

OIL & GAS 4.0: ATTRACTING THE WORKFORCE OF THE FUTURE

How careers in oil and gas are perceived by
STEM students and young professionals



ABOUT THIS STUDY

The Abu Dhabi National Oil Company (ADNOC) commissioned the inaugural global *“Workforce of the Future”* survey with the aim of examining and understanding the future workforce and employment trends in the oil and gas industry – particularly as the industry looks to grow and attract science, technology, engineering and mathematics (STEM) talent, and ADNOC advances its *Oil & Gas 4.0* mission.

The survey examines the attitudes of STEM students and young professionals (Millennials and Generation Z) towards the workplace of the future. It looks at their perception of new technologies and their potential impact on the future workplace, the skills and strengths that they value for their prospective and chosen careers, and their preconceived ideas towards the oil and gas sector in comparison with other industries.

METHODOLOGY

The ADNOC-commissioned survey included 3,075 quantitative interviews with young STEM talent across 10 countries that represent a mix of the major global economies, and producers and consumers of oil and gas. The countries included: The United States (US), Canada, the United Kingdom (UK), France, Russia, China, India, Japan, Kingdom of Saudi Arabia (KSA) and the United Arab Emirates (UAE).

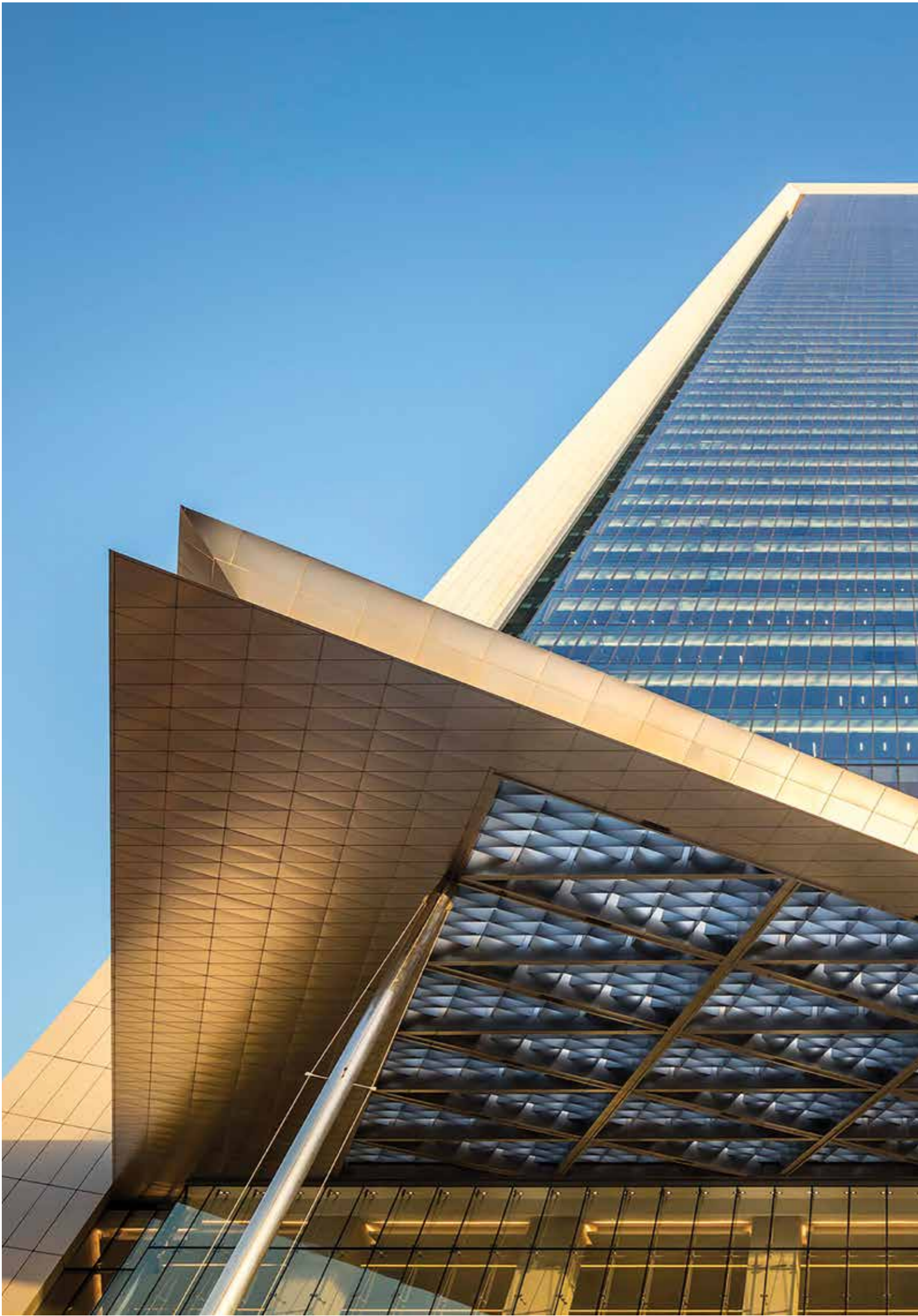
The survey focused on STEM students and young professionals across three key life stages:

