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SOLVING THE SKILLS CRUNCH

Penang Industries Face
Hiring Challenges during
Economic Recovery

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Preamble

Information for this proposal is gathered from a webinar and a series of focus group meetings held with various stakeholders and industry leaders in electronics manufacturing and services, global business services, and the tourism and construction industries in Penang. These gatherings discussed hiring difficulties, skills mismatch, and graduate employability; from these, labour market solutions have been garnered towards attaining a reliable and skilled labour force for the country, and enhancing its future-readiness.

This paper discusses the challenges and opportunities of skill issues faced by Penang and provides recommendations to relevant federal ministries to seriously consider. There is great urgency in this matter.

The Economic Landscape in Penang

Penang remains a global electronics and services hub today. Industrialisation of its economy began in the early 1970s, and since then, robust, primarily foreign investments have generated a tremendous ripple effect, buoying local businesses and startups. This ecosystem, especially surrounding electronics manufacturing and medical technology, inspired impressive innovations that continue to maintain the industrialisation process in the country as a whole. For example, local tech manufacturing companies such as Globetronics, Inari and ViTrox previously nurtured by Penang's multinational firms, are now listed in the Kuala Lumpur Stock Exchange (KLSE). Most importantly, their products and services are strongly integrated into the global electrical & electronics (E&E) value chain.

Now a highly industrialised export-oriented state, Penang's E&E sector constituted 33.6% of its economy in 2021. The stable inflow of new and expansion investments into the state has also been seen as becoming responsible for the country's largest E&E value-added, accounting for about 35% in 2020 and producing about RM60,000 in average annual salary per person engaged in the industry. The state has also chalked up the highest exports value in Malaysia, increasing by 14% in 2021 over 2020, amid the Covid-19 pandemic. These indicators are expected to grow exponentially in the coming years due to Penang registering a new all-time high in manufacturing investments approved in 2021.

Global business services (GBS) is another growing sector that attracts foreign investors. Some multinational manufacturing firms (e.g. Jabil, Intel, TF-AMD, Osram, etc.) have set up their global

¹ Special thanks to YB Professor Ramasamy, the Deputy Chief Minister II of Penang for his guidance, and Dr Lee Siu Ming, Ng Kar Yong and Yap Jo-yea for their assistance in organising the webinar.

business centres and centres of excellence within proximity of the manufacturing plants. Other high-value-added global corporations, such as Cisco Systems, Clarivate, Emerald, IHS-Markit, UST Global, and others, have found this environment appealing, with a primary focus on robotic process automation, artificial intelligence, big data analytics, and cybersecurity, in addition to traditional GBS functions in business process and knowledge intelligence. Penang's robust growth in the manufacturing and services sectors thus contribute substantially to the economic growth and prosperity of Malaysia as a whole.

With huge numbers of jobs being generated, labour market bottlenecks have emerged across the country. Labour shortages, general skills mismatch and an intense brain drain are the growing issues facing industry players. According to one industry player, there are 1.7 million Malaysians working overseas, largely in Singapore and China, alluding that Malaysia is not making full use of locally available talent. A lack of skills competitiveness certainly hinders significant economic development. The risk of Malaysia remaining in the middle-income trap and failing to move up the value chain is real if no concrete steps are taken to address the skill challenges. Urgent and strategic measures are needed to address the skills gap and sharpen Malaysia's competitive edge as a destination of choice for investments in the E&E industry, its ancillary sectors, and high-value digital business services.

Talent Shortage and Skills Mismatch

As the country grapples with post-pandemic conditions, the demand for skilled workers and talents appears buoyant in most economic sectors. The resurgence of economic activities increases the labour demand alongside rising investment. Penang's employment loss reduced significantly by 66.4%, from 10,465 people in 2020 to 3,519 people in 2021. Job vacancies advertised on the Social Security Organisation (SOCSO)'s MYFutureJobs doubled in 2021, while unemployment dropped to its lowest point at 3.2% since the onset of the pandemic in the last quarter of 2021.

