

# Engineering and technology skills in the Sultanate of Oman



A 2023 survey

Data provided by:

**YouGov**

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In partnership with:



جمعية المهندسين العمالية  
Oman Society of Engineers

# 1. Introduction

The Institution of Engineering and Technology (IET) inspires, informs and influences the global engineering and technology community to engineer a better world. Founded in 1871, we are one of the world's oldest professional institutions. We are also one of the largest, with 154,000 engineering and technology professionals in 148 countries. We have operated under a Royal Charter for more than 100 years.



As documented in Oman Vision 2040, the Sultanate of Oman has clear long-term ambitions that support an economic diversification away from oil dependence. Priorities include modernising the education system, building local capabilities and supporting global competitiveness. We are interested in the opportunities and challenges arising from this change, so commissioned a survey by international market research and data analytics expert YouGov to gauge workforce issues faced by engineering and technology organisations in Oman.

The sample was drawn from trusted partners in Oman. Only those with management responsibility in an organisation employing engineers were allowed to take

part. In total there were 244 respondents, with a spread across organisation size, work sector and time spent in their industry.

The results are not weighted so are not representative of the population. The report findings represent the views of survey respondents only. All fieldwork was carried out online between 20 December 2022 and 3 January 2023.

Based on the survey findings, we have made several recommendations that will support the development of the engineering sector in Oman and the realisation of Oman Vision 2040.

# Contents

<b>1. Introduction</b>	<b>2</b>
<b>2. The current skills situation</b>	<b>4</b>
– What are the main workforce challenges for employers?	4
– How easy is it to recruit engineers?	4
– How do firms assess employee performance?	5
– What are the barriers to an engineering career?	5
– Do graduates have the right skills for engineering?	6
<b>3. Looking ahead</b>	<b>8</b>
– Which industries will become more important?	8
– Which skills will be needed?	9
<b>4. Maximising Oman's engineering potential</b>	<b>11</b>
– What does today's training look like?	11
– Which training topics will organisations prioritise?	12
– How should training be delivered?	12
– How can engineers increase their credibility?	13
<b>5. IET concluding remarks and recommendations</b>	<b>14</b>





## 2. The current skills situation

### What are the main workforce challenges for employers?

Nearly all respondents (95%) say their employer faces at least one workforce-related challenge.

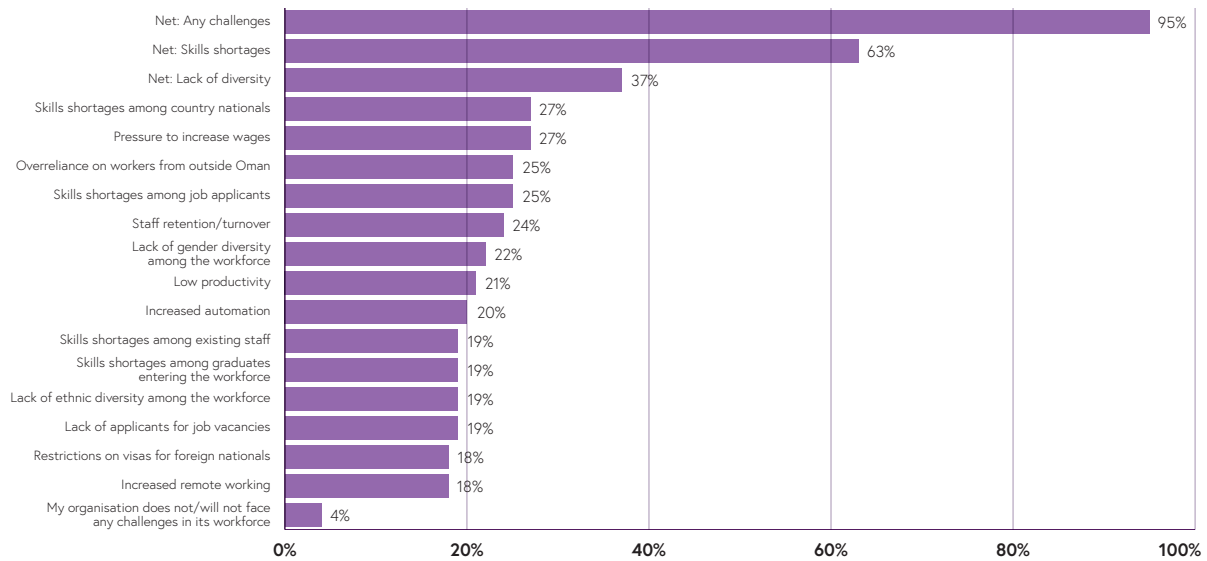
Some of the more prominent issues from the findings include:

- pressure to increase wages (27%)
- skills shortages among country nationals (27%) and job applicants (25%)
- overreliance on foreign workers (25%)
- staff retention (24%).

Nearly two-thirds of respondents (63%) cite at least one form of skills shortage as a workforce-related challenge in their organisation. Just over a third (37%) say that lack of diversity in the workforce is the biggest issue, with lack of gender diversity at 22% and lack of ethnic diversity at 19%.



Figure 1: Biggest challenges faced by your organisation today in terms of its workforce



**Q: What are the biggest challenges, if any, that your organisation currently faces in terms of its workforce? Base: All respondents (n=244)**

