# ENDLESS POSSIBILITIES WITH DATA FOR ENERGY AND UTILITIES

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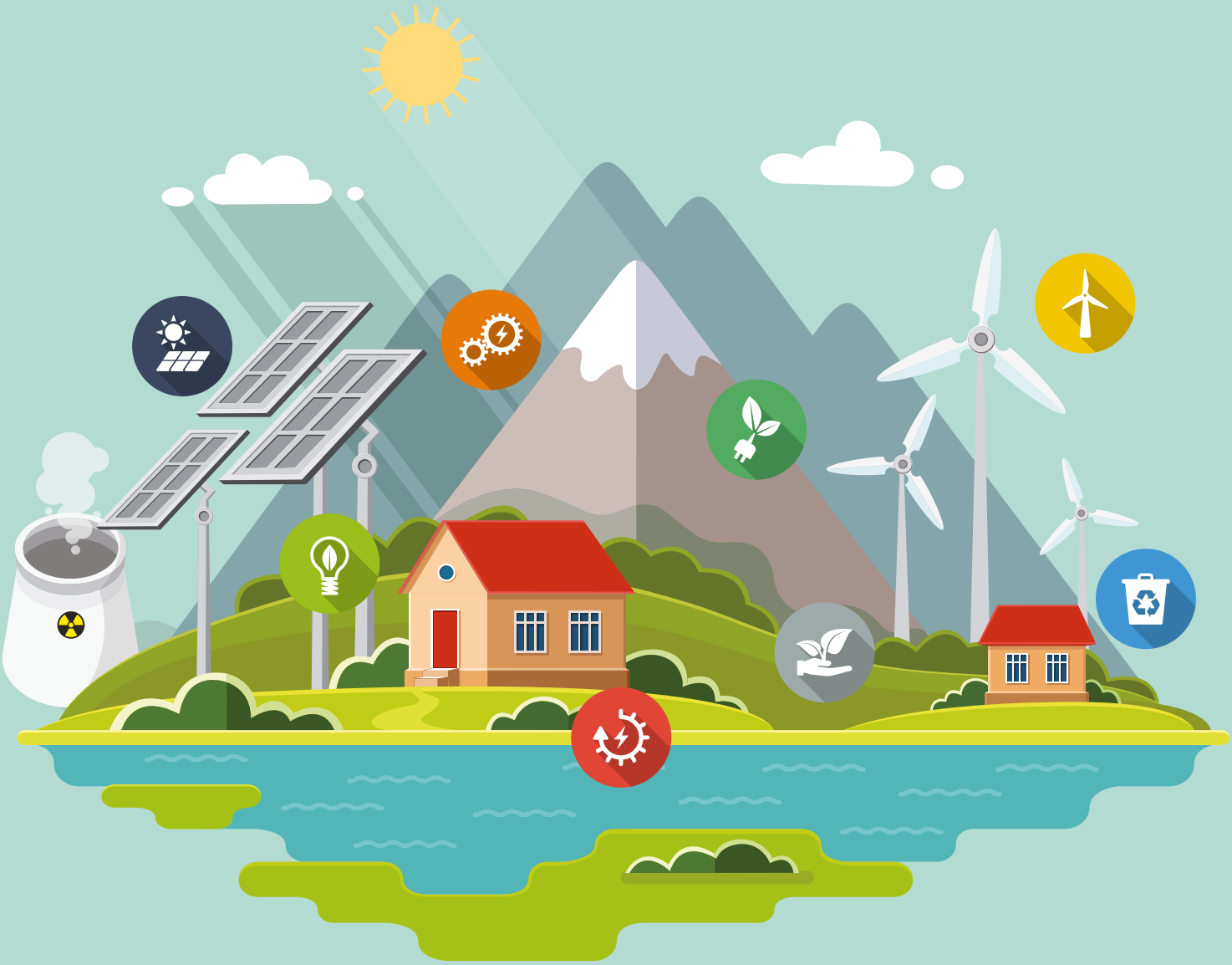

