Asia-Pacific
Economic Cooperation

Advancing Free Trade
for Asia-Pacific Prosperity

Empowering the Health Workforce through Digital Upskilling

APEC Human Resources Development Working Group

March 2023

Asia-Pacific
Economic Cooperation

Empowering the Health Workforce through Digital Upskilling

PROJECT SUMMARY REPORT

Virtual Format | 20 September 2022

APEC Human Resources Development Working Group

March 2023

APEC Project: HRD 06 2021A

Produced by

Chinese Taipei

For

Asia-Pacific Economic Cooperation Secretariat

35 Heng Mui Keng Terrace

Singapore 119616

Tel: (65) 68919 600

Fax: (65) 68919 690

Email: info@apec.org

Website: www.apec.org

APEC#223-HR-04.1

APEC Project Summary Report: Empowering the Health Workforce through Digital Upskilling

Table of Contents

1. Introduction

1.1 Overview

The COVID-19 pandemic is a global public health and also caused unprecedent economic and social crisis in the world. Confronting the global crisis highly relies on the collaboration of policymakers, health workforce, scientists, and other stakeholders. A significant reason is the contactless environment caused by the social distance requirement and lockdown measures raise a serious challenge to business and workforce.

However, digital technologies and innovative application provides a solution, especially for service sectors which are highly relied on physical contact such as health services. Contactless approaches for health caring have been developed which are based on digital innovation. On the one hand, digital health technologies have been widely recognized with the potential for the pandemic strategy and public health responses. On the other hand, digital innovation forces health carers to adapt themselves to confront the new workforce environment. In other words, health workforce require to be retrained and reskilled to provide caring services in a digital way. To adapt to the new change in health workforce, a government plays a key role by making policies to support the digital transformation of caring services.

As health ministers highlighted in the tenth Hight-Level Meeting on Health (HLM), there is no wealth without health. They also believed that “the exchange of APEC region experiences and best practices helps to shape policies that can address COVID-19 while improving health systems in the long run, and in doing so enable a return to strong economic growth”. To equip health workforce for the digital health future, and to effectively defend against the threat of next diseases, it is worthy to promote the digital upskilling and retraining on health carers. In this regard, the project wants to invite experts, policy makers, and other stakeholders together to share best practices that facilitate capacity building of digital health solutions for health workforce.

1.2 Project objectives

When digital technologies and applications pave the way for the contactless economy, the benefits instead could be underestimated if the workforce and business managers cannot equip sufficient digital literacy and swiftly adapt new skills and technologies. Therefore, this project concentrates on capacity building for the frontline health

workforce to in terms of digital solutions and applications.

The project echoes the long-term goals of the Human Resource Development Working Group (hereinafter HRDWG) and of the APEC, the HRDWG 2021-2025 Strategic Plan and APEC Putrajaya Vision 2040 respectively. By concentrating on the skills development and capacity building, this project makes a contribution to foster a "skill-centered and digital future" and "accelerate digital transformation and narrow the digital divide", promoted by the HRDWG 2021-2025 Strategic Plan and APEC Putrajaya Vision 2040. In specific, the project held a workshop to collect best practices of health workforce digital upskilling from a wide range of stakeholders, including experts, economies, governments, industries, and universities from APEC economies. The best practices are all aimed to equip health workforce to embrace the digital health future, and to build the workforce's capacity of digital innovation application, and in doing so enable a return to strong economic growth.

A workshop was organized to exchange ideas, facilitate thorough discussions, and share practical experiences. A project report will be produced to present outcomes of a pre-workshop survey, the workshop and shared best practices, the post-workshop evaluation, and recommendations. The project report will provide a good reference for all economies to develop training programs to equip health carers with necessary digital skills and knowledge.

1.3 Methodology

The project adopts a three-phased approach to explore the potentially digital technologies for healthcare workforce. The three phases include the pre-workshop stage, the proceeding of workshop, and the post-workshop stage. In the three stages, the outcomes include a pre-workshop survey, the post-workshop evaluation, and the project summary report.

At the pre-workshop stage, an online survey was proceeded to streamlining the primary topics in discussion. The purpose of a pre-workshop survey is to ensure the discussion touching the issues, difficulties, or problems confronted by APEC economies in the digital transformation of healthcare services. The questionaries enquired by the pre-workshop survey are illustrated in the following section. Likewise, a post-workshop survey will be conducted to collect feedback from all participants to guide future advancement of the topic.

As to the APEC ASD-CBA workshop, a one-day workshop is planned for Q3 of the year 2022. The workshop aims to collect and share case studies of the health workforce in digital upskilling in the Asia-Pacific region. The case studies include the training programs, economy-wide strategic plans, or innovative development and resources supporting the digital transformation of healthcare services. Among the shared case studies, the best practices and policy instruments related to digital upskilling and reskilling of healthcare services will be further illustrated in the project summary report. The participants include representatives of private and public sectors in APEC economies. Concerning the COVID-19 pandemic policy in Chinese Taipei, the workshop provides physical and online ways to attend. The outcomes and case studies in the workshop will be summarized in the project report.

A timeline for the three-phased approach is as follows:

Time	**Tasks**	**Deliverables**
May 2022	Draft and circulate pre-workshop survey	Pre-workshop survey
June 2022	· Make an execution plan for the project and workshop program · Develop draft agenda for workshop · Circulate draft agenda for feedback and speaker suggestions (anticipate engagement with HWG, PPWE, SMEWG)	The plan for the workshop and a draft of the workshop agenda
July 2022	Draft the General Administrative Circular	General Administrative Circular
August 2022	· Finalize workshop agenda · Assemble list of potential workshop invitees · Confirm meeting space and other hosting-related logistics · Send invitations	· Agenda · List of invitees for workshop · Speakers/Experts
September 2022	A workshop	

Time	Tasks	Deliverables
September 2022	Circulate post-workshop evaluation	A post-workshop evaluation
1 October 2022	Submit the APEC Project Monitoring Report to the Secretariat	APEC Project Monitoring Report
October-December 2022	Prepare the project summary report	
1 January 2023	Submit the project summary report to APEC Secretariat	A project summary report
April 2023	Submit the APEC Project Completion Report and supporting documents to the Secretariat	APEC Project Completion Report

2. Overview of the workshop project

2.1 Pre-workshop survey

This section provides a summary of the pre-workshop survey conducted to develop the workshop agenda.

