2020 CIO Survey

Power & Utilities industry insights

IT in the New Reality for Power & Utilities

As an essential sector, power and utilities companies keep the lights and heat on and our phones and internet connections running. As a critical service that underpins all other essential services, this sector is one that historically has seen consistent, and largely stable demand for its services. However, it is not immune to fluctuations according to economic activity and suffered an unprecedented 10 percent[1] reduction in demand for power on average through the early COVID-19 lockdowns around the world as offices, commercial sites and many manufacturing operations closed down. But these shutdowns have now largely passed and economies are opening up again, while residential demand for power is possibly higher than ever with so many people working from home and moving power that was traditionally centered in metropolitan areas to the suburbs. As a result, 40 percent of CIOs in the sector describe their businesses as being in 'surge' mode.

Nevertheless, there are challenges the sector must navigate. Some CAPEX projects have been interrupted by COVID-19 due to restrictions on physical workforce co-locations; the loss of jobs in many markets during the pandemic has resulted in cash flow issues for power and utility services and left uncertainty in the sector's ability to recoup payments for unpaid residential services; renewable energy projects may also have suffered disruptions to supply chains and project financing during the pandemic; and there is an ongoing need for significant investments for upgrades to electricity grids and gas/water pipelines – some of which are often postponed due to regulation caps on consumer pricing levels. Electricity transmission and distribution grids need upgrades to support future demand and modern consumption, not least as electric passenger and commercial vehicles spread and residential solar power further impact the two-way power grid. Long-term, companies in this sector will also need to set carbon reduction targets and increase investment in green energy sources to meet the low carbon agenda.

From a technology perspective, the innovation imperative is centered around the asset: physical assets need to be digitized and digital assets need to be monetized – such as digital twin technology that replicates power plant and transmission-distribution equipment and processes in a virtual environment to model scenarios that reduce CAPEX or OPEX. While the definition of "smart cities" is not universally agreed upon, smart functions for utilities may include integrated two-way power grids for home solar, carbon reduction or increased use of clean energy sources, widespread use of commercial and passenger electric vehicles, or digital customer channels that give customers choices over how they consume and monitor energy usage. In the new reality, power and utilities companies need to deliver more personalized services and communications, and digital technologies that create more seamless customer interactions. They need to consider digitizing front-to-back operating models to standardize disparate operations, integrate enterprise-wide architecture, respond to dynamic energy consumption and enable shorter decision cycle to drive profitability. Data must be captured and leveraged to enhance higher precision, predictive modeling of power demand and for dynamic maintenance and upgrades of networks. Companies in this sector are largely looking to increase automation (73 percent) and invest in infrastructure/cloud (35 percent) to meet their strategic goals in the new reality.

[1]Source: ttps://www.ncbi.nlm.nih.gov/pmc/articles/PMC7458120/

Board priorities & investment

While the annual pace of investment has remained high, the Power & Utilities industry traditionally moves relatively slowly, so there is a critical need for companies in the sector to double down on innovation and speed. Accelerated investment in digital is key, adopting digital infrastructure, cloud based collaboration platforms, IOT and modern networks to enable the next generation of the smart grid, enhance operations, manage workforces and reduce cost. 51 percent of CIOs in this sector expect their budget to increase in the next 12 months, signifying the investments in OPEX to reduce long-term OPEX spend. This diverges from the sector's typical prioritization of CAPEX due to the rate case model. The primary area in which Boards are looking to IT to support the business is by helping boost operational efficiency with 58 percent of companies in this sector identifying this as a top priority and 37 percent placing operations and production as a top three technology investment. In some regulated markets with rate cases capping revenue and increased state intervention, it is no surprise that companies in this sector are looking to optimize their operations, stabilize IT performance and use systems of insight to drive efficiency and maintain profitability.