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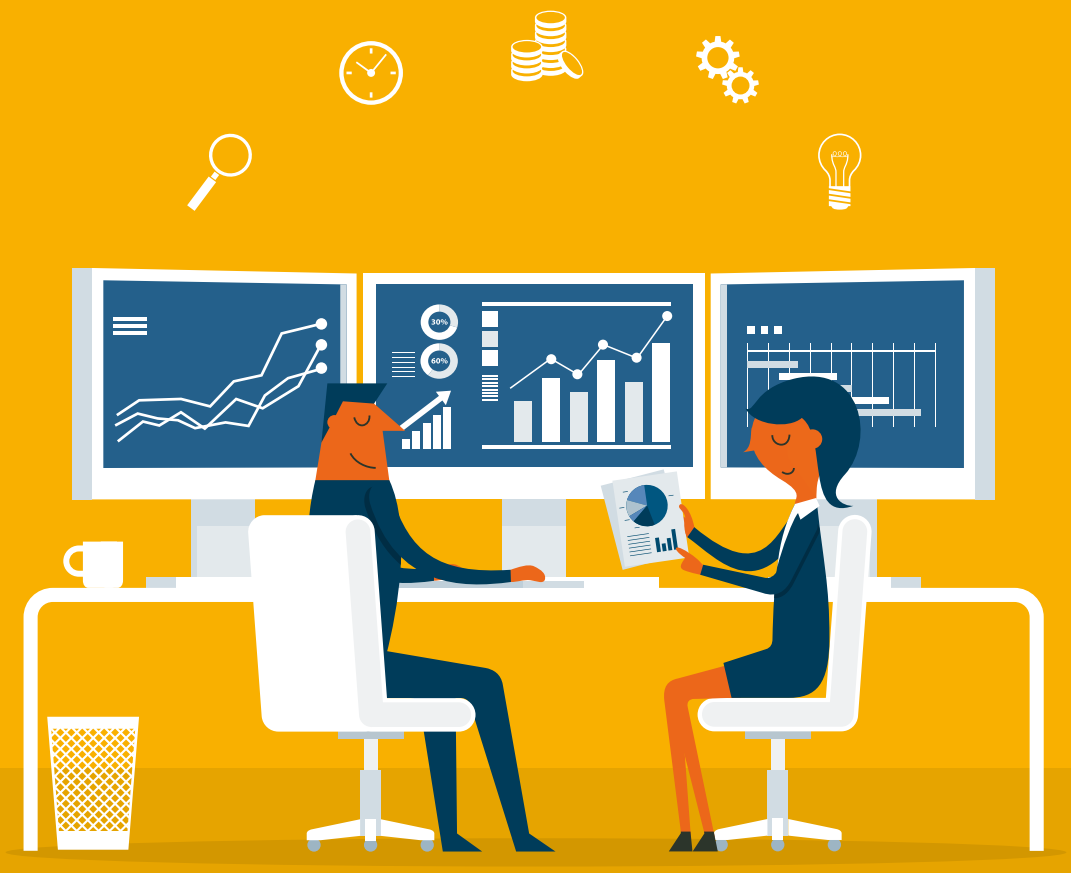

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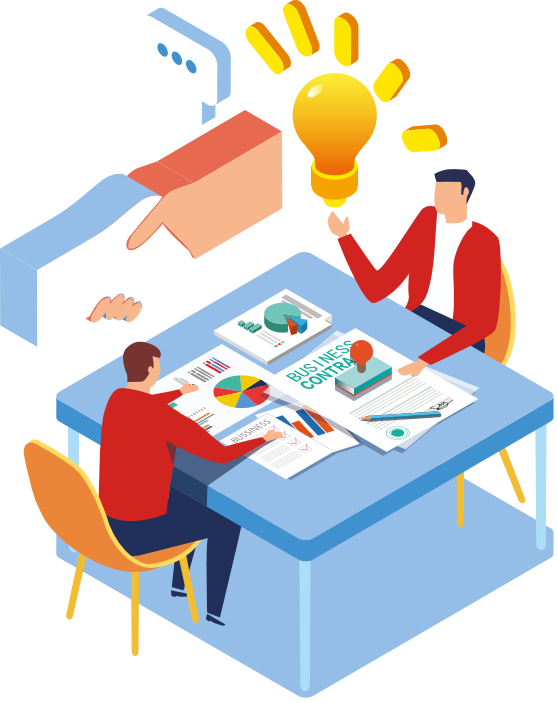
# INTRODUCTION TO THE STUDY

Shaking off its technology laggard tag, today the energy and utilities industry is racing to use data analytics to do several things, including monitor grid infrastructure to improve operations, understand consumer behavior, forecast energy demand, improve regulatory compliance, mitigate fraud and enhance customer service. But some analysts say that this is only the beginning, and that in future, utilities will employ advanced analytics to analyze data from customers' devices in the Internet of Things to build huge competitive advantage*.