### How easy is it to recruit engineers?

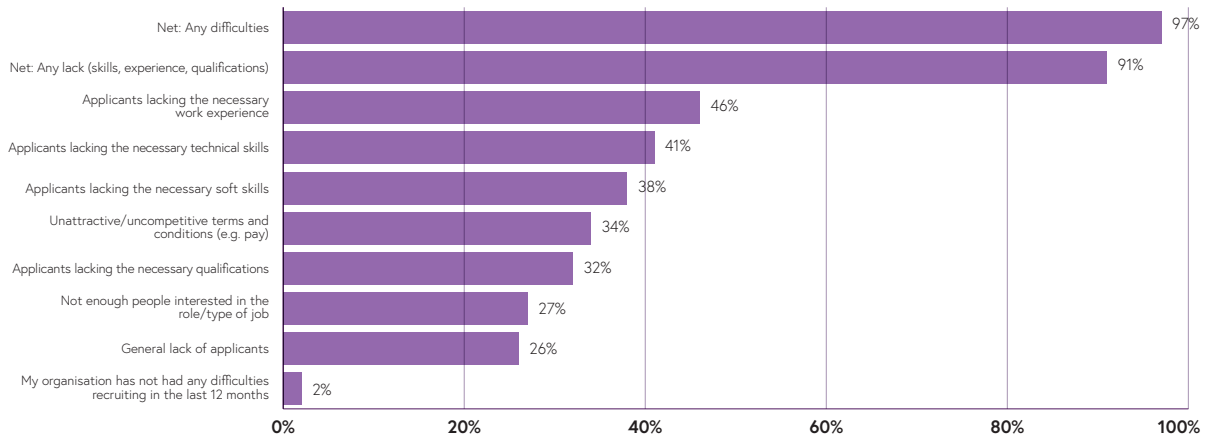
Over the last year Oman's engineering sector appears to have been experiencing a period of growth, with two-thirds (66%) of respondents saying that the headcount in their organisation has increased during the last 12 months.

There appears to be some correlation between workforce skill level and recruitment success: 84% of employers with a 'mostly highly skilled' workforce

increased their headcount in the last year; but the figure drops to just 50% for those employers whose staff have mostly intermediate or low skill levels.

Nevertheless, nearly all respondents (97%) say their organisation faced recruitment difficulties in the last 12 months. In most cases (91%) the problems centred on applicants' lack of skills, experience or qualifications.

**Figure 2: Biggest challenges faced by your organisation in terms of its recruitment in the last 12 months**



**Q: Thinking generally about your recruiting for your organisation – which, if any, of the recruitment difficulties listed has your organisation experienced in the last 12 months? Base: All (244)**

**How do firms assess employee performance?**

Using competency frameworks to assess employee performance/progression is common. Usage varies by company size and sector:

**90%** of medium and large firms vs **76%** of small firms

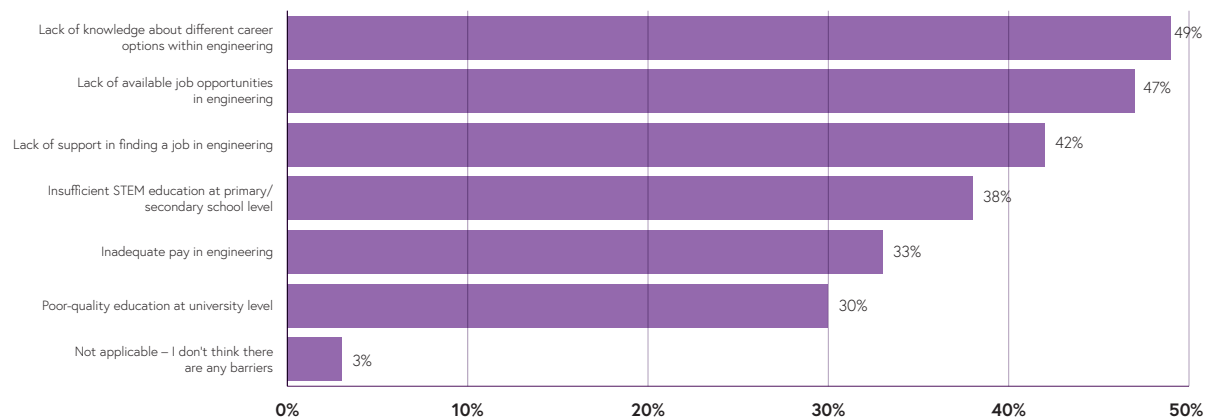
**92%** of private sector firms vs **65%** of nationalised industry/public sector

**What are the barriers to an engineering career?**

Based on the survey findings, most Omani engineering firms employ university graduates (81%), people with a General Education Diploma (76%) and apprentices (70%).

However, there are still many barriers that prevent Omani young people and graduates from pursuing a career in engineering (see Figure 3). Knowledge about career options, support in finding a job and available opportunities appear to be lacking.

**Figure 3: Main barriers to young Omanis choosing engineering as a career**

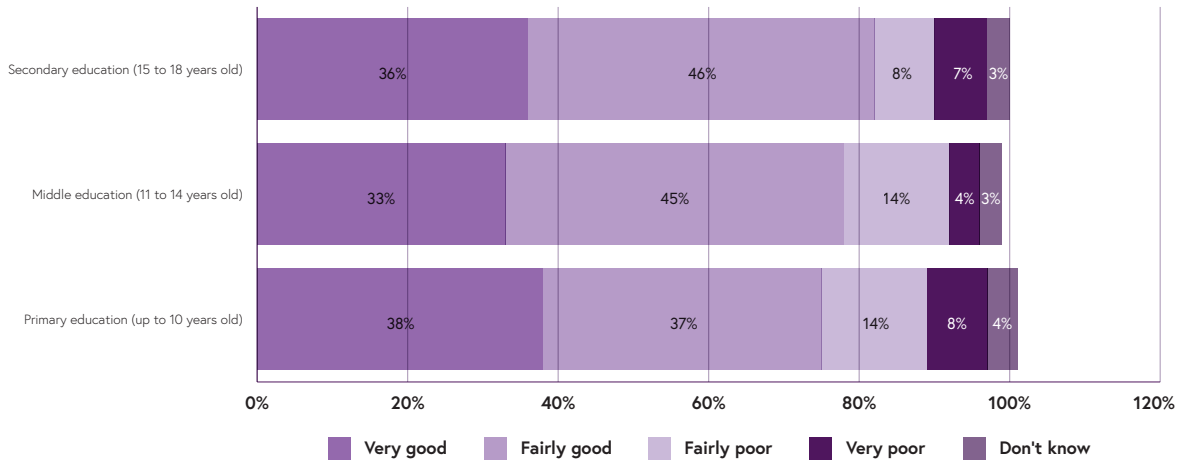


**Q. What, if anything, do you personally think are the main barriers to young Omanis choosing engineering as a career? (Please select all that apply) Base: All (244)**

Nearly two in five respondents (38%) view insufficient science, technology, engineering and mathematics (STEM) education at primary or secondary school level as a barrier for young Omanis considering a career in engineering. Those working in the private sector are

almost twice as likely to say this than their counterparts in nationalised industry or in public sector organisations (42% vs 22%). However, at least a third of respondents rate the overall quality of STEM education for children and young people as 'very good' (see Figure 4).