Top three business issues that management boards are looking for the IT function to address:
Power & Utilities vs. overall

Power & Utilities
1. Improving operational efficiency
2. Enabling the workforce
3. Delivering stable and consistent IT performance

Overall
1. Improving operational efficiency
2. Improving customer engagement
3. Enabling the workforce

Most important technology investments:
Power & Utilities vs. overall

Power & Utilities
1. Security and privacy
2. Operations and production
3. Infrastructure/Cloud
4. Systems of insight

Overall
1. Security and privacy
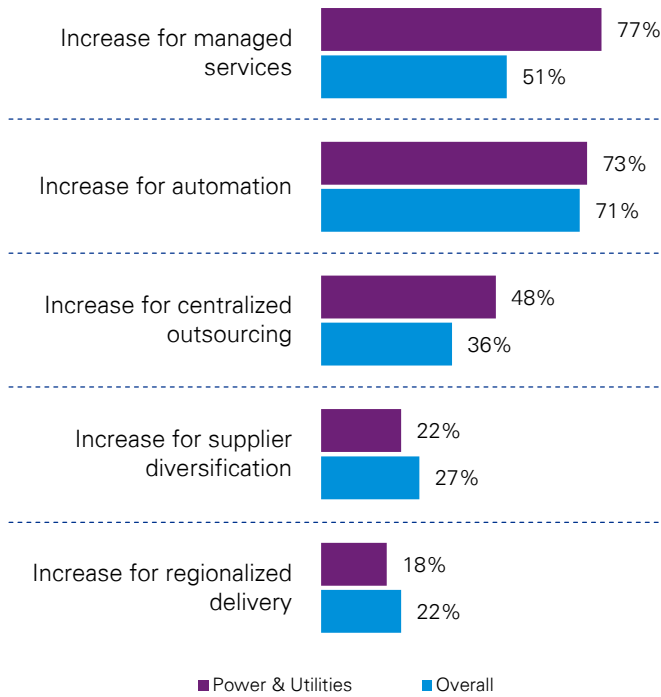2. Customer experience and engagement
3. Infrastructure/Cloud

Source: 2020 Harvey Nash/KPMG CIO Survey, KPMG International

Strategy & operating model

In such volatile times, power and utilities companies need more flexible organizational structures, allowing for agile decision-making. Many are rethinking which activities need to be controlled in-house and which can be run through managed services (77 percent expect an increase here) and supply chain relationships. We are likely to see a move away from tactical contractual arrangements to long term strategic partnerships with suppliers. It will be essential to build resiliency with proactive planning, stress testing of internal operations, agile supply chains, and the upgrading of technology to address complex and evolving needs. Increasing automation across operations is a strong priority for many (73 percent) with constant changes in regulation threatening to hamper growth and innovation. Meanwhile, Digital Leaders have a significant advantage over their peers, out-performing on operational efficiency (58 percent vs 40 percent), time to market (47 percent vs 29 percent) and significantly better on the customer experience (67 percent vs 36 percent).
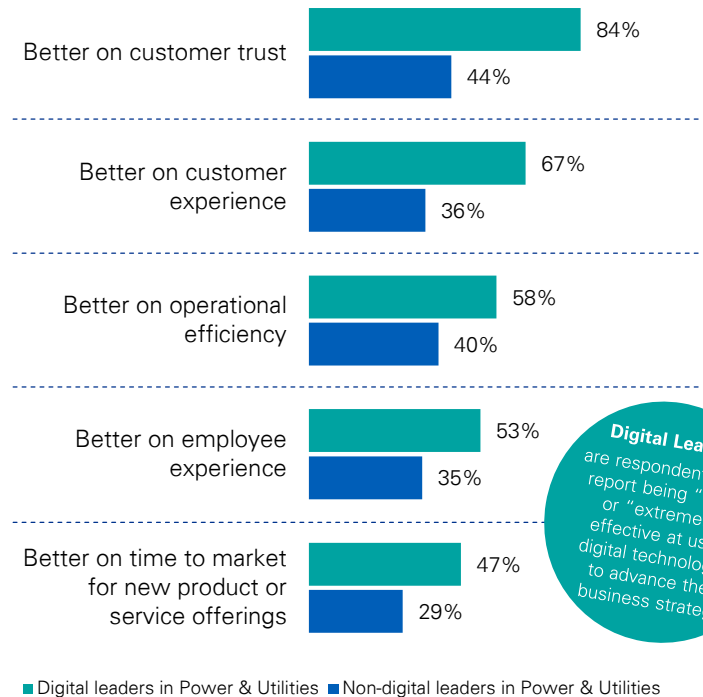
Expected change to service delivery model:
Power & Utilities vs. overall