- *STEM Secondary Students*: studying at least one STEM subject as part of their secondary school curriculum
- *STEM University Students*: studying a STEM subject as their primary course at university
- *Young Professionals*: who studied a STEM subject as their primary course at university and had been working full-time for less than five years

The survey was conducted by PSB Research and the interviews were conducted from October 9th to 18th, 2018. Data weights were applied to ensure that each country is represented equally within the overall study sample; within each country, the three STEM sub-audiences are weighted equally.

	Total sample	US	Canada	UK	France	Russia	China	Japan	India	KSA	UAE
Method		Online	Online	Online	Online	Online	Online	Online	Online	F2F	F2F
Sample Size	3 075	300	300	300	300	300	300	300	300	310	365
Margin of Error (+/-)	1.77%	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	5.66%	5.57%	5.13%

PSB Research, a member of Young & Rubicam Group and the WPP Group, is a global research-based consultancy that specializes in messaging and communications strategy for blue-chip corporate, political and entertainment clients. The company operates offices around the world, including in Washington D.C., New York, Seattle, Los Angeles, Denver, London, Madrid and Dubai, which are supported by in-house field capabilities and fully equipped to provide the complete creative solutions PSB clients need. More at www.psbresearch.com



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AN INDUSTRY WHERE TOMORROW'S INNOVATORS WILL EXCEL AND THRIVE



"As we enter the 4th Industrial Age, the world's demand for energy and higher value products is increasing at an unprecedented rate. Our goal is not simply to keep up, but to stay ahead of the curve to meet this demand. This is a mission we at ADNOC are calling 'Oil & Gas 4.0'."

I am delighted to present our inaugural report on the *Workforce of the Future*, a comprehensive global survey that we commissioned to provide insights into the perceptions of STEM youth or STEM Millennials and Generation Z – those either planning a STEM career, or with their first foot on the career ladder. In particular, we wanted to better understand their attitudes towards the oil and gas industry.

As we enter the 4th Industrial Age, the world's demand for energy and higher value products is increasing at an unprecedented rate. Our goal is not simply to keep up, but to stay ahead of the curve to meet this demand. This is a mission we at ADNOC are calling "**Oil & Gas 4.0**". In practical terms, this means fostering a dynamic, performance-led, commercially-minded corporate culture that applies the latest technology and optimizes our resources, including, most critically, our people and talent.

The evidence presented in this study tells us that, while our industry is recognized by many young people as an industry that embraces innovation, work needs to be done to position ourselves better alongside other high-tech sectors of the future.

The students and young professionals we surveyed, for example, are increasingly drawn to sectors in which they see technology playing a major role – yet oil and gas is not one of the top most preferred career options for them. Given that our industry is embracing innovation and new emerging technologies to help power tomorrow's economy in the era of **Oil & Gas 4.0** – from cutting-edge extraction breakthroughs to the application of blockchain and artificial intelligence – I am convinced that what we are dealing with here is a narrow understanding of what our industry offers.

"There is much we must do to broadcast the exciting changes taking place in our industry, and to demonstrate to STEM Millennials and Gen Zs that oil and gas is an industry that offers truly rewarding, fulfilling careers."

There is much we must do to broadcast the exciting changes taking place in our industry, and to demonstrate to science and technology graduates and young professionals that oil and gas is an industry of the future that offers truly rewarding, fulfilling careers.

We increasingly need geologists who can marry technology with geophysics and help unlock future reserves in more difficult and deeper places. We need the engineers who can help us extract maximum value from our existing reserves, and chemical engineers who can further stretch the margin of each barrel of oil.

We need data scientists and analysts who can transform the reams of data generated at every step of the hydrocarbon value chain into real efficiencies and savings; and programmers who can build the operating systems to fully automate facilities.

One welcome finding is that STEM talent in emerging economies see our industry in a more positive light than their peers in developed nations. STEM Millennials and Gen Zs in China, for example, clearly see the professional opportunities the oil and gas industry affords. But the industry still has the power to inspire loyalty and pride in our best students. We also see in this data that, globally, oil and gas is more attractive to young professionals than students. This suggests that when the reality of the workplace sets in, the highly competitive salaries and stability offered by oil and gas companies becomes much more appealing to maturing minds.

