Industry-Academia Roundtable | brought to you by TalentCorp MALAYSIA

Filling the talent pipeline for the E&E sector

BY EMILY CHOW

Malaysia's electrical and electronics (E&E) sector is a strong driver of the local manufacturing industry. Last year, almost half of the country's exports from the manufacturing industry (RM231.2 billion) were from the E&E sector. As one of the 12 National Key Economic Areas (NKEAs), it accounted for 32.8% of Malaysia's exports and 27.2% of total employment in 2013.

Thus, ensuring a high-quality talent pipeline is crucial to sustaining and enhancing the sector. The Industry-Academia Collaboration (IAC) is one initiative that has been set up to address this issue.

Launched in Penang last month, this collaborative effort of the Malaysian Investment Development Authority (Mida), Ministry of Education (MoE) and Talent Corporation Malaysia Bhd (TalentCorp) is aimed at forming a partnership between universities, government entities and industries to work on the issue. The IAC's programme includes internships, short courses and industrial training to enhance graduate employability.

"This [partnership] is about producing the right supply of graduates, and the most sustainable talent supply is our local pool of universities," says TalentCorp CEO Johan Mahmood Merican. "This ensures that we have industry-ready quality graduates for the growth of the sector in all the priority clusters of the electronics sector."

The partnership comes at a crucial time for the E&E sector. A World Bank report has found that 62% of Malaysian firms face difficulty in finding talent with the right skills, while 48% of companies have identified a lack of talent as a constraint for future growth.

The IAC follows the launch of Malaysia's National Higher Education Blueprint 2015-2025 early last month, which aims to equip local graduates with skills for high-income career paths. At the moment, an estimated 53,000 graduates remain unemployed after six months of leaving university.

To address talent issues in the E&E sector, TalentCorp hosted a media roundtable with members of academia and industry as well as representatives from Mida and the MoE. The roundtable, moderated by Khazanah Nasional Bhd director Hamdan Abdul Majeed, comprised Johan, Altera Corp Sdn Bhd managing director Datuk Dr Sofi Abdullah, Universiti Sains Malaysia (USM) director Prof Abdul Rahman Mohamed, Mida's executive director of investment ecosystem Jaswant Singh, the MoE's director of industry relations Associate Prof Arham Abdullah, Universiti Malaysia Perlis (UniMAP) deputy vice-chancellor Prof Abdul Hamid Adom and Motorola Solutions Malaysia Sdn Bhd managing director Dr Hari Narayanan.

The discussion ranged from developing industry-ready graduates and its challenges, how companies conduct internships and integrate local graduates into the workforce, to the changes required to increase the value-add of the E&E sector. The following is an excerpt from the roundtable.

Hamdan Abdul Majeed: The E&E sector is an important part of the industrial landscape. In terms of employment, it accounts for more than 600,000 of the workforce. The industry has upgraded significantly. It is a major component of the Economic Transformation Programme (ETP) journey that Malaysia has set forth. I will ask Johan to give the context of why the issue of the IAC comes to the fore.

Johan Mahmood Merican: Sometimes, we think of the E&E sector in terms of manufacturing. But under the ambition of the ETP, the government wants to see the sector move up the value chain and take on higher value-added activities. The launch of the IAC reflects a more coordinated and holistic approach.

It starts with Mida articulating the future of this sector, identifying the key technologies or domain clusters and ensuring we are able to produce university graduates across these clusters. Towards that, we have identified lead companies. Datuk Sofi dispels the myth [of Malaysia just being a manufacturing hub] as Altera, which does no manufacturing in Penang, has 40% of its headcount here. Dr Hari, with Motorola, has a centre for excellence right here in Penang. These are lead companies passionate about moving up the value chain and talent agenda.

At the same time, a key part of the jigsaw is academia. Now you have the MoE setting up the plan through the [National Higher Education] Blueprint for greater industry-academia collaboration. It is great that we have both research and technical universities here today. USM, for example, has a long tradition of research and working closely with electronics companies. Technical universities like UniMAP have shown leadership by embedding industry content in their curriculums. We look forward to adding more companies and universities to this agenda over time.

