

# THE SEARCH FOR VALUE

FIVE TRENDS IN DIGITAL INVESTMENT

Accenture Upstream Oil and Gas Digital Trends Survey 2019

## **OVERVIEW**

The Accenture Upstream Oil and Gas Digital Trends Survey 2019 examines the focus and investments upstream oil and gas companies are making in **digital technologies**.

- Online survey conducted in May 2019 by Oil & Gas Journal (OGJ) Research on behalf of Accenture
- Respondents are subscribers to PennWell publications
- Analysis conducted by Accenture Research

Seventh report on upstream oil and gas surveying **255 upstream leaders** in 47 countries representing:

- National oil companies
- International oil companies
- Independent oil companies
- Oilfield service providers

Respondents included C-level executives, vice presidents, business unit leads, mid-level management, information technology professionals, engineers, and project managers

# METHODOLOGY AND SAMPLE COMPOSITION

Accenture retained OGJ Research to conduct a survey among professionals in the oil and gas industry.

RESPONDENTS' POSITION	2019
C-level (not chief information officer or chief digital officer)	9.4%
Chief information officer	2.8%
Chief digital officer	2.4%
Vice president	4.7%
Business unit head	7.5%
Engineer	33.3%
Geoscientist	3.5%
Information technology	3.5%
Mid-level management	9.4%
Other	12.9%
Project manager	10.6%
Total	100%

#### THE SURVEY SOUGHT TO DETERMINE

- How companies use digital technologies in their upstream businesses
- The barriers companies experience that prevent the adoption of digital technologies
- The perceived benefits of adopting digital technologies in their upstream businesses

GEOGRAPHY OF RESPONSIBILITY	2019
Africa	9.4%
Asia Pacific (excluding Australia)	11.8%
Australia/New Zealand	0.4%
Europe (excluding Russia)	4.7%
Latin America	10.2%
Middle East	9.8%
North America	40.4%
Russia and Central Asia	0.7%
Worldwide	12.6%
Total	100%

#### **METHODOLOGY**

- Online survey sent to 39,959 potential participants in the Oil & Gas Journal database
- Complete responses were received from 255 individuals
- Confidence level for the survey is 95% with a margin of error of 6.12%

ORGANIZATION TYPE	2019
Independent oil organization	28.7%
International oil organization	9.0%
National oil organization	18.0%
Oilfield services	13.3%
Oilfield consultant	19.2%
Other	11.8%
Total	100%

# FIVE TRENDS

#### TREND 01

Digital investments continue to increase—as digital is seen as a key enabler of a successful upstream business.

#### TREND 02

Cybersecurity leads digital investments today and is the technology of greatest impact—whereas big data/analytics, especially artificial intelligence, will take the lead tomorrow.

#### TREND 03

Digital helps optimize core businesses today and is expected to help drive faster and better decisions tomorrow.

#### TREND 04

Full value from digital is not being realized due to challenges with scaling.

#### TREND 05

External skills and partnerships are key to unlocking the value of digital.

# TREND 01

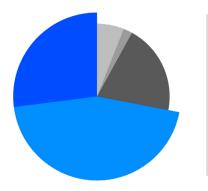
Digital investments continue to increase—as digital is seen as a key enabler of a successful upstream business.

# TREND 01: DIGITAL INVESTMENTS

# THE TREND CONTINUES

Over the next 3-5 years, how much is your organization planning to invest in digital technologies compared to current investments?

In 2019, nearly 72% of survey respondents **plan to invest** "more or significantly more" in digital technologies.



**27% Significantly more** 

**45% More** 

**72%** 

plan to invest more or significantly more

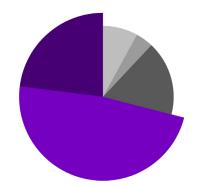
**20% Same** 

2% Less

6% Don't know

**2019** 

The results from 2017 were not too different, at 71%.



23% Significantly more

**48% More** 

**71%** plan to invest more or significantly more

**17% Same** 

4% Less

8% Don't know

**2017** 

# TREND 01: DIGITAL INVESTMENTS

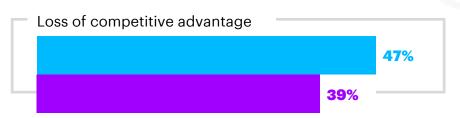
### THE RISKS OF NOT INVESTING

In 2019, 47% of survey respondents say the greatest risk from lack of digital investments is a "loss of competitive advantage."

This concern has grown from 39% in 2017.

