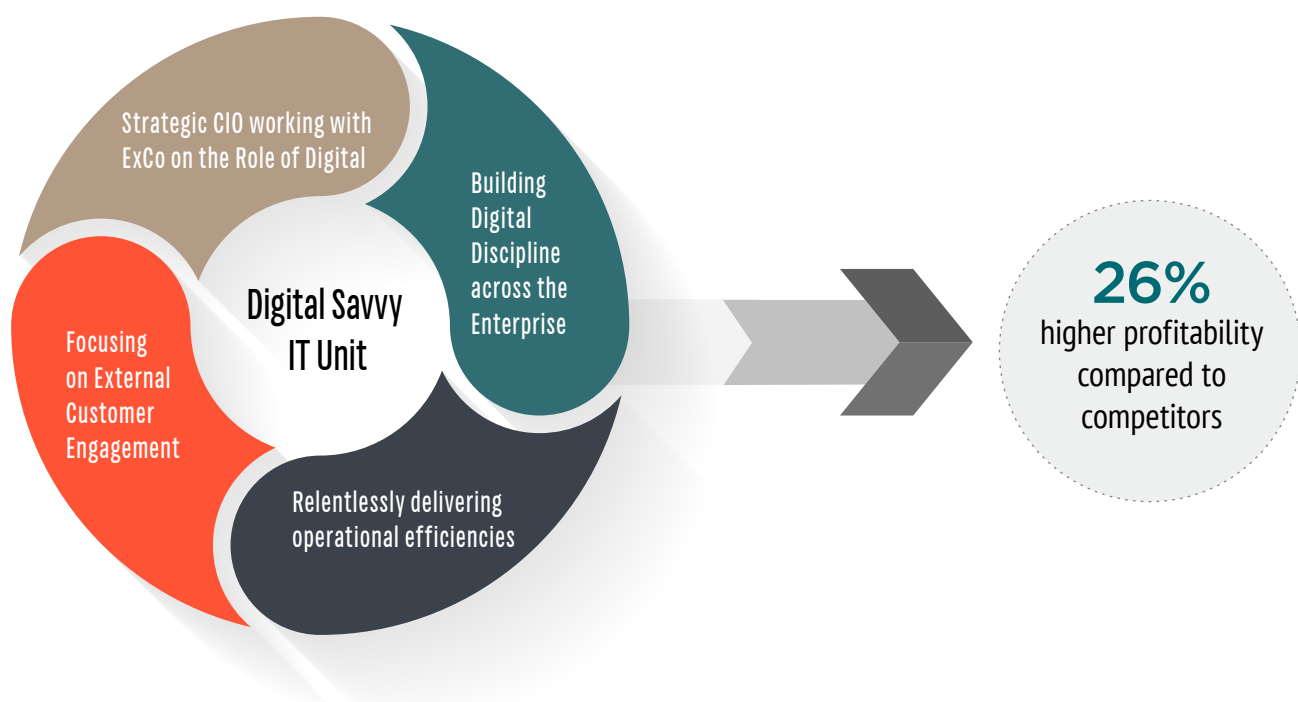
preference for projects that make money as opposed to save money.) There is still room to improve the strategic impact of CIOs. Even the top-quartile CIOs only rate 59 per cent on a scale we created to measure the strategic influence of CIOs. Our research at MIT CISR suggests that, besides working with the executive committee, top-performing CIOs spend more time with customers, focus on innovation and do the work to service enable core enterprise capabilities for both internal and external use.

Digital discipline: In digital-leading firms the whole IT unit acts more strategically. The activities of the IT unit boost the business in three ways: funding, integration and experimentation. Digital leaders manage and control more of the overall spend on IT than enterprises in the bottom quartile – typically on building digital services used enterprise-wide that enable innovation. These enterprises are more effective at integrating core business processes using digital solutions, thus creating new opportunities for innovation to spread. And finally, these enterprises are more effective at the practice of "test and learn" – scaling up the experiments that succeed and shutting down those that fail. In a digitally savvy enterprise culture, IT units support evidence-based decision-making and provide the necessary infrastructure like A/B testing platforms.

