



30 JUN, 2025

CRUCIAL CROSSROADS TO SECURE LOCAL TALENT

The Edge, Malaysia



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TALENT

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MALAYSIA'S semiconductor industry is facing a significant talent shortage, despite its role as a major player in the global semiconductor supply chain. Through the National Semiconductor Strategy, the government has identified a need for 60,000 skilled engineers by 2030 to support its ambition of becoming a global chip hub.

However, based on reports, Malaysia only produces around 5,000 engineering graduates annually. With just five years to go, the country will not be able to meet the target of 60,000 engineers, which signals that semiconductor stakeholders will need to step up efforts and find ways to fill the shortfall.

The value of the semiconductor market is expected to reach nearly US\$1 trillion by 2030 and industry players, educational institutions and the government are aware that in order to not lose out on a piece of the pie, not only do we need more science, technology, engineering and mathematics (STEM) graduates, but those with technical and vocational education and training (TVET) skills as well.

ET Partners Sdn Bhd founder and managing partner Tan Eng Tong, known by industry players as ET, who has more than 30 years of experience in the industry, observes that there has been misinformation on talent requirements. Malaysia is primarily a manufacturing economy but now, we are also looking to add value, which requires design and development engineers to join the workforce.

To support the engineers, more

technicians are needed. A technician should be proficient in repairing and maintaining the machines in a factory, to keep things running smoothly. However, engineers have been taking on this job instead, resulting in burnout and some of them leaving the industry completely.

"The big problem is that we need more technicians to support the expansion of factories. The ratio of engineers to technicians can be 1:5, or even up to 10, depending on the type of manufacturing and amount of automation," says ET.

"This is also where TVET comes in, as TVET students can be trained to learn how a machine works. The industry has got used to the absence of technicians and the engineers have been filling the gap."

He adds that right now, the enrolment for training is below the capacity of training institutes, while the industry demand is higher than the full capacity of enrolment. This means that even if all the talent were to graduate today, the number would still be insufficient to meet demand.

"In a recent survey by Invest-Penang, the five-year demand is 12,000 technicians. This shortfall will only get worse if nothing is done to increase the [talent] pipeline," he stresses.

"Recruitment is getting tougher and the competition from other companies is getting fiercer. Attracting talent is getting harder and the natural response is to raise salaries, but this is not enough.

"Human resources departments

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can no longer just promote job openings with a competitive salary because other companies will have similar job descriptions. This means that salary cannot be the only differentiator."

The greater pull of multinational corporations (MNCs) compared to homegrown small and medium enterprises (SMEs) is another hurdle, purely because the former has greater optics.

It all boils down to a lack of marketing, says ET. Local companies are doing exciting things in the semiconductor space and graduates need to know this, so that they will actively choose to work there.

"We have some fantastic technologies [being developed] in our local companies, but they don't know how to articulate this, hence university students don't hear about them. We hear of the products from Intel, but not the ones built here, because they are manufacturing companies and don't know how to market themselves," he explains.

This is something talent recruitment platform Hiredly has witnessed as well. Its founder and CEO Derek Toh says about 25% of its headhunting requests come from this industry and it typically signals that talent is hard to come by.

"Most companies don't headhunt for talent because it is more expensive. But the fact that a significant amount is coming to us means that they are struggling and are willing to pay for good talent," he adds.

Collaborative Research in Engineering, Science and Technology (CREST) CEO Jaffri Ibrahim agrees that local companies do not have sufficient visibility, especially those that are pushing the envelope in product innovation. The federal government can do a better job of highlighting the complexity of the technologies these companies are working on.

"A few of the local companies that I know are actually doing IC (integrated circuit) design at the 2nm and 3nm level, and you can't get any bet-



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ET, ET Partners



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Toh, Hiredly

ter than that from a skill-set standpoint. But from a visibility standpoint, few people understand and know that there are companies doing this in Penang," he says.

"Companies like Oppstar Bhd (KL:OPPSTAR), SkyeChip Sdn Bhd and Greatch Technology Bhd (KL:GREATEC) are doing work on a global scale, but very few people realise that. We should be proud of these people, and they're doing all the best work."

MICROCREDENTIALS AN EFFECTIVE WAY TO BRIDGE TALENT GAP

A key structural consideration in addressing the talent gap is the difference in the timeline between how quickly industry needs evolve — particularly in dynamic sectors like semiconductor and electrical and electronics (E&E) — and the pace at which academic programmes are developed and approved within the national quality assurance framework.