Other concerns respondents mentioned relate to the risk to **profits, the ability to scale innovation, and access to new talent**. These are likely to become more pressing as the energy transition accelerates.

# What is the biggest risk to your business from a lack of investment in digital?



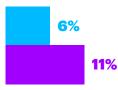
Revenue/profit declines (continued or increased)



Lack of ability to scale innovation/new technology



Inability to access new talent/skills



Global (N=255). Responses do not add up to 100%. Top four responses shown only. Not all the same categories were included in the 2017 survey.

**2019** 

0 2017

No 2017 data available

— TREND 01: DIGITAL INVESTMENTS

### **OUR ANALYSIS**

Digital continues to be a **significant annual investment** for upstream companies as they fear **losing competitive advantage.** 

Accenture believes that digital investments are key to unlocking business value but they should be structured toward achieving more transformational changes that will position the company to **move beyond proofs of concept**.

As the oil industry's purpose and license to operate challenges increase, digital can enable oil companies to preserve their license to operate, for example, through **greater transparency**, **enhanced safety measures**, **and environmental actions** such as emissions tracking.

In addition, we are seeing leading upstream companies invest in digital as an enabler to help with the energy transition and create more sustainable future business models.

Oil companies continue to invest in digital so they can remain competitive as the energy transition progresses and leading companies continue to move to sustainable business models.

# **TREND 02**

Cybersecurity leads digital investments today and is the technology of greatest impact—whereas big data/analytics, especially artificial intelligence, will take the lead tomorrow.

# TREND 02: TODAY'S INVESTMENTS

# TECHNOLOGIES DRIVING IMPACT

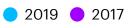
The digital technologies driving the greatest impact on business performance in 2019 were:

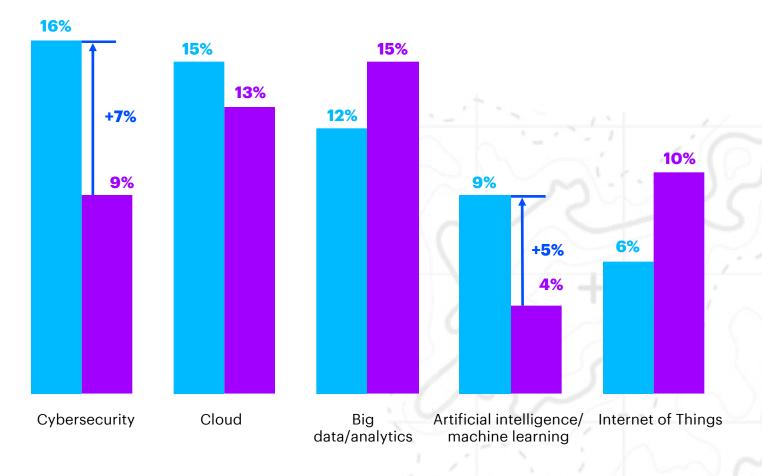
- Cybersecurity
- Cloud
- Big data/analytics

Cybersecurity had the largest increase (7%) in response to the increased cyber threats to the oil and gas industry.

The impact artificial intelligence (AI) is having on business performance is increasing significantly. It has more than doubled in 2019 from the last survey period. This is consistent with the industry expectation that AI will be driving future value.

Which of the digital solutions are driving the greatest impact on business performance?





Global (N=255). Responses do not add up to 100%. Top five responses shown only.

#### TREND 02: TODAY'S INVESTMENTS

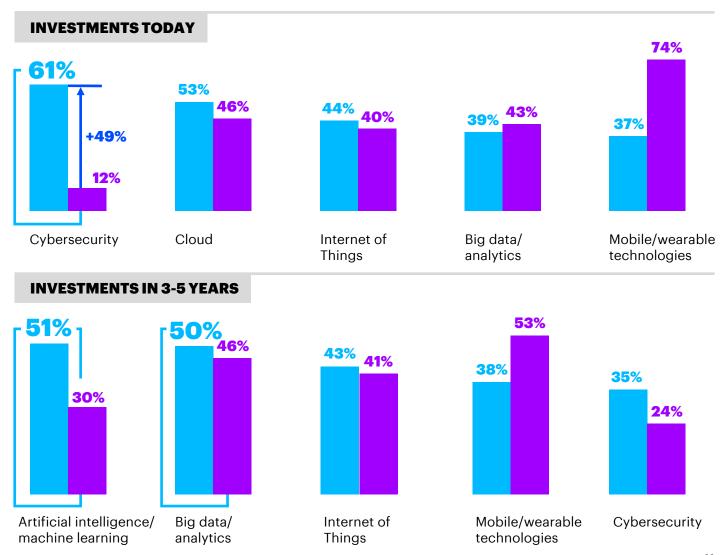
# TECHNOLOGIES IN FOCUS

In 2019, **cybersecurity** was the number one investment focus with 61% (a 49% increase) of survey respondents indicating they were investing in cybersecurity technologies for prevention and detection of threats.