Increase for managed services	77% (Power & Utilities) / 51% (Overall)
Increase for automation	73% (Power & Utilities) / 71% (Overall)
Increase for centralized outsourcing	48% (Power & Utilities) / 36% (Overall)
Increase for supplier diversification	22% (Power & Utilities) / 27% (Overall)
Increase for regionalized delivery	18% (Power & Utilities) / 22% (Overall)

■ Power & Utilities   ■ Overall

Organizations performing 'better' or 'significantly better' than competitors on the following metrics:
Digital leaders vs non-digital leaders in Power & Utilities

|	
Better on customer trust	84% (Digital leaders) / 44% (Non-digital leaders)
Better on customer experience	67% (Digital leaders) / 36% (Non-digital leaders)
Better on operational efficiency	58% (Digital leaders) / 40% (Non-digital leaders)
Better on employee experience	53% (Digital leaders) / 35% (Non-digital leaders)
Better on time to market for new product or service offerings	47% (Digital leaders) / 29% (Non-digital leaders)

Digital Leaders are respondents who report being "very" or "extremely" effective at using digital technologies to advance their business strategy

■ Digital leaders in Power & Utilities   ■ Non-digital leaders in Power & Utilities

Four economic recovery paths:
Power & Utilities
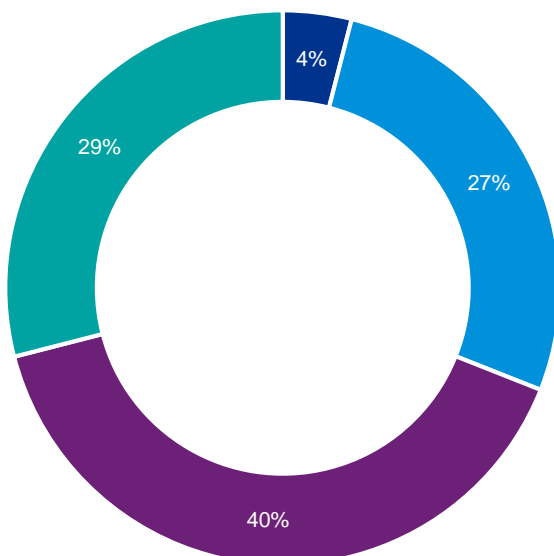
- 4% (Hard Reset)
- 27% (Transform to Re-emerge)
- 40% (Surge)
- 29% (Modified Business-as-usual)

■ **Hard Reset** — companies that struggle to recover from COVID-19 due to 'permanently' lowered demand for offerings, insufficient capital to ride out extended recession, and/or poor execution of digital transformation.

■ **Transform to Re-emerge** — companies that will recover but along a protracted path requiring reserves of capital to endure and transform operating models to emerge stronger and more in line with changed consumer priorities.

■ **Surge** — companies that scale post-COVID-19 as consumer behavior that was altered during the crisis is sustained in their favor. Investors sense their potential to lead and provide capital to scale aggressively during recovery.

■ **Modified Business-as-usual** — companies seen as daily essentials will suffer effects of the consumer shutdown recession but are expected to recover more quickly as consumer demand returns in similar volumes.

Delivering value at speed

In order to sharpen market responsiveness and personalize services, IT must support the business in a number of key ways. There needs to be an increased use of AI and machine learning applications to improve both customer interactions and engineering productivity, real-time information retrieval to support the expanded use of connected utility devices, and automation of repetitive processes that stand in the way of a streamlined customer experience. Smart technology solutions including the use of IoT and AR/VR are needed to enable remote diagnostic monitoring and preventative maintenance of infrastructure equipment, production systems and other assets. Fieldworkers and engineers must be equipped with the right technology tools for real-time communication, updates and collaboration. The need to deliver value at speed is most critical in the power & utilities sector versus all other sectors: digital leaders in power & utilities are 21x more effective at pivoting and scaling digital channels than non-digital leaders in power & utilities (compared to the cross-sector factor of 5.3x). Digital leaders in this sector have a large competitive advantage – comfortably outperforming on customer experience, collecting valuable data, and increasing profit through their digital offerings. They are also investing in large scale implementations of quite a wide spread of emerging technologies – not only distributed cloud and SaaS, but also edge computing, IoT, intelligent automation and AI/ML.