The pre-workshop survey aimed to understand the current state of the digital trend in the healthcare industry within each member economies and in Asia-Pacific and to shape the discussion topics in the APEC ASD-CBA Workshop: Empowering the Health Workforce through Digital Upskilling. Questions included in the survey focused on three dimensions: (1) current digital capabilities of healthcare workforce, especially those at the frontline; (2) opportunities and challenges of healthcare workforce in the digital era; and (3) best practices for the digital adaptability of healthcare workforce. There are several sub-questions for each part. The list of questions in the pre-workshop survey is as follows:

Main issues	Sub-issues
Current digital capabilities of	· What kind of digital capabilities are

healthcare workforce, especially those at the frontline	commonly equipped by healthcare workforce in your economy? · Are healthcare workforce required to gain economy-wide certifications to prove their essential digital capabilities associated with their professionals in your economy? A. If yes, please describe the economy-wide certifications and relevant assessment criteria briefly. B. If one does not exist, does Ministry of Labor or other authorities have a plan to develop economy-wide training programs and corresponding economy-wide certification/assessment for healthcare workforce in your economy?
Opportunities and challenges of healthcare workforce in the digital era	· What are the opportunities of the digitalization trend of the healthcare workforce in your economy? And what challenges facing healthcare workforce face in adapting to the digital changes and environment? · Following the previous question, any new opportunities and challenges are inspired and caused by the COVID-19 pandemic in your economy and the Asia-Pacific

	region?
Best practices for the digital adaptability of healthcare workforce	· Is your economy planning a economy-wide policy to boost the digital development of the healthcare industry, especially equipping and improving the digital skills of healthcare workforce? A. If yes, please descript briefly and points out the priority areas of your economy-wide policy. B. If one has not discussed the economy-wide policy, have any training programs for healthcare workforce's digital adaptability been conducted by public or private sectors? · Do you have any suggestions on how the APEC Human Resource Development Working Group, especially the Capacity Building Network, to assist member economies in equipping people to adapt to the digital changes and enhance inclusiveness in the health industry? · Do you have any suggestions on cross-cutting issues and cross-fora collaboration relevant to enhancing the digital healthcare workforce in the Asia-Pacific region?

Interviewees share several points vital to the digital capacity of healthcare workforce. These shared viewpoints include:

- Capabilities required are different by sectors.
- Economy-wide certifications are not compulsory for healthcare workforce.
- Digital medical devices are critical for the healthcare workforce.
- Online platform is useful for consultations.
- Standards of digitalization in the field of healthcare are in need.

With regard to the three dimensions of the digital capacity of healthcare enquired by the survey, the details of the interviewees' responses are as follows:

(1) Current digital capabilities of healthcare workforce, especially those at the frontline

A. What kind of digital capabilities are commonly equipped by healthcare workforce in your economy?

Economies where interviewees are from	Responses
Chinese Taipei	· specific apps for uploading patients' health data and electronic records · healthcare management E-platform
Thailand	· computer and basic program literacy · the Internet · online meeting such as Zoom, Microsoft team · cyber security awareness
Australia	· Developing digital skills programs · Training and upskilling on the latest technology

	· Using devices to record the resident's health statistics, movement, and medications
Malaysia	· Trainings on work · Training with digital health units scheduled by Ministry of Health

B. Are healthcare workforce required to gain economy-wide certifications to prove their essential digital capabilities associated with their professionals in your economy?

Economies where interviewees are from	Responses
Chinese Taipei	No, but there are e-learning platforms conducted by health workforce's associations. These e-learning platforms provide continuity education, including digital capacity training programs for health workforce.
Thailand	No, but the Ministry of Public Health has a strategy to develop and equip workforce with digital efficiency to respond to the e-government.
Australia	No, but the new CHC Training package is currently under review and may be included. Currently there are a number of non-accredited courses and services being provided.
Malaysia	No, but the Ministry of Health Malaysia works with professional bodies and medical university to encourage them to go for the digital literacy upskill programs.

(2) Opportunities and challenges of healthcare workforce in the digital era

A. What are the opportunities of the digitalization trend of the healthcare workforce in your economy? And what challenges facing healthcare workforce face in adapting to the digital changes and environment?

- Opportunities

Economies where interviewees are from	Responses
Thailand	Increase chance to provide service in remoted area, access to the use of digital medical devices to take care of the patients, resulted in the improvement of well-being of the patients.
Malaysia	Private digital health companies and hospitals recruiting healthcare workforce as part of their teams to help to formalize and implement the digital healthcare ecosystem.
Australia	The Australian Digital Health Agency established in 2016 to deliver “better health for all Australians enabled by safe, seamless, secure digital health services and technologies that provide a range of innovative, easy to use tools for both patients and providers.

- Challenges

Economies where interviewees are from	Responses
Chinese Taipei	Content and specialties of home care workforce have increased; however, the salary and training hours

	have not, respectively. Motivation for middle-aged and elder care workforce is limited.
Thailand	Inaccessibility to necessary tools, in low-income society or poor infrastructure area to provide service, or low-skilled healthcare workforce
Australia	The different levels of digital maturity across the healthcare sector have a major impact on healthcare workforce.
Malaysia	It is a top-down approach to manage the decision-making for healthcare workforce to attend upskilling courses. Policymakers place a critical role in digital upskilling.

B. Are there any new opportunities and challenges are inspired and caused by the COVID-19 pandemic in your economy and the Asia-Pacific region?

- Opportunities

Economies where interviewees are from	Responses
Chinese Taipei	Distance healthcare and Medicare are emphasized by the government and hospitals. The government supports hospitals to develop distance health care system. Hospitals also work with digital companies to upgrade their distance care systems.
Thailand	Health applications and self-care medical devices to monitor health and symptoms of the COVID-19 at home and communicate with the doctors or service deliver.

Australia	· Gaining a medical prescription online without seeing a doctor is an improvement for some. · Digital technology provides additional safety from not having the contact may be viewed as an advantage for some.
Malaysia	Pharmacies, hospitals, and healthcare providers are more receptive to use digital health applications. E-prescription is expected to be the upcoming trend.
Japan	Online medical services for initial consultations are approved as a temporary measure. These services were previously available only for follow-up visits.

- Challenges

Economies where interviewees are from	Responses
Australia	Using the digital technology is a challenge for some. While removing the "human element" away may impact the need for social contact for some.

(3) Best practices for the digital adaptability of healthcare workforce

A. Is your economy planning a economy-wide policy to boost the digital development of the healthcare industry, especially equipping and improving the digital skills of healthcare workforce?

Economies where interviewees are from	Responses

Thailand	Yes, the National Economic and Social Development Plan, and National Strategy (2018-2037).
Australia	Yes, the Australian Digital Health Agency has the National Digital Health Workforce and Education Roadmap, which was developed through consultations with education, health, and consumer stakeholders.

B. Do you have any suggestions on how the APEC Human Resource Development Working Group, especially the Capacity Building Network, to assist member economies in equipping people to adapt to the digital changes and enhance inclusiveness in the health industry?

Economies where interviewees are from	Responses
Australia	Research, review, and adapt what some of the other economies are currently using as a best practice model to develop one that suits your own economy.
Japan	Promoting capacity building through implementing workshops would be an effective approach.

C. Do you have any suggestions on cross-cutting issues and cross-fora collaboration relevant to enhancing the digital healthcare workforce in the Asia-Pacific region?

Economies where interviewees are from	Responses
Chinese Taipei	It is recommended that the content of digital capabilities and digital tools required for caregivers be

	defined.
Thailand	To establish APEC cross fora work program or conduct the Standards of APEC Digitalization of Healthcare Workforce.

2.2 Workshop introduction

On the 20th of September 2022, the Workforce Development Agency at the Ministry of Labor, Chinese Taipei, organized a Workshop with combing virtual and physical approaches. The Workshop was commissioned by APEC Skills Development Capacity Building Alliance (APEC ASD-CBA) project for digital upskilling of healthcare workforce. The Workshop titled “Empowering the Health Workforce through Digital Upskilling” was held from 11am to 16:50pm (GMT+8), providing Webex meeting for online attendance.

For widely exploring the potential and future of digital upskilling of the Healthcare workforce, the Workshop divided into three sections.