Penang's employers find themselves facing a shortage of labour, be it low or high skilled. The lack of low-skill labour cuts across all industries in Penang, especially in the agriculture, manufacturing, construction and tourism sectors. The shortage of mid-to high-skill labour is more prevalent in electronics manufacturing, medical technology, precision machining, GBS, ecotourism and civil engineering segments.

The depth and breadth of Penang's labour shortage in four key economic activities are discussed below.

1. Electrical & Electronics Industry

The demand for skilled workers and talents, resulting from increased investments by new and existing multinational corporations (MNCs) in Penang, is on the rise. While these investments have created many technical and engineering jobs for Malaysians, industries are facing a **critical shortage of technicians and engineers** along with a **misalignment of skills between TVET/higher education institutions and industry requirements**. For example, out of 20 job applicants from engineering disciplines, only 20-25% are able to make it through the first interview stage. Companies have highlighted five key challenges in the hiring process. These are:

- a. Industries are struggling to find suitable talent.
- b. Universities are not churning out enough engineers.
- c. Universities are unable to meet full enrolment in engineering courses.
- d. Potential graduates require further training to fit industry needs.
- e. Graduates are difficult to train due to the lack of growth in mindsets.

The traction of Industry 4.0 is not only dependent on talent availability. The suitability of talent is another hurdle to overcome. Broadly, the high-tech manufacturing and high value-added services address this issue by **retraining new hires**. Due to the slow pace of change in the Malaysian education system, employers have had no option but to hire any available fresh graduates to meet the quantitative demand and incur a higher cost in the process. For example, there is a lack of solar engineering degrees offered in Malaysia's higher education institutions despite Malaysia being the world's second largest manufacturer of photovoltaic modules and the third largest producer of photovoltaic cells. Course revision is slow, generating doubts about the universities' ability to prepare a pool of future-ready students.

Employers have highlighted two concerns with the training provision. First, the disinvestment from skills training is rather high as employees become more marketable upon completion of training. In a full-employment economy, **labour poaching** is prevalent. Second, the phenomenon of an **artificial salary bubble** arises due to the excess demand for skilled talents as well as the skills shortage.

Based on a study conducted by Penang Institute (2022), not all STEM graduates are able to secure an employment in their respective fields after graduation. It is found that unemployed graduates from pure sciences, applied sciences, arts, and social sciences are associated with **structural mismatches** while engineering graduates highlight the lack of required skills and their being underqualified as major factors constraining them from getting a job. From employers' perspectives, three critical components are not available in a majority of fresh graduates:

- a. Skills match;
- b. Growth mindset; and
- c. Ability to communicate thoughts and ideas comprehensively.

Even those who can secure employment also request for technical and non-technical upskilling programmes. There is therefore an urgent need to ascertain why new graduates of pure and applied sciences are not able to find a job.

The skills mismatch could have begun in the early years of learning. The policy proposal for 60% of students to be enrolled into Science/Technical streams and the remaining 40% into Art streams since the 1970s has yet to be met, while the number of students entering Science/Technical streams at present have also diminished. This is worsened with students perceiving science subjects as being too difficult to comprehend². Additionally, science teachers from secondary schools had revealed that **obsolete classroom methods, inadequate teaching time, outdated textbook content, rigid marking schemes, lack of quality science and mathematics teachers, poor upkeep of laboratory equipment and apparatus and lack of qualified laboratory assistants** have significantly affected students' interest in science.

Over the years, local and foreign manufacturing industries have been adopting the elements of the fourth industrial revolution (4IR or Industry 4.0) into the manufacturing process and production. Companies wish to take on cutting-edge tech such as nano optics. However, the relevant talent is not available in the labour market. To bridge the skills gap, some local and foreign corporations have set up internal academies to train their employees for Industry 4.0 elements. **But while industry players are willing to contribute toward closing the skills gap, they lack proper channels and platforms for nurturing students and future graduates.** The success of this adaptation also relies heavily on the availability of future-proof human capital and a long-term industrialisation plan in light of rising regional competition from Vietnam and Indonesia.