Great customer engagement: Enterprises that are digital leaders build a single view of the customer across all channels and invest in digital technologies that enhance the customer experience. It is particularly important right now for IT leaders to help the ente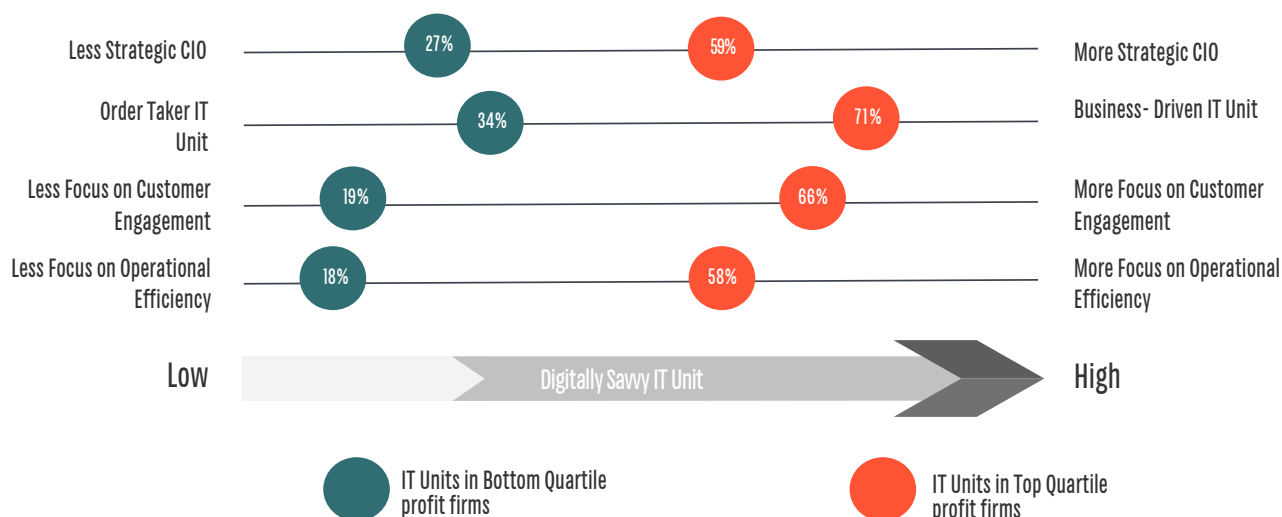rprise professionalise how it measures and manages customer experience. Typically, that involves selecting one or two key metrics like NPS, measuring for customer interactions across channels and working on improving the customer experience every day.

Operational efficiencies: Digital companies still need to ensure secure and reliable transactions and access to master data. They must invest in automation to improve the efficiency of business processes. Despite the rhetoric over the years around IT units reducing business process costs, the scores here are surprisingly low and offer a fantastic opportunity. While automating and cutting back-office costs may not be as compelling as meeting new business opportunities with digital innovation, efficiency is an important part of being digitally savvy and will dominate again in the lean years that inevitably will come.

Enterprises of all sizes can benefit from a strong, digitally savvy IT unit but the data suggests it is easier in smaller firms. Enterprises with less than US$25m in IT budget accounted for 64 per cent of the organisations in the top quartile of digital leaders. And there is no statistical difference in the profitability among the different sizes of enterprises, so enterprises of all sizes benefit from being a digital leader.

A great place to start for CIOs and their IT units to help their companies outperform in the digital era is to lead the way by becoming digitally savvy themselves. In top-profit firms, CIOs and the IT unit play an important role but only if they lead strategically, leverage digital enterprise-wide, and focus on the ambidextrous goals of creating great customer engagement and delivering operational efficiencies.