This year, we hope to catalyse more industry-academia collaborations, including the adoption of short courses or industry projects like what Motorola has done, enhancing the internships of various programmes with training, doing electives or hosting lecturers from the industry.

Hamdan: Jaswant, from Mida's viewpoint, how has the industry transformed and seen value-add? What has been the strategy in terms of building the ecosystem? Can you give an overview of where Mida has set forth its journey?

Jaswant Singh: The electronics industry's humble beginnings began more than 40 years ago. Over time, the industry has grown, whether it is the front end, R&D or design, production or supply chain management. Along the entire value chain, the industry has been growing and is moving up the value chain.

As the country has set a high income and economic transformation [target], you have to go through high value-added activities to achieve that. Therefore, high-quality labour comes in. But before that can be in place, we are promoting investments through all kinds of policy instruments, whether it is incentives or an investment ecosystem. Before Jan 1, 2013, there was no industry talent management division at Mida. If there was anything happening in the field of talent, it was always a reactive approach. It could have been from a university on the supply side or from another party. It has been happening, but there's no structure.

Coming back to the E&E industry, last year there was RM11.1 billion worth of investment through 96 projects, with a potential employment of 16,700 workers. In terms of design and development, investment has gone from RM1 billion to RM2.5 billion from 2007 to 2012. [The number of] design and development engineers has increased from 2,000 to 5,500. The trend is clear. Mida is cultivating high-value investments and companies are believing in our story, therefore investments are moving towards high value. There are technological clusters developing. You can see the light-emitting diode (LED) and solar clusters, embedded systems, even auto-electronics and advanced manufacturing. For all these clusters, you can see the evolution becoming more complex and high value.

So, we must stay ahead of the game. The gaps have

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existed and will always exist. Industries can be secretive. Technologies can be disruptive. You wouldn't know what's coming. From Mida's viewpoint, we are a proxy to the demand. We know the trend, what kind of numbers are needed and who is going where. This will add to the initiative.

Hamdan: You have brought up an interesting point about the whole industry moving up the value chain. I am going to ask Dr Hari to add to this, as Motorola is one company that has chosen to do end-to-end work in Penang. Could you share how you addressed the talent need when you built this industry up for yourself?
Dr Hari Narayanan: We started looking at R&D with two people back in 1976. Currently, if you look at the organisation, we have 3,300 people. Of that, we have about 1,060 for R&D, and with the manufacturing engineers, it could be about 1,500. This is a knowledgeable force. We are probably the largest R&D organisation outside the US, and probably the largest in the world in the distant future. From a manufacturing point of view, this is the largest manufacturing site in the world for Motorola. The strength and depth we have in this country is huge. How did we go through these things? It really has to do with the strategy of what we wanted to be over the past few years.

Over the years, we have gone from manufacturing to automation. And from the R&D point of view, we helped do incremental designs, slowly started putting capabilities into the workforce, went from analogue to digital and now we are going into solutions. Talent has been the key aspect of how we grew. We worked on it on an ad-hoc basis. We looked at internships, collaborated with universities ... There are many facets to touch on and I want to see how Motorola can help.

Hamdan: Motorola in Penang is a major impact centre for global Motorola. How was that journey? Have you struggled to keep that going by virtue of talent?
Hari: Back in 2002, we had 250 engineers. Today, we have 1,060. It has been exponential growth. We struggled over the years. We had to create our own academic department to see how we could bring in fresh engineers. By the way, from the R&D point of view, 99% of my workforce is local. We have been depending on fresh graduates, putting them on the FasTrack Programme to see how they can learn quicker. It has been a lot of internal work. Sometimes, it has been inefficient. We could have spent more of our expert resources doing something else. It has been a hard journey, but there is another wave of growth coming up and I want to see how we can work with TalentCorp and Mida to make life easier.