The first section was keynote speech. There were two speakers invited to share their experiences and insights on empowering healthcare workforce through digital upskilling. One speaker was Mr. Che-Shang Huang, Section Chief of the Workforce Development Agency, who illustrated the deliverables from the Chinese Taipei’s APEC Project, Training Package on Caregiver Digital Upskilling. Another speaker was Professor Eric Y. Chuang, Dean of the College of Biomedical Engineering at China Medical University, who shared insights to the global trend of digital transformation and the opportunities of digital health sector emerging in Chinese Taipei.

The second section was presentation of best practices. The project team reached out six speakers from different Asia-Pacific economies to share their experiences of facilitating digital upskilling in the health sector. These speakers presented best practices in Australia, India, Thailand, and Malaysia from the perspectives of trainers, policymakers, and academics.

The final section was a panel discussion to brainstorm the challenges and opportunities of digitalization of health workforce from diverse perspectives. In this

section, the six speakers in the second section and other two panelists discussed two issues: (1) key challenges and issues faced in implementing digital solutions in health sector from a perspective of workforce development; (2) best practices of including digital skills in the content of health education or healthcare professional training.

The workshop was attended by participants. These participants came from APEC economies including Australia, Brunei Darussalam, Indonesia, Malaysia, Papua New Guinea, the Philippines, Chinese Taipei, and Thailand.

In addition, the project team collected gender-disaggregated data among workshop participants. The workshop targeted gender parity among invited speakers and also ensured that there were no gender restrictions on suppliers, partners, or participants. Overall, the workshop achieved the gender targets, having five female speakers in the best practice presentation section of six speakers (83 percent), six female experts in the panel discussion of eight panelists (75 percent). Also, the workshop had participants of 65 percent of its attendance consisting of women from various APEC economies.

The Workshop program, including the Workshop agenda, the content of pre-workshop survey and post-workshop survey were attached in the Annexes.

2.3 Opening remarks

The Workshop began with Dr. Dong Sun Park, the Lead Shepherd of the Human Resource Development Working Group (HRDWG), delivering opening remarks.

Dr. Park highlighted the importance of digital technologies and the positive impact of the COVID-19 pandemic that accelerated digital technologies being adopted. However, he noticed that the digitalization in the medical sector has lagged behind other industries.

He believed that the digitalized health care has a huge impact on health care workforce and patients. An OECD report emphasized the role of government in digital transformation on the health sector, including providing a trustworthy, ethical, and human-centered environment and a safe and effective use of digital technologies for workforce. However, Dr. Park pointed out that the existing models of work and the related legal and financial frameworks required to be timely adapted to unlock the potential of digital technologies. In this regard, Dr. Park appreciated the workshop contributing to the digital transformation issues in health care.

Besides the benefits of digital technology, Dr. Park mentioned the relevance of caregiving and the life quality. He urged APEC economies to devote to enhancing the quality of caregiving human resources by concentrating professional medical work knowledge and capacity of good communication, interpersonal skills, and good characteristics such as patience and compassion.

In conclusion, Dr. Park expected the workshop as a useful opportunity for APEC economies to discuss policies and programs concerning the digital upskilling of health care sector, because the workshop aimed to cultivate talented workforce who can identify new skills in accordance with the industry needs. While the workshop was a starting point, Dr. Park encouraged all APEC economies work together to develop a holistic patient-centered and integrated care system, as well as a community-oriented regional care system in the Asia-Pacific region.

2.4 Delegates

The workshop was attended by some high-level delegates as follows:

- Mr. Tsai Meng-Liang, Director General, Workforce Development Agency, Ministry of Labor
- Ms. Rosanna Urdaneta, HRDWG CBN Coordinator
- Mr. Tommy Kambu Kunji, Representative, Papua New Guinea Trade Office
- Mr. Winky, Angga Priatna, Director of Industry Department, Indonesian Economic and Trade Office to Taipei
- Mr. Vikas Mahajan, Assistant Section Chief, India-Taipei Association

2.5 Speakers

Speaker 1: Mr. Che-Shang Huang

Mr. Che-Shang Huang (Section Chief, Workforce Development Agency at Ministry of Labor) shared the experiencing of developing a training package on digital upskilling for healthcare that based on an APEC Project launched by Chinese Taipei in 2020.

Since Chinese Taipei created the APEC Skills Development Capacity Building

Alliance (ASD-CBA) in 2017, it has devoted itself to launching relevant projects to assist workforce in the region in equipping necessary skills and capacity in the changing labor environment. The prevention measures required to fight the COVID-19 pandemic created a contactless environment in many societies, which raised challenges to healthcare that highly relied on physical contact between patients and caregivers. While digital technologies help the industry develop innovative approaches, caregivers might not easily manage and utilize them. Therefore, Chinese Taipei proposed a "Promoting APEC Innovative Caregiving through Digital Upskilling" Project in 2020. Based on studying the changing landscape of the healthcare service during the pandemic, the project aimed to deliver a pilot training program that can enhance digital literacy and capacity for caregivers. A primary outcome of the pilot program is the training package for digital health care that was accomplished in 2021.

According to Mr. Huang's experience, a training program to explore new capacities or skills must go through four stages. The four stages are the commencement of a research work, analysis of research results, developing a competency model, and design of a training package. Among the four stages, the latter two stages of developing a competency model and designing the corresponding training package are more difficult. Take the "Promoting APEC Innovative Caregiving through Digital Upskilling" Project for example. Research works and analyses highlighted digital skills that emerged in the healthcare service, concentrating on the functions of documentation, communication, and risk reduction. However, specific digital skills essential for home-based aging caregiver need to be identified. Therefore, the project further adopted a focus group approach to identify the coverage of digital skills.

The results of research and focus groups provided the foundation of a training package to target five practices. The five practices include decubitus ulcer wound measurement, digital physiological measurement, remote able health tracking platform, position sensing detection, and life and moving aids. The training package planned a five-day course to equip caregivers with the five major digital skills, including capacity evaluation. Chinese Taipei also initiated a small-scale class between 8th November and 12th November 2021 to test the feasibility of the training package. The details of the training package on caregiver digital upskilling had been published in July 2022.[1]

[1] APEC, Training Package on Caregiver Digital Upskilling,

In conclusion, Mr. Huang said the Chinese Taipei's training package was a starting point. He urged other APEC economies to work together and collaborate with private sectors to develop more training packages to enhance the digital upskilling of caregivers.

Speaker 2: Eric Y. Chuang

Professor Eric Y. Chuang (Dean of the College of Biomedical Engineering, China Medical University, Chinese Taipei) shared his insights on global digital trend and opportunities for digital health sector in Chinese Taipei.

Professor Chuang introduced the landscape of medical care through three dimensions and five levels. The three dimensions are health, diagnosis, and care. Health is about physical conditions, including personal health, self-health management, and disease prevention and prediction. Diagnosis refers to medical treatment that aims to enhance medical effectiveness, improve diagnostic and therapeutic effect, and reduce cost and human error. As to the dimension care, it includes the maintenance and rehabilitation of physical conditions through tele-health care, chronic disease management, and postoperative rehabilitation and care. The three dimensions of medical care indicates the five phases of a relationship between patients and doctors. The five phases are health management, disease prevention, disease diagnosis, disease treatment, and rehabilitation and care. Digital technologies, especially big data, provide opportunities for the industry of medical care.