Organizations that are 'very effective' or 'extremely effective' at pivoting and scaling digital channels to meet new customer demands and expectations:
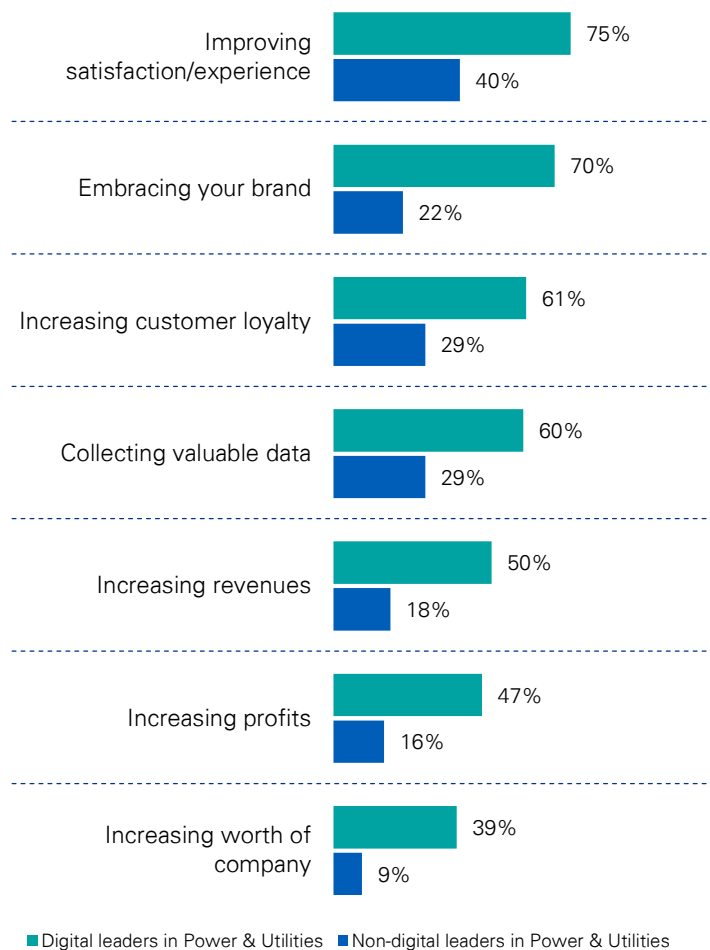*Digital leaders vs non-digital leaders in Power & Utilities*

Very or extremely effective
- 63%
- 3%
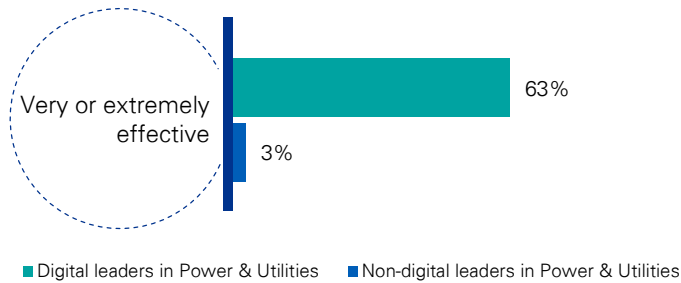
■ Digital leaders in Power & Utilities   ■ Non-digital leaders in Power & Utilities
Source: 2020 Harvey Nash/KPMG CIO Survey, KPMG International