Hamdan: Datuk Sofi, Altera has got a fabulous design outfit in Malaysia. Forty per cent of your global workforce is based here. How have you seen the journey of Altera in Malaysia? Do you get graduates from local universities or do you find graduates from around the world to fill up positions here? How has the journey been in being able to compete with your other sites and fulfilling demand?
Datuk Sofi Abdullah: There has been a comparison between overseas and local graduates. The perception is overseas graduates are better than local ones, but this isn't true. At Altera, more than 80% of our R&D workforce are local graduates, and they are able to come up with complex products. How we managed to do this is to give them opportunities to be exposed to the real product. Most are able to make it. We have had graduate trainees come on board with us for one year. Starting this year, we will have an open programme. It is part-time. We fund them, and within a year we will try to absorb 80% to 100% of them.
Johan: I want to add on to what Datuk Sofi said about the graduate trainees. TalentCorp has a one-year programme where it is partly classroom training and the rest is spent on the job. One of the challenges is to create a more sustainable pipeline for organisations like Motorola and Altera. Can we take a component of that training back to the university, so that the time required for an engineer to be of value to an organisation is faster?

Hamdan: There is a World Bank study that highlighted a number of factors when it comes to the industry-readiness of graduates. Issues they have identified include analytical and soft skills and the ability to articulate more effectively. In recent times, more and more firms have been trying to bridge this gap through graduate trainee programmes and other forms of interaction. But if this load can be taken off them, they can use their time for other priorities, and the National Higher Education Blueprint tries to articulate this. Prof Arham, give us a perspective on the goals you are trying to achieve in the next five years. What kinds of action are being put in place to achieve those goals?
Prof Arham Abdullah: Looking at the National Higher Education Blueprint, the link between academia and industry has been mentioned in seven out of 10 shifts. Shift one mentions holistic entrepreneurial and balanced graduates. We have identified how we can improve on language proficiency and how you can articulate your ideas. In talent excellence, shift two, we have four [types] of lecturers. One as educators, second as researchers, third is to lead the institution, and the fourth is where we invite experts from industry to be part of the teaching faculty. Last week, we launched the CEO-Faculty programme, where 20 [industry experts] committed to being part of the programme and to teach and share their experience, giving 30 hours of lectures per year. The contract is for a two-year period. This is an opportunity to open doors and create trust between industry and universities.

Another important thing is shift seven, the innovation ecosystem where we look into a quadruple helix of academia, industry, government and community. The engagement was a triple helix last time, but now we need to impact the community.

Hamdan: Prof Rahman, there is the blueprint and some level of academia-industry collaboration, but the data indicates one out of two graduates who responded to this survey say the key issues are the ability to work independently, analytical skills, creative and critical thinking, and communication skills. To what extent has USM addressed these issues? Can you share with us some of the actions the universities are taking to bridge this gap so that graduates are industry-ready?
Abdul Rahman Mohamed: You cannot expect students to be ready when they are only exposed to the industry for three months during their four-year study. But through the process now, students can go for industry attachments after their first and second year. And after their third year, they can do their final-year projects with the industry. That is what is needed. I wish that after their third year they will get to spend a year in the industry, and then come back for their fourth year. That would be fantastic. USM is also going into industry-driven research. We publish papers, but is there any knowledge from them which can be used in the industry? There is no impact otherwise.

Hamdan: From the industry's point of view, is there a need to look at the curriculum, in terms of more specialised programmes?
Abdul Rahman: At USM, we have already started what we call Industry in the Classroom. It is not where the CEO comes and discusses management issues — that is more suitable for graduate schools of business. We have a syllabus, and two hours of that topic is taught by somebody from the industry.
Johan: I think Dr Hari has these projects which you do in universities. Maybe you could share that as an example?
Hari: We have different degrees of projects, some of which take three to four years. But there are smaller projects that can provide a better understanding of what the industry needs. What we do now when interns come in is to include them in a project so that we can follow through with them. We have been doing this for the past two to three years, but I wish we could do a lot more of this across companies.

Hamdan: I want to bring UniMAP into the discussion. UniMAP has been working closely with Silterra Malaysia Sdn Bhd and there have been positive results and both partners have benefited. Could you share that with everyone, and is there a particular pathway that should be considered?
Prof Abdul Hamid Adom: UniMAP, being a small and young university, is very agile. Our mission statement is to produce graduates for the national industrial demand, so we always look at what the industry needs. We have always involved the industry in our human resource (HR) development, curriculum and research. Some efforts are top-down, some are bottom-up.