**Figure 4: Quality of STEM education at primary, middle and secondary education**

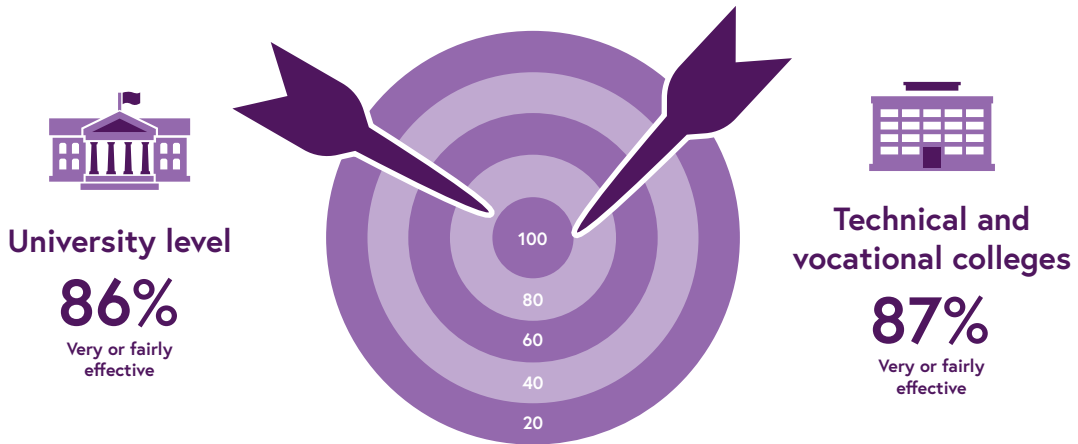


**Q. In your experience how good or poor is the quality of STEM education (science, technology, engineering, maths) at each of the following levels? Base: All (244)**

**Do graduates have the right skills for engineering?**

Most managers believe post-secondary education produces graduates equipped with enough skills to take on a technical engineering role (see Figure 5).

**Figure 5: Effectiveness of education at technical and vocational colleges/university level at producing graduates with sufficient skills**

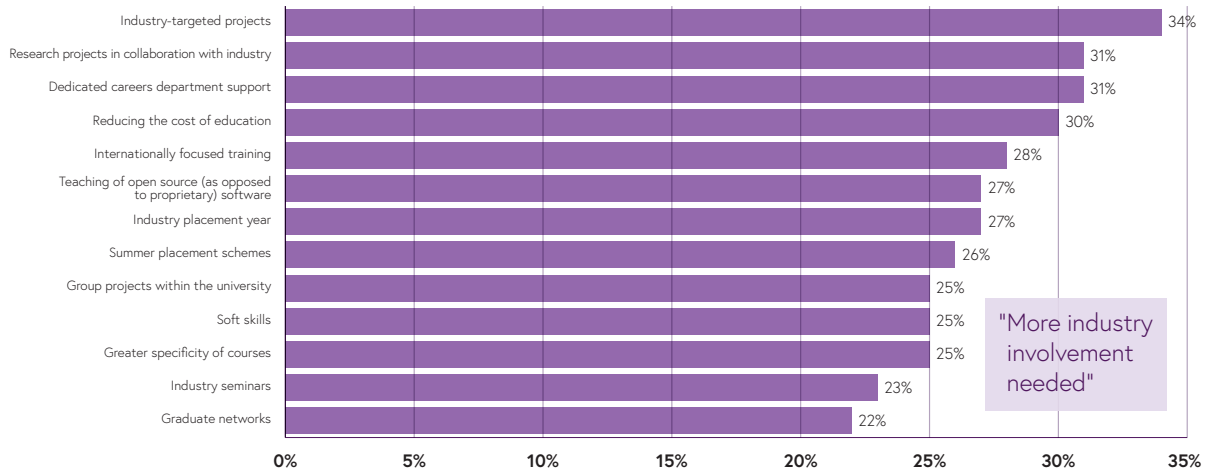


**Q. In your experience, how effective is education at [technical and vocational colleges/university level] in producing graduates at a sufficient level to work in technical engineering roles? Base: All (244)**

However, there is room for improvement. Respondents suggest a range of areas where university-level education needs to do better to produce more qualified engineering and technology candidates (see Figure 6).

Many of the responses indicate that industry is keen to build and strengthen partnership arrangements with universities. Suggestions include more industry-targeted projects (34%), collaborative research projects (31%) and industrial placements (27%).

**Figure 6: Improvements needed at university level to provide more qualified engineering and technology candidates**

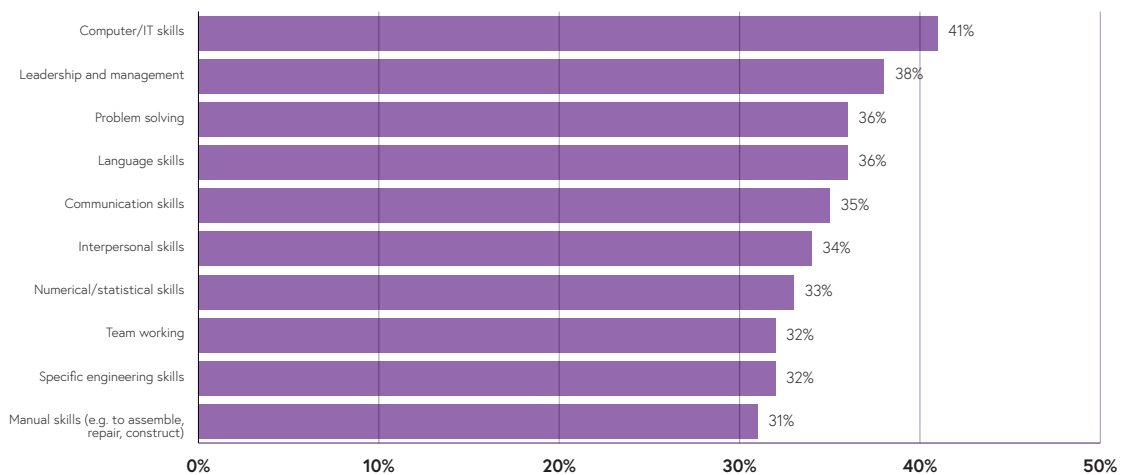


**Q. Where, if at all, does education at a university level need to improve in order to provide more qualified engineering and technology candidates for the industry? Base: All (244)**