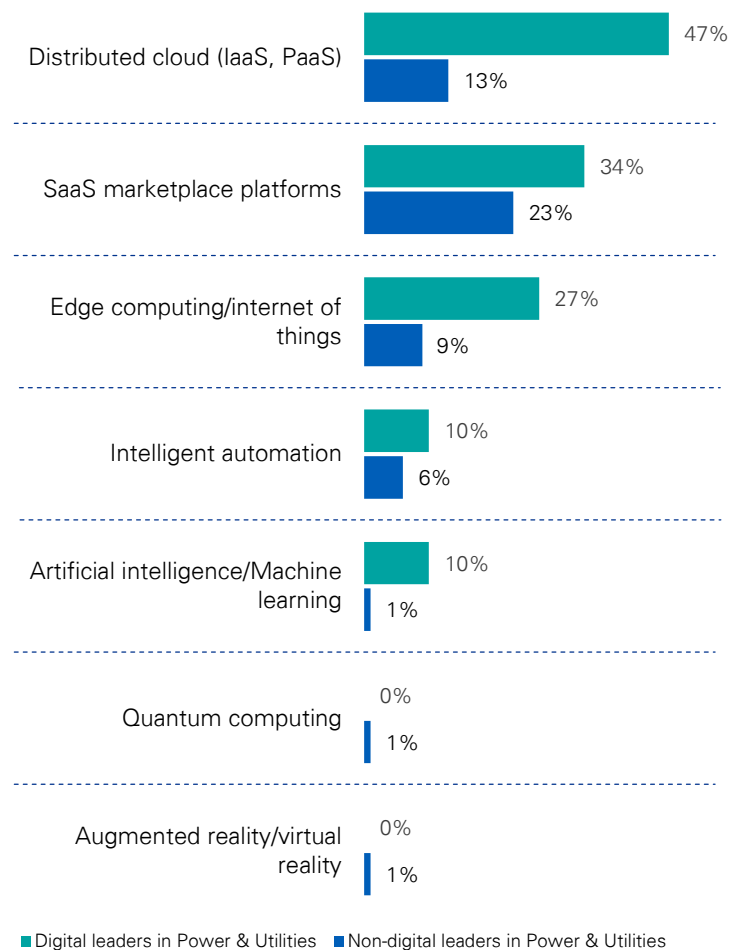**Digital offerings to customers that were 'very effective' or 'extremely effective' at the following:**
Digital leaders vs non-digital leaders in Power & Utilities

Improving satisfaction/experience
- 75%
- 40%

Embracing your brand
- 70%
- 22%

Increasing customer loyalty
- 61%
- 29%

Collecting valuable data
- 60%
- 29%

Increasing revenues
- 50%
- 18%

Increasing profits
- 47%
- 16%

Increasing worth of company
- 39%
- 9%

■ Digital leaders in Power & Utilities   ■ Non-digital leaders in Power & Utilities
Source: 2020 Harvey Nash/KPMG CIO Survey, KPMG International

Large-scale implementations of emerging tech:
Digital leaders vs non-digital leaders in Power & Utilities

Distributed cloud (IaaS, PaaS)
- 47%
- 13%

SaaS marketplace platforms
- 34%
- 23%

Edge computing/internet of things
- 27%
- 9%

Intelligent automation
- 10%
- 6%

Artificial intelligence/Machine learning
- 10%
- 1%

Quantum computing
- 0%
- 1%

Augmented reality/virtual reality
- 0%
- 1%

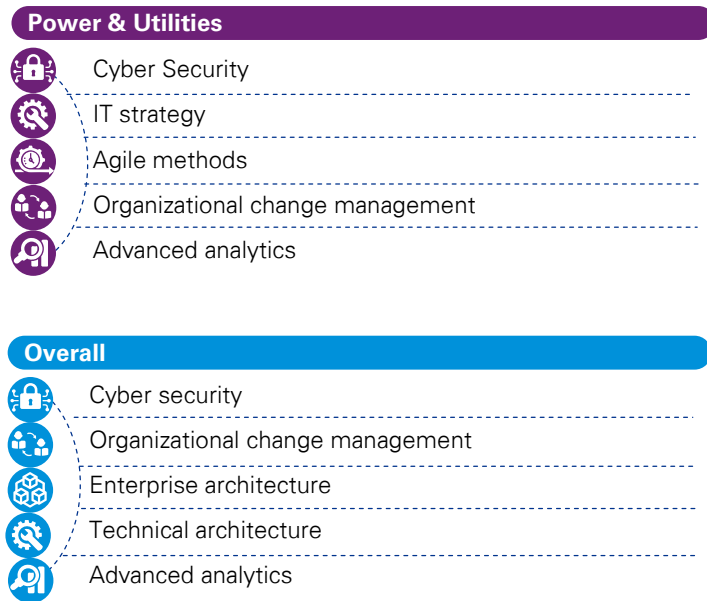■ Digital leaders in Power & Utilities   ■ Non-digital leaders in Power & Utilities
Source: 2020 Harvey Nash/KPMG CIO Survey, KPMG International