When we started UniMAP, we supported the E&E sector. People talk about why the university focuses on such specialised undergraduate programmes when other universities only offer this at the post-graduate level. But it's because we see changes in the industry landscape. We have always involved industry in these three areas — curriculum design, updates and HR development. When I talk about curriculum design, we have always involved one of the engineers from Motorola to be on our industrial adviser panel. We get advice on what our curriculum should be like and where it is heading. We have been doing that from the start.

Hamdan: What has been the outcome? Is this the model you recommend other universities consider?
Abdul Hamid: Yes. When the university creates such avenues, our graduates have little difficulty getting jobs and meeting industry demands. Although UniMAP is small, we are able to attract students from overseas, considering there is 'nothing' in Perlis. We also help industry develop its own HR, like with Agilent Technologies. We train their technicians to be upgraded.

Hamdan: I am going to put the bigger issue to debate now. Jaswant said this is about trying to create a high-income nation, a value-added industry. For Motorola, it has chosen Malaysia as a site to anchor its value-added strategy, meaning you are doing significant things here as part of your global business. This includes generating intellectual property (IP) and increasing your output value. What do you think are the key issues that aca-

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demia needs to address that can really bring Malaysia up? The E&E sector has significant potential — there is industry and academia collaborating, there is positive dialogue, the government has set up an enabling environment ... But what can universities do so that in five years, it can really make a big impact?

Sofi: Personally, my concern is the science stream enrolment, which is dropping to below 25% in secondary schools. These are the people who are going to be in the science, technology, engineering and mathematics (STEM) industry. If you don't have these students, the pipeline will be dry. Not all these people who enter tertiary education will go into engineering; some will enter other fields like medicine and when they graduate, they could go into business or teaching. We are left with maybe 10% if we keep filtering it.

Another thing is the quality of the teachers in primary and secondary schools. These are the people who mould good students. But sometimes we don't have good teachers who can deliver knowledge to students. The quality of students coming into university and its output will be affected. We need to make the teaching profession a sexy one.

Johan: What I want to find out more from Datuk Sofi is an interesting pilot programme Altera has tried with USM's information and communications technology (ICT) faculty, where students come two days a week during the semester to work at Altera. How did that come about and how is it working out?

Sofi: Once students are exposed to real work, they can relate [it back to their studies]. The exposure helps a lot, and when they come in to work, concepts are not alien to them. Personally, what I would like to see is an offsite between industry and university. Universities can [host] small breakout groups, and each group will have their own time with different companies. After the breakout sessions, you discuss the needs of industry and share it. [We should] have a process where the collaboration comes together because right now, it is artificial.

Hamdan: Jaswant, your view?

Jaswant: When we promote investments, whether it is domestic or foreign direct investments, we are also talking about sustainability. We don't want investments that come today but aren't deeply rooted and so it is easy to move. You are not only talking about retaining existing investments that will move up the value chain, but also attracting new investments. Imagine the contribution of manufacturing to gross domestic product (GDP) and also services, which we are aggressively promoting. Imagine what will happen if talent becomes a big issue.

We view talent as a competitive issue. I would say it is the only renewable resource the country really has. In the 6th Malaysia Plan, [the discussions on talent] started, and this issue has been going on. We are now going into the 11th [Malaysia Plan]. Obviously, there are problems. One of the major roles we are playing now is policy advocacy. For example, students must go into industry to train. In Taiwan, professors are taken out of the university to train in industry every few years. To solve major problems, you need major policy intervention and to think outside the box. We have to be aggressive. We think we are moving fast, but people are moving faster. If we don't do it, others are going to catch up. We need this investment ecosystem and go into high value-add [activity] so that it is not easy for investors to move out of Malaysia.

Johan: One of the challenges here is retaining companies. Sometimes, the multinational corporations (MNCs) that operate here function almost as cost centres. When the National Higher Education Blueprint talks about producing balanced graduates, we need to produce not just engineers who can do engineering, but also engineers with a business angle. They need to be able to go into MNCs and compete with other company branches to bring more business here.