To find out what was brewing in the industry, we recently spoke to 176 professionals from the energy and utilities industry as part of a larger independent survey of 1,062 senior executives from 7 verticals across the globe. Of the 176 respondents, 48% were decision makers, 39% belonged to senior management, 9% were responsible for project/ program execution and 4% were external consultants. 50% of the respondents were based in the United States, 22% in Europe and 28% in Australia and New Zealand.

The study explores the current scenario and usage of data analytics among energy and utilities organizations, including the opportunities and challenges of data analytics, its role in a world of digital and AI technologies, and the maturity and preferences of enterprises. It also examines what the future of data analytics in the industry would look like if there were no limit to its possibilities.




# IN A WORLD OF ENDLESS POSSIBILITIES WITH DATA

In the days of the traditional utilities model, companies simply collected consumption data from their customers' premises and billed them for it. The monthly bill was their only interaction with customers. With the arrival of digitization and smart metering, the amount of data from the grid has increased exponentially.

When this data combines with unstructured information from social media and IoT devices, it creates virtually unlimited analytical possibilities for the industry.

Which of those possibilities do energy and utilities companies find most relevant? In answer to this question, 39% of respondents named Risk Mitigation, much higher than the 28% of the overall vote. 28% of participants said it was Experience Enhancement, while 20% mentioned Business Model Creation and 13% named Revenue and Profitability Maximization. Responses from Australia and New Zealand deviated from this pattern – there, while risk mitigation was the top answer (47%), it was followed by business model creation (27%); using data analytics to improve profit and revenue was relevant to only 6% of respondents.

| User Groups | Overall Energy and Utilities | Individual Industry | | Geographies | | |
|---|---|---|---|---|---|---|
| | | Energy | Utilities | USA | Europe | ANZ |
| Base | 176 | 88 | 88 | 88 | 39 | 49 |
| Business Model Transformation | 20% | 22% | 18% | 17% | 18% | 27% |
| Experience Enhancement | 28% | 27% | 30% | 31% | 33% | 20% |
| Revenue and Profitability Maximization | 13% | 15% | 11% | 18% | 11% | 6% |
| Risk Mitigation | 39% | 36% | 41% | 34% | 38% | 47% |

Table 1: Scenarios where data analytics would be extremely relevant if possibilities with data were endless

What was the strategic approach taken by energy and utilities companies for driving analytics initiatives within their organization? Nearly 1 in 2, or 44%, said that they had a well-defined strategy or roadmap, which was followed throughout the enterprise. 40% of respondents said that the enterprise strategy existed, but business functions were free to develop their own. This was mostly the case in Europe (56%) and Australia and New Zealand (43%).

In 1 in 10 energy and utilities companies, there was no enterprise strategy; business functions built and executed their own roadmaps. At 6% of companies, even those function-level roadmaps did not exist, and analytics projects were implemented as and when needed.

| Current strategy/ approach towards driving analytics initiatives | Overall Energy and Utilities | Individual Industry | | Geographies | | |
|---|---|---|---|---|---|---|
| | | Energy | Utilities | USA | Europe | ANZ |
| Base | 176 | 88 | 88 | 88 | 39 | 49 |
| Well defined enterprise-wide strategy/roadmap exists and is followed religiously. |  44% | 44% | 43% | 52% | 36% | 35% |
| Enterprise wide strategy/ roadmap exists as a guideline but business functions have flexibility to develop their own. |  40% | 42% | 39% | 32% | 56% | 43% |
| No enterprise wide strategy/roadmap exists; business functions build their own roadmap & executive accordingly. |  10% | 9% | 11% | 9% | 5% | 16% |
| Business functions/ divisions/geographies use analytics/drive initiatives on a need basis; but they do not have a roadmap. |  6% | 5% | 7% | 7% | 3% | 6% |

Table 2: Current strategy/approach towards driving analytics initiatives

# MEETING AND BEATING DATA CHALLENGES

The industry said that its biggest challenges in implementing analytics initiatives stemmed from a lack of expertise in integrating multiple datasets from different sources (46%) and ensuring data hygiene (42%).