According to professor Chuang's observation, how to integrate big data and artificial intelligence (AI) is vital to the digitalization of medical care. In specific, the integrated system of big data and AI has improved the efficiency of disease diagnosis and treatment. For instance, computing medicine has expanded the coverage to smart medical electronics and pharmaceutical R&D, and promoted intelligent manufacturing automation that includes regenerative medicine and microreactor technology. For the aspect of disease prevention and health management, the integration of big data and AI facilitates the development of holistic care that relies on ALD fitness progression and risk assessment, prodromal dementia MCI assessment, population debilitating change, and analysis of frailty-cost of care. The digital system is also helpful for the post-treatment rehabilitation by providing environmental monitoring and active care.

---

https://www.apec.org/publications/2022/07/training-package-on-caregiver-digital-upskilling

Moreover, in the COVID-19 pandemic, many governments have discovered the potential of digital technology on pandemic preparedness and response. Digital technologies have been used to develop tools for the functions of tracking, screening for infection, contact tracing, quarantine and self-isolation, and clinical management.

However, for the future vision of medical care in the big data era, professor Chuang focused on the precision health. He mentioned that market surveys have indicated the upward trend of the precision health market. The changing health market is due to the increased demands of bioinformatics and data analysis along with the development of sequencing technology. Professor Chuang believed that the growth of the precision health market will drive the creation of technologies related to drug discovery, diagnostic, and medical information. Considering the potential of the precision health market, Chinese Taipei had decided to establish big data platform to allow the Digital Health Center to provide stronger information security management when collecting people's health data systematically for long-term research propose, and build digital tracking system for recoding biomedical data of various disease digitally, and create a human genomic biobank. In addition, the importance of intelligent biomedical technologies in promoting the precision health and precision medicine is highlighted.

Besides the commercial potential of precision health, professor Chuang explained why the government is devoted to applying digital technologies in medical care. The primary reason is the coming of a super-aged society and the increased disabilities. Finding hidden information and reducing caregivers' pressure will be crucial for the government to confront the elder and disabled society. To achieve the goal, data can help. Therefore, precision health based on big data and AI technologies can allow people and society to invest in the early stage of life but shortens unhealthy life expectancy.

However, sustainable health promotion relies on creating new business models that consider the supply and demand sides and governmental support. Professor Chuang shared several initiatives promoted by Chinese Taipei. For instance, the government has cooperated with private sectors to create KuangFu living lab integrated solutions that can provide environmental monitoring of patients and proceed the whole body gait analysis for nursing staff. In addition, because massive data is the base for precision health, Chinese Taipei is planning to create smart symbiotic community that is located

in different cities to create data driven personnel health promotion and early intervention.

In conclusion, professor Chuang repeatedly emphasized the importance of big data and AI that changes the landscape of medical care and motivates the growth of precision medicine and healthcare. Developing the integrated system for multi-type data is crucial to advance biomedical studies for promoting precision health. Therefore, the government plays a crucial role in establishing a living lab and data center for health promotion and new business models to boost the industry of precision health and healthcare.

2.6 Panel discussion highlights

The panel discussion was moderated by Professor Yue-Shan Chang, Project Team Overseer of the Chinese Management Association, and had eight panelists share viewpoints on two issues. The two issues are: (1) key challenges and issues faced in implementing digital solutions in health sector-a perspective from workforce development; and (2) best practices of including digital skills in the content of health education or healthcare professional training.

Three trainers from Australia's TAFE mentioned that the lack of digital skills in the health industry workforce is indeed a challenge. As the role of the healthcare industry expands, how to assist the health industry workforce to upgrade their digital skills has also become a challenging issue. However, the digital capabilities of the workforce can be enhanced through relevant information and digital training courses.

Dr. Kumar believed that the health industry involves long-term care, so policies in this area must also propose relevant supporting measures to meet the current situation. In addition to continuously improving the existing medical technology and digital skills, the digitalization of medical management and the manpower required for operation are also aspects that need attention.

Mrs. Tiamtiabrat mentioned the need to strengthen implementation because practitioners in the health industry accumulate experience and provide case references from continuous performance.

Dr. Tan pointed out that it is a trend to guide the health industry workforce to upgrade their digital skills. However, meanwhile, the government requires to cooperate

with private sectors to find appropriate solutions to achieve the goal gradually. In specific, the issues that rely the government's engagement to promote the workforce development in the health sector include data governance, data literacy, data literacy, data access regulation, permission and connectivity, the leadership and management teams to realize the required digital skills for home-based health caregivers, and the investment in reskilling and upskilling programs, and the trust on the digital system.

Dr. Ying-Jun Lin (assistant professor, the Department of Finance and Law of Chung Yuan University, Chinese Taipei) mentioned that the digital skills of the health industry could be gradually promoted to facilitate the maturity and structural adjustment of the overall industrial workforce. The adjustment of policies and standards could rely on the regional cooperation between APEC economies, for instance best practices and policy experiences sharing and the public-private dialogue.

Professor Chuang said that assisting the health industry workforce in digital transformation and digital skills improvement can start from different aspects.

In conclusion, Professor Chang appreciated the panelists and participants from different economies attended the Workshop. The panel discussion provided a verity of opinions according to the panelists' own experiences. These viewpoints will be very helpful for the subsequent promotion of associated projects. He looked forward to having the opportunity to exchange views and advance the discussion the digital upskilling and the digital health care in the future.

3. Case studies

The case studies covered best practices of digital upskilling of healthcare workforce from a variety of policies, training programs, and business models in the Asia Pacific region.

Australia: Pooja Thapliyal, Delena Caagbay, and Alex Miller

Ms Pooja Thapliyal (Head Teacher, General Health Teaching Section, TAFE Digital, TAFE NSW), Dr. Delena Caagbay (Allied Health Teacher, TAFE Digital, TAFE NSW), and Ms Alex Miller (Digital Product Manager, TAFE NSW) emphasized the importance of digital technologies to changing and enhancing the learning and teaching of health caring. In their institution, TAFE, the Australia's largest vocational education and training provider, they have delivered the health caring programs through information and communications technologies. For instance, live online classrooms and video recording for self-led learning allow teachers and students to continue the course in the contactless environment and to promote an inclusive and flexible learning. In addition, virtual reality and augmented reality have been integrated into courses to enable students to operate caring procedure and understand the structure of eyes. These technologies are vital for achieving immersive experiential learning.

The training programs of health caring provided by TAFE demonstrate the possible approaches to use digital technologies to improve the course content, enhancing teaching and training methods, and motivating the learning.

India: Piyush Kumar

Dr. Piyush Kumar is associate professor and associate dean at Institute of Health Management Research Bangalore, India. He pointed out that digital technologies only provide the tools. They cannot transform the health sector on its own without the productive use by the workforce and patients. Therefore, a serious issue is how to bring adaptive change in human attitudes and skills, and legal frameworks and the organization of work through the digital transformation.

Dr. Kumar identified a range of digital technologies with positive impacts on healthcare and bringing disruption to different extents. The potential technologies include telemedicine, smartphone apps, sensors and wearables for diagnostics and remote monitoring, reading the genome, speech recognition and natural language

processing (NLP), virtual and augmented reality, automated image interpretation using AI, interventional and rehabilitative robotics, predictive analytics using AI, and writing the genome. He mentioned that these technologies are grounded in the development of big data, artificial intelligence, the internet of things, robotics, and wearables.

