Under Pressure

Our recent study shows companies are already separating from the pack based on how they deploy advanced technologies and business models. In this e-book, we offer business and tech leaders in the fast-evolving E&U industry our research-based insights on the best next steps to take.
As we move beyond the early days of the digital economy, the pressure is on to optimize advanced technologies and approaches for business performance. This e-book aims to provide insights for E&U organizations to move ahead.

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Introduction: The end of the beginning

We’re 20% of the way through the 21st century, and by now, most energy & utility organizations are feeling the heat. Until recently, E&U organizations have had the luxury of moving slowly into the digital economy, given the industry’s very regional nature, the brand value that companies have acquired over the years and the fact that their operating models were tightly aligned with the way utilities traditionally conducted their business.

As we move beyond the early days of the digital economy, however, the timer is going off. With the increasing availability of distributed energy resources (DER), E&U businesses now face competition from new market entrants equipped with the latest digital technologies, processes and organizational models that cater to the needs of the energy consumer. E&U stalwarts also need to increase the agility of their operating models so they can offer energy choice, enable consumer self-selection and develop new energy trading models. Success here will be highly dependent on digitally-enabled processes and modernized IT infrastructure and data architectures.

In this environment, crucial questions arise about how to keep moving forward: what’s working, what’s not, where investments are paying off, optimal next steps, and what separates leaders from followers.
To find the answers, we surveyed 2,491 business and technology leaders from multiple industries globally (including 191 E&U organizations) that collectively account for about $21.6 trillion in annual revenue. We also interviewed senior executives who are knowledgeable about advanced technology initiatives within their companies (see Methodology, page 26).

Using our findings, we distinguished leaders from laggards to better understand what organizations look like at any point on the digital maturity curve and what it takes to make progress on that journey. Our research reveals how much businesses should be investing in advanced technologies as a percent of revenue today and in the near future, the investments that are yielding the greatest returns, the next best areas to focus on, the returns they can expect at various points of the maturity curve and more.

Our findings reveal that while E&U organizations lag behind other industries in the key measures of digital maturity, they are already seeing results from their initiatives to improve the customer and employee experience. By looking to their more mature peers, E&U businesses can determine where to invest first to gain the highest payback.

We invite you to read our ebook or visit us at cognizant.com/digital-transformation-report to read the full cross-industry report.
Our findings reveal that while E&U organizations lag behind other industries in the key measures of digital maturity, they are already seeing results from their initiatives to improve the customer and employee experience. By looking to their more mature peers, E&U businesses can determine where to invest first to gain the highest payback.
Finding Your Place on the Maturity Curve
Unsurprisingly, some companies in our full study are doing much better with adapting to modern-economy realities than others. To better understand what a leader looks like, we devised a framework to calculate a maturity score. The score is based on three criteria:

1. **Ranking on a digital transformation framework**: We scored companies across 13 key aspects of business and technology change (see page 8 for the full list).

2. **Ability to influence revenue through digital methods**: Drawing on self-reported data, we analyzed the level of revenue influenced directly or indirectly by digital channels.

3. **Benefits generated from digital**: This included operational benefits, such as speed to market and improving cost efficiencies, and more strategic ones, such as greater shareholder value and market share.

We created a maturity score for each respondent and assigned each to one of four categories: “beginner,” “implementer,” “advancer” and “leader.” We then distilled our findings into easily digestible lessons that business and technology leaders can absorb and apply immediately.

Where you go next depends on where you are now.
We’re through the first inning of the Fourth Industrial Revolution

With more than half of all respondents across industries at an intermediate or even advanced state in nearly every area of our framework, we’re well into what the World Economic Forum calls the Fourth Industrial Revolution.¹

But experienced executives have outsized expectations to move even faster, more aggressively, over the next 36 months. So amid the groundswell of progress, there’s a clear warning: If you’re not moving fast already, you’re falling farther behind.

Key components of the modern enterprise

Percent of all respondents in the implementation, maturing or advanced stage of each area of the digital maturity framework.