Also for the industry, finding the right resource skill was a problem.

| | Overall Energy and Utilities | Individual Industry | | Geographies | | |
|---|---|---|---|---|---|---|
| | | Energy | Utilities | USA | Europe | ANZ |
| Base | 176 | 88 | 88 | 88 | 39 | 49 |
| Integrating multiple analytics tools to draw synergies | 36% | 38% | 34% | 35% | 36% | 37% |
| Deciding on choice of tools/technologies to pick from | 39% | 40% | 39% | 42% | 31% | 41% |
| Maturity of existing systems/architectures & technology environments | 31% | 28% | 34% | 33% | 31% | 29% |
| Required resource skills in the analytics realms | 40% | 45% | 34% | 39% | 33% | 47% |
| Absence of a dedicated analytics team to drive the initiatives to closure | 13% | 20% | 6% | 10% | 10% | 20% |
| Pace of execution/ implementation of the initiative | 39% | 43% | 34% | 39% | 33% | 43% |
| Lack of high levels of clarity in the execution roadmap | 32% | 33% | 32% | 28% | 36% | 37% |
| Understanding the right analysis techniques to be deployed | 39% | 42% | 35% | 38% | 33% | 45% |
| Integration of multiple datasets for various sources | 46% | 51% | 41% | 35% | 62% | 53% |
| Ensuring data hygiene (correctness of data, relevance) | 42% | 41% | 43% | 43% | 36% | 45% |

Table 3: Key challenges in implementing data analytics-led initiatives

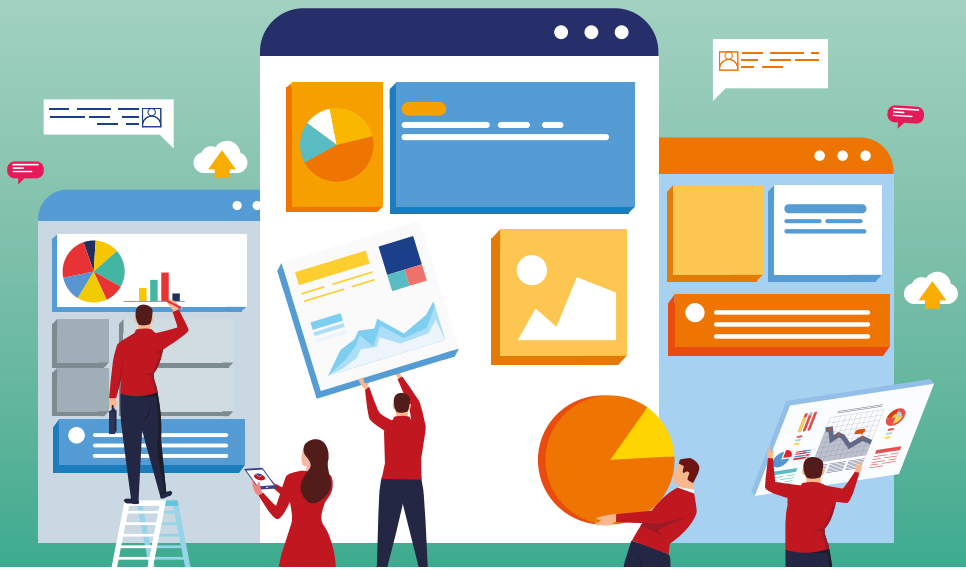
How did the respondents think they could beat these challenges? For 51%, it was choosing the right analytics tools and technologies; 46% said they needed to have a clear roadmap/execution strategy beforehand. Finding the right analysis techniques and centralizing enterprise data to make it fungible received 44% mentions each.