Of those people who work for a firm that employs university graduates, 88% say that these new entrants have the skills to address the challenges their organisation faces. Around two-thirds (67%) consider that university graduates are up to speed

within six months – apprentices fare slightly better (71%). When asked which skills graduates need to make a positive impact, the two most popular choices are computer/IT skills (41%) and leadership/management skills (38%).

**Figure 7: Skills that new graduates need to make a positive impact**



**Q: And thinking about the challenges facing your organisation over the next five to 10 years, what skills will new graduates need to make a positive impact? Base: All (244)**

Managers working in the private sector are more likely than their nationalised industry or public sector organisation counterparts to value communication skills (37% vs 24%) or interpersonal skills (37% vs 20%) in graduates. The reverse is true for problem-solving skills (33% vs 49%).

# 3. Looking ahead

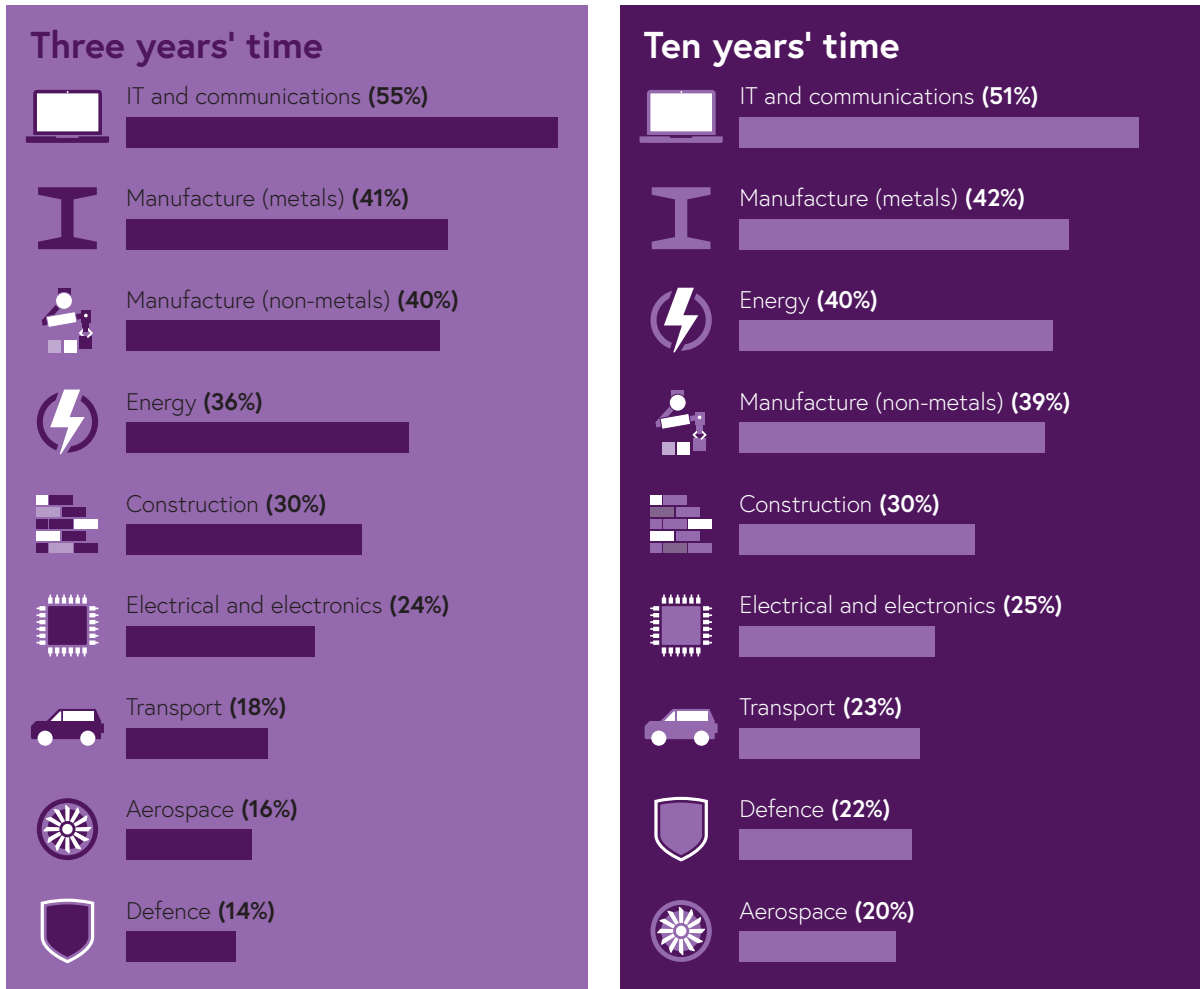
## Which industries will become more important?

Industries seen as more important to Oman in the short term are also expected to have a similar level of importance in the long term (see Figure 8). This is particularly true for the manufacture of metals (41% vs 42%) and non-metals (40% vs 39%), as well as

for construction (30% for both) and electrical and electronics (24% vs 25%).

Although IT and communications tops the list, its perceived long-term value does wane slightly (55% vs 51%). Conversely, respondents expect the importance of the energy sector (36% vs 40%) and defence sector (14% vs 22%) to increase.

