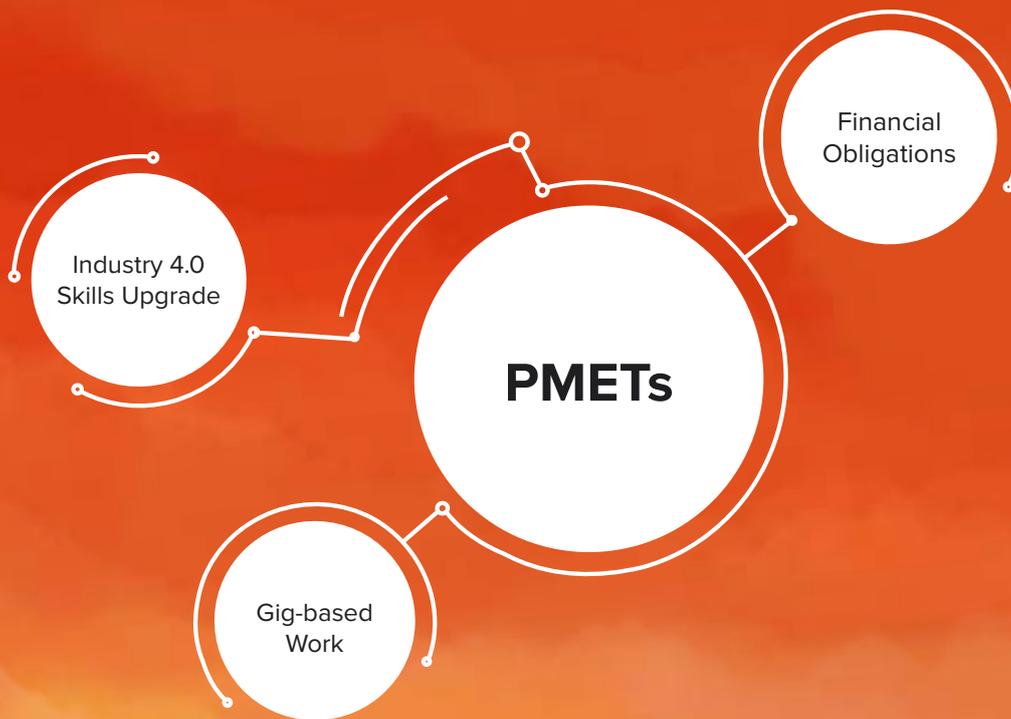


CHAPTER 3

Industry 4.0: Risks and Opportunities for PMETs





INDUSTRY 4.0: RISKS AND OPPORTUNITIES FOR PMETs

The World Economic Forum (WEF) has raised the spectre of a technology revolution that will fundamentally alter the way we live, work and relate to one another. It would be unlike anything humankind has experienced before, it added. While this era has the potential to raise global income levels and improve quality of life, American economists Erik Brynjolfsson and Andrew McAfee also warned that it could cause greater inequality with its potential to disrupt labour markets¹⁷.

Demand for highly-skilled employees will surge, while those in lower-skilled job roles will be less sought after. The net result is a job market with a strong demand at the high- and low-wage brackets, but a hollowing out of the middle, leading to a large tranche of the workforce being vulnerable to loss of income. This unequal outcome is a major societal concern associated with the digital revolution.

As business restructuring intensifies, an estimated 375 million of the global workforce, or one in seven (14%) worldwide, would need to switch occupational categories between 2016 and 2030, according to the McKinsey Global Institute. The people caught in the middle of this disruption are the PMETs, especially those in roles related to financial administration, computer support, production work and machine operation. These middle-wage jobs will be swamped by a wave of automation in advanced economies, leading to a polarisation of wages¹⁸. By 2022, at least 54% of employees will require significant reskilling, based on 2018 data from the WEF¹⁹.

There is an urgent need to prepare the workforce to take on new roles in businesses impacted by Industry 4.0. The digital transformation, if managed well, could lead to an age of good work, good jobs and improved quality of life for all, as all stakeholders level up together.

PMETs in Singapore

The global forces affecting middle-wage employees around the world are also felt in Singapore.

An indication of the impact is reflected in official retrenchment data. PMETs form the bulk of retrenched locals and their share was 77% in the second quarter of 2019, according to MOM²⁰. It added that this group takes longer to find new jobs, and faces the largest skills gap compared to other occupational groups.

There appears to be a job mismatch in the labour market. On average, 21% of the PMET vacancies in 2018 were unfilled for six months or more²¹. Employers have observed that this is because jobseekers lack the requisite skills.