And looking ahead—in the next 3-5 years—more than 50% of respondents place **artificial intelligence and big data/ analytics** at the top of the investment list.

Which digital technologies is your organization investing in today and over the next 3-5 years?





# TREND 02: TODAY'S INVESTMENTS

### **OUR ANALYSIS**

The focus on **cyber resilience** continues and is, in fact, sharply increasing as oil companies protect their assets and reputation. Cybersecurity is now a boardroom-level concern and watched closely by governments, stakeholders, and consumers.

**Cloud** technologies continue to be a focus as they are a foundation for upstream companies for value creation from other digital technologies. As more operational data and services are hosted in the cloud, it is becoming multi-layered, more complex and much more important to the upstream business (as well as improving operational security generally).

**Big data/analytics** and **artificial intelligence/machine learning** are having a positive impact on business performance. The focus is shifting more to artificial intelligence and machine learning as oil companies look to unlock the promise of these rapidly maturing technologies to help them make much better decisions on areas such as drilling, more predictive maintenance and optimized production.

Oil companies see cybersecurity, cloud and big data/analytics driving the most business impact today, and artificial intelligence/ machine learning driving more value tomorrow.

# TREND 03

Digital helps optimize core businesses today and is expected to help drive faster and better decisions tomorrow.



### COST REDUCTION TODAY

For the 2019 and 2017 surveys, the business challenge that respondents felt digital can best help with is **cost reduction**.

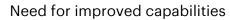
In 2019, the percentage grew to 42%—with respondents indicating they can use digital primarily to **become more operationally efficient**.

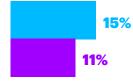
Concerns about **improved capabilities** have grown (15%) along with those around **skills shortages** (11%)

# What business challenges do you believe digital can help address?

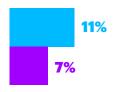








#### Skills shortages



#### Innovation and research and development



#### Race for operational effectiveness



Global (N=255). Responses do not add up to 100%. Top five responses shown only.

# TREND 03: AGILITY

# FASTER, BETTER DECISIONS TOMORROW

Survey respondents indicate digital solutions can make them into more agile upstream companies.

They cite the enablement of more rapid decision making (31%), faster time to first oil and gas (23%), and reducing risk in decision making (16%).

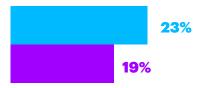
# What are the top three areas you believe digital can benefit your organization?

**)** 2019 **)** 2017

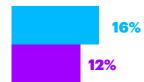
#### Faster and better decisions



#### Faster time to first oil and gas



#### Reduced risk due to real-time decision support



#### Better asset management



Global (N=255). Responses do not add up to 100%. Top four responses shown only.

# TREND 03: AGILITY

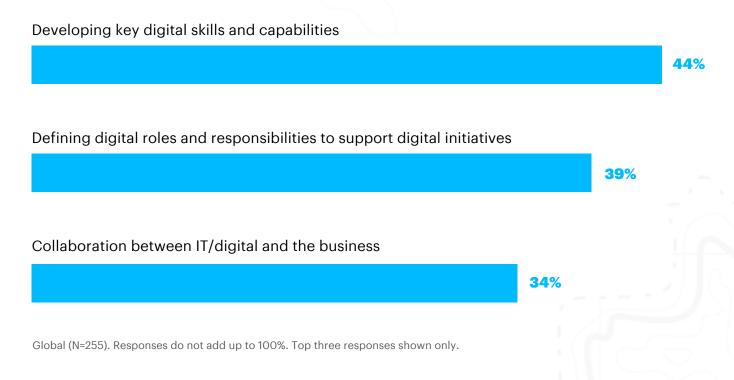
### NEW DIGITAL SKILLS AND OPERATING MODELS

As oil companies move to become more agile and nimble as they respond to the market pressures, many see the need to develop **new digital** capabilities and operating models.

Most important is the **development of digital skills** (44%), followed by **defining new roles for digital** (39%).

Next, a third of respondents indicated they are improving collaboration between IT and the business as their businesses become more digitally driven. Many are doing this through new combined digital operating models.

# Is your organization making any of the following changes to position digital to deliver value in your upstream business?