Focused and targeted engagement is needed, though, to encourage younger students with a passion for STEM subjects to see oil and gas as their future. If we are seen as low-tech and old-fashioned, we must showcase our high-tech breakthroughs and our cutting-

edge practices. When we are perceived as environmentally unfriendly, we need to highlight the work we are doing to protect and safeguard our natural world. We are not an industry set in the past; we are an industry that is embracing the future and enabling the 4th Industrial Age.

The STEM Millennial and Gen Z talent of today will be the leaders of our industry tomorrow – and we need those leaders to be the best. To ensure we match and exceed competing industry sectors in career favorability, we need to clearly demonstrate that oil and gas has always been – and always will be – an industry that embraces technology and pioneers scientific breakthroughs.

At ADNOC, we are incorporating the latest in artificial intelligence, data analytics, blockchain and machine learning into our Panorama digital command center, in order to empower our people to make better, quicker, market-driven decisions. In doing so, we are making ADNOC a destination of choice and an incubator of talent that will build long-term resilience into our company, and ensure it continues to provide the energy the world needs while making a lasting positive impact for the UAE and its partners.

As we move forward, we need to partner with even more with schools, universities, academic institutions, other technology companies, and local communities to champion the development of STEM talent. And, as an industry, we must make a concerted effort to demonstrate to a new generation how fulfilling, challenging and rewarding a career in our industry can be.

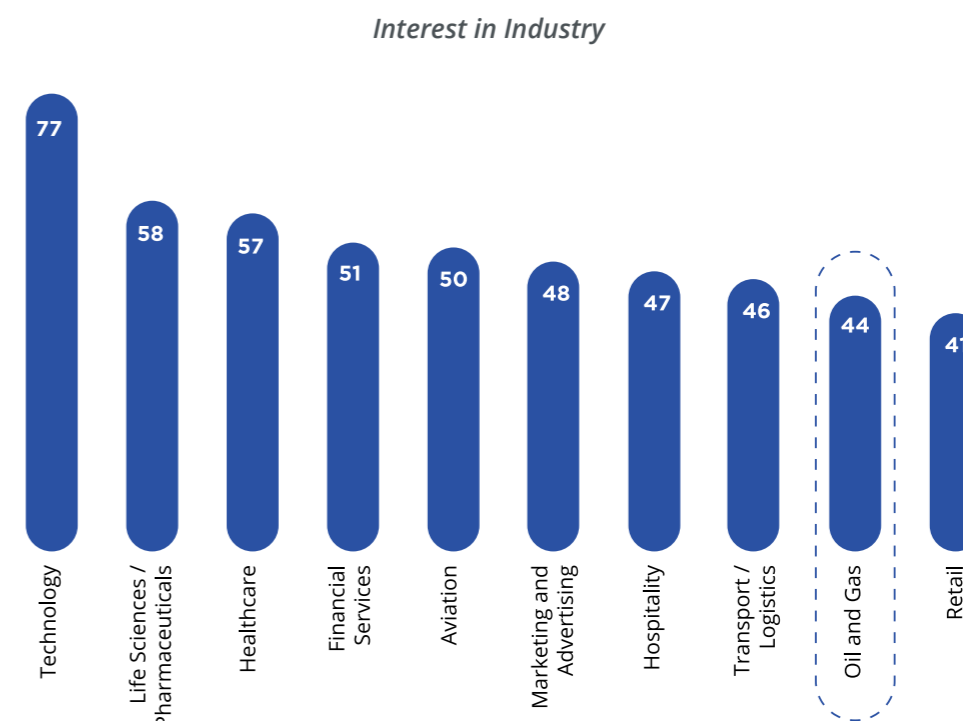
H.E. Dr. Sultan Ahmed Al Jaber
ADNOC Group CEO

1 THE OIL AND GAS INDUSTRY IS FACING STRONG COMPETITION FROM OTHER SECTORS IN ATTRACTING YOUNG STEM TALENT AROUND THE WORLD

The oil and gas industry is facing strong competition in attracting top STEM talent

Q. Thinking about each of the following sectors, how interested would you be in pursuing a career in this sector?

(Showing % "Interested")