Respondents from Australia and New Zealand were the only ones who named enabling a digital culture across the organization their top option (55%).

| | Overall Energy and Utilities | Individual Industry | | Geographies | | |
|---|---|---|---|---|---|---|
| | | Energy | Utilities | USA | Europe | ANZ |
| Base | 176 | 88 | 88 | 88 | 39 | 49 |
| Choosing the right analytics tools/ technologies |  51% | 56% | 45% | 49% | 59% | 47% |
| Ensuring a clear roadmap/execution strategy is set before |  46% | 42% | 50% | 45% | 38% | 53% |
| Identifying the right analysis techniques |  44% | 42% | 47% | 43% | 49% | 43% |
| Centralizing organisation wide data for better fungibility |  44% | 47% | 41% | 44% | 41% | 45% |
| Deploying the right people with the right skills |  43% | 43% | 43% | 45% | 36% | 45% |
| Investing in latest IT Infra/Cloud technologies |  40% | 43% | 38% | 42% | 49% | 31% |
| Enabling/Evangelizing digital culture across the organization |  38% | 44% | 32% | 34% | 26% | 55% |
| Partnering with external service providers, data experts |  19% | 23% | 16% | 16% | 15% | 29% |

Table 4: Important aspects to drive in order to overcome execution challenges in analytics initiatives

# WHAT ANALYTICS AND WHY



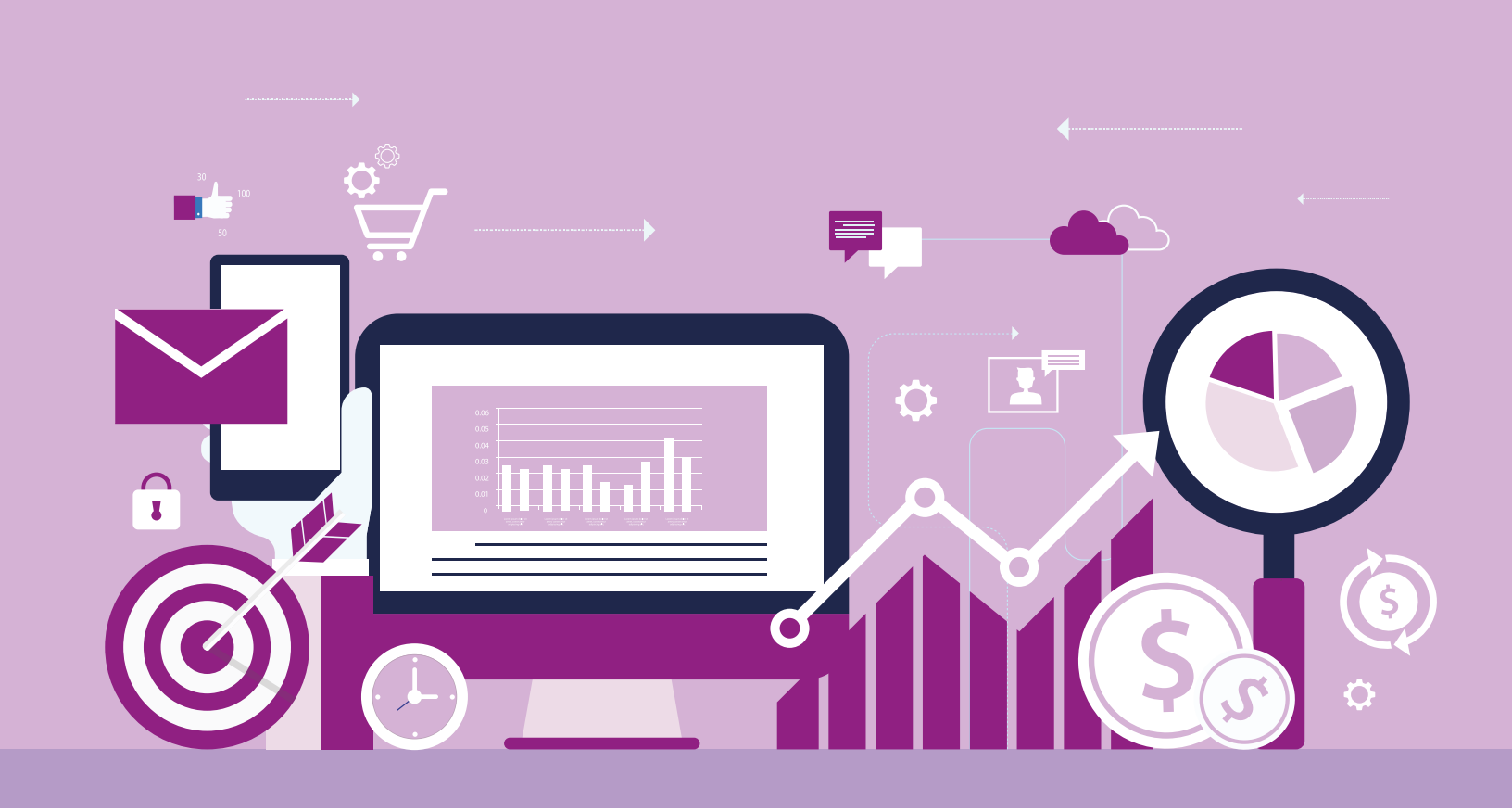
The energy and utilities sector was an early adopter of predictive analytics, using it to proactively maintain production platforms, forewarn a user of an impending large electricity bill etc.