Universities, such as Wawasan Open University (WOU), operate within established processes designed to uphold academic quality and national standards, but industry advancements can occur rapidly. This makes it a challenge for both institutions and regulatory bodies to ensure that programme offerings remain responsive to evolving workforce needs.

Microcredentials and specialised courses seem to be the way forward.

CREST is in the midst of finalising the details to be a talent facilitator with the Human Resource Development Corporation (HRD Corp). "Our big picture vision is to offer microcredentials for different career paths to those working in the industry," says Jaffri.

Meanwhile, WOU chief executive and vice-chancellor Prof Dr Lily Chan says the university has undertaken modular curriculum architecture, allowing it to unbundle courses from its accredited degree programmes into targeted microcredentials and professional certifications. This enables companies to cherry-pick the skills they need most and deploy training in a way that works best for their teams.

These stackable options provide immediate value to both employers and learners, while still feeding into recognised academic pathways. Coupled with workplace-integrated learning models and ongoing input from industry partners, this approach allows them to remain agile

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and be aligned with evolving talent demands, says Chan.

“For entry into selected technology and engineering-related programmes, there are supplementary requirements — such as foundational qualifications in mathematics — which may limit the immediate pool of eligible learners. This highlights a broader, long-term issue: the need to cultivate STEM interest and capability from the grassroots level, so that more individuals are equipped to pursue and succeed in these fields, helping to strengthen our talent pipeline for the future,” she adds.

Another challenge lies in shifting legacy perceptions about what open distance learning (ODL) can deliver. Chan observes that there is still a tendency — among both employers and learners — to associate technical or engineering education with traditional classroom formats.

“We are actively challenging this mindset by demonstrating that ODL can be rigorous, immersive and industry-ready. Our learners are working professionals, many already embedded in the sector, seeking to advance rather than begin their careers,” she says.

“Ultimately, bridging the talent gap is not just about training. It’s about building stronger pathways, encouraging earlier engagement with STEM and working hand in hand with industry to develop sustainable, future-ready capabilities.”

WOU is currently the only institution in Malaysia offering a fully ODL-based Bachelor of Technology, and this model is proving especially attractive to adult learners who need flexibility without compromising on academic depth or industry relevance.

It is also working closely with industry partners to co-create tailored upskilling solutions, treating each case on its own merits. In a recent move to strengthen Penang’s high-tech talent pipeline, WOU formalised strategic partnerships with TT Vision Technologies, Oppstar Technology and Clarion Malaysia, positioning the university as their primary skills development partner.

These collaborations support the upskilling and reskilling of more than 200 technical professionals in high-demand areas such as IC design, Internet of Things-enabled manufacturing analytics and smart manufacturing systems.



“The training solutions include modular, stackable microcredentials and full academic qualifications, offering clear and flexible progression pathways.”

Chan, WOU

“The training solutions include modular, stackable microcredentials and full academic qualifications, offering clear and flexible progression pathways,” says Chan.

Its School of Technology and Engineering Science maintains regular engagement with the sector through roundtables, technical forums and joint programme development. These ongoing touchpoints provide vital insights that keep WOU’s curriculum responsive to market trends and technological shifts.

TIME TO FOCUS ON DIGITAL TALENT TOO

While Penang’s strength in the semiconductor industry lies in the manufacturing sector, there should also be a focus on the digital economy and developing skills for newer technologies.

Howie Chang, co-founder and CEO of Forward College of Technology and Future Skills, says this can help the country attract companies like OpenAI to set up an engineering team here.

“We saw announcements by AWS and other companies to set up data centres here. And while it’s great, we’re only focusing on servicing the construction of the data centres. At the end of the day, the hope is that with more data centres, there will be more digital applications and software, and thus more need for digital talent,” he adds.

This is where innovation and growth will happen, says Chang. “We believe that at the intersection, software and digital skills are going to be extremely important as part of the transformation. And we have the potential to contribute to that as well.

“Having manufacturing skills is good, but we also need people who understand AI (artificial intelligence) and can develop AI solutions. It’s not just confined to tech skills, but also domain knowledge.”

Some of the newer software technologies that Forward College focuses on are AI, data analytics, product and design, cybersecurity, cloud computing and digital marketing. • By Vanessa Gomes



“Having manufacturing skills is good, but we also need people who understand AI and can develop AI solutions.”

Chang, Forward College



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SUMMARIES

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