<table>
<thead>
<tr>
<th></th>
<th>Today</th>
<th>In three years</th>
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<tbody>
<tr>
<td>1.</td>
<td>Digital strategy and roadmap</td>
<td></td>
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<tr>
<td>2.</td>
<td>Workforce transformation</td>
<td></td>
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<tr>
<td>3.</td>
<td>Innovation culture</td>
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<tr>
<td>4.</td>
<td>IoT and connected products</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Aligning operations with customer demands</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Modernized core IT</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Data management and analytics</td>
<td></td>
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<tr>
<td>8.</td>
<td>Automation</td>
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<tr>
<td>9.</td>
<td>Software deployment</td>
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<tr>
<td>10.</td>
<td>Human-centricity</td>
<td></td>
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<tr>
<td>11.</td>
<td>Enhanced/augmented workers</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Improved consumer/employee experience</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Artificial intelligence</td>
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Total response base: 2,491
Source: Cognizant
Figure 2
The E&U Digital Imperative
No industry has escaped the waves of change washing over the business landscape, and that includes energy and utilities. From the well-known E&U trilemma of affordability, sustainability and security, to renewables, distributed energy and the rise of the self-sufficient energy “prosumer,” E&U businesses need to rethink how they engage with customers, employees and suppliers.

Already, we see utilities in several states impacted by Community Choice Aggregation (CCA) and other initiatives that offer alternative energy supplies, threatening to reduce utilities’ role to a wires and infrastructure business. Digital-native powerhouses like Google and Amazon also hold the potential to upend traditional E&U business models very quickly. Additionally, E&U organizations need to become more proactive about limiting the impact of an increased number of natural and man-made disasters.
So far, E&U organizations lag all other industries in nearly all of our key measures of digital maturity. The one exception is in improving the consumer/employee experience.

At the same time, E&U businesses are well aware that investments in digital technologies and business models are essential to meeting their long-term goals. The question is where to invest first to gain the highest payback.

Utilities lag in all measures of digital maturity but one

Percent of respondents in the maturing or advanced stage of each area of the digital maturity framework.

![Bar chart showing differences in digital maturity measures between E&U respondents and all respondents.]

- Digital strategy and roadmap: -16
- Workforce transformation: -7
- Improved consumer/employee experience: +4
- Modernized core IT: -8
- Aligning operations with customer demands: -6
- Innovation culture: -15
- Automation: -23
- IoT and connected products: -16
- Data management and analytics: -25
- Enhanced augmented workers: -4
- Human-centricity: -8
- Software deployment: -23
- Artificial intelligence: -14

Total response base: 2,491
E&U response base: 191
Source: Cognizant
Figure 3
E&U organizations as a whole give themselves relatively high marks for improving the customer and employee experience. This study finding aligns with where we see industry players making investments, as it’s a key differentiator in an increasingly competitive marketplace. The disparity with other industries would likely be even higher if utility suppliers (not just generators and distributors) were included in the study.

We consider the industry to be in a similar situation as telecommunications businesses were when smartphone popularity began precipitating high customer churn. With a changing landscape caused by the emergence of retail companies offering alternative energy distribution channels and proliferating renewables, E&U businesses need to enhance their brand recognition. Failure to invest in a better customer/employee experience increases the risk of losing customers to competitors that offer easier two-way engagement, more transparency and self-service options.

Considering customer/employee experience has been a focal point for E&U businesses thus far, it’s not surprising to see “increased customer retention and engagement” arise as a top benefit of investing in digital, especially among leaders.
With a changing landscape caused by the emergence of retail companies offering alternative energy distribution channels and proliferating renewables, E&U businesses need to enhance their brand recognition. Failure to invest in a better customer/employee experience increases the risk of losing customers to competitors that offer easier two-way engagement, more transparency and self-service options.
That said, E&U businesses need to amp up their spending when it comes to investing in digital. Considering the due diligence processes and compliance issues of regulated businesses, it’s clear that any spending increases must be made in a balanced and measured way.

The good news is that E&U organizations plan to double the percent of revenue spent on advanced technologies between now and 2022. E&U’s growth rate of 88% is the highest of all industries and exceeds the cross-industry average of 60%.

E&U digital leaders — which aren’t far from meeting the cross-industry spending norms — provide a useful benchmark for other industry players to follow. For now, though, the spending gap between the average E&U business and leaders is wide.

The good news is that E&U organizations plan to double the percent of revenue spent on advanced technologies between now and 2022. E&U’s growth rate of 88% is the highest of all industries and exceeds the cross-industry average of 60%.
The looming question for many E&U businesses is where to start with their digital initiatives and investments. The activities and investments of the leaders in the E&U industry provide a clear-eyed view of which investments are vital to make and which provide the highest payback. Leaders rate themselves as most mature in three top areas: digital strategy, data management/analytics and automation (see next page).

Among all respondents in our study, data management stood out as a particularly high-payback investment. Across industries, the same percent of respondents whose organizations have made moderate or substantial investments in data management (60%) have realized moderate to high returns. E&U leaders have not yet seen these results; 45% of leaders say they’ve made high levels of investment in data management, and 29% have realized moderate to high returns (see next page).