Therefore, unlike the overall respondent base, which leveraged descriptive/diagnostic analytics the most, energy and utilities organizations had the maximum number of analytics initiatives around predictive solutions (67%). The trend was more pronounced among European companies (82%).

60% and 30% of respondents respectively said they used descriptive/diagnostic and prescriptive analytics the most. The use of descriptive/diagnostic solutions was much more in energy companies (68%) than among utilities providers (51%).

| | Overall Energy and Utilities | Individual Industry | | Geographies | | |
|---|---|---|---|---|---|---|
| | | Energy | Utilities | USA | Europe | ANZ |
| Base | 176 | 88 | 88 | 88 | 39 | 49 |
| Descriptive/Diagnostic analytics | 60% | 68% | 51% | 60% | 62% | 57% |
| Predictive analytics | 67% | 70% | 64% | 61% | 82% | 65% |
| Prescriptive analytics | 30% | 27% | 32% | 27% | 44% | 22% |

Table 5: Analytics initiatives deployed or currently running in organizations



# ANALYTICS USAGE BY FUNCTION

In many countries, energy flows both ways between providers and thousands of producer-consumers, making billing extremely complex.

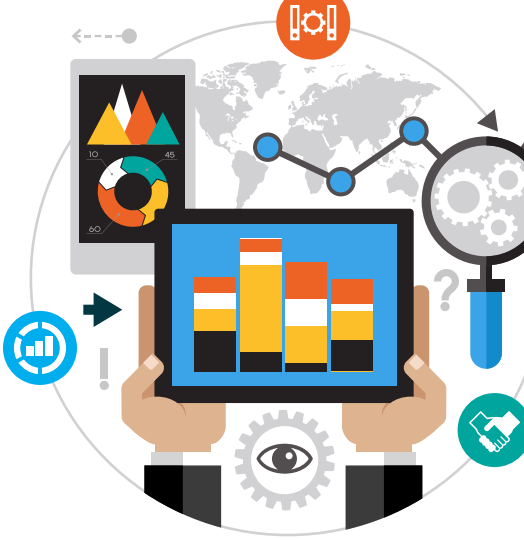
***An Australian power distribution company said that it found analytics valuable in enabling it to manage customer claims better.***

So it was not surprising to find that finance and accounting had the most number of initiatives among energy and utilities providers (named by 40%). Marketing was second (20%) and operations came third (18%).

| | Overall Energy and Utilities | Individual Industry | | Geographies | | |
|---|---|---|---|---|---|---|
| | | Energy | Utilities | USA | Europe | ANZ |
| Base | 176 | 88 | 88 | 88 | 39 | 49 |
| Finance & Accounting | 40% | 38% | 42% | 43% | 36% | 37% |
| Marketing | 20% | 18% | 22% | 14% | 31% | 22% |
| Operations (Production, Supply chain, Support) | 18% | 24% | 11% | 20% | 9% | 20% |
| Sales & Presales | 9% | 8% | 10% | 6% | 13% | 12% |
| Research & Development | 6% | 3% | 9% | 9% | – | 6% |
| Human Resources | 6% | 7% | 5% | 7% | 8% | 3% |
| Sourcing & Procurement | 1% | 2% | 1% | 1% | 6% | – |

Table 6: Analytics savvy functions in an organization

# THE IMPACT OF OTHER TECHNOLOGIES



How will other technologies enhance analytics initiatives in the future? According to the energy and utilities respondents in the survey, artificial intelligence will help to create new business models/ cases and drive prescriptive and predictive modeling (46% each). Automation, on the other hand, will give them the ability to scale existing initiatives (55%), and standardize data and analysis techniques (51%).