Figure 8: Industries that will become more important to Oman



Q: Which engineering and technology-related industries do you think will become more important to Oman in three and 10 years' time? Base: All (244)



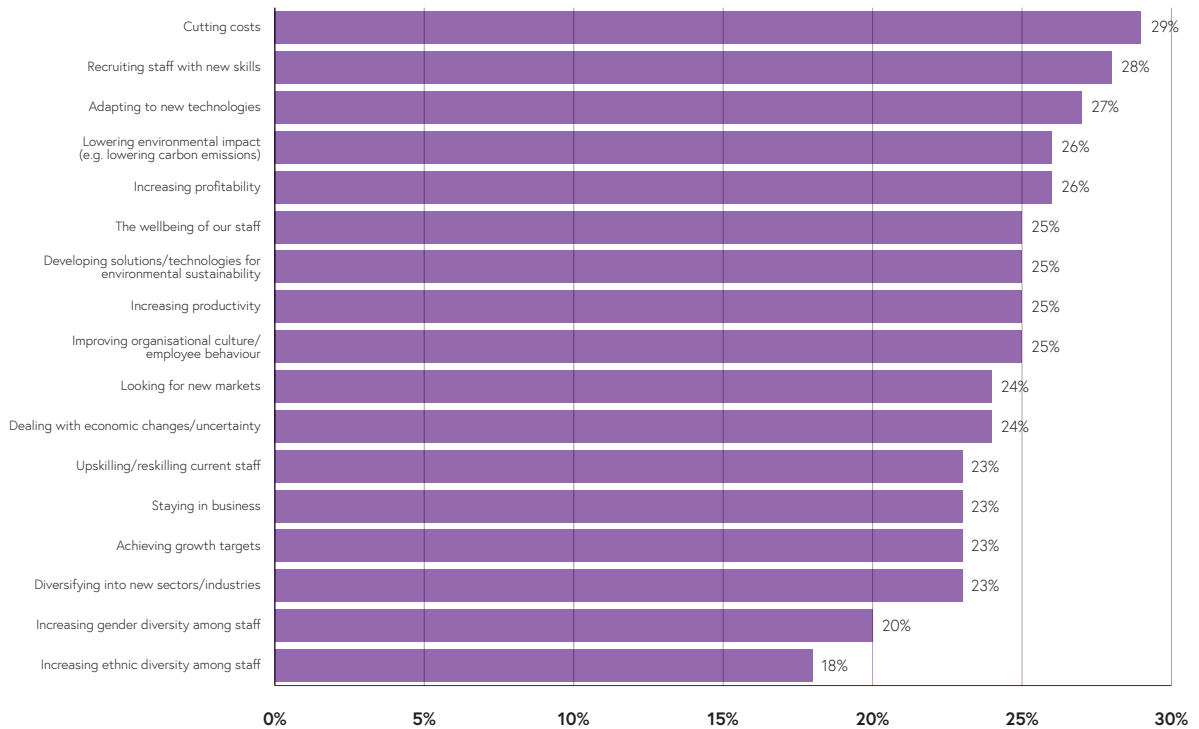


### Which skills will be needed?

Respondents say the top priority among Omani engineering firms over the next five years is to improve financial performance: 29% want to cut costs and 26% want to boost profitability.

Given the rapid pace of technological change, it's no surprise that the list of priorities also includes recruiting staff with new skills sets (28%) and adapting to new technologies (27%).

**Figure 9: Key priorities for engineering organisations in Oman in five years' time**



**Q: Which, if any, of the priorities listed will be key to your organisation over the next five years?**

*Base: All (244)*

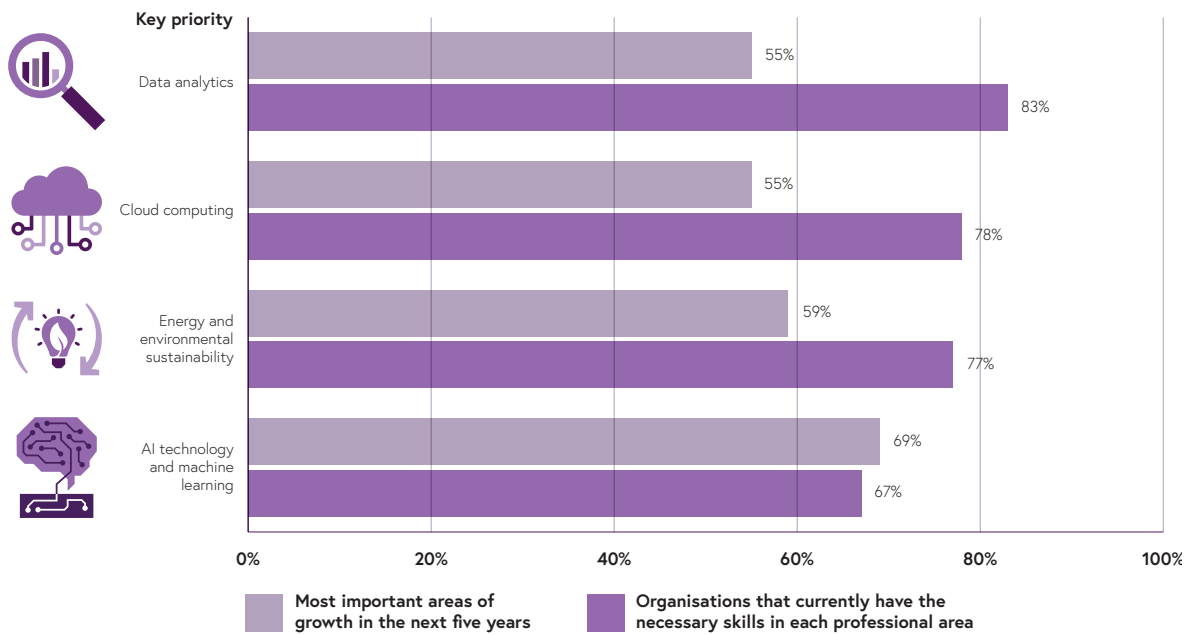
The desire to adapt to new technologies is driven chiefly by large organisations (33%) and medium-size organisations (29%). Only 17% of small organisations view this as a key priority.