² See <https://penanginstitute.org/publications/books-and-reports/students-choice-of-stem-study-in-secondary-and-tertiary-education-in-penang/>

2. Global Business Services (GBS)

The demand for knowledge workers in the GBS industry varies by job functions. Where the roles of accounting, finance and human resources are concerned, employers have received favourable feedback on the competencies of fresh graduates; apparently, the supply of such graduates is sufficient. For such roles, only experienced hires are facing a quantitative gap. This may indicate **the presence of a brain drain** among experienced graduates. Investors fear the talent crunch of mid-to-high skills will cause significant delays in execution and deliverables.

Meanwhile, GBS in the information technology sector poses a presents a unique set of challenges in talent recruitment. Although remote recruitment is possible, this industry faces two barriers. First, university programmes have not been able to keep up with real-world technological development. Poor student exposure to work life results in costs for employers to invest in reskilling new hires. Second, **low take-up rates in computer sciences** including data science, cloud computing, software development and cybersecurity have led to an insufficient skills supply of graduates. Employers continue to hire talents even when the latter lack the needed competencies to fill the quantitative gap. This is intensified by the **fierce labour poaching** and **stringent hiring requirements for new expatriates**.

In the new normal, working from home has made remote hiring popular in the shared services industry. While employers generally experience an equivalent level of productivity from the work-from-home policy, this has opened up greater job opportunities for employees, resulting in a high rate of employee turnover.

3. Tourism Sector

The demand for workers in the tourism sector (including retail trade) surged after the reopening of economic activities and interstate travel in 2022. However, this demand is rather different from that in other sectors. The hospitality industry has encountered **hiring issues with housekeeping and stewarding jobs** possibly due to concerns over Covid-19 infectiousness. The pandemic appears to have also discouraged food and hospitality graduates from pursuing hospitality jobs. Meanwhile, ecotourism operators such as The Habitat and Entopia that recruit biosciences and environmental sciences graduates have also been unable to retain experienced professionals, despite efforts to cultivate their interest through internships.

Tourism operators believe that graduates with the right attitudes are the most important trait for them to work and fit in this industry. Importantly, since **the level of service quality in the country is not comparable** with that found in other popular tourist cities such as Bangkok and Bali, it suggests that the establishment of a hospitality training centre to groom service attitudes for workers for this industry is desperately needed.

4. Construction Sector

The construction industry has been suffering a great shortage in foreign workers while grappling with the pandemic. For companies, the **inability to renew expired work permits for skilled and experienced foreign workers** has been the major stumbling block, on top of the closure of international borders. These reasons have affected product delivery and the costs of construction, which will increase property prices in the long run. Furthermore, the shortage of skilled foreign labour in this sector is aggravated by **labour pinching** by other industries. This has resulted in higher wages, and in some skilled jobs being filled by unskilled workers.

For higher-skill positions, **the lack of interest among young talents** in construction work is a major challenge. The industry has seen a drop in civil engineering graduates, with many whom are unwilling to take up site supervising jobs. Currently, retirees are filling some of these vacancies. In contrast,

fresh architectural graduates have proven themselves to be skillful in technology, and the architectural profession has thus far been able to fulfill the needs of the industry.

Last but not least, industry players have highlighted the importance of consistent and transparent government policies, along with effective public services delivery as being crucial to their ability to function up to expectations.

Recommendations to strengthen future-ready workforce

A multi-pronged strategy is urgently needed to produce a sustainable future-ready workforce for the country. Addressing technical skills mismatch in higher education should be prioritised to close the growing skills gap. In the following section, we provide policy recommendations to the above-mentioned hiring issues and challenges raised by employers in the respective key industries. These policy recommendations for different sectors are divided into short- and long-term measures.