As more firms integrate technology into work processes, job openings related to technology

development and implementation are on the rise. These positions require skills that are not widely available.

The onslaught of technological disruption is simultaneously challenging and exciting. The workforce of tomorrow will comprise those with broad and complementary skills – for instance, a lawyer learning coding and blockchain technology to execute smart contracts. An expanding technology and innovation ecosystem will also enable new start-ups to bubble up together with their emerging workforce needs.

The gap between requisite and available skills can be addressed with investments in education and training. Businesses must help themselves by prioritising the reskilling and upskilling of its PMET workforce, making sure that this group does not fall behind economically.

RECOMMENDATION 1: BUSINESSES TO TAKE GREATER OWNERSHIP OF UPSKILLING THE PMET WORKFORCE

Training and Developing Human Capital: Actions to be Taken Now

Training is not a new solution, with the Government and labour movement constantly encouraging businesses and employees to reskill for relevance. But training has always been costly for businesses and employees, resulting in a reluctance to invest in human capital. A longer-term mindset recognising the value that a workforce brings to the company and industry is necessary as businesses transform to remain competitive. This must also include allocating time for employee training.

The following describes some of the resources available for businesses interested in taking the first step in this area.

Collaborate with an appropriate training provider

The Institute of Technical Education (ITE), Nanyang Polytechnic (NYP) and NUS are some local institutions of higher learning (IHLs) that offer high-quality and industry-relevant training programmes. Reskilling is a continuous process. For mature PMETs, employers should take concerted effort in communicating the skills required of PMETs today as well as in the future, to help them prepare for future job roles.

- **Emerging skills:** The NUS School of Continuing and Lifelong Education (NUS SCALE) at NUS trains employees in emergent areas with potential for future growth, such as advanced manufacturing and cybersecurity.

- **Swiss and German standards:** The National Centre of Excellence (NACE) for Workplace Learning in NYP helps companies put in place training systems and certifications, and also customises training programmes that draw on the expertise of Swiss and German training institutions.
- **On-the-job training (OJT):** ITE's Certified On-The-Job Training Centre (COJTC) and Work-Study Diploma train PMETs in technical skills and help companies institutionalise structured OJT by certifying companies with quality OJT systems.

Tap existing human capital initiatives

Developing human capital and building organisational capabilities are crucial for success. SSG and Workforce Singapore (WSG) have put in place useful resources to guide businesses in these areas.

- **Productivity Solutions Grant:** It has been enhanced to include the SkillsFuture Training Subsidy to help businesses train their employees. It covers 70% of out-of-pocket training expenses incurred by businesses and is capped at \$10,000 training subsidy per company.
- **Skills Framework:** It provides key information on industry trends, skills and competencies required in job roles and recommended training programmes. To date, SSG has developed frameworks for more than 30 industry sectors.

- **Career Support Programme:** Businesses can receive up to \$42,000 in salary support for a maximum of 18 months when they hire PMETs who have been jobless for at least six months. SMEs can also receive a grant of \$5,000 when they successfully retain each newly hired PMET for six months under WSG's P-Max initiative. P-Max is a Place-and-Train programme for SMEs to better recruit, train, manage and retain their newly hired PMETs and place job-seeking PMETs in suitable SME jobs.
- **Professional Conversion Programme (PCP):** These are career conversion programmes targeted at PMETs, including mid-career switchers, to undergo skills conversion and for deployment to new occupations or sectors that have good prospects and opportunities for progression.

Businesses could also tap the relevant Trade Associations and Chambers, Unions, the Employment and Employability Institute (e2i) and the Singapore National Employers Federation (SNEF) to discuss human capital development needs. SME Centres are available for complimentary consultations to support SMEs.

The benefits of PMET training go beyond improving employee welfare. The training plugs the capability gaps in enterprises and makes them more competitive. Improving the capabilities of local PMETs also lessens the reliance on foreign manpower.

HR Community to Play a Critical Role in Enabling Cross-Industry Workforce Transformation

Technological advancement is expected to impact a fifth of all PMET jobs. Deloitte believes that jobs will continue to be created, enhanced and destroyed as they have been in the last 150 years²². New categories of jobs will emerge that will partly or wholly displace others, as these new jobs demand a range of new horizontal value-added and technology skillsets that are applicable across industries. In response, companies need to be better able to forecast job creation or technological disruption to deploy their workforce to respective jobs.