Although new technologies are innovated to facilitate the delivery of health care and medical treatment, the adaptation has not been significantly mature. According to Dr. Kumar's study, adopting digital technologies in the health sector could be blocked by workforce's and systematic factors. From the perspective of workforce, the resistance to technology adoption, poor acquaintance and low trust in the technology, and lack of ability to use computers and access information systems are the factors to hinder the use of digital technologies in practice. From the systematic aspect, lack of integration, insufficient clarify and right approach in management, and regularly busy and hectic schedules could decrease benefits of innovative technologies.

Concerning the opportunities and challenges of digital health care, Dr. Kumar proposed a phase-based model to promoting a holistic development strategy. The phase-based model of development strategy contains seven phases, including gap identification, enhancing learning by doing, digital infrastructure and framework, setting leadership priorities, aligning priorities with the health personals, developing digital champions, and digital credentialing. It can see that the phase-based development model aims to consider a variety of concerns in the policy-making, such as the infrastructure, regulatory framework, the using environment and trusty, and the mutual learning of business management.

Thailand: Budthree Tiamtiabrat

Mrs. Budthree Tiamtiabrat (Plan and Policy Analyst, Senior Professional Level, Office of Industrial Economics, Ministry of Industry) shared the Thailand's economy-wide policy and plan on promoting digital upskilling of health workforce.

Firstly, Mrs. Tiamtiabrat illustrated the general situation of the healthcare workforce in Thailand. According to the statistics, professional nurse is the vocation occupying the majority of healthcare workforce (184,840), followed by doctors (38,820) and dentists (8,094). However, the distribution of professional medical personnel in Thailand is imbalanced. For example, the proportion of the population per physician in Bangkok is extremely higher than other regions. One physician needs to take care of

576 people, much lower than the economy's average of 1,700 people.

In the COVID-19 pandemic, there were emerging applications of digital technology in the healthcare sector in Thailand. For instance, "Thai Chana" is an APP program used to tracing the COVID-19 spread by the function of online self-reporting. "Mor Dee" application is an online healthcare platform that can provide healthcare services such as telemedicine, medicine delivery, and personal health consultant. The APP is not only cost-saving but also customized for different health problems and helpful for companies to take care of employees or customers.

To maximize the benefits of digital technology, Mrs. Tiamtiabrat then elaborated the efforts of the Thailand government to promote digital upskilling for healthcare workforce. In specific, Ministry of Public Health published "twenty-Year National Strategic Plan for Public Health 2017-2036" to support three projects. The three projects are the project of development of health workforce to ensure professional healthcare services, the project of happy MOPH, and the project of development of health workforce network. The Department of Skill Development at Ministry of Labor adapts its priorities to promote skills training, enhance skill development system, develop economy-wide skills standard and testing system, and promote workplace learning and create skill development network. A new agency, the Digital Skill Development Academy (DISDA), is created to oversee the development of digital skills for the workforce. Moreover, Ministry of Digital Economy and Society planned the fifth strategy to develop workforce to have readiness for the digital age, which aimed to enable the workforce equipped with knowledge and digital technology skills to utilize in the market and motivate the economy and society.

Among these government's actions, Mrs. Tiamtiabrat highlighted the devotion of DISDA on the digital upskilling of the healthcare sector. She mentioned the DISDA's mission as enhancing new digital human resources to support the manpower for the digital economy and society. DISDA proposed the "health professional education reform strategic plan" that aimed to improve health workforce, competency, and transformative learning in term of digital upskilling and reskilling.

Besides the policy supports, Mrs. Tiamtiabrat explained that the collaboration between private and public sectors and initiatives also play a key role in enhancing upskilling in the healthcare sector. For example, Thailand National Digital Healthcare Workforce Development Initiative is a three-year work plan that aims to address the

demand of patients by providing digital healthcare services. This initiative also echoes Thailand's 4.0 digitization and the policy priority of tourism.

In the final part, Mrs. Tiamtiabrat introduced the Thailand government's visions. First, the Thailand government is drafting the "Action Plan for the Development of Smart EE Industry (2023-2027)" to promote Thailand as a hub of ASEAN in devices and system of smart EE with technology localization by 2027. The action plan will cover smart home, smart factory, smart hospital and health, and smart farm. To achieving the goal, the government is developing guideline for a smart hospital. In addition, the Thailand government also discusses the "Action Plan for Development of Medical Devices Industry Phase 1 (2023-2027)"to envision Thailand as the hub of medical devices manufacturing in ASEAN region by 2027. Therefore, it can see that Thailand has devoted to digitalization of the healthcare sector.

Malaysia: Dr. Ee Xion Tan

Dr. Ee Xion Tan (Senior Lecture and also the Program Director for Digital Health at International Medical University, Malaysia) shared the Malaysia's practice of empowering the health workforce through digital upskilling.

Dr. Tan highlighted four issues to understand the progress of digital upskilling in the health sector in Malaysia. The four issues are: (1) why do we need to empower the healthcare workforce through digital skilling? (2) How to do? (3) What are the outcomes? (4) What is the next step?

As to the first issue of "why", Dr. Tan explained that in Malaysia, the shortage of healthcare workforce motivates the health care services entering to the digital transformation to maintain the service supply. The digital transformation for healthcare services involves providing the community with necessary services in on-site and remote ways and allowing experts to deal with interdisciplinary and multidisciplinary stakeholders. According to her study, the digital health economy provides opportunities for healthcare services to utilize health-tech to connect key participants within a healthcare ecosystem. However, a market survey of thirteen health-tech deals in the Southeast Asia region in 2021 indicated a less competitive performance in Malaysia. Malaysia's deals only occupied 3 percent of total health-tech deals in the region, much less than that in Singapore (55 per cent) and Indonesia (40 per cent).

In addition, Dr. Tan shared indicated three dimensions essential to a

comprehensive digital health landscape. The three dimensions are patient-centric, diagnostic-centric, and R&D centric. In specific, the patient-centric dimension is about the education for consumer and workforce, including creating a health information platform, the telemedicine that permits tele-consultation and remote monitoring, the insurtech that can manage health claim, health insurance, and medical payment, the triage of medical concierge, chatbots, and track and trace application programs, distributing services to different consumer market-places, the management of chronic diseases and the patients' wellness being cared by wearable devices and wellness apps. The diagnostic-centric dimension includes the point-of-care testing diagnostics, screening of medical image and teleradiology, and the safety and security by addressing counterfeit tracking and cybersecurity. The R&D centric dimension refers to the research concerning drug discovery and genomics related studies, and the research clinical trials for next generation sequencing.

According to a market feasibility conducted by International Medical University in 2019, experts shared their ideas of how to promote the digital transformation in the health sector in a Next Five Years Digitalization Plan. The experts believed that a digital system integration across the company, the connected health, artificial intelligence, and the Internet of Things/Internet of Medical Things play a vital role.

Malaysia's situation and shared understanding of digital transformation in healthcare services led to the second issue of "how". Dr. Tan proposed three approaches to facilitate digital upskilling for the healthcare workforce. The three approaches are: (i) promoting the awareness campaign to encourage the need for digital skills in healthcare; (ii) investing in the infrastructure to support digital health deployment; and (iii) facilitating formal education to engage in the development of digital skills of the healthcare, including postgraduate studies in related fields and micro-credentialling courses.

Accordingly, Dr. Tan visioned that the healthcare workforce could be benefited from the digital transformation because there would be more promotions, better opportunities, more efficiency, and increase productivity, raising a long-term development plan, and towards the goal of work-life balance.

