"E&E Continues to Reach New Heights of Excellence in Technology and Productivity Growth"

By Champion of Electrical & Electronics Productivity Nexus, Dato' Seri Wong Siew Hai

If the last two years have taught us anything, it is the sheer potential off the electrical and electronic (E&E) sector in Malaysia. Last year alone, the E&E sector contributed RM455.73 billion (36.8%) to Malaysia's total exports, an increase of 18% year on year from 2020 when it brought in RM386 billion, in itself a 3.5% increase over 2019.

At the moment, Malaysia is a crucial hub in the global semiconductor supply chain, with approximately 7% of the total global semiconductor trade flowing through here. Its importance became clear in the first half of 2020 when these key components of the global supply chain were interrupted due to closure of factories and only 30-50% of factory are allowed to run.

Many multinational companies missing their quarterly or yearly financial forecasts pointed to the disruption of the supply chain in countries like Malaysia, as one of the problems. And, the car manufacturing plants in the US, Europe and Japan also blamed it on the inability of electronics factories in Malaysia to ship the semiconductor components needed for assembly at the time.

Luckily, the government stepped up and we worked together to get these companies up and running again, not least through the PIKAS vaccination programme that allowed the manufacturing plants to reopen. We needed to get our act together quickly as it was crucial that our customers did not divert their orders, new products and technologies to other countries.

Our E&E industry started at roughly the same time as the ones in Korea and Taiwan. Look where they are today and look where we are. They have created their own local global companies such as Samsung and TSMC. The major difference, I would say, is the amount of government support they received and the effort that went into creating local ecosystems in those countries. By contrast, we relied on foreign direct investment, which was all right to start with, but we should have taken more initiative to create our own companies and move them up the value chain.

Thankfully, in the past few years, we have recognised our deficiencies and in March 2020, the pandemic brought it all to a head and sped things up.

In 2017, the government launched the Malaysia Productivity Blueprint to enhance productivity growth and one of the nine priority subsectors identified was E&E. The Electrical and Electronics Productivity Nexus (EEPN) was then established under the Ministry of International Trade and Industry's Malaysia Productivity Corporation (MPC) to raise the country's E&E productivity and enhance competitiveness.

The E&E Nexus set its sights on four key areas:

- Enhancing higher value-added activities, especially in design and development;
- Nurturing the talent pool;
- Accelerating the adoption of Industry 4.0, and
- Strengthening the development of SMEs.

Here's a little-known fact; we already have Malaysian companies doing IC design, embedded system design and development, industrial software, artificial intelligence and 5G, wafer fabrication, integration of robotic systems and testing equipment. But not enough. So, we need to focus on growing local capabilities in these areas.

To do that, we really need to focus on talent development. EEPN is driving a Structured Industry Apprenticeship Programme (SIAP), a curriculum enhancement and embedment programme for IC design and development.

Created in partnership with the Ministry of Higher Education, it consists of six industry-driven training modules: introduction to design, digital front-end, digital back-end, design for testability (DFT), analogue and circuit layout.

There is also the little issue of unemployed engineering graduates. In a time when the industry is facing an acute talent shortage how is it that so many engineering graduates are without jobs? We found three major problems – some were not technically sound, had attitude problems and/or a lack of soft skills.

Commented [LWW1]: Is there another way to introduce the subject on unemployed graduates?

Using trainers from industry, we were able to turn them around in just a few months. In 2019, all 121 of the unemployed engineering graduates who passed through our programme, have been successfully placed, a third one of them with MNCs, no small achievement.

But with all our best efforts there is still a major talent shortage in the industry. A longer-term solution would be to get companies to embark on Industry 4.0 strategies, chiefly automation. When we broach the idea, we found that the major barrier was cost, or rather, perception of a high cost.

To show them that this was not necessarily the case, EEPN organised a series of Plugfest workshops in Industrial Internet-of-Things and Artificial Intelligence-based Machine Vision systems (AIoT) where participants underwent training and brought in challenges from their own companies or industries and were required to come out with proof of concept projects in their own workplace.

Since we first started Plugfest, which, by the way, is named for the event where engineers meet each other and test and solve challenges of their products and processes, it has attracted 172 participants from 92 companies. They came up with affordable solutions and that most of them have already implemented in their companies.

To get the word out, we have put together a booklet, "Productivity through digitalisation: EEPN end-users Plugfest Projects Compilation," with the best 32 Proof-of-Concepts.

Moving to Industry 4.0 is no pipe dream. It can be done and we are showing them how.

But there are other areas that also need to be considered. For instance, strengthening the domestic ecosystem. We think electronics manufacturer Inari Amertron Bhd can be used as a model. This company has spent hundreds of millions buying equipment from local companies.

We need to create global champions the way Korea and Taiwan did and we need to allocate a lot more effort and resources to supporting local companies, to do this. We already have the various pieces scattered all over the place; what we need is to put them together.

Last January, through the encouragement by MPC, MIDA, MITI and EPU, the Malaysia Semiconductor Industry Association (MSIA) was set up to accelerate government-industry collaborations, drive productivity and competitiveness of the local E&E sector and be the collective voice of the E&E industry.

MSIA has 180 members from 10 Malaysian states and they represent a broad range of companies with headquarters in 17 countries. MSIA's four main objectives are:

- To strategically develop the country's semiconductor industry by nurturing and growing a complete semiconductor ecosystem;
- To elevate the global market position and value chain of local semiconductor companies by enhancing their capabilities and capacities;
- To highlight the industry's challenges and build positive relationships with the government and agencies, as well as other industry associations and chambers of commerce; and
- To collaborate with the government to formulate strategies and policies to enable Malaysia's semiconductor industry to be globally competitive.

In fact, even before it was officially formed, MSIA worked with EEPN to develop the E&E Marketplace Malaysia (EEMM), the B2B online marketplace is specifically developed to promote companies in Malaysia to the world.

We have made a start at creating the local ecosystem but much more needs to be done; for starters, attract foreign investment in wafer fabrication, grow our capabilities in semiconductor testing and packaging design and finally, establish a strong software industry.

In the past few years, we have finally started seeing some movements in the right direction for the industry. Malaysia had a head start and it's time we make the best of all that we already have to illuminate our path forward.