People & culture

IT leaders in the Power & Utilities sector will likely need a strong vision for digital transformation and a culture that drives innovation in order to attract and retain key technology talent. With so much for IT to contribute in the transformation of power and utilities businesses, skills shortages must be a key priority for long-term success. In line with the cross-sector average, cyber security is the number one shortage for the industry, but in second place comes simply those with expertise in 'IT strategy' – indicating the recognition that a broader IT transformation of the business is at hand. Organizations will be looking at hiring highly skilled technology talent as well as upskilling their existing workforce to adjust to the new digital paradigm. Attracting a new wave of IT skills, and particularly millennials, may be challenging given the competition faced with other sectors: strong culture and leadership, career progression opportunities and good remuneration being amongst the top perceived requirements. However, the growing interest and advancement of clean energy through electric vehicles and solar power may provide an opportunity for power and utility companies with the right strategy and culture to get access to the technology talent pool in the power space. One point of encouragement is that over half (53 percent) of CIOs in the sector believe that COVID-19 has increased the sense of inclusivity within the IT team.
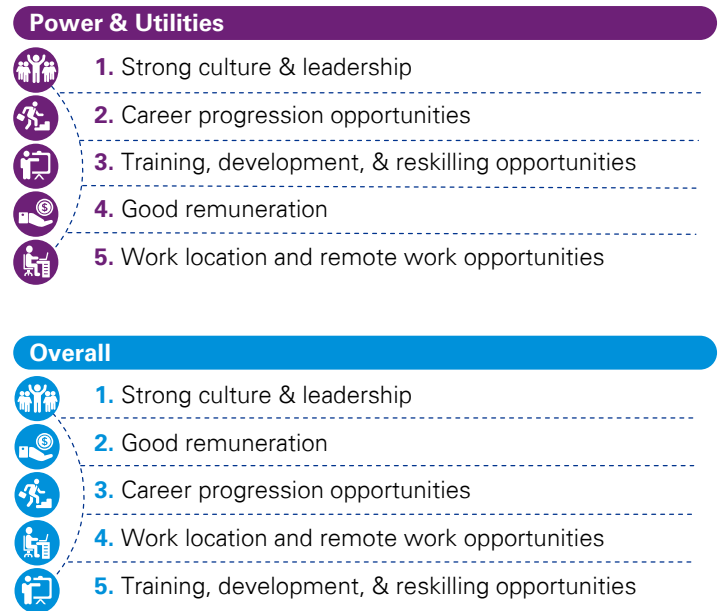
Most in demand skills:
Power & Utilities vs. overall

Power & Utilities
- Cyber Security
- IT strategy
- Agile methods
- Organizational change management
- Advanced analytics

Overall
- Cyber security
- Organizational change management
- Enterprise architecture
- Technical architecture
- Advanced analytics

Top factors in engaging and retaining key technology talent in the new reality:
Power & Utilities vs. overall

Power & Utilities
1. Strong culture & leadership
2. Career progression opportunities
3. Training, development, & reskilling opportunities
4. Good remuneration
5. Work location and remote work opportunities

Overall
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5. Training, development, & reskilling opportunities
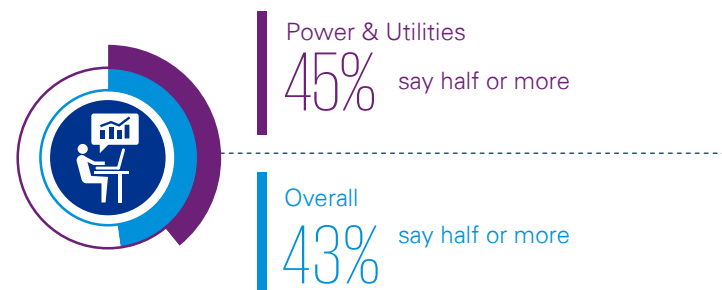
Source: 2020 Harvey Nash/KPMG CIO Survey, KPMG International

53% in Power & Utilities believe **COVID-19 created a culture** of inclusivity in the **technology team**

More than half in Power & Utilities believe **promoting diversity** improves **trust and collaboration, ability to innovate, creating customer focused products, engagement with the business and accessing the right skills**

Source: 2020 Harvey Nash/KPMG CIO Survey, KPMG International

Proportion of enterprise that will remain predominantly working from home post COVID-19:
Power & Utilities vs. overall