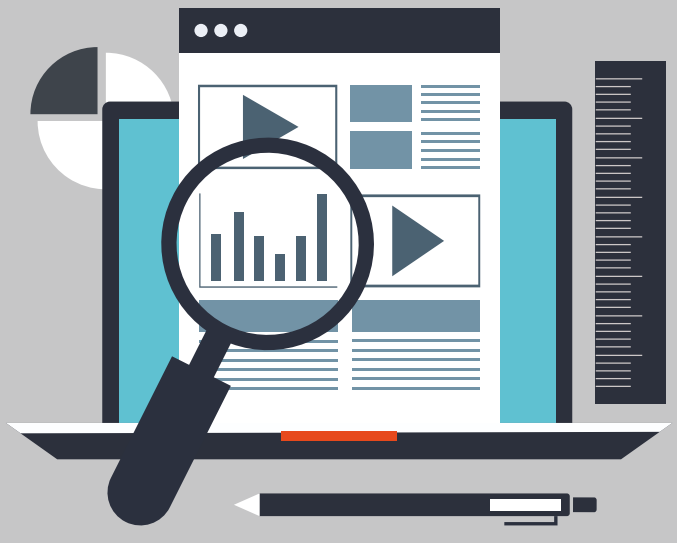
| | Overall Energy and Utilities | Individual Industry | | Geographies | | |
|---|---|---|---|---|---|---|
| | | Energy | Utilities | USA | Europe | ANZ |
| Base | 176 | 88 | 88 | 88 | 39 | 49 |
| **Automation** | | | | | | |
| Ability to scale current analytics initiatives & deploy | 55% | 51% | 59% | 58% | 49% | 55% |
| Standardization of data & analysis techniques | 51% | 52% | 50% | 53% | 49% | 49% |
| Drawing higher efficiencies | 45% | 49% | 42% | 47% | 44% | 45% |
| **Artificial Intelligence** | | | | | | |
| Driving Prescriptive & predictive modeling | 46% | 61% | 31% | 45% | 51% | 43% |
| Possibility for creating new Business cases/ models | 46% | 49% | 43% | 44% | 54% | 43% |
| Effective risk detection & mitigation | 34% | 30% | 38% | 30% | 44% | 33% |

Table 7: Role of AI and Automation in the analytics world

The focus on predictive and prescriptive analysis prevailed even when it came to other technologies, such as cloud, Big Data and IoT. 53% of industry respondents said it would strengthen those areas, while 51% said it would bring forth new business models/ cases. Respondents from the U.S. however thought the convergence of cloud, big data and IoT would make analytics frameworks more scalable and repeatable.

| | Overall Energy and Utilities | Individual Industry | | Geographies | | |
|---|---|---|---|---|---|---|
| | | Energy | Utilities | USA | Europe | ANZ |
| Base | 176 | 88 | 88 | 88 | 39 | 49 |
| Predictive & prescriptive analytics | 53% | 58% | 48% | 49% | 64% | 51% |
| New business models/ cases | 51% | 58% | 43% | 48% | 44% | 61% |
| Effective data management | 47% | 50% | 44% | 49% | 49% | 43% |
| Scalability & Repeatability of analytics frameworks | 45% | 45% | 44% | 51% | 28% | 47% |
| Cross organizational synergies | 37% | 40% | 34% | 40% | 31% | 37% |
| Real-time impact on decision making | 34% | 31% | 38% | 27% | 46% | 37% |

Table 8: Convergence of Cloud, Big data & IoT



# CONCLUSION

The energy and utilities sector has undergone a great transformation in recent years with the digitization of networks. Smart meters provide a wealth of customer data from the grid that companies use to identify usage patterns, manage demand and supply, mitigate loss and improve service levels. The use of analytics will only grow as the industry taps data from external sources to make better predictions, take preemptive actions and arrive at informed decisions. Currently, the industry faces challenges in integrating multiple datasets and maintaining data quality. While analytics providers sort these out, they should also help energy and utilities companies to identify the right tools and technologies and build a sound analytics strategy.

Source:

* https://biztechmagazine.com/article/2018/01/utilities-will-invest-heavily-data-analytics-years-ahead

## About Infosys Knowledge Institute

As enterprises navigate the path to being digital, Infosys Knowledge Institute offers thought leadership to guide their transformation. With decades' worth of business and technology experience we help enterprises strategize how they reinvent themselves from the core: their people, processes, and proposition.

# NOTES

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