Figure 2: IT units in the most profitable firms are digitally savvy

	Bottom Quartile	Top Quartile	
Less Strategic CIO	27%	59%	More Strategic CIO
Order Taker IT Unit	34%	71%	Business-Driven IT Unit
Less Focus on Customer Engagement	19%	66%	More Focus on Customer Engagement
Less Focus on Operational Efficiency	18%	58%	More Focus on Operational Efficiency

Low → Digitally Savvy IT Unit → High

● IT Units in Bottom Quartile profit firms
● IT Units in Top Quartile profit firms

Stephanie L. Woerner
Research Scientist, MIT Sloan School of Management's Center for Information Systems Research.

Peter Weill
Chairman and Senior Research Scientist, MIT Sloan School of Management's Center for Information Systems Research.

LEAGUE TABLES

Country League Tables

Top IT priority for the board

Country	
Australia	Enhanced customer experience
Austria	Improved business processes
Belgium	Improved business processes
Brazil	Improved business processes
Canada	Operational efficiencies
China Mainland	Improved business processes
France	Innovative new products
Germany	Improved business processes
Ireland	Operational efficiencies
Italy	Improved business processes
Mexico	Improved business processes
New Zealand	Enhanced customer experience
Norway	Improved business processes
Panama	Improved business processes
Sweden	Improved business processes
Switzerland	Stable IT performance
The Netherlands	Operational efficiencies
Turkey	Improved business processes
United Kingdom	Operational efficiencies
United States	Improved business processes
Vietnam	Improved business processes

10%+ tech budget controlled outside IT

Country	
Germany	63%
Austria	61%
Ireland	52%
Norway	52%
Canada	51%
Turkey	51%
Australia	50%
Vietnam	49%
Switzerland	44%
The Netherlands	44%
United Kingdom	43%
China Mainland	42%
New Zealand	41%
Sweden	41%
Mexico	40%
France	39%
Panama	38%
United States	37%
Belgium	36%
Italy	36%
Brazil	33%

Increased IT budget

Country	
Austria	68%
Canada	59%
China Mainland	59%
Vietnam	57%
Sweden	56%
United States	56%
Belgium	53%
Italy	53%
Germany	51%
Australia	49%
France	49%
Mexico	49%
United Kingdom	49%
Ireland	48%
The Netherlands	46%
New Zealand	44%
Panama	44%
Turkey	40%
Norway	39%
Brazil	36%
Switzerland	33%

Enterprise-wide digital strategy in place

Country	
Vietnam	55%
Ireland	43%
Austria	42%
Australia	41%
China Mainland	41%
France	41%
The Netherlands	41%
Germany	35%
Sweden	34%
United Kingdom	33%
Mexico	32%
Norway	29%
Panama	29%
Switzerland	29%
Canada	27%
United States	27%
Belgium	25%
New Zealand	25%
Turkey	23%
Italy	18%
Brazil	7%

Country League Tables

Base salary increase in last 12 months

Country	
New Zealand	72%
Norway	58%
United States	55%
China Mainland	53%
Mexico	53%
Vietnam	53%
Canada	49%
Turkey	49%
Ireland	48%
Brazil	45%
United Kingdom	44%
Italy	39%
Belgium	38%
Germany	37%
Panama	37%
Australia	36%
Austria	36%
Switzerland	36%
Sweden	33%
The Netherlands	30%
France	26%

Very fulfilled in job

Country	
Austria	65%
Canada	49%
Mexico	47%
Norway	44%
The Netherlands	44%
Belgium	43%
Brazil	42%
New Zealand	42%
Germany	40%
Switzerland	40%
Sweden	37%
Ireland	36%
Italy	36%
Turkey	35%
United Kingdom	35%
United States	31%
Panama	29%
Australia	26%
France	25%
China Mainland	18%
Vietnam	12%