### **OUR ANALYSIS**

Today, most oil companies are still looking to digital to help them reduce costs and make their operations more efficient—optimizing their core upstream business as they strive to become as lean as possible to compete in a challenging environment.

Oil companies are expecting that **analytics and machine learning** will help them drive better and faster decisions and bring new oil and gas production online more rapidly.

To be able to unlock value, many recognize that they will need to develop more digital skills and capabilities and bring the business and IT closer together.

Digital is helping oil companies reduce costs and make faster and better decisions, but there is the need to develop skills and reorganize in order to unlock this value.

# **TREND 04**

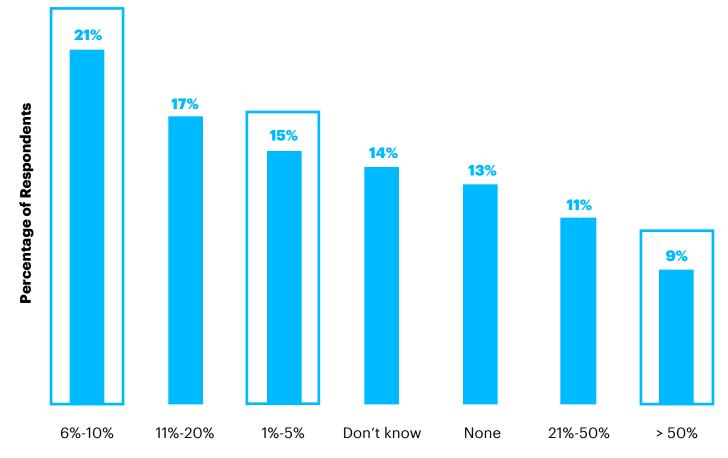
Full value from digital is not being realized due to challenges with scaling.

## SCALING DIGITAL BEYOND PILOTS

**Scaling digital proofs of concept** (POCs) remains a challenge and it is needed to realize the real value from digital investments.

**Only 9%** of respondents said their companies have developed and scaled **more than half** of POCs while **36%** reported developing and scaling **1-10%** of their POCs.

Over the last 2 years, what percentage of digital proofs of concept have been developed and scaled in the department/division you lead?



**Percentage of POCs Developed and Scaled** 

### VALUE REMAINS TRAPPED

Upstream oil companies are not fully translating digital investment into value.

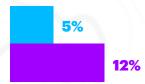
The percentage of respondents that felt digital was adding significant value (i.e., over \$100 million in value) decreased by 7% in 2019 compared to 2017.

In 2019 a higher number of respondents (20%) felt that the value they were seeing from digital was less than \$5 million in total.

# Can you quantify in terms of value, how much digital is adding to your business today?

**2019 201** 

Significant-Over \$100 million in total value



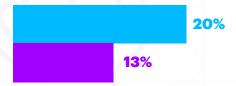
High-Over \$50 million in total value



Average-Over \$5 million in total value



Low-Less than \$5 million in total value



Global (N=255). Responses do not add up to 100%. Top four responses shown only.

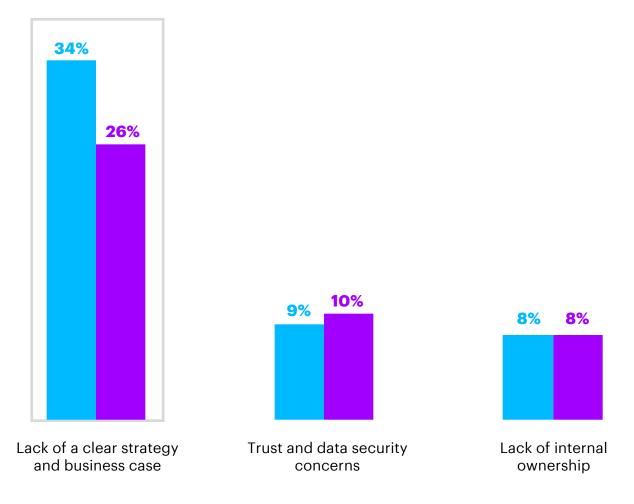
### BARRIERS TO ACHIEVING VALUE

The lack of a clear digital strategy (34%) remains the most significant challenge in 2019 as companies try to shift digital practices from IT into the business.

Other barriers identified include trust in data, security, and lack of internal ownership.

# What are the biggest barriers to achieving more value from digital?





Global (N=255). Responses do not add up to 100%. Top three responses shown only.