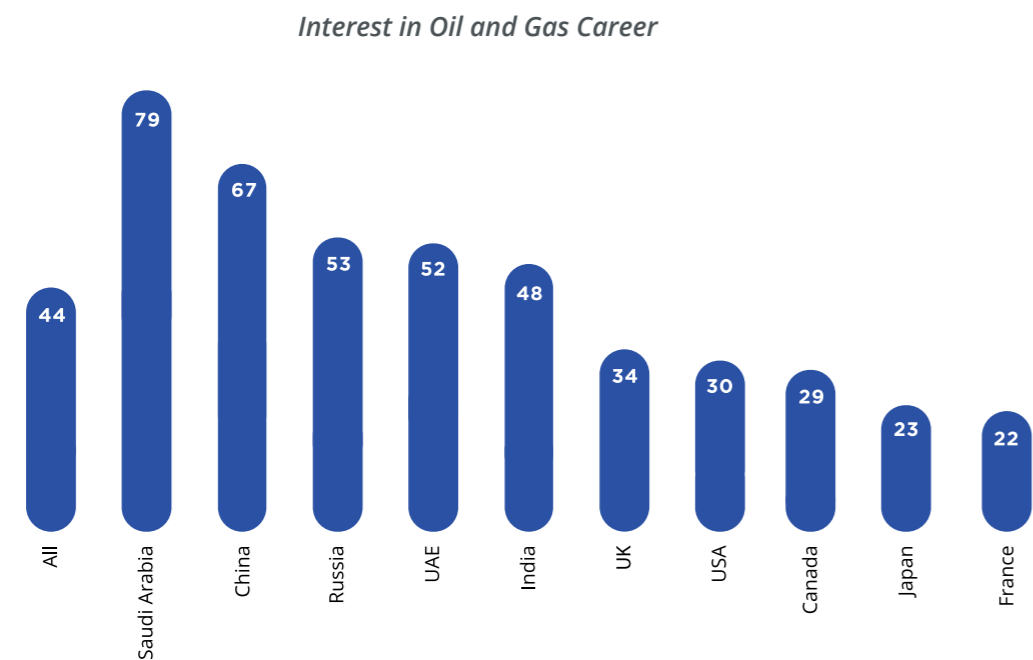
Globally, STEM students and young professionals are more drawn to careers in technology than in the oil and gas industry. While nearly half (44 per cent) say they would be interested in pursuing a career in oil and gas, significantly more young STEM talent express interest in the technology industry (77 per cent).

The level of interest in the oil and gas industry among young STEM talent is on par with marketing and advertising (48 per cent), hospitality (47 per cent), transport/logistics (46 per cent), and retail (41 per cent).

Interest in oil and gas is higher in emerging economies

Q. Thinking about the oil and gas sector, how interested would you be in pursuing a career in the oil and gas sector?

(Showing % "Interested")



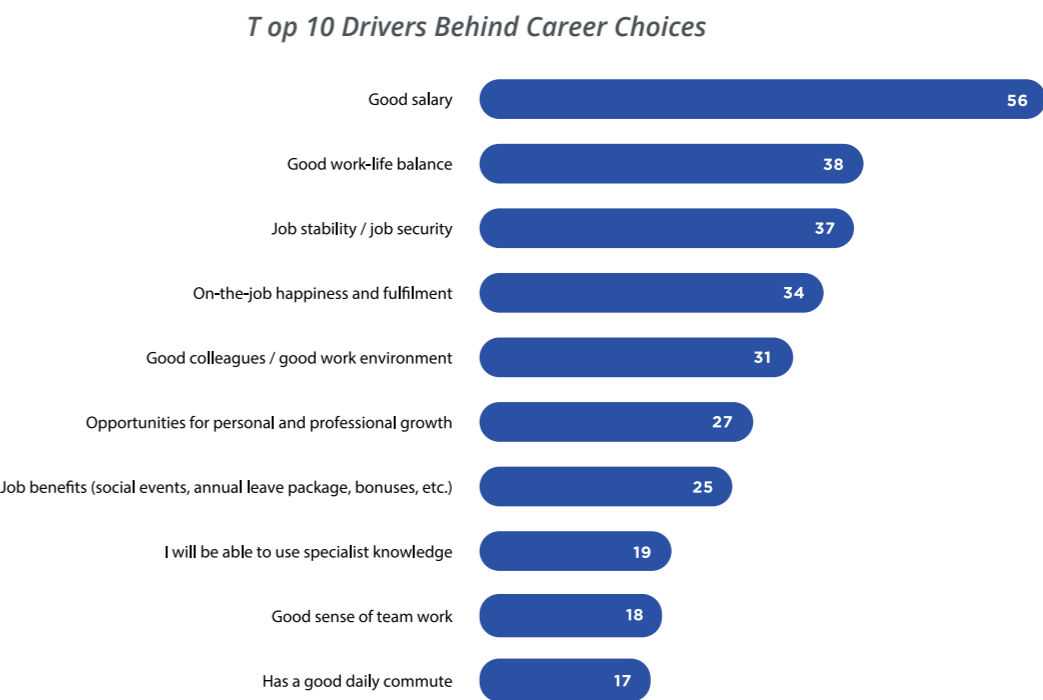
Interest in oil and gas varies significantly by geography, with talent living in emerging economies and more hydrocarbon-focused economies far more keen to pursue a career in the sector. For example, STEM students and young professionals living in China (67 per cent) are nearly three times more likely to express interest in the industry than young STEM talent in Japan (23 per cent) or France (22 per cent).