a. *Electrical & Electronics Industry*

Short-term measures	Long-term measures
<ul style="list-style-type: none"> a. Primary and secondary schools should build a platform for successful engineers and scientists to speak at their alma mater to inspire students with success stories. b. A tripartite collaboration between industry, university and government should be enhanced. For example, ViTrox offers graduate employability management (GEM) schemes to help graduates with commercial skills training. c. Soft skills training should be incorporated into every level of education, especially through a student-centred teaching approach. The ability to communicate thoughts and ideas is a major concern for employers, especially STEM graduates. d. The government should provide special incentives in terms of tax rebates for companies who have assisted colleges and polytechnics in skills training. Many corporations like to contribute as part of their corporate social responsibility programmes. e. All STEM initiatives at state level should be carried out in a strategic manner with monitoring and evaluation. All activities should be measured in terms of 	<ul style="list-style-type: none"> a. Revisiting university programmes periodically can ensure a future-proof curriculum. Graduate unemployment is attributed to courses teaching skills that are not needed. Science programmes that have high unemployment and are not needed in the market should consider reducing enrolment. Programmes such as artificial intelligence and data science should be introduced across related disciplines in universities. b. Improved quality of lecturers is urgently needed, and this can be done accomplished through industry-relevant activities and real-world industry exposure. This can upgrade students' knowledge on present industry development. Lecturers should attend periodical professional training and development to upskill digital and research skills and keep pace with top-ranking universities regionally and internationally. c. Universities should relax the requirements of teaching professionals by allowing industry practitioners to perform short-term teaching in universities. d. Rebranding TVET education to increase

<p>participants' desire to pursue STEM and their problem-solving ability if any.</p> <p>f. Foreign university students in Malaysia should be tapped on to fill the talent gap of the country through special visas.</p> <p>g. The state government is recommended to improve liveability of the state as a strategy to retain talent and reduce the brain drain.³</p> <p>h. A unified database that allows job seekers (especially from outside Penang) and employers to obtain suitable initiatives should be created to help job seekers and employers, and increase information dissemination efficiency.</p>	<p>the interest of school leavers/students as response to exponential demand for technical skills.</p> <p>e. The Ministry of Education should reconsider the strategies set for the 60:40 policy to increase participation in STEM education.</p> <p>f. MQA should promote a Work-Based Learning (WBL) model to produce graduates who are industry-relevant. The programme should be based on the learning needs of students who are full-time employees of organisations. It is critical to encourage all institutes of higher learning to adopt this model and increase close collaboration with the industry.</p> <p>g. MQA can consider a flexible curriculum design that can respond quickly to changes, with rigorous consultations with industry players.</p> <p>h. Career services centres in higher education institutions should develop continued ties with the industries to grasp current industry requirements.</p>
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³ The liveability support includes a variety of affordable housing choices for first-home buyers from outside Penang, childcare subsidy, reliable public transportation, mobility assistance for hard-to-fill vacancies, conducive recreational learning parks and community centres for the young and old.

Global Business Services (GBS)

Short-term measures	Long-term measures
<ul style="list-style-type: none"> a. People development and leadership skills are crucial for undergraduates. These are the main criteria required in the GBS industry. b. The state government should organise and support networking and training sessions with big software houses in Penang. Tech incubation sessions should be enhanced by cloud sponsorship. c. Special grants should be made available for tech training to support SMEs. 	<ul style="list-style-type: none"> a. The government should bring in multinational software houses like SAP and Amazon to help develop quality local talent and build a global shared services ecosystem with local software houses in Penang. Setting up a regional or head office in Penang should attract talent to Penang. b. Regular revisits to university programmes are needed to ensure a future-proof curriculum (see E&E, a). GBS requires graduates fluent in languages such as German and Japanese. For English language skills training, international skills training programmes such as Toastmasters International and Coursera should be incorporated into university syllabi. c. Improved quality of lecturers is urgently required through industry-relevant activities and real-world industry exposure (see E&E, b). External partners should be engaged to proliferate knowledge in new tools and new applications of technology. d. A flexible curriculum design should be considered by MQA for fast reactions to changes, with rigorous consultations with industry players. Obsolete syllabuses should be phased out. For example, Oracle is still used by the university as part of cloud-based training. However, MS Azure, Amazon Web Services and Google Cloud Computing are more popular in the industry.

e. Tourism Sector

- a. A hospitality training school (with key inputs from the industry) is needed to support the hospitality industry and upgrade the quality of services of the industry.
- b. Prolonging internship period among graduates especially those in biosciences and environmental sciences disciplines in enhancing the eco-tourism sector.