Power & Utilities
45% say half or more

Overall
43% say half or more

Source: 2020 Harvey Nash/KPMG CIO Survey, KPMG International

The rise of cyber

With COVID-19 causing the mass relocation of staff from corporate networks to home offices, bedrooms and kitchen tables around the world, organizations' attack surfaces also dramatically grew. As a result, more than four in ten organizations overall have experienced an increase in cyber security incidents – and in the Power & Utilities sector this is appreciably higher, at 50 percent. Spear-phishing (76 percent) and malware attacks (67 percent) have seen the largest rises. On the operational front, power and utilities companies are becoming increasingly connected through a widely distributed network of IOT, smart devices, and a wide variety of sensors. With the ability to take down the power of full cities and international cyber attacks on the rise, maintaining the cyber security of power plants and stations is of the highest priority – while for utilities businesses with extensive customer account information, keeping data secure and beyond the reach of cyber criminals is a non-negotiable requirement.

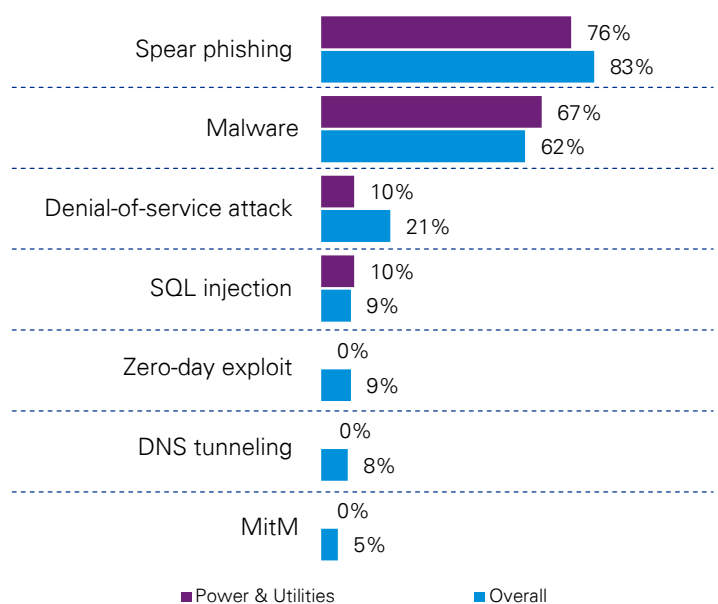**Organizations that experienced an increase in security or cyber incidents due to remote working:**
Power & Utilities vs. overall

Power & Utilities
50% yes
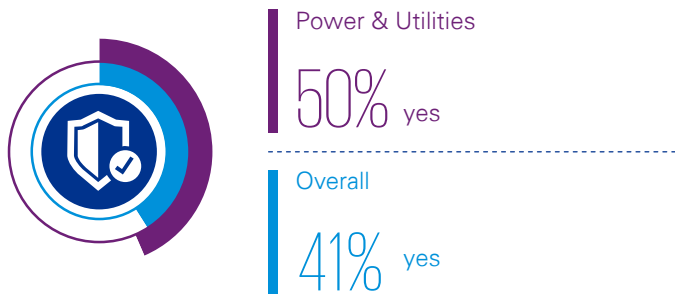
Overall
41% yes