Besides China, interest in oil and gas is relatively high in other oil-rich and emerging economies, such as Saudi Arabia (79 per cent), Russia (53 per cent), the UAE (52 per cent), and India (48 per cent). Meanwhile, young STEM talent in the G7 economies (USA, Canada, UK, Japan, France) are significantly less likely to say they are interested in pursuing a career in the oil and gas sector.

Salary, work-life balance, job stability and on-the-job fulfilment are key factors STEM talent look for in a career

Q. Thinking about your career and what you look for in your career, which of the following factors are most important to you? Please select up to five.

(Showing % for top 10 drivers)



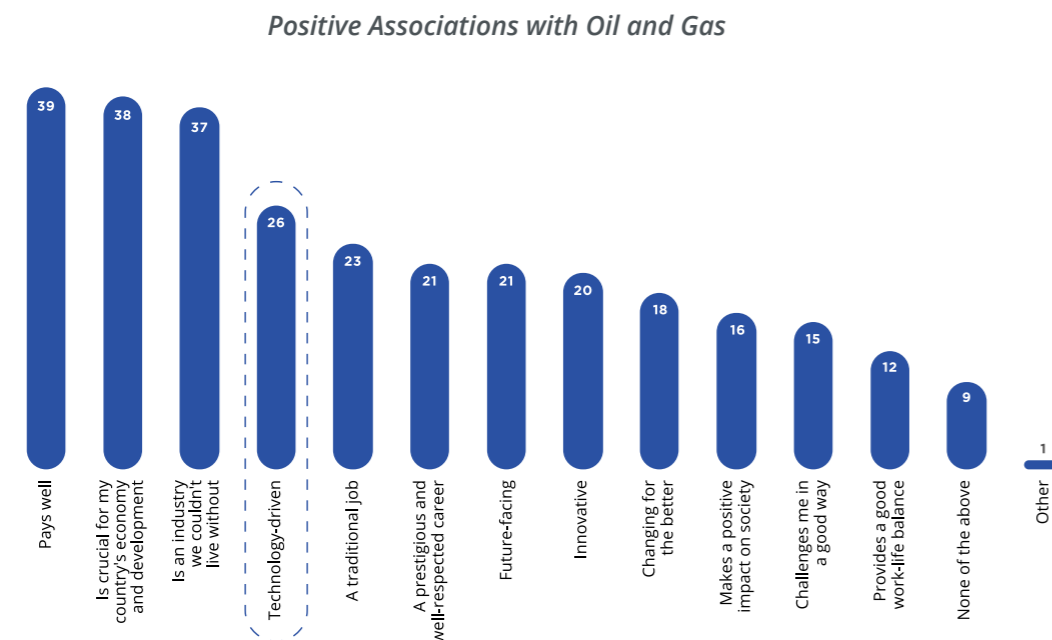
Respondents were given the option to pick five key drivers behind potential career choices, and a "good salary" was by far the most important consideration for STEM talent when looking for a career – as selected by 56 per cent of those surveyed. "Work-life balance" and "stability" were also important, and selected by 38 per cent and 37 per cent of respondents respectively; while "on-the-job happiness and fulfilment" (34 per cent) and a "good work environment" (31 per cent) rounded out the top five.

Lower priorities were "good daily commute", which was cited by just 17 per cent of respondents, "good sense of teamwork" (18 per cent) and the "ability to use specialist knowledge" (19 per cent).

STEM talent acknowledges several important positive qualities about the oil and gas industry

Q. Thinking about working in the oil and gas industry, which of the following would you say apply? *Please select all that apply.*

(Showing % for top attributes)



STEM talent associate oil and gas with high salaries, and many also see it as an industry that is invaluable. Asked about the positive associations with oil and gas, the top three responses include: "The industry pays well" (39 per cent), "the industry is crucial for their country's economy and development" (38 per cent), and it is "an industry we couldn't live without" (37 per cent).

Encouragingly, a quarter of respondents (26 per cent) say the industry is technology-driven, while one in five (21 per cent) say it is a high-status career. A similar number say the industry is future-facing (21 per cent) and innovative (20 per cent).

However, only 16 per cent of STEM talent believe that the industry has a positive impact on society, 15 per cent say the industry will challenge them in a good way, and just 12 per cent think the industry will provide a healthy work-life balance.

High status of industry careers and positive impact on economies are among the top reasons cited for interest in oil and gas

Q. Earlier you said that you would be interested in working in the oil and gas industry, why do you say that? *Please be as detailed as possible.*



Of those who expressed interest in a career in the oil and gas industry, high salaries, contribution of the industry to the development of national economies, and its stature within society, were cited as key drivers of their interest.

A young professional in China summed up the interest succinctly: "The oil industry is respected, has relatively large prospects and is closely linked to science and technology."