Increased outsourcing spend

Country	
China Mainland	56%
Belgium	53%
Italy	49%
France	45%
New Zealand	43%
The Netherlands	42%
Germany	39%
Mexico	39%
Switzerland	39%
Austria	38%
Australia	36%
Brazil	34%
Vietnam	34%
Canada	33%
Ireland	33%
Sweden	33%
United Kingdom	28%
Norway	26%
United States	26%
Panama	24%
Turkey	19%

Major cyber attack in last 2 years

Country	
Austria	52%
France	52%
Vietnam	51%
Turkey	46%
Sweden	45%
Mexico	41%
Belgium	39%
Switzerland	38%
Brazil	35%
The Netherlands	35%
United Kingdom	35%
Germany	33%
Italy	32%
Panama	32%
Australia	31%
New Zealand	31%
Ireland	30%
Norway	30%
United States	28%
Canada	20%
China Mainland	20%

Sector League Tables

Top IT priority for the board

Sector	
Broadcast/Media	Innovative new products
Professional Services	Improved business processes
Charity/Non Profit	Stable IT performance
Construction/Eng	Stable IT performance
Education	Stable IT performance
Financial Services	Operational efficiencies
Government	Stable IT performance
Healthcare	Operational efficiencies
Leisure	Enhanced customer experience
Manufacturing/Auto	Improved business processes
Oil & Gas	Improved business processes
Pharmaceuticals	Improved business processes
Power & Utilities	Operational efficiencies
Retail	Enhanced customer experience
Technology	Innovative new products
Telecommunications	Saving costs
Transport/Logistics	Stable IT performance

10%+ tech budget controlled outside IT

Sector	
Power & Utilities	58%
Broadcast/Media	53%
Pharmaceuticals	52%
Government	50%
Technology	49%
Telecommunications	49%
Charity/Non Profit	48%
Education	46%
Retail	45%
Transport/Logistics	45%
Professional Services	43%
Financial Services	42%
Leisure	42%
Oil & Gas	41%
Manufacturing/Auto	37%
Healthcare	36%
Construction/Eng	33%

Increased IT budget

Sector	
Leisure	67%
Broadcast/Media	54%
Manufacturing/Auto	54%
Professional Services	52%
Retail	52%
Financial Services	51%
Construction/Eng	50%
Technology	50%
Transport/Logistics	50%
Healthcare	46%
Pharmaceuticals	46%
Power & Utilities	46%
Charity/Non Profit	43%
Education	43%
Government	38%
Telecommunications	37%
Oil & Gas	36%

Enterprise-wide digital strategy in place

Sector	
Technology	47%
Telecommunications	43%
Healthcare	39%
Power & Utilities	39%
Professional Services	36%
Broadcast/Media	35%
Financial Services	33%
Government	29%
Manufacturing/Auto	26%
Transport/Logistics	24%
Charity/Non Profit	23%
Construction/Eng	23%
Pharmaceuticals	23%
Retail	23%
Oil & Gas	22%
Leisure	21%
Education	18%

Sector League Tables

Base salary increase in last 12 months

Sector	
Professional Services	55%
Construction/Eng	55%
Leisure	55%
Charity/Non Profit	52%
Financial Services	49%
Technology	49%
Manufacturing/Auto	48%
Power & Utilities	47%
Education	43%
Pharmaceuticals	43%
Transport/Logistics	43%
Healthcare	41%
Retail	41%
Oil & Gas	38%
Broadcast/Media	37%
Government	32%
Telecommunications	31%

Very fulfilled in job

Sector	
Telecommunications	40%
Healthcare	38%
Leisure	38%
Professional Services	37%
Transport/Logistics	36%
Financial Services	35%
Government	35%
Power & Utilities	35%
Broadcast/Media	34%
Manufacturing/Auto	34%
Technology	34%
Charity/Non Profit	32%
Construction/Eng	30%
Education	30%
Pharmaceuticals	29%
Oil & Gas	28%
Retail	26%