Businesses must be proactive in taking the lead to identify potential job disruptions, and to develop a training and transition plan for the reskilling of their workforce. This helps employees to be resilient, and enables progression across different job roles and industries to avoid the risk of redundancy.

Driving cross-industry workforce upskilling

Businesses should begin the process by taking reference from the list of 18 Generic Skills and Competencies identified by SSG. These skills are applied across all the sector-specific Skills Frameworks, with training programmes mapped out for each of the 18 areas such as communication, creative thinking and problem solving.

The Skills Framework developed by SSG and industry partners is an integral component of the Industry Transformation Maps (ITMs). The Framework provides key information on sector-specific career pathways, occupation/job roles, emerging skills required, as well as training programmes for skills upgrading and mastery.

To further assist businesses in supporting job redesign and training plans, a “Workforce 4.0 Skills

Guide” could be developed as a supplement to guide workforce reskilling.

Transitioning to the Industry 4.0 workplace will require complementing existing technical and traditional soft skills with value-added and technology skills to help the workforce adapt to the challenges of a rapidly evolving industry landscape.

Value-added skills are those that involve integration and interdisciplinary functions while technology skills will help improve the workforce’s ability to find, evaluate, utilise, share and create expertise for Industry 4.0. Where needed, the Skills Guide can also serve as a basis for developing a cross-industry diagnostic tool to assess workforce Industry 4.0 readiness and reskilling requirements.

The HR community can play a major role in cross-industry upskilling, led by the Institute for Human Resource Professionals (IHRP). IHRP was established by the tripartite alliance – MOM, SNEF and the National Trades Union Congress (NTUC) – to professionalise HR practices and develop the competitiveness of Singapore’s workforce.

SBF will partner IHRP in its engagement efforts with HR professionals. This will provide a feedback loop for the identification of relevant and forward-looking cross-industry skills.

AN EXAMPLE: BANKING ON NEW SKILLS

Here is how the financial services industry, in particular DBS Bank, has taken the lead in retraining employees to build a future-ready workforce.

Individual Company Training

For nine years, Ms Nahariah Mohd Nor served customers as a Service Executive, helping them with opening bank accounts and making cash deposits and withdrawals.

Now, she is able to help customers from beyond the counter – via a virtual teller machine. This is all thanks to her retraining under DBS' PCP to be a Customer Service Officer. In addition to a sense of personal fulfilment from picking up new skills, Ms Nahariah also enjoys the flexible working hours afforded by this new role, allowing her to spend more time with her family. In August 2017, DBS announced it would invest \$20 million over five years in the broad-based PCP to train its employees across all levels and help them stay relevant in today's fast-changing business environment. The five-year strategy plan for workforce transformation looks at skills development, job placements and career pathways.

Since October 2017, 1,500 employees have been chosen for training under the PCP. This equips them with digital tools and the knowledge to migrate customers to digital channels. The PCP also helps employees to be versatile and multi-faceted in skills and sharpen their soft skills.

DBS also launched DigiFY for its employees in 2017. Hosted on a 24/7 artificial intelligence powered Learning Management System, DigiFY is a curriculum focused on seven digital skills – Journey Thinking, Digital Business Models, Digital Technologies, Agile, Digital Communication, Data Driven, and Risk and Control. Since the launch, 77% of DBS' employees have started on these digital courses.

Ecosystem Training

DBS has established several learning programmes for businesses, one of which is The SME Academy. It is designed for SMEs to understand new methods of improving their businesses from a community of industry experts. "How to wow with innovation" and "Creating the right culture with the right talent" are some of the courses offered at the academy.



Industry-led Training

The Institute of Banking and Finance Singapore (IBF) has reached out to the Association of Banks in Singapore and several financial institutions to identify job matches and associated skills gaps in the financial services industry.

They published the study “Impact of Wider Integration Data Analytics and Automation on Manpower in the Singapore Financial Services Sector”, which covered 121 jobs in the financial service industry. HR practitioners in the industry can use the study’s findings to identify the functional and future-enabled skills for their job roles and use them as a guide for workforce transformation.

In 2019, DBS partnered IBF in a new Technology in Finance Immersion Programme, which is designed to provide mid-career professionals with the opportunity to take up tech jobs in the financial sector. DBS is one of seven financial institutions to participate in the programme and has committed to offering 20 places across areas such as cybersecurity, cloud computing and full-stack development.