A peer in Saudi Arabia took that sentiment further: "It develops the country, raises the rate of individual wages, and develops the country's industry and self-development."

In Canada, one young professional cited the industry's embrace of technology as a key factor, and also saw the sector as an opportunity to effect real change. "I believe this industry will benefit from new technology in the future. I want to clean up the image of this industry. I want to use new technology in this industry to make oil and gas production more environmentally friendly. I believe this industry will give me a rewarding career. I will get good benefits, a flexible work-life schedule and opportunities for advancement."

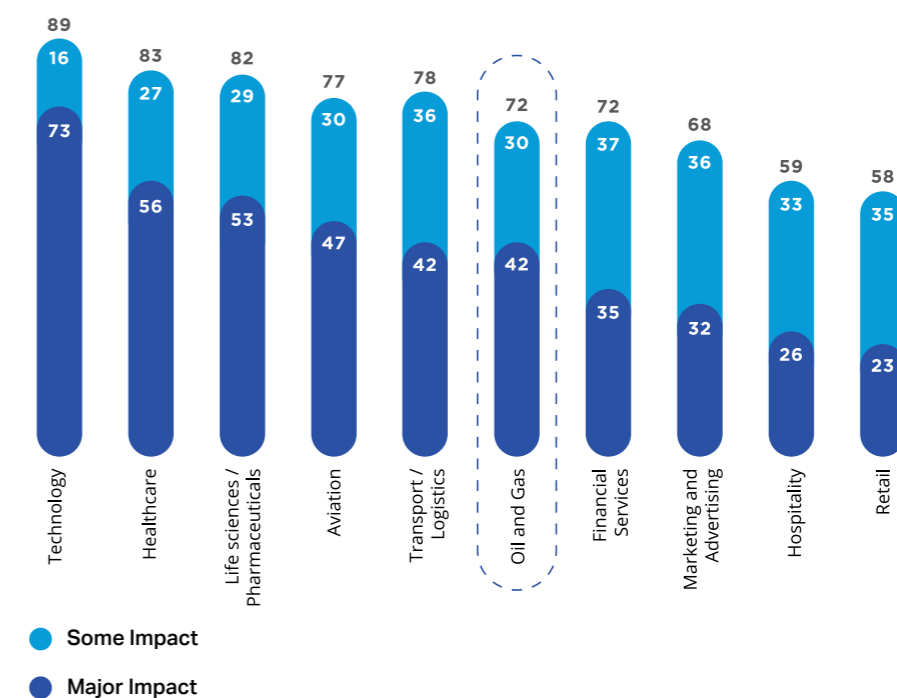
2 THE MORE STEM TALENT ASSOCIATE OIL AND GAS WITH NEW TECHNOLOGIES, THE MORE LIKELY THEY WILL WANT TO BE PART OF THE INDUSTRY

Nearly three in four say that new technologies will have an impact on the oil and gas sector

Q. Thinking about each of the following sectors, how big an impact do you believe that new technologies will have on them in the future?

(Showing % "Impact")

Perceived Impact of New Technologies on Industries



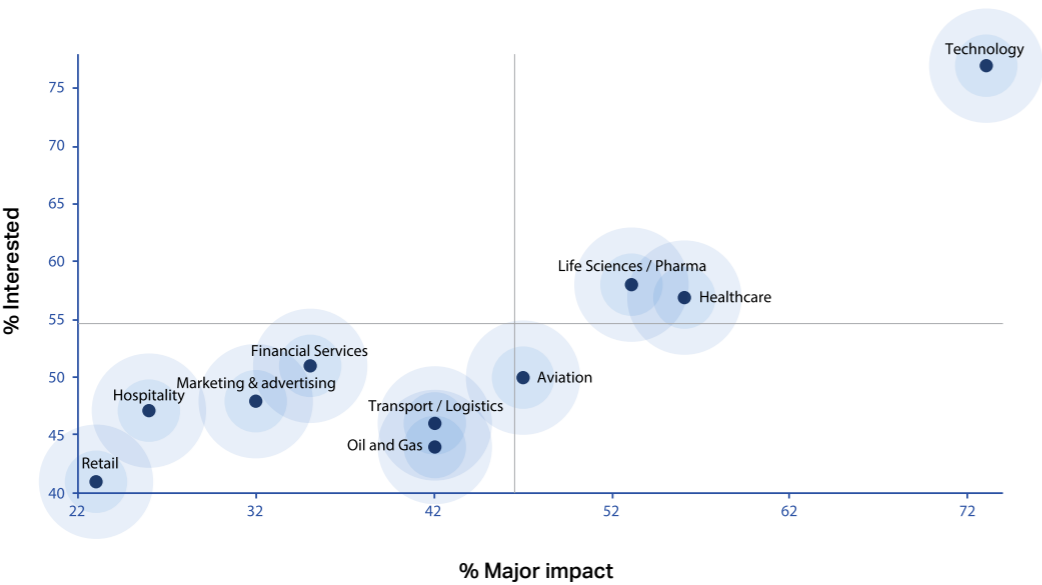
Seven out of 10 respondents say new technologies will have an impact on the oil and gas industry, including nearly half (42 per cent) who believe the impact will be "major".