Increased outsourcing spend

Sector	
Pharmaceuticals	43%
Leisure	40%
Transport/Logistics	39%
Financial Services	36%
Government	36%
Manufacturing/Auto	36%
Construction/Engineering	35%
Power & Utilities	33%
Professional Services	30%
Education	30%
Retail	30%
Charity/Non Profit	29%
Oil & Gas	29%
Technology	28%
Broadcast/Media	25%
Telecommunications	25%
Healthcare	23%

Major cyber attack in last 2 years

| Sector	
Education	49%
Telecommunications	45%
Leisure	44%
Manufacturing/Auto	42%
Transport/Logistics	40%
Construction/Engineering	38%
Government	38%
Retail	36%
Broadcast/Media	34%
Financial Services	31%
Healthcare	31%
Charity/Non Profit	28%
Pharmaceuticals	28%
Professional Services	27%
Power & Utilities	26%
Technology	26%
Oil & Gas	24%

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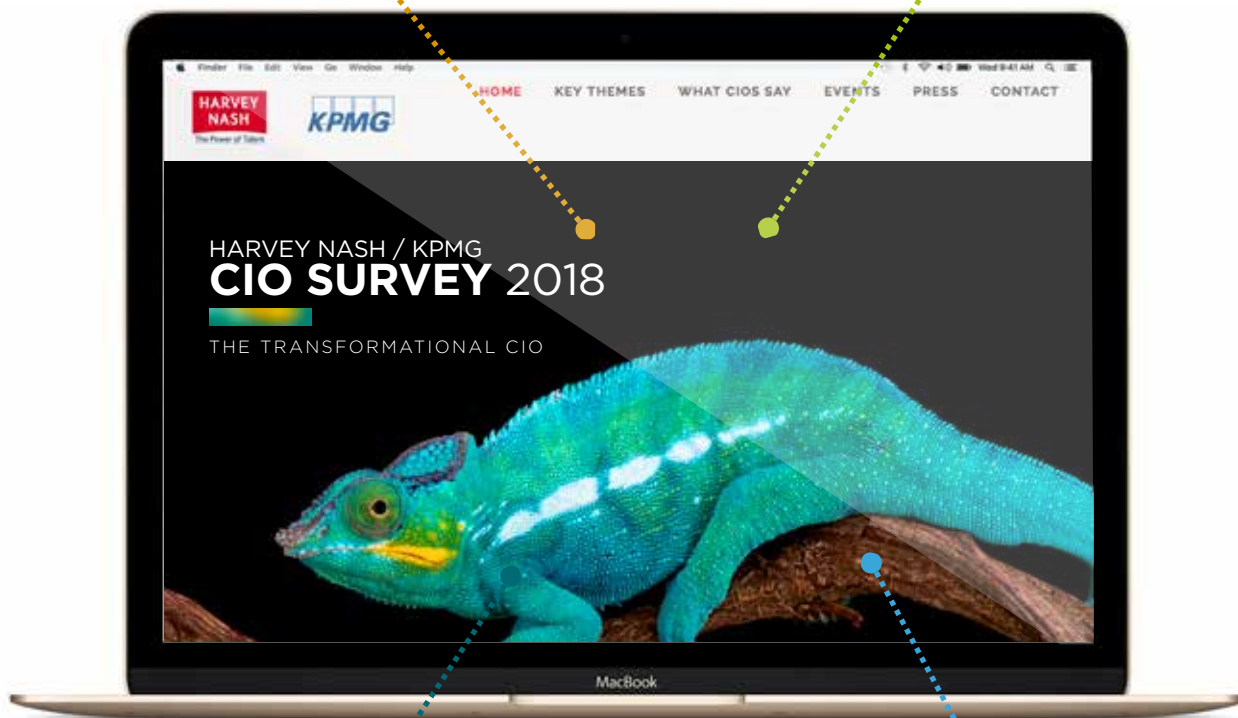
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