Forging Institutional Support for Lifelong Learning

In order to better institutionalise lifelong learning for PMETs, there can be better integration between industries and IHLs. While some partnerships exist today, in the financial industry for example, more collaborations are needed in many other sectors and sub-sectors. A structured approach to develop industry-relevant training in IHLs serves two important purposes.

First, this builds up institutional support as a resource for PMETs to receive regular training to hone both industry and cross-sectoral skills. Large companies have the resources to collaborate with IHLs directly, but for smaller companies, this role can be taken on by the respective industry Trade Associations and Chambers which are in a good position to bring together businesses and

other stakeholders in the industry to organise collaborations with the IHLs. Second, these tie-ups between the respective industry sectors and IHLs can enable internship and apprenticeship opportunities, providing on-the-job and vocational training for students who will be the next generation of PMETs.

Over time, such collaborations will create a wide network of industry-specific competency centres to drive manpower development in an industry. Such centres would sit in closer nexus to the IHLs, while some might find better synergy with industries – for example, with the Trade Associations and Chambers. In Germany and Switzerland, many Trade Associations and Chambers are responsible for vocational training, including training standard certification. We need to build this ecosystem in order to respond robustly to the changes brought about by Industry 4.0.

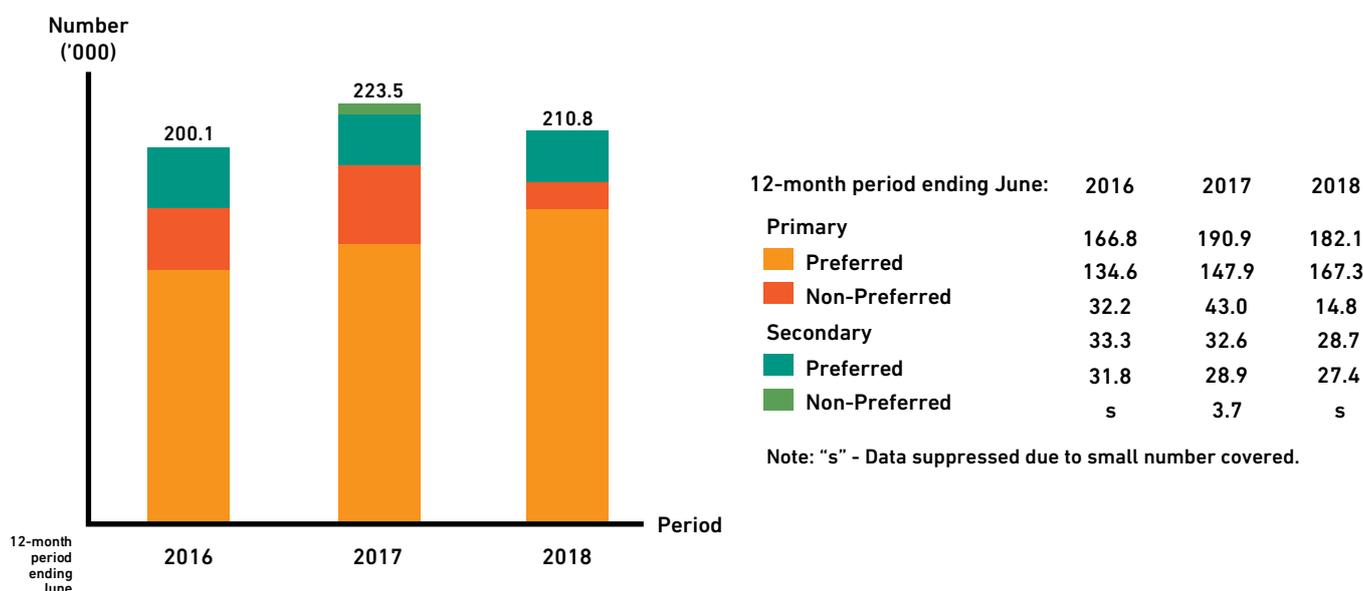
THE DIGITAL AGE: THE GROWING GIG ECONOMY

Technology is also vital in creating new work opportunities. It is fuelling the rise of the gig economy, characterised by independent workers who take up short-term contracts or “gigs” for income. Technology-enabled platforms have disrupted traditional industry structures – from hotels to transportation – offering the ability to match demand to supply in a sharing economy. These online platforms also eliminate geographic barriers, growing the gig economy across borders.

Gig Workers in Singapore

This report defines “gig workers” as independent workers, including SEPs and own-account workers, who take up short-term contracts or “gigs” for income. MOM refers to persons who operate their own trades or businesses as SEPs. Those who do not employ any paid workers are also known as “own-account workers”.