While that is an encouraging perception, the oil and gas industry still has room to grow, as more than four in five STEM talent globally say that new technologies will have an impact in the field of technology (89 per cent).

The more an industry is associated with new technologies, the higher the interest in pursuing a career

- Q. Thinking about each of the following sectors, how interested would you be in pursuing a career in this sector? (Showing "Very interested" and "Somewhat interested")
- Q. Thinking about each of the following sectors, how big an impact do you believe that new technologies will have on them in the future? (Showing "Major impact")

Interest in Career vs. Belief that New Technologies Will Have a Big Impact



The perceived impact of new technologies is important for the oil and gas industry in attracting top STEM talent because students and young professionals are drawn towards careers that they perceive will be most impacted by new technologies.

Oil and gas scores lower on this measure, ranking alongside transport and logistics, but above retail, marketing and advertising, hospitality and financial services, on the perceived impact of new technologies on the sector, and above retail in stated interest in pursuing a career.

The correlation seen between new technologies and interest in pursuing a career suggests that attracting the best STEM graduates and professionals into the industry will require oil and gas to better highlight the role of technology in driving the industry towards the future.



A woman wearing a black hijab is smiling and looking towards a group of people. In the foreground, the back of a person's head wearing a black hijab is visible. To the left, a portion of a man in a white thobe and ghutra is visible. The background is a light-colored, textured wall. Overlaid on the top left is a large blue number '3' followed by a vertical line and the text 'ADDRESSING INDUSTRY PERCEPTION GAPS RELATED TO THE SKILLS OF THE FUTURE WILL BE IMPORTANT IN ATTRACTING STEM TALENT' in blue capital letters.

3 | ADDRESSING INDUSTRY PERCEPTION GAPS RELATED TO THE SKILLS OF THE FUTURE WILL BE IMPORTANT IN ATTRACTING STEM TALENT

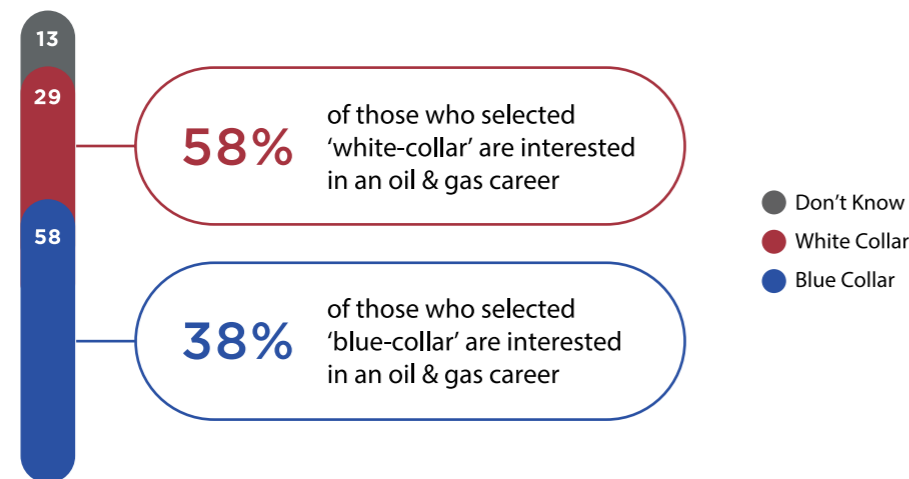
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Many believe oil and gas is a blue-collar industry; the more oil and gas is seen as a white-collar industry, the higher the interest in the sector

Q. Thinking about the oil and gas sector, do you believe that this sector is primarily for blue-collar workers or white-collar workers?

Q. Thinking about each of the following sectors, how interested would you be in pursuing a career in the oil and gas sector?

Blue-Collar Industry vs White-Collar Industry



Showing % of all respondents

A majority (58 per cent) of young professionals and STEM students say oil and gas is primarily for blue-collar workers. Fewer than one in three (29 per cent) say oil and gas is primarily for white-collar professionals.

The perception that oil and gas is a blue-collar industry has a major impact on lowering interest in the sector among young STEM talent globally. Among those who perceive oil and gas as a blue-collar industry, only 38 per cent are interested in pursuing an oil and gas career. Meanwhile, among those who see it as a white-collar industry, 58 per cent express interest in oil and gas.