f. Construction Sector

Short-term measures	Long-term measures
<p>a. Work permit approval should be approved on a flexible basis based on market demand.</p> <p>b. Continuous training courses should be carried out and expanded to enhance workers' skill competencies in the construction industry.</p>	<p>a. A skills shortage inventory should be developed in Malaysia to list the shortage occupations that qualify for the work permit. For example, the United Kingdom (UK) government has a list of shortage occupations for skilled worker visas along with a salary guide and areas of the UK where there is a shortage.⁴</p> <p>b. Greater transparency and accountability is urgently needed in public service delivery. Additional charges from the middlemen exercise should be abolished to uplift good governance.</p>

⁴ see <https://www.gov.uk/government/publications/skilled-worker-visa-shortage-occupations/skilled-worker-visa-shortage-occupations>

Industry wish list for the federal government

Four policy issues are presented below, along with respective proposed solutions. They are based on recommendations from industry players.

a. Establish a comprehensive skills shortage list for immigration policy and industry

Since 2015, TalentCorp Malaysia has been developing the Critical Occupational List (COL) on an annual basis in collaboration with the Institute of Labour Market Information and Analysis (ILMIA) aiming at providing an understanding of in-demand occupations for stakeholders, especially policymakers, institutes of higher learning, training institutes and immigration departments to make a sound and effective policy decision. While this initiative provides an overview of the labour demand in Malaysia, it has yet to improve the labour market situation in the country.

While Malaysia's COL has been available for almost six years, the dissemination process is limited to the capital city. Employers in other states are unaware of the existence of such lists, and the questions of labour and skills shortage continue unresolved.

Policy recommendation 1:

A review of the COL is needed to deepen labour market information and improve labour policy decisions. In reference to the UK government, the list of shortage occupations includes salary guide (for employers and potential candidates) and information on the locality of shortage. Malaysia's COL is recommended to expand to include greater details on skills shortage. For example, the COL should contain multidimensional labour shortage information for each economic activity at the subnational level. This would strengthen the information flow in immigration policy and improve recruitment effectiveness. Additionally, foreign university students in Malaysia should be offered employment opportunities to fill the talent gap of the country through special talent visas.

Policy recommendation 2:

On the dissemination front, this information should be constantly shared with:

- i. the state agencies in charge of skills training and investment facilitation;
- ii. industry associations that can identify the needed areas for upskilling programmes that benefit their members;
- iii. companies that can utilise this list for business expansion; and
- iv. education institutions that can attune training and development programmes to suit industry requirements.

b. Reviewing strategies set in the education policy

The Malaysian Education Blueprint (2013-2025) is the country's main education policy reform document. It sets out a holistic process to address graduate employability by enabling IHLs to design better curricula embedded with core competencies. Many public policy research projects have studied various delivery aspects of the Blueprint. For example, The HEAD Foundation and The University of Nottingham reviewed the policy implementation and dissemination of the Blueprint in 2019.⁵ The hierarchy of education management was then identified as a major factor inhibiting the effectiveness of policy implementation. A top-down and highly centralised approach has restricted the State Education Department and district education offices from administering the required programmes, along with limited resources, lack of equipment, cascaded teacher training, and unrealistic teaching

⁵ see <https://www.nottingham.edu.my/Education/documents/education-leadership-conference/The-HEAD-Foundation-Policy-Brief-No.-7-Educational-Policy-in-Malaysia-Implementation-Challenges-and-Policy-Proposals-Feb.pdf>

policies. These barriers should be taken into consideration before policy implementation (The HEAD Foundation and the University of Nottingham, 2019; and Ibrahim et al., 2015).

On the national front, there is no follow-up assessment or mid-term review of this Blueprint from the Ministry of Education (MOE). The Blueprint expires in three years, and yet the question of skills mismatch continues to be bemoaned by employers, and many of them are convinced that the skills gap will certainly undermine the country's economic development. The situation will also be exaggerated by the fierce immigration policies on talent demand implemented by neighbouring countries. Malaysia will continue to lose more local talent if proper training and development support are not available.