Number of Resident Regular Own-Account Workers in Singapore



Concepts

| | |
|---|--|
| Primary Own-Account Workers | Persons who are own-account workers in their main job. |
| Secondary Own-Account Workers | Persons who are multiple job holders who spend fewer hours in own-account work relative to other types of employment. |
| Preferred and Non-Preferred Choice of Work | Own-account workers for whom own-account work is not their preferred choice of work are those who engage in such work because they are unable to find work as an employee. |

Source: Supplementary Survey on Own-Account Workers, Manpower Research & Statistics Department, MOM

In Singapore, there are no official statistics on the projected growth of gig workers. Between 2016 and 2018, there was a 25% increase in the number of Singapore residents choosing to be own-account workers, according to MOM²³. Self-employment can be an attractive arrangement, as gig work offers an opportunity for people to remain active while giving them full autonomy over their work schedule or allowing them to supplement their income while seeking full-time opportunities. Gig arrangements may also be suited to businesses facing immediate manpower shortage or those which want to keep the size of their full-time workforce lean.

As the pool of gig workers increases, regulations and safeguards must be in place to address the income security they face. These issues include slow or no pay for their work, irregular pay based on one's ability to land paid assignments, insufficient insurance coverage and retirement adequacy.

In 2018, the TWG on SEPs put up several recommendations to address some of these issues, namely to:

- Develop tripartite standard and mediation to resolve payment-related and other disputes;
- Make available insurance protection that provides cash benefit to mitigate the loss of income due to prolonged illness or injury;
- Introduce a contribute-as-you-earn model to make it easier for SEPs to save for their healthcare needs; and
- Support SEPs on developing occupation-specific competency frameworks to keep skills current and make self-employment a sustainable career.

Businesses are encouraged to work with the Government, which has accepted the TWG-SEP's recommendations²⁴, in adopting these guidelines.

RECOMMENDATION 2: DEVELOP PLATFORMS TO MATCH HIGH-SKILLED PROFESSIONALS TO GIG WORK

Rapid technological advancement will continue to change the way we work. There is potential for high-skilled work to be offered on gig platforms in the future, opening up new business opportunities that could be taken up by the private sector, social enterprises or even Trade Associations and Chambers.

While gig platforms are not new, aggregating high-skilled gig work in an online marketplace can be supported with a greater focus on accreditation, insurance, legal protection as well as training and development, particularly on a sector-specific basis. In an earlier focus group discussion conducted by SBF, businesses in the engineering and healthcare sectors cited a need for freelance engineers

and healthcare professionals respectively to supplement their permanent workforce during busy periods. However, identifying suitable freelancers was challenging as there was no trusted platform in place for such services to be offered and tapped.

An aggregator of high-skilled gig work with support infrastructure offers the following value proposition compared to a gig worker operating on his or her own. This benefits both the freelancer as well as the company or individual engaging him or her.

- **Accreditation:** There is a structured standard for ensuring proper qualifications, either through certification by professional bodies or

through a thorough verification of qualifications and references.

- **Insurance:** The aggregation of gig professionals allows insurance providers to offer a product that is customised to cover liabilities and hazards specific to the job or sector, in addition to basic protection for personal accident and loss of income. These are important safety nets for freelancers, as pointed out by the TWG-SEP.
- **Legal Protection:** Individual freelancers may not have the resources or know-how to draft appropriate service agreements to define their scope of service and payment terms, thus exposing them to disputes which could affect or delay payment for their services. Through an aggregator platform, a standard formal contract could be used by all gig professionals in the database.

- **Training and Development:** The cost of training and other capacity-building offerings such as counselling is optimised with a critical mass. This also provides gig professionals with a structured pathway and possible incentives for skills upgrading, which may not be foremost on their mind as independent operators.

This model is a new opportunity to tap Singapore's high-skilled professionals who may have left the industry due to various reasons such as familial commitment, retirement or job restructuring, but wish to use their skillsets under a more flexible and self-directed arrangement. This model is win-win as it offers gig professionals a viable and empowered livelihood through freelancing. It also provides companies or individuals in need of such services access to a trusted and talented group of professionals to meet their business or individual needs.

AN EXAMPLE – CARING FOR CAREGIVERS

When Ms Yeo Wan Ling's grandmother was discharged from the hospital eight years ago, her family took a month to find a nursing team that could provide round-the-clock professional care at home as well as connect comfortably with her grandmother. It was this experience that inspired Ms Yeo to set up CaregiverAsia, a platform to connect Caregivers and Careseekers based on the principles of transparency, choice and empowerment.