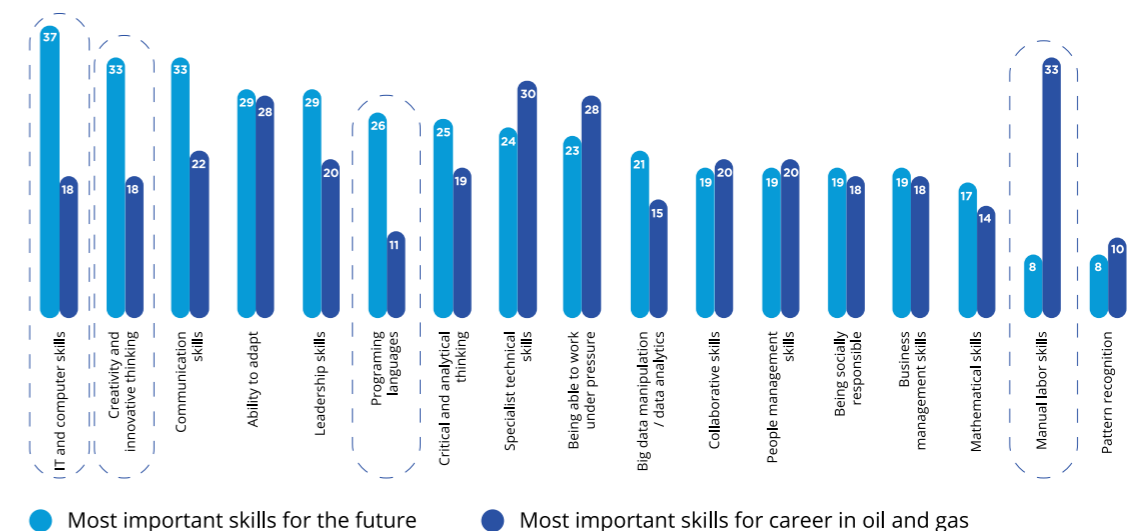
There is a mismatch between what STEM talent perceives as the most important skills for the future and for a career in oil and gas

Q. Thinking about the skills for the workplace, which skills would you say will be the most important in the future? Please select up to five.

Q. What skills will be most important for having a successful career in the oil and gas industry? Please select up to five.

Showing % "Most important skills"

Important Skills: Future vs. Oil and Gas



The data indicates a mismatch between what young STEM talent sees as the most important skills to succeed professionally versus what they see as the most important skills for a career in oil and gas.

"Information technology (IT) and computer" skills (37 per cent) and "creativity and innovative thinking" (33 per cent) are seen as the most important skill-sets for succeeding in the future – but only 18 per cent see "IT and computer" and "creativity and innovative thinking" as important skills for a career in oil and gas. Similarly, while 26 per cent say programming languages are key for future professional success, only 11 per cent view it as an important skill in the oil and gas industry.

Additionally, when asked to select the most important skills for a career in oil and gas, STEM students and young professionals chose manual labor as the most important skill (33 per cent). Correspondingly, manual labor was ranked least important for being successful in the future (8 per cent) by respondents.

The survey results indicate that the industry needs to better showcase the importance that technology and softer skills such as "creativity and innovative thinking" play in oil and gas; as well as highlight the opportunities that pursuing a career in the sector offers young STEM talent – particularly in the areas of programming languages, data analytics, etc.

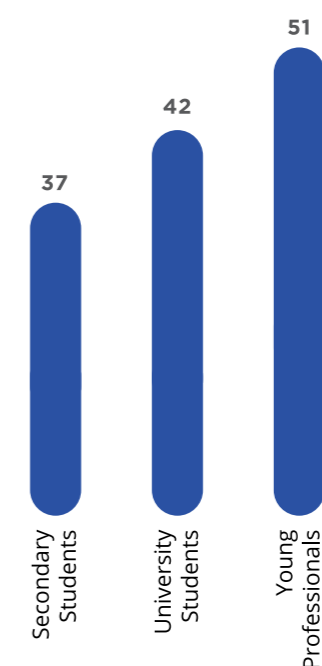
4 | YOUNG STEM TALENT EXPRESS MORE INTEREST IN THE OIL AND GAS INDUSTRY AS THEY GET OLDER AND ENTER THE JOB MARKET

Interest in oil and gas rises as STEM talent enters the job market

Q. Thinking about each of the following sectors, how interested would you be in pursuing a career in this sector?

(Showing % "Interested in oil and gas")

Interest in Oil and Gas by Life Stage



Some experience in the job market and a tertiary education in STEM subjects appear to change perceptions positively towards a career in the oil and gas sector.

While interest is relatively low among secondary school-age STEM students (37 per cent say they are interested in a career in oil and gas) this figure rises to approximately half (51 per cent) of young professionals being interested in pursuing a career in the sector – representing a 14-point increase.