Out of the new technologies that organisations will need to adapt to in the next five years, artificial intelligence (AI) technology and machine learning is seen as the most important growth area in this period (from the options provided in Figure 10). It is deemed

to be more important than energy and environmental sustainability, data analytics and cloud computing.

Given the future importance of AI technology and machine learning, it is worth noting that only two thirds (67%) of respondents currently have the necessary skills in this area. There are currently more skills in other areas. This suggests a need for upskilling in AI technology and machine learning.

**Figure 10: Most important areas of growth in the next five years**



**Q: Which, if any, of the following skills areas do you anticipate being important areas for growth for your sector in the next five years? (Please select all that apply). Base: All (244)**

**Q: And do you think your organisation currently has the necessary skills in these areas? Base: All (244)**


# 4. Maximising Oman's engineering potential

## What does today's training look like?

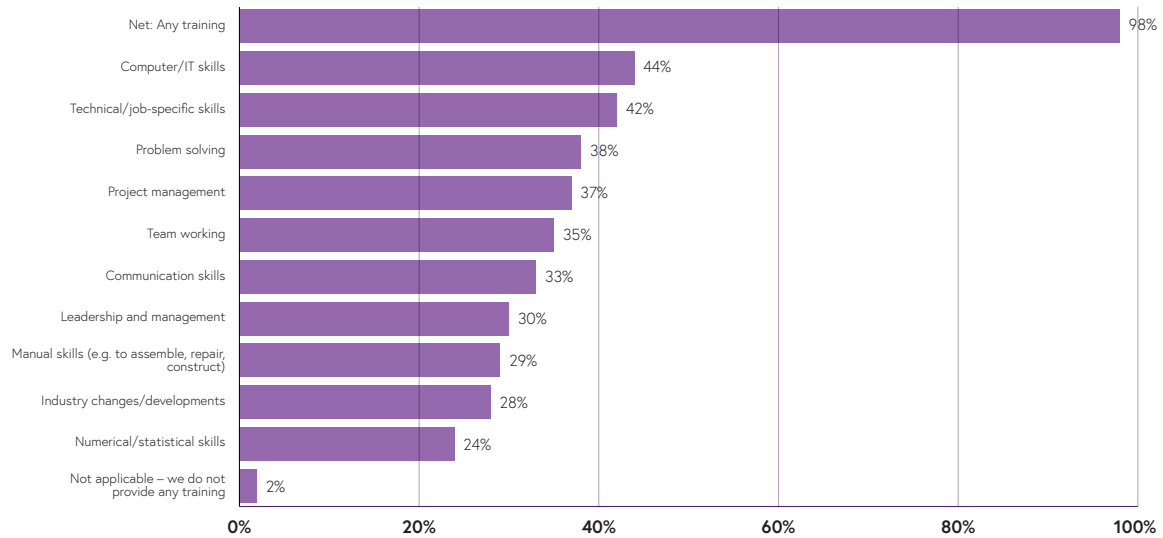
Almost all (98%) of respondents report that their organisation provides some form of training. Consistent with the area most needed to deliver their organisation's priorities over the next five years, the most common type of training offered is computer/IT skills (44%) followed by technical/job-specific skills (42%). The likelihood of an organisation offering training in computer/IT skills increases according to size: small (26%), medium (49%), large (53%).

Almost two-fifths of respondents (38%) offer training on problem solving. Small organisations are most likely to offer leadership/management training (33% small, 30% medium, 27% large).

**Training in computer/IT skills is most common** **44%**



**Figure 11: Training offered by organisations**



**Q: What kind of training does your organisation provide? Base: All (244)**

Overall, respondents say that most training is done face-to-face (60%) rather than online (40%). However, in large organisations it's almost an even split, with 51% of training done face-to-face.

**67%** of organisations offering training do so in both Arabic and English

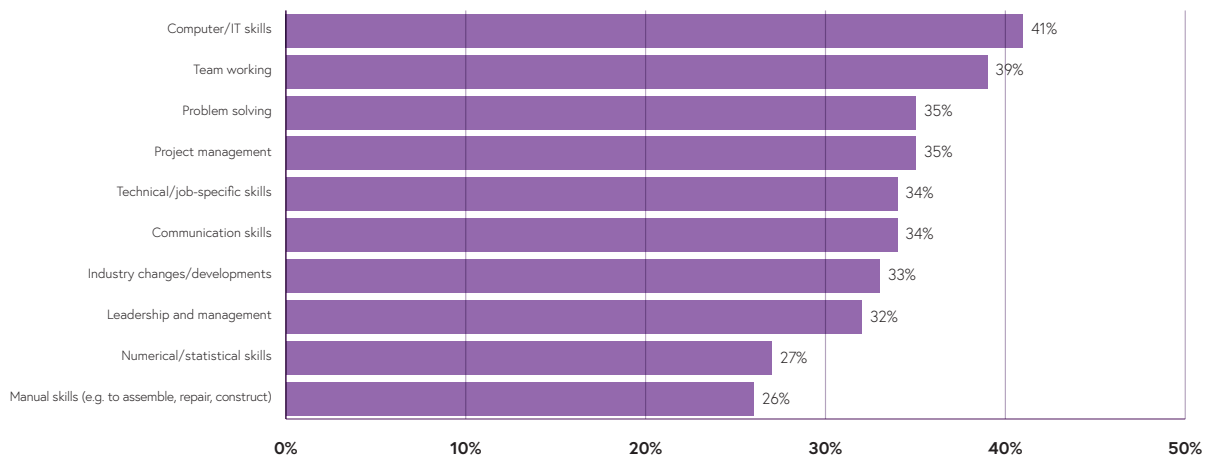
### Which training topics will organisations prioritise?

Given the anticipated importance of AI technology and machine learning, it's not surprising that, when taken as a whole, the top training priority during the next five years is computer/IT skills (41%). This is considered an important training need by medium and large organisations (47% and 45% respectively), but less so by their smaller counterparts (21%).