In the final part, Dr. Tan suggested the next step for digital transformation in healthcare from the perspectives of Malaysia's Academy of Science, the World Economic Forum, and a holistic observation. The Academy of Science, Malaysia,

published the “10-10 Malaysian Science, Technology, Innovation and Economy (Mystie) Framework” to support economy-wide niche areas. In the economy-wide Framework, medical healthcare is regarded as a socio-economic driver for Malaysia, including 5G, sensor technology, 4D/3D-printing, advanced materials, advanced intelligent systems, cybersecurity and encryption, augmented analytics and data discovery, blockchain, neurotechnology, and bioscience technology. Likewise, the World Economic Forum promoted an “Education 4.0 Framework” that identified key capabilities and competencies that must be equipped for future education. The key capabilities include problem-based and collaborative learning, accessible and inclusive learning, personalized and self-paced learning, interpersonal skills, innovation and creativity skills, and global citizenship skills. These key capabilities are also crucial to empowering the healthcare workforce in the digital economy.

Following the policy guidance by Malaysia and the World Economic Forum, Dr. Tan suggested that the next for digital transformation in healthcare must focus on several issues: the readiness of the infrastructure of digital technology and skills, the manpower of healthcare by reskilling and upskilling, job opportunity, the consideration of cost (affordable) and efficiency (productivity), patient empowerment, and applying machine learning and artificial intelligence to healthcare data. Dr. Tan also highlighted the importance to consider ICT application, health, safety, and cost when promoting the digital policy in healthcare.

4. The post-workshop evaluation

An online evaluation form was prepared for attendees to provide their feedback on the APEC Empowering the Health Workforce through Digital Upskilling Workshop. A total of 51 responses were submitted out of 69 registered participants from 4 APEC member economies, which include Australia, Malaysia, Thailand, and Chinese Taipei. Among these responses, 37 were from female participants and 14 were from male participants. The gender ratio of the post-workshop survey is 72 percent.

98.2% of participants found that the Workshop project that was relevant to them and their economies. In specific, all participants agreed that the objectives of the Workshop were clearly defined, the project achieved its intended objectives, and the Workshop agenda and topics covered were relevant. As to the speakers, all participants agreed that the trainers/experts were well prepared and knowledgeable about the topic and facilitated the discussion, and the materials distributed in the Workshop were useful.

However, one participant suggested the content of this Workshop was not easy to follow, and the time allocated for the training program was insufficient. Figure 1 and 2 demonstrated the survey results.

Figure 1: Results of the statement “how relevant was the project relevant to you and your economy”

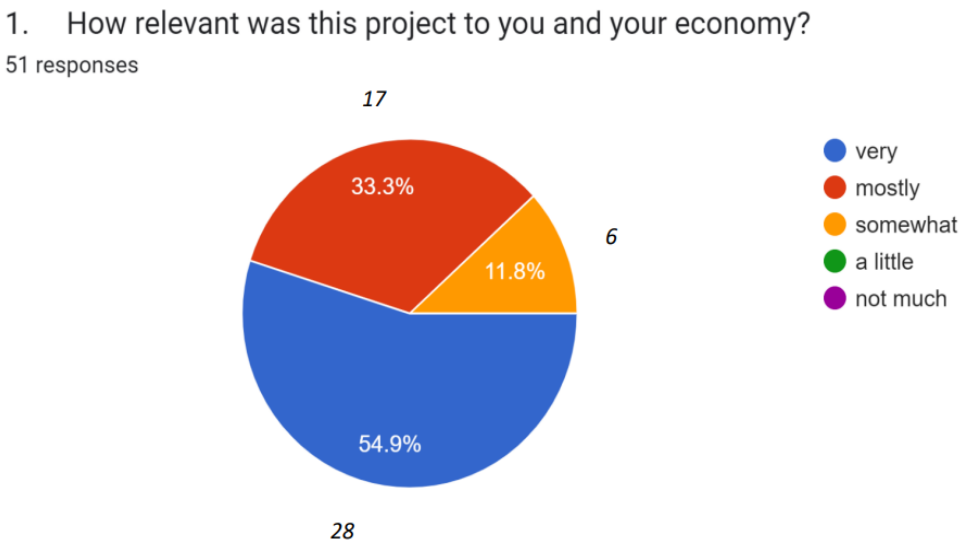
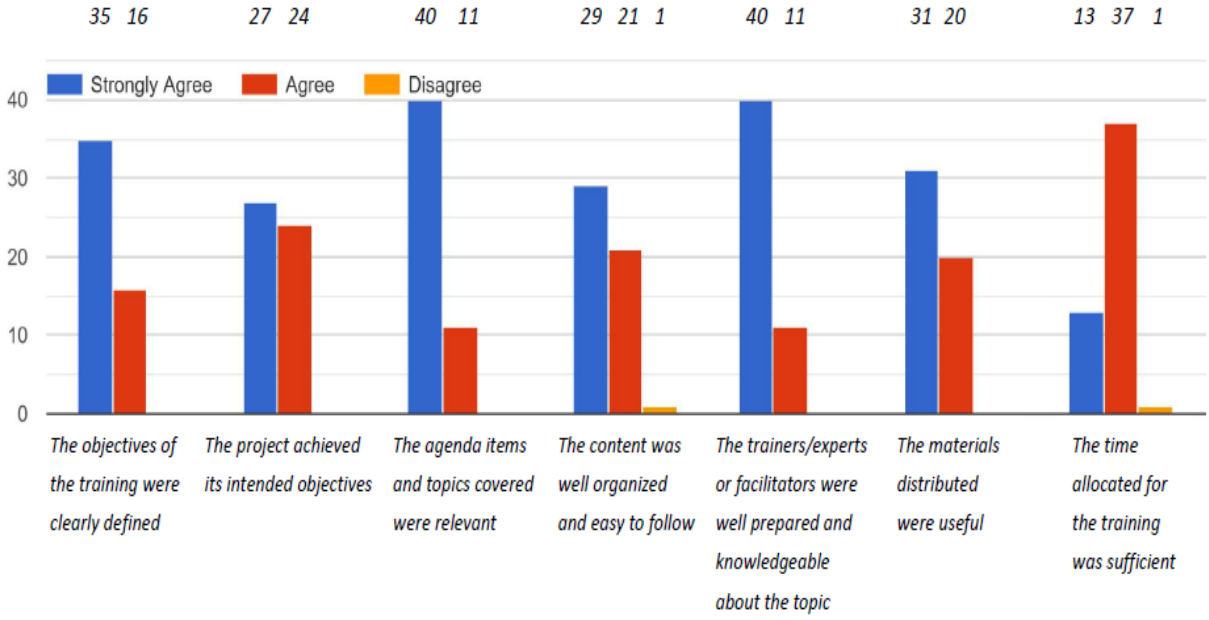


Figure 2: Results of specific statements related to “the topics covered were relevant and useful to you and your economy”