### **OUR ANALYSIS**

Upstream companies are not realizing the value of their digital investments not because of lack of good ideas or lack of POCs. The issue is that oil companies are **not able to scale** their digital solutions due to a lack of clearly articulated strategy and lack of base capabilities needed to scale.

Accenture believes companies need to define the "true north" or their strategy for digital transformation and then set up a "base camp" of key capabilities to make it happen. This would involve creating an operating model supported by new digital capabilities and skills, innovation to scale processes, digital platforms, and ecosystem partners. With this foundation, they will be able to learn quickly and then take the best digital ideas and scale them to unlock real business value.

To unlock the value of digital, oil companies should define their "true north" and then develop a "base camp" of key capabilities needed to scale.

# **TREND 05**

External skills and partnerships are key to unlocking the value of digital.

# TREND 05: PARTNERSHIPS

## ACCELERATING DIGITAL TRANSFORMATION

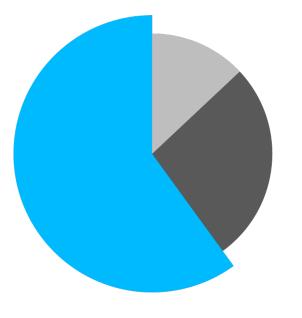
The majority of upstream companies felt that they needed external skills and capabilities to scale digital to transform their companies.

Nearly 60% stated they would look to **external providers for assistance**.

This list of external providers includes technology platform providers, niche vendors, and large IT service providers—as well as the general category of "outsourced," and the current incumbent the company is using.

Only slightly over a quarter (27%) of respondents plan to carry out **new digital investments using in-house resources.** 

How does your organization plan to carry out any new investment in digital in the upstream?



Global (N=255). Responses add up to 100%. All responses shown.

A cumulative total of

60%

stated they would look to external providers for assistance.

**27%** In-house

13% Don't know

# TREND 05: PARTNERSHIPS

## INCENTIVES FOR GETTING EXTERNAL SUPPORT

Upstream companies recognize that external strategic partnerships can accelerate change and bring greater value.

Faster access to technology and innovation (31%) and better business margins (24%) are the top reasons for forming such partnerships.

"Other" incentives cited included access to new talent, new technology, new geographies, and new customers.

What has been the main incentive for your organization to enter into strategic partnerships?



31%

Faster access to technology/digital innovation

**24%**Better business margins

13%

Access to new customers

32%

Other

Global (N=255). Responses add up to 100%. All responses shown.

# TREND 05: PARTNERSHIPS

### **OUR ANALYSIS**

Oil and gas companies are realizing that **they do not have all of the skills needed** to unlock the value that digital can create. They are starting to leverage more skills and capabilities from the external ecosystem and, in some cases, with start-ups and boutique organizations.

We believe that upstream companies need to not only change who they work with, but also how they work with these companies to tap into the broad **external ecosystem of partners for innovation, co-creation and co-development** needed for digital transformation. No single company has the breadth of skills required to unlock the full value that digital can provide, and we believe that new inter-company partnership models and new ways of collaboration across ecosystems are required.

In order to scale and realize the value, oil companies will need to get comfortable with these new models and ways of working.

Oil companies need to work in new collaboration models with external ecosystems to gain access to the skills, technologies and innovation needed to scale digital and unlock value from their digital investments.

## CONCLUSION

The search for value from digital investments continues.

#### **KEY TAKEAWAYS FROM THE SURVEY:**

- Oil companies continue to invest in digital so they can remain competitive as the energy transition progresses and leading companies continue to move to sustainable business models.
- Oil companies see cybersecurity, cloud and big data/analytics driving the most business impact today, and artificial intelligence/machine learning driving more value tomorrow.
- Digital is helping oil companies reduce costs and make faster and better decisions, but there is the need to develop skills and reorganize in order to unlock this value.
- To unlock the value of digital, oil companies should **define their** "true north" and then develop a "base camp" of key capabilities needed to scale.
- Oil companies need to work in new collaboration models with external ecosystems to gain access to the skills, technologies and innovation needed to scale digital and unlock value from their digital investments.

# **CONTACT US TO LEARN MORE**



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The Accenture Upstream Oil and Gas Digital Trends Survey 2019 was conducted online by PennEnergy Research in partnership with the Oil & Gas Journal. The survey included 255 respondents from 47 countries. Respondents included C-level executives, vice presidents, business unit leads, mid-level management, information technology professionals, engineers and project managers from a cross section of national oil companies, international oil companies, independent oil companies and oilfield services companies. The final results and analysis were supported by Accenture Research.

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