Respondents also prioritise team working (39%), which could be linked to the report's earlier finding that two-thirds (66%) of Omani engineering organisations have increased their headcount. Nearly half (47%) of micro/small organisations say they need to develop their teams – medium and large organisations aren't quite as keen (34% and 43% respectively).

Many respondents (35%) believe more training will also be needed in problem solving and project management.

**Figure 12: Training areas to deliver organisational priorities within the next five years**



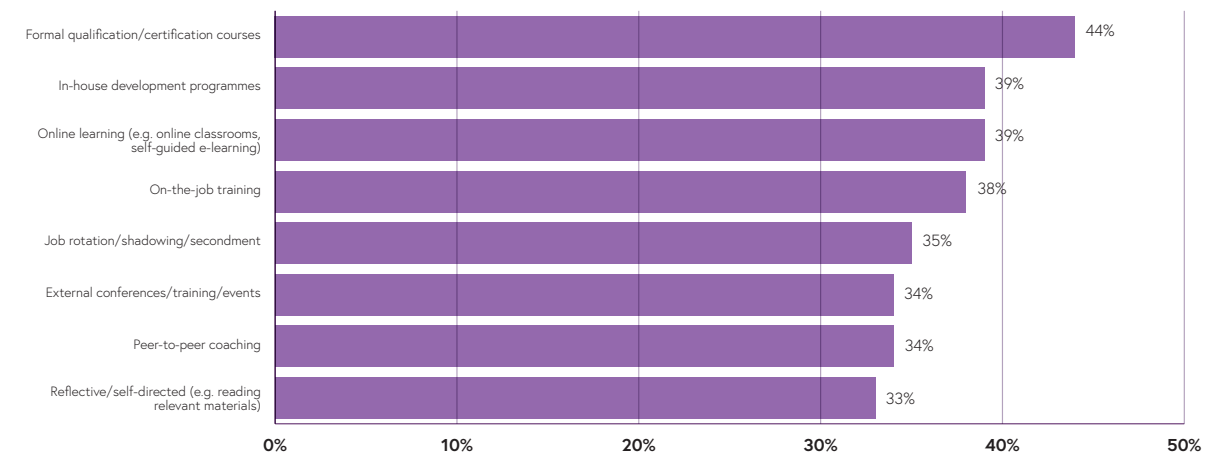
**Q: Which, if any, of the training areas listed will your organisation need to implement in order to deliver on its priorities over the next five years? Base: All (244)**

### How should training be delivered?

Respondents say their organisation needs to provide different types of training to deliver on its priorities – the most common type is formal certification courses (44%).

Around two-fifths of all respondents believe that in-house development (39%), online learning (39%) or on-the-job training (38%) is needed.

**Figure 13: Types of training needed to deliver on priorities**

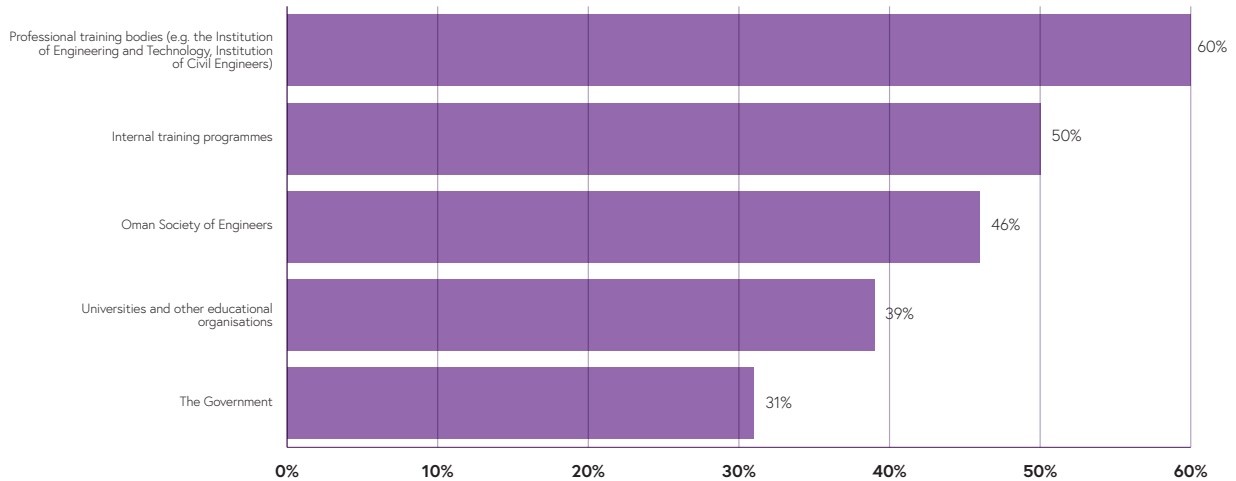


**Q: Which, if any, of the training types listed will your organisation need to implement in order to deliver on its priorities over the next five years? Base: All (244)**

Almost all respondents (94%) are confident that their organisation will be able to access the necessary training to deliver its priorities over the next five years – the private sector is more optimistic than its

counterparts in nationalised industry or the public sector (95% vs 89% respectively). Six in ten respondents think professional training bodies are best placed to deliver their organisation's training requirements.