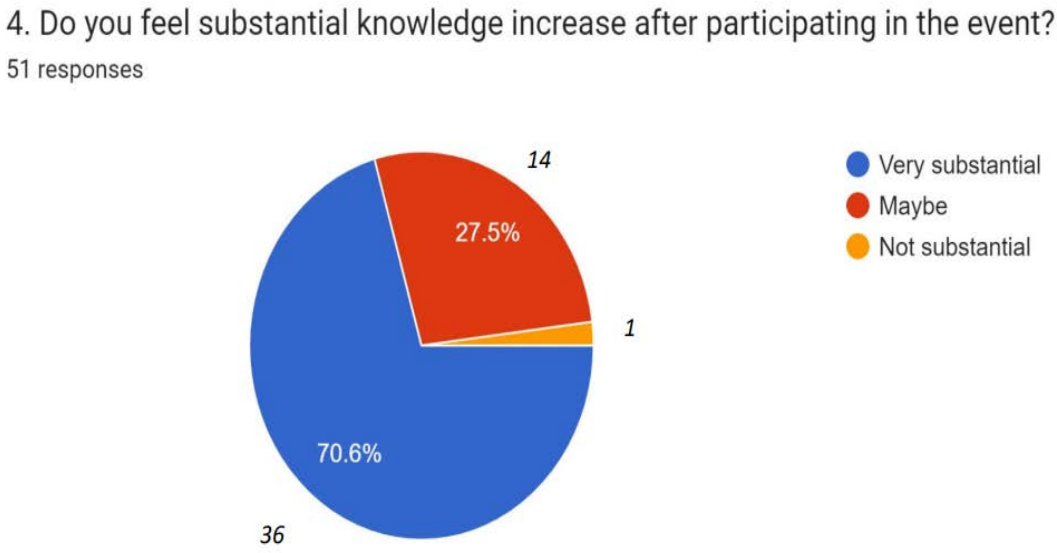
With regard to the outcomes of participating the Workshop, some participants provided concrete feedbacks. For instance, some participants appreciated the Workshop to indicate the future vision of the healthcare industry, including “get better understanding of the future trend of healthcare industry”, “a better understanding on the digital upskilling practices, innovation and right approach to implement such programs”, “the project provided detailed information regarding the development of healthcare services”, and “a better understanding on the digital upskilling practices, innovation and right approach to implement such programs”. Other participants benefited from the Workshop to realize practices in the Asia-Pacific region: “Indicate key challenges in upskilling healthcare workforce each economies found”, “sharing diverse practices of digitali[z]ation in the healthcare sector, including healthcare, in Asia-Pacific”, “interesting to know what's happening in other APEC economies”, and “the project provided detailed information regarding the development of healthcare services”.

Furthermore, few participants were delighted to know the challenges in the digital healthcare, mentioning “indicate key challenges in upskilling healthcare workforce each economies found”, and “understanding global challenges in upskilling the health force”.

As to the digitalization of healthcare, a few participants shared their comments. For instance, some pointed out that from the Workshop, they know “how VR & AI can be used in healthcare industry, and the challenges to use this technology”, and “the VR learning of healthcare and economy-wide policies of digital health”. Other participants appreciated the best practices shared by the Workshop indicating the “different economies’ approaches”, “other economies have similar challenges”, and “new way of thinking when facing digital upskilling issues”. A participant suggested the project “to clarity of gaps in the training areas of the health care staff and possible challenges for staff development”.

Although some participants gave concrete suggestions for the arrangement of the Workshop, almost participants agreed that the Workshop enhance their knowledge of the development of digital healthcare and the impacts on workforce. Figure 3 demonstrates the survey result.

Figure 3: Results of the statement “do you feel substantial knowledge increase after participating in the event?”



In the final part, the post-workshop survey also encouraged the participants to give comments on the next step for the project and the APEC’s works. For the project, some participants suggested to arrange “more workshops should be held to educate the benefit of digital upskilling from different levels in healthcare industry” and “focus on identifying the training needs matching the work profile of the various healthcare workforce. Mapping out the job profile, outcomes expected with the digital skills and developing a training matrix with specified outcome and activities”. For the APEC’s works, participants suggested the APEC to promote “more cross-fora collaboration could be the next step, e.g. the collaboration between HRDWG and group of services to advance the progress of APEC Services Competition Roadmap, and the collaboration between HRDWG and the health working group to promote digital health in APEC”, “enhance collective actions should be presented to the APEC economy's policymaker”, and “undertake for the professional development of the health care staff across the region by assisting in further undertaking the training requirements of the staff with in health care”.

5. Recommendations

In general, the Workshop and case studies covered in this report demonstrate that the

COVID-19 pandemic caused the challenges to the healthcare but also accelerated the digitalization of the health sector. The majority of APEC economies has recognized the potential of digital technologies in healthcare and medical treatment.

To grasp the opportunities of digital health and digital healthcare, these economies have collaborated with private sectors to explore innovative digital skills and solutions by focusing on specific areas. For instance, Chinese Taipei is devoted to create biobanks, ITRI living lab, and smart symbiotic community to promote the precision health. Thailand is investing in smart hospitals. Some economies are proposing the development strategy and plan to unlock the potential of digital healthcare in the future. For instance, Malaysia has launched the MySTIE Framework to promote the application of science and technology in the medical healthcare. The Thailand government is drafting action plans for establishing an ASEAN hub of medical devices and manufacturing.

Behind the different approaches between APEC economies, the common challenges are identified. The challenges include: how to realize the needs of the industry and workforce? How to create a sustainable business model for the digital health? How to develop an integrated system to combine multiple technologies? How to enable healthcare workforce to access to necessary training programs to adapt in the digital era? How does the government promote digital healthcare by establishing laws and regulations? And, how to raise the awareness of digital health both from the patients and caregivers?

Based on the challenges and opportunities identified by the case studies and suggestions from participants, some recommended areas for further exploration in the APEC could include, among others:

- **Indicate the benefits of digital reskilling and upskilling for workforce and the healthcare industry** from different dimensions of healthcare, different caring environments, different business scales of caring institutions, and different industrial conditions by best practice sharing.
- **Identify the needs of the health industry and healthcare workforce** that allow caregivers to match the work profile for a variety of healthcare workforce and pave the way for developing a training matrix of digital upskilling and reskilling for the healthcare workforce through the public-private dialogue as a reference for APEC

economies.

- **Enhance professional training programs for healthcare workforce across the region** by exploring innovative solutions to deliver relevant training programs in light of different caring environments and developing the essential training requirements of workforce in digital health to promote digital health in the region.
- **Collective action based on cross-fora works in the APEC** to explore the relevance of the digitalization of the healthcare workforce, the promotion of healthcare services, the safety, security, and trust of digital systems, and the gap of digital infrastructure within and across APEC economies.

Appendix 1: Questionaries for the pre-workshop survey

APEC ASD-CBA Initiative_ Empowering the Health Workforce through Digital Upskilling

Pre-Workshop Survey

Introduction

This survey aims to understand the current state of the digital trend in the healthcare industry within each member economies and in Asia-Pacific and to shape the discussion topics in **the APEC ASD-CBA Workshop: Empowering the Health Workforce through Digital Upskilling**. Results of the survey will be used to produce a paper which will report the landscape of the healthcare workforce in the digital era, opportunities and challenges facing healthcare workforce, and best practice and recommendations for policy makers.

APEC economies participating in the APEC ASD-CBA Workshop: Empowering the Health Workforce through Digital Upskilling are expected to answer the questions below.

Please answer the questionnaire to the best of your knowledge and ability. If you are aware of other people who may have useful information, please feel free to forward the questionnaire to them. Also, please don't worry if you do not have all the information- anything we can learn will be valuable to inform the workshop programme and facilitate the discussions in the workshop held in **September 2022**. When the questionnaire is completed, please contact Mr. Joseph Liu(aarond@wda.gov.tw) **before 26 July 2022**. Should you have questions to the survey, please contact Mr. Joseph Liu(aarond@wda.gov.tw).