Leaders rate themselves as most mature in three top areas: digital strategy, data management/analytics and automation.
The leader-beginner digital divide

Percent of respondents in the maturing or advancing stage of digital maturity.

![Bar chart showing the leader-beginner digital divide](image)

Data is a hidden advantage that legacy companies have against digital-native competitors. Finding, mining, managing and using existing reams of market and customer data — in an ethical and transparent way — is paramount to success. It’s also the foundation for strategies pertaining to predictive maintenance of energy assets and anticipating customer needs.

E&U response base: 191
Source: Cognizant
Figure 6
Where leaders place their bets — and win

Top areas of investment for E&U leaders provide additional insight into where other players can gain the most from technology expenditures. In our study, the areas where the most mature E&U business are both making the greatest investment and seeing the highest payoff are mobile technology/apps, cloud, cybersecurity, IoT and robotic process automation. Except for mobile and cybersecurity, the investment gap between leaders and beginners is large.

**Investment gulf between leaders and laggards**

Percent of respondents who made a significant investment in each technology over the last two years. Percent of E&U leaders who saw a significant return on that investment.

- **Leaders’ ROI**
  - Mobile technology/apps: 92%
  - Cloud technology: 82%
  - Cybersecurity technologies: 77%
  - IoT: 68%
  - Robotic process automation: 58%
  - Artificial intelligence: 44%
  - Digital assistants: 44%
  - Data management: 29%
  - Open platforms/API: 34%
  - Drones: 34%

E&U response base: 191
Source: Cognizant
Figure 7
Cloud: When it comes to the cloud, E&U businesses at the earlier stages of digital maturity are particularly cautious about considering migration and are apt to view cloud as a double-edged sword. Even with the agility benefits it offers, many are concerned about the introduction of unknown cybersecurity risk.

For these organizations, we advise taking a selective approach to cloud deployment that would slowly but surely increase organizational agility and transparency while minimizing risk. A good start would be to focus on applications with the lowest-risk workloads or those with minimal customer data or sensitive information.

Cybersecurity: It’s not surprising to see cybersecurity at the top of both beginners’ and leaders’ lists. Because leaders are more apt to have established and benefited from a digital strategy, it’s also not surprising that over three-quarters consider cybersecurity to be a high-payback investment, as a well-crafted roadmap would help them understand not just where to invest but also how to do so while minimizing security risk.

IoT: The instrumenting of devices that sit on operational infrastructure with IP addresses is the most effective way to gather information for disaster intelligence or predictive maintenance. It’s notable that a fairly close percentage of leaders have invested substantially in both IoT (82%) and AI (76%) as the two technologies often go hand-in-hand. While IoT initiatives signal a move toward collecting data that matters, full maturity means integrating data, analyzing content, understanding what data matters most, and using AI to predict and prescribe the best actions. We’ve already seen leaders embark on IoT/AI initiatives to inform customers of potential outages and predict natural disasters before they happen so they can take preventive measures.

A smaller percentage are realizing returns as yet from AI (44%) vs. IoT (68%). This is because while the impact of AI is great, it’s also among the most difficult of digital disciplines to master. Not only does it require a modern data foundation that brings together all the data that matters, but it also requires new skills to extract meaning from that data.
We advise taking a selective approach to cloud deployment that would slowly but surely increase organizational agility and transparency while minimizing risk. A good start would be to focus on applications with the lowest-risk workloads or those with minimal customer data or sensitive information.
Beyond technology: starting with processes

Technology is reshaping work

Top three processes where E&U respondents see impact today and expect a bigger impact in the next three years.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Impact from digital tech today</th>
<th>Expected impact in three years</th>
</tr>
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<tbody>
<tr>
<td>Utilities</td>
<td>Transmission/distribution (62%)</td>
<td>Generation (77%)</td>
</tr>
<tr>
<td></td>
<td>Generation (59%)</td>
<td>Retail markets (76%)</td>
</tr>
<tr>
<td></td>
<td>Wholesale markets (44%)</td>
<td>Transmission/distribution (76%)</td>
</tr>
<tr>
<td></td>
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<td>Wholesale markets (76%)</td>
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</tbody>
</table>

E&U response base: 191
Source: Cognizant
Figure 8

Determining the highest-impact digital investments should be a function of reimagined business processes that enable the organization to become more operationally advanced.

When we examined the top three processes where respondents across industries see impact today and expect a bigger impact in the next three years, two strategic points stand out:

1. **Process investments with the best payoff are largely oriented around work directly touching customers.** The truth about the modern economy — something we’ve been saying for years now — is that as we become more technically enmeshed, the human experience will become even more of a value driver.