**Figure 14: Organisation best placed to deliver training requirements**



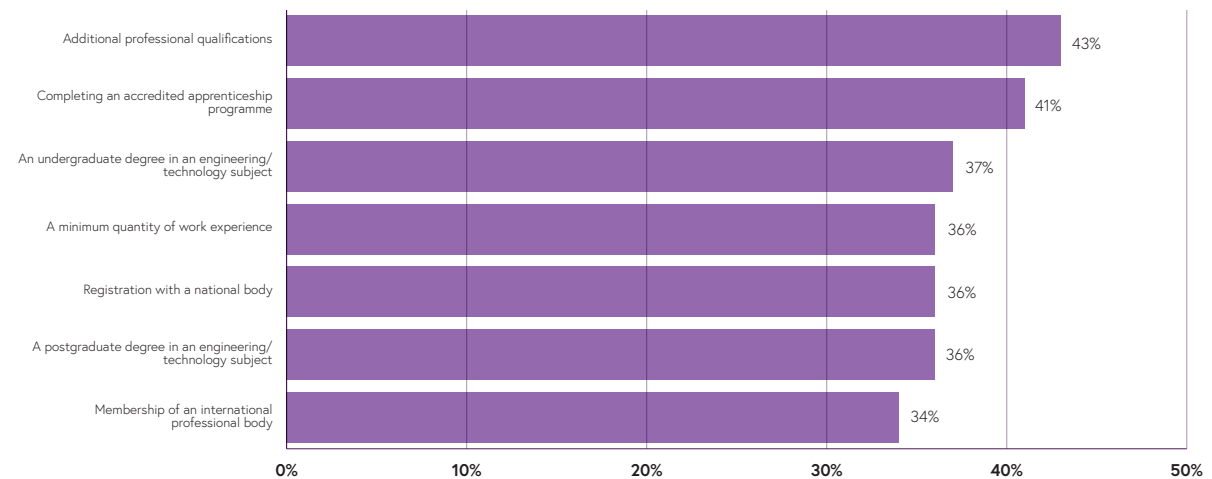
**Q: Which, if any, of the organisations listed do you think will be best placed to deliver your training requirements? Base: All (244)**

**How can engineers increase their credibility?**

As shown in Figure 15, beyond mandatory requirements the top ways to increase credibility as a competent engineer are to have completed additional professional qualifications (43%) or an accredited apprenticeship programme (41%). More than a third of respondents selected the remaining options, demonstrating that Omani engineers have a range of opportunities available to them to increase credibility within their industry.

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**Figure 15: How to increase credibility as a competent engineer**



**Q: Which of the options listed do you think increases credibility as a competent engineer? Base: All (244)**

When it comes to employing new graduates, 88% of engineering employers surveyed think that having an internationally accredited degree increases the likelihood

of employment. Half think it helps a fair amount (53%), while a third (35%) think it increases the likelihood of employment in their industry by a great deal.



## 5. IET concluding remarks and recommendations

As a global institution we regularly provide evidence-based, impartial advice to governments and policy makers. Based on our findings, our wider experience and the context of Oman Vision 2040, we have highlighted some action areas for government, practitioners, industry and academia to consider. Our intention is to partner with local stakeholders and use these recommendations to facilitate further discussion and action.

### Education

Education and learning are fundamental components of Oman Vision 2040, with targets to move Omani universities up the global rankings index (into the top 300) and to move into the top 20 countries in the Global Talent Competitiveness Index. Our research gives a generally positive view of education, with graduates who enter the workforce largely having sufficient skills.

There are, however, some areas to address. Most respondents think that the current STEM offering is fairly good or very good but that perhaps there is not enough of it. We recommend reviewing the quality of early years STEM education to make sure there is enough experiential learning to inspire the next generation of engineers. A clearly defined career pathway from school education through to employment is also needed, supported by extra-curricular and/or curriculum-enhancing programmes that provide real-world applications to learning. Positive reinforcement of engineering careers is important from an early age and exposing young people to engineering role models in different sectors will help them to make informed choices about their future career.

It also appears that greater collaboration between higher education organisations and industry will be beneficial. We encourage employers to help shape engineering education so that it is aligned to current and future industry needs – and higher education organisations should provide opportunities for them to do so. This should be a continual dialogue and can be supported by collaborative projects and student work experience schemes. To achieve global competitiveness, higher education organisations should seek accreditation from reputable international bodies and form more partnerships with international institutions. This will support future global mobility of engineers.

### Continuous learning and development

It is great to see that training is commonplace in organisations. Investment in staff development is crucial for long-term growth, even if the benefits are not immediately tangible. It is important that organisations identify the future skills they will need and make sure that training is aligned accordingly. We champion continuing professional development (CPD) and encourage employers and employees to consider learning as a lifelong commitment. Organisations should invest in systems that support their engineers to record, track and reflect upon their learning and development.

Training in computer/IT skills is most important when it comes to delivering future priorities and this is followed by team working. Computer/IT skills also top the list for new graduates who want to make a positive impact, followed by leadership and management. AI and machine learning is highlighted as an important area of future growth, so upskilling employees in this area may be very useful.





### Professional recognition

Our findings show that Omani engineers can increase their credibility and standing by gaining additional qualifications (43% of managers said this) and more than a third of respondents think that registration with a national body can boost credibility and recognition. This supports the recent move by the Ministry of Labour in launching its accreditation system for engineers in cooperation with the Oman Society of Engineers – a move that will provide regulatory benefits while also increasing the quality of engineers.

We recommend that this accreditation system uses a competence-based assessment approach such as that outlined in 'PAS525: 2018 Framework for assessing professional engineering competence'. This is an internationally applicable framework for assessing the competency and commitment of professional engineers and it can be adapted to suit local needs.

The framework assesses an engineer's knowledge and how they apply it. Personal responsibility, interpersonal skills and commitment to professional standards are also assessed. This holistic approach enables a robust assessment of an engineer's competence and professionalism. It also supports global mobility and competitiveness.

Our research shows that most engineering organisations in Oman already use competency frameworks to assess employee performance and progression at a company level. This will support the introduction of a competence-based professional accreditation system at a national level and ideally one that gains international recognition.

### Diversity in the workplace

To achieve its long-term goals, Oman needs to diversify its economy. Successful diversification requires new knowledge, relevant skills and innovation. To access the best skills and knowledge, and to ensure engineering outputs are for all of society, it is important to harness a wide source of talent, yet 37% of managers in our survey think that lack of diversity in the workforce is an issue.

We recommend that organisations champion multiple areas of diversity in their workforce. This will give access to a greater breadth of knowledge, skills and experience, ensuring that the engineering workforce reaches its full potential. In turn, this will support diversification and growth. It will also help to address the ongoing skills shortages around the globe.



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