Source: 2020 Harvey Nash/KPMG CIO Survey, KPMG International

Increase in types of attacks:
Power & Utilities vs. overall

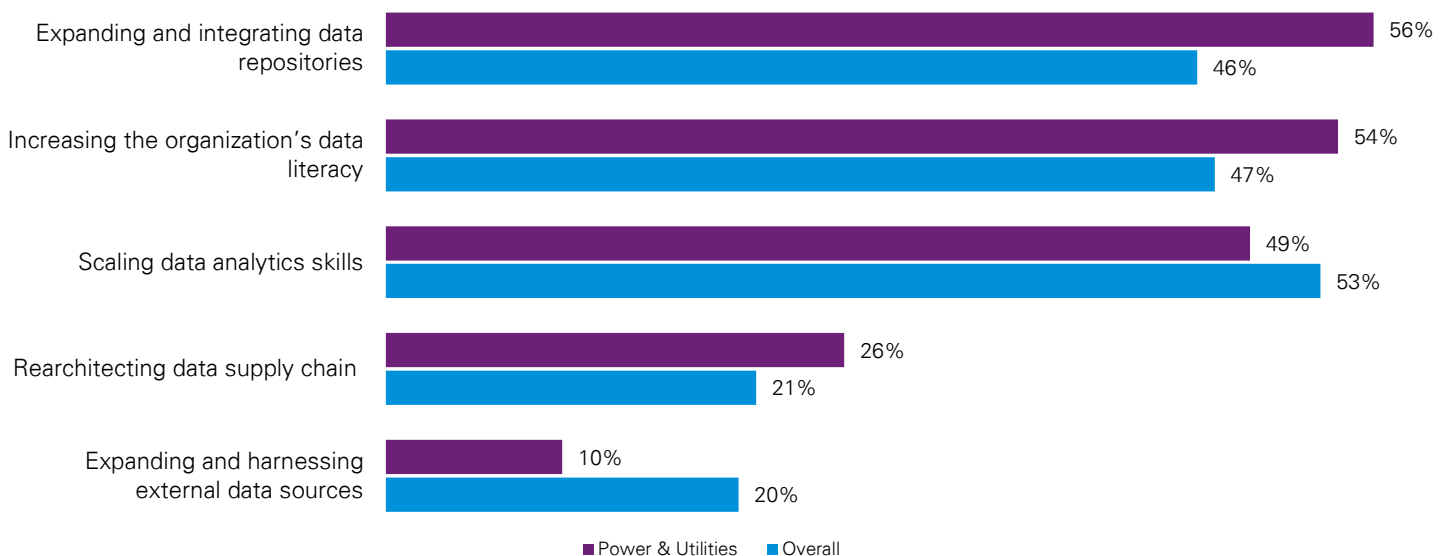| Attack type	Power & Utilities	Overall
Spear phishing	76%	83%
Malware	67%	62%
Denial-of-service attack	10%	21%
SQL injection	10%	9%
Zero-day exploit	0%	9%
DNS tunneling	0%	8%
MitM	0%	5%

■ Power & Utilities   ■ Overall

Source: 2020 Harvey Nash/KPMG CIO Survey, KPMG International

Analytics & insight

Data is critically important to operators in the sector, using analytics, machine learning applications and sophisticated models to optimize energy production, anticipate imminent demand and manage fluctuations. Both historical data and predictive analytics must be applied to build models. CIOs in the sector see expanding and integrating data repositories as their number one requirement, closely followed by increasing data literacy and scaling data analytics skills.

Priorities for your organization's data strategy:
Power & Utilities vs. overall

Priority	Power & Utilities	Overall
Expanding and integrating data repositories	56%	46%
Increasing the organization's data literacy	54%	47%
Scaling data analytics skills	49%	53%
Rearchitecting data supply chain	26%	21%
Expanding and harnessing external data sources	10%	20%

■ Power & Utilities   ■ Overall

Source: 2020 Harvey Nash/KPMG CIO Survey, KPMG International

What now?

COVID-19 has changed the landscape. With technology more important than ever to organizations' ability to survive and thrive, the opportunity has never been greater for CIOs to work as strategic partners with the business. Seven in ten IT leaders report increased collaboration between the business and technology teams – this relationship is something that CIOs must build on to ensure their organization's digital transformation success.

For CIOs in the Power & Utilities industry, digital transformation must now be accelerated. Being so based around physical products and processes, the sector has lagged somewhat compared to other industries in terms of IT enablement. Now, with operational efficiency gains critical, the technology function has the opportunity to prove its strategic value and help the business leverage the power of IT to lift processes and performance across the organization.

How KPMG can help

While KPMG firms are some of the largest providers of services to power and utilities organizations globally, we take a boutique approach to client issues with a focus on flexibility, adaptability, and innovation. We recognize that there are many on-ramps to supporting IT transformation and we've tailored our services accordingly:

Transform the business

— Strategy and operating model
— Organizational design
— Enterprise architecture
— Portfolio planning
— Merger and acquisition
— Integration and separation

Run the business

— Scaling agile
— Product management
— DevOps tooling
— IT financial management
— IT service management
— IT asset management

Modernize and protect

— Cloud strategy
— Data center strategy
— Continuity and resiliency
— Workplace transformation
— Network modernization
— Cyber, risk, and compliance

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