Hamdan: A lot has been brought up about the pipeline; people see it drying up. What is the MoE doing to ensure universities perform? Who is going to be made accountable if the universities don't perform and what will happen then?

Arham: Since 2013, the two ministries of education and higher education have merged. This is one of the biggest approaches we took to look at the supply chain, from primary school up to higher education. The Malaysian Education Blueprint 2013-2025 talks about STEM. There are several initiatives to increase the intakes and interest of students to study science, and to make sure teaching is the first-choice job among top graduates.

Hamdan: Would the ministry be prepared to say that if universities don't perform, their budgets are going to be slashed and professors will be let go if they are not performing?

Arham: We have it in shift five and six, which is financial sustainability and empowered governance. Budgets given to the university are performance-based.

While the blueprint was launched in April, some initiatives were started last year. For example, the innovation ecosystem. To have a high-income nation by 2020, we want to move from manufacturing to innovation or knowledge-based economies. The R&D component that can be used by the industry is important, so ... we need the cooperation of industry at the early stage of research. By having this collaboration at an earlier stage, the R&D product will be more accepted by industry.

Hamdan: So, there are clear plans in place, which are tied to specific outcomes and the performance of individual universities will be open to scrutiny. You need fundamental research, where you can get industry to be actively involved in shaping these ideas. So hopefully, this can become start-ups or new innovations that will encourage entrepreneurship to emerge.

Hari, you have seen this landscape for the last two decades in building up the R&D setup at Motorola, and you know where you want to go as an organisation. You have seen what the government is doing, so what would you expect in terms of actual outcomes that would convince you this is going to be a choice location, so there is going to be industry sustainability?

Hari: It looks like we are doing all the right things, but I worry that we are always doing too many things in a shallow way. I always use this analogy with my engineers: What is the efficiency rate from Power Point to reality? We need to have very specific key performance indicators and performance measures.

The second point I want to look at is that the E&E sector is moving at a fast rate from a technology point of view. If you fast forward four or five years, what kind of engineering or talents will we need? We have to work on it now. The kind of talents we need will be different. Now, as we talk about the IAC, we have to look at the curriculum and pick out the universities that will help industry move into being more multi-skill and multi-disciplinary. I don't think we are going to work on discrete engineering. We are going to work on system engineering, we are going to provide integrators and so forth. I don't think universities are geared up for that.

Hamdan: We are dealing with a fast-changing environment where competencies are also changing rapidly. Traditional ways of learning are changing. Talent has to be relevant. Can each of you give your viewpoints. What do you think really needs to be done to achieve the growth we expect?

Hari: We are on the right track. We have had some mileage, but the return on investment has not been that great. We have had good opportunities, we have identified industries and universities, but can we get that focus sharpened in order to tackle the problem?

Abdul Hamid: In 2014, while 90% of our students were in engineering, 62% [of that] were women. Only 38% were men. Not only are there fewer students entering STEM, there are fewer men.

Jaswant: With the Higher Education Blueprint, if the perception is that no university is going to close, things will be the same. We must be bold, think high impact and strategically, and put away personal interests to push the country forward in a very passionate way.

Abdul Rahman: In terms of government policies, a lot of funding has been given and I am glad. But I want to go down to the lecturers. They have to be the champions. We can plan programmes, but if lecturers and students don't see the benefit of it, [it is pointless]. The platform and ecosystem are there; now, we need the players. Let them champion their cause and tell the university what to do.

Johan: We have to recognise the amazing potential here in Malaysia. When you talk about the E&E sector, we probably have all the top companies in the world here. We have great talent coming out of local universities. The question is, how do we solve this problem where companies continue to be successful and we have talent that can be optimised — where they achieve high income and have fulfilling careers — towards supporting the success of the economy?

To do that, a key step is to avoid shallow or false collaborations. Companies are busy, so with the finite resources they have, how do you optimise that and what sorts of activity make sense to them? Maybe some can go all the way to curriculum development. For others, maybe only short courses or final-year projects [are feasible]. We have to figure out what works for companies and which universities are interested. E

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