2. **Business decision makers have already started mining the seams of value in their middle and back offices.** The vast majority of processes expected to deliver value based on new technology will stay the same between today and the coming three years.
E&U organizations that invest in digital technologies and approaches could potentially see hefty benefits to the bottom line as their revenue outstrips their initial costs on a cumulative basis. As they advance on their plans and develop into leaders, their revenue and net impacts grow.

Cumulative net impacts for E&U businesses by maturity level
(Net benefit — revenue minus cost — as a percent of overall revenue)

- Beginner: 3.8%
- Implementer: 3.7%
- Advancer: 6.5%
- Leader: 10.1%

E&U response base: 191
Source: Cognizant
Figure 9
In our analysis, businesses will realize different returns on any given investment depending on their digital maturity level.

Across industries, a key investment for businesses in the earlier stages of maturity is in the digital strategy itself. For E&U organizations in particular, uncertainty about digital technologies among less mature organizations may result in an old-school approach to laying out a technology roadmap that could put utilities even further behind. Concerns regarding cloud security, for instance, have pushed at least one of our clients to invest in building a new data center vs. taking a more modern and agile approach.

A well-planned digital strategy can also go a long way toward reducing the risk of unintentionally creating cybersecurity holes. By filling in knowledge gaps, E&U businesses can set up a digital roadmap that will help them anticipate the security issues they should be aware of. It’s telling that of all the elements in our maturity framework, digital strategy is where E&U leaders consider themselves to be most mature.
Three additional takeaways from our findings:

- **Build your innovation muscle from the get-go.** Having an innovation capability can make your organization a player in the Fourth Industrial Revolution. An innovation culture enables organizations to boost performance across all areas of digital endeavor.

- **Proficient data management supercharges performance for more mature companies.** As companies advance in maturity, managing data better — and therefore being able to derive insights, apply intelligence, drive growth and more — provides fuel for continued advancement.

- **Unleash the bots.** Automation — applying software to make work more efficient — should be on nearly every roadmap. It’s a good way to contain costs and improve efficiency, as well as free capital to invest in other modern-economy initiatives (and upskill your workforce).
Advancing Your Digital Maturity
The road ahead

E&U organizations are striving to prepare for future challenges and advance their digital maturity. To meet these goals, we advise businesses to take the following steps:

1. **Focus on processes, not technology.** Taking a process-first approach provides needed context for technology investments. The best place to start is not “which technology to use” but how transactions should be conducted in the business based on changes in the marketplace and whether current processes are supporting them.

2. **Prepare a digital roadmap.** For regulated E&U organizations in particular, it’s essential to develop a strategy that outlines which digital investments will be prioritized over time. Doing so enables these businesses to present a structured view of what they intend to implement and the intended outcomes.

3. **Keep cybersecurity risks in perspective.** It can feel risky to pursue strategies involving advanced technologies and techniques, however, it’s vital for E&U organizations to branch out beyond their comfort zones. By focusing on which processes would benefit most from a digital upgrade, E&U decision makers can take a laser-like approach to what’s best for the business while minimizing security gaps.

The best place to start is not “which technology to use” but how transactions should be conducted in the business based on changes in the marketplace and whether current processes are supporting them.
Respondents by region and country

Of the 191 utilities that responded, 37% were in Europe, 37% in North America, and 26% in Asia Pacific.

Respondents by industry

Respondents were spread evenly by industry (healthcare payers, healthcare providers, technology hardware, technology software, consumer products, financial services, industrial manufacturing, insurance, life sciences, media/entertainment/publishing, retail, telecommunications, utilities). Each of the 12 industries represented 8% to 9% of the sample, or approximately 200 respondents per industry. Hardware and software companies were combined into one of the 12 industries.

Respondents by revenue

By subsector*

* Sample sizes for geothermal and electric power distribution are smaller than statistically significant.
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Learn More

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www.cognizant.com/digital-business

For the full report, please visit
cognizant.com/digital-transformation-report.

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Cognizant Digital Business

We help clients build digital businesses and innovate products that create new value – by using sensing, insights, software and experience to deliver on what customers demand in the digital age. Through IoT, we connect the digital and physical worlds to make smart, efficient and safe products, operations and enterprises. Leveraging data, analytics and AI, we drive intelligent decisions and anticipate where markets and customers are going next. Then we use those insights, combining design and software to deliver the experiences that consumers expect of their brands. Learn more about how we’re engineering the modern enterprise at www.cognizant.com/digital-business.

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