CaregiverAsia is an online aggregator of on-demand health and caregiving services which has 10,000 Caregivers, of whom 6,000 are active at any time, in its database. CaregiverAsia offers a suite of services across medical, nursing, elder care, pregnancy and childcare needs. Unlike traditional providers or agencies, Caregivers under CaregiverAsia are predominantly freelancers who have the necessary training or experience, and mandatory licences where relevant, to provide care services. The Caregivers are all Singaporeans and Singapore Permanent Residents (PRs) as the company believes that it is important for Caregivers to communicate well with locals and understand local practices.

CaregiverAsia attends to the needs of the freelancing Caregivers in a number of ways.

1. Convenient and Secure Online Infrastructure

Caregivers can post their services on the platform for free and do not pay any agency fees to CaregiverAsia. What they quote is what they take home, and all payment is handled through the platform once a booking is made.

2. Insurance Coverage

CaregiverAsia provides its registered Caregivers with a named professional indemnity insurance which protects them from legal liability arising from any claim made against them for the rendering of, or failure to render, medical services which result in bodily injury, sickness, illness, mental injury or death of the client. This insurance is underwritten by Great Eastern, which has also partnered CaregiverAsia to offer personal accident and loss of income insurance to its Caregivers. This is an important financial safety net that enables freelance Caregivers to provide care with a peace of mind.

3. Legal Agreement Protection

All bookings made through the CaregiverAsia platform are covered by a formal Contract for Service Agreement which includes scope of service, service variation(s), payment terms and dispute resolution. This is a result of interactions with NTUC's Freelancers and Self-Employed Unit (FSEU), through which CaregiverAsia learnt that not all freelancers are covered by a formal contract. Such an arrangement is necessary and important, especially in the area of health and caregiving services.

4. Training and Personal Development

CaregiverAsia offers a comprehensive list of training courses to meet the training needs and preferences of its diverse base of Caregivers. This ranges from one-hour lunchtime talks to Workforce Skills Qualification courses and Specialist Diplomas. To incentivise Caregivers to upgrade themselves with new skills, CaregiverAsia has a badge system which recognises the training achievements of Caregivers as part of their profile.

5. Mental Wellness Support

Recognising that caregiving can be a stressful and emotional job, CaregiverAsia organises monthly mental wellness workshops and group counselling sessions, in partnership with the Association of Psychotherapists and Counsellors Singapore to support Caregivers' mental wellness. These sessions, in addition to activities such as onboarding sessions for new Caregivers on the platform, provide an opportunity for freelance Caregivers to connect with their peers and form a community for mutual support and learning.

The initiatives by CaregiverAsia have provided freelance Caregivers with the tools and resources required to manage their livelihood, while retaining the autonomy to practise independently with full control over their time and terms of service.

Two such Caregivers who have benefited from the platform are Stephanie and Aunty Mabel (both fictitious names).



Stephanie is an ex-nurse who is unable to take on full-time shift work in a hospital as she has two young children to care for. CaregiverAsia provides an ideal platform for Stephanie to have a viable career and to keep her skillsets relevant while setting aside time for her family.



Aunty Mabel has decades of experience in taking care of young children and is interested in earning supplemental income as well as interacting with other families, as her own children have grown up. CaregiverAsia provides Aunty Mabel with access to Careseekers, while offering a structure for her to undergo formal training to match her experience.

In meeting an unmet demand among Caregivers and Careseekers, CaregiverAsia has carved out a strong position in the Singapore market, with a growing international presence in Malaysia, Taiwan, Hong Kong, South Korea and the United States. By caring for its Caregivers through its policies and practices, CaregiverAsia has empowered inactive Caregivers to return to the industry, transforming the way care is delivered to people and communities.

SINGAPORE IN THE LEAD

Singapore has the attributes to become an active centre for high-value gig work for the region. These attributes include a highly-skilled and educated workforce, solid legal foundation and technology infrastructure. Singapore can be a leader in high-value gig work such as data engineering, brand identity and strategy – offering rich opportunities for PMETs to find diverse and well-paying work. Companies here also benefit from a large pool of talented gig workers in professional, creative and technology-related services.

The challenges and opportunities brought about by technology are not unique to Singapore. However, tackling these the right way will put Singapore at a competitive advantage. A vibrant economy built on diverse business and employment models, anchored by market needs, puts our businesses and people in a good position to stay ahead of global headwinds and developments.