Policy recommendations:

An institutional approach is required to enhance the graduate competency level (Ma'dan et al., 2020). Schools should participate in the intended policy reforms, and state governments and district education offices should be given sufficient authority to perform policy reforms based on the level of achievements of each school. To assess the effectiveness of each programme, a feedback loop should be incorporated to enable practitioners to advise policy makers on the operational aspects, and enhance the communication flow between practitioners and policy administrators on issues and challenges faced in policy execution.

c. Strengthening higher education institutions with strong industry linkages

Skill training initiatives have increasingly become a joint responsibility between education institutions and industries. Many manufacturing firms take a step further by offering graduate training programmes for technical and soft skills to their employees. This situation has shed light on the role of higher education institutions in cultivating future-ready graduates. Specifically, the curriculum design is not adequately embedded with core competencies. Instead, software training (computer-related knowledge) is taught only at a superficial level and soft skills training is not sufficiently equipped.

Policy recommendation 1:

With industry participation, a wide range of suitable programmes should be offered according to the requirements of employers and market demand (Husain et al., 2015; Palvin 2014; and Aris et al., 2013). Boldness from educational institutions to make changes in learning structures and appropriate programmes with support from related authorities is crucial in producing future-proofing graduates. Higher education institutions should focus on nurturing graduate attributes through teaching and learning development programmes, and collaborating with the industry through teaching and learning content design and industry graduate development programme (Ma'dan et al., 2020). This is to improve job-skill relevance by enhancing career counselling, apprenticeship programmes, and accreditation of relevant courses (Penang Institute, 2022). Partnerships with industry associations and companies are important to fill the technical knowledge and skills gap. For example, universities should relax the requirements of teaching professionals by allowing industry practitioners to perform short-term teaching in universities. Meanwhile, university career services centres and student affairs offices should increase affiliations with industry associations, employers, and alumni in addressing graduate employability.

Policy recommendation 2:

The federal government's support is needed to incentivise students to participate in an "Academy in the Factory" programme. MSIA is working with Malaysia Productivity Corporation (MPC) to address the lack of technicians by introducing an 18-month training programme where students spend only three to four months in the classroom and the rest of the time in practical training.

d. Practising good governance principles in public service delivery

The members of focus groups expressed dissatisfaction with public service delivery, saying that it lacks transparency and accountability. This often happens concerning acquisition permit applications, where the culture of middle men is used to smoothen the process of service delivery. As such, industry players highlight the importance of consistent and transparent government policies and the need for a unified system to increase the efficacy of public service delivery.

Policy recommendation:

To increase confidence in government services, there is a need to improve the public service system and procedures through strict standard operating procedures (SOP) and enforcement that minimises corruption opportunities. This would also enable effective and efficient management and utilisation of resources through good practices in transparency and accountability. For example, a clear and active commitment to a code of ethics is vital to the workings of the government.

Concluding remarks

Companies in Malaysia are experiencing acute quantitative and qualitative shortages in the labour market. A comprehensive human capital development plan is therefore urgently needed for the country to elevate its competitiveness regionally and internationally, as part of its plan to achieve a high-income economy and a developed status. A dynamic and life-long learning and education ecosystem is crucial to strengthen the talent pipeline in the country and to retain local talent from leaving for other countries. The federal and state governments are recommended to work together towards accelerating economic development to the next level.

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6. Mr Emmanuel Joseph, Senior Engineering Manager, Jabil
7. Mr Eugene Khoo, CEO, Experior
8. Mr Francis Wong, Senior Director, Finance GBS, Jabil GBC
9. Mr Patrick Yeoh, Senior Information Technology Manager, Jabil Penang
10. Ms Ally Loo, HR Business Partner, Clarivate
11. Ms Lim Min Lee, Talent Acquisition Specialist, UST Global
12. Mr Ben Ho, Vice Chairman, Malaysian Association of Hotels (MAH) - Penang Chapter
13. Mr Allen Tan, Vice Chairman, Association of Tourism Attractions Penang (ATAP)
14. Mr Joseph Goh, Secretary, Association of Tourism Attractions Penang (ATAP)
15. Ms Yoon Pauline, Penang Global Tourism (PGT)
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