With thanks,

Mr. Che-Shang Huang

Project Overseer

1. Economy being reported on

The current digital capabilities of healthcare workforce, especially those at the frontline

2. What kind of digital capabilities are commonly equipped by healthcare workforce in your economy?

3. Are healthcare workforce required to gain economy-wide certifications to prove their essential digital capabilities associated with their professionals in your economy?

   A. If yes, please describe the economy-wide certifications and relevant assessment criteria briefly.

   B. If one does not exist, does Ministry of Labour or other authorities have a plan to develop economy-wide training programmes and corresponding economy-wide certification/assessment for healthcare workforce in your economy?

Opportunities and challenges of healthcare workforce in the digital era

4. What are the opportunities of the digitalisation trend of the healthcare workforce in your economy? And what challenges facing healthcare workforce face in adapting to the digital changes and environment?

5. Following the previous question, any new opportunities and challenges are inspired and caused by the COVID-19 pandemic in your economy and the Asia-Pacific region?

Best practices for the digital adaptability of healthcare workforce

6. Is your economy planning a economy-wide policy to boost the digital development of the healthcare industry, especially equipping and improving the digital skills of healthcare workforce?

   A. If yes, please descript briefly and points out the priority areas of your economy-wide policy.

   B. If one has not discussed the economy-wide policy, have any training programmes for healthcare workforce' digital adaptability been conducted by public or private sectors?

7. Do you have any suggestions on how the APEC Human Resource Development Working Group, especially the Capacity Building Network, to assist member economies in equipping people to adapt to the digital changes and enhance inclusiveness in the health industry?

8. Do you have any suggestions on cross-cutting issues and cross-fora collaboration relevant to enhancing the digital healthcare workforce in the Asia-Pacific region?

Appendix 2: The Workshop agenda

APEC ASD-CBA Workshop:

Best Practices for Empowering the Health Workforce through Digital Upskilling

- **Date：Tuesday, 20 September 2022 14:00-16:55 (GMT+8)**
- **Format：Virtual (WebEx)**
- **Organizer：Workforce Development Agency (WDA), Ministry of Labor (Economy: Chinese Taipei)**
- **Participants：**Delegates of APEC Human Resources Development Working Group Capacity Building Network (HRDWG CBN), healthcare/caregiving industry experts, training providers, WDA affiliated agencies/units
- **Agenda (as of 16 September 2022)：**

Agenda		
Tuesday, 20 September 2022		
Time	**Agenda**	**Note**
11:00-12:00 (60mins)	**【Online Testing】** For speakers and panelists only (WebEx)	
13:30-14:00 (30mins)	**【Registration】**	

14:00-14:05 (5mins)	**【Introduction】**	
14:05-14:10 (5mins)	**【Welcoming Remarks】** Mr. Tsai Meng-Liang, Director General, Workforce Development Agency, Ministry of Labor	
14:10-14:20 (10mins)	**【Opening Remarks】** 1. Professor Dong Sun Park, APEC HRDWG Lead Shepherd 2. Ms. Rosanna Urdaneta, APEC HRDWG CBN Coordinator	
14:20-14:25 (5mins)	**【Group Photo】**	
【Keynote】		
14:25-14:40 (15mins)	**Best Practices of Digital Upskilling in Health Sector and Deliverables from Training Package on Caregiver Digital Upskilling** Mr. Che-Shang Huang, Section Chief, Workforce Development Agency, Ministry of Labor	
14:40-14:55 (15mins)	**Global Digital Trend and Opportunities for Digital Health Sector in Chinese Taipei** Professor Eric Y. Chuang, Dean, College of Biomedical Engineering, China Medical University (Economy: Chinese Taipei)	

【Thematic Presentation】 Best Practices for Empowering the Health Workforce through Digital Upskilling		
14:55-15:10 (15mins)	Ms. Pooja Thapliyal, Head Teacher, General Health Teaching Section, TAFE Digital & Dr. Delena Caagbay, Allied Health Teacher, TAFE Digital & Ms. Alex Miller, Digital Product Manager, Technical and Further Education New South Wales (TAFE NSW), Australia	
15:10-15:25 (15mins)	Mr. Piyush Kumar, Associate Professor and Associate Dean, Institute of Health Management Research, Bangalore, India	
15:25-15:40 (15mins)	Mrs. Budthree Tiamtiabrat, Plan and Policy Analyst, Senior Professional Level, Office of Industrial Economics, Ministry of Industry, Thailand	
15:40-15:55 (15mins)	Dr. Ee Xion Tan, Programme Director, Senior Lecturer at Digital Health Programme, International Medical University, Malaysia	
15:55-16:10 (15mins)	【Tea Break】	
【Panel Discussion】		

16:10-16:55 (45mins)	1. Key challenges and issues faced in implementing digital solutions in health sector – a perspective from workforce development 2. Best practices of including digital skills in the content of health education or healthcare professional training **Chair** Professor Yue-Shan Chang, Project Team Overseer, Chinese Management Association **Panelists** 1. Ms. Pooja Thapliyal, Head Teacher, General Health Teaching Section, TAFE Digital, TAFE NSW, Australia 2. Dr. Delena Caagbay, Allied Health Teacher, TAFE Digital, TAFE NSW, Australia 3. Ms. Alex Miller, Digital Product Manager, TAFE NSW, Australia 4. Mr. Piyush Kumar, Associate Professor & Associate Dean, Institute of Health Management Research, Bangalore, India 5. Mrs. Budthree Tiamtiabrat, Plan and Policy Analyst, Senior Professional Level, Office of Industrial Economics, Ministry of Industry, Thailand 6. Dr. Ee Xion Tan, Programme Director,	

	Senior Lecturer at Digital Health Programme, International Medical University, Malaysia 7. Professor Eric Y. Chuang, Dean, College of Biomedical Engineering, China Medical University (Economy: Chinese Taipei) 8. Professor Ying-Jun Lin, Department of Financial and Economic Law, Chung Yuan Christian University (Economy: Chinese Taipei)	
Wrap-up		
16:55	The End	

Note：

1. Chinese-English simultaneous interpretation service is available
2. Attendance of speakers is subject to the arrangement of the organizer

Appendix 3: Questionaries for the post-workshop survey

APEC Project Evaluation Survey: Seminar, Symposium, Workshop

APEC Project Name/Number: **ASD-CBA Project: Empowering the Health Workforce through Digital Upskilling (HRD 06 2021A)**

Date: **20th September 2021**

Instructions: Please indicate your level of agreement with the statements listed in the table below.

	Strongly Agree	Agree	Disagree	COMMENTS (Continue on back if necessary)
The objectives of the training were clearly defined				
The project achieved its intended objectives				
The agenda items and topics covered were relevant				
The content was well organized and easy to follow				
Gender issues were sufficiently addressed during implementation				
The trainers/experts or facilitators were well prepared and knowledgeable about the topic				
The materials distributed were useful				
The time allotted for the training was sufficient.				

1. How relevant was this project to you and your economy?

5	4	3	2	1
very	mostly	somewhat	a little	not much

*Explain:*_____-

_____

2. In your view what were the project's results/achievements?

Explain:_____

_____

3. What new skills and knowledge did you gain from this event?

Explain:_____

_____

4. Rate your level of knowledge of and skills in the topic <u>prior to</u> participating in the event:

5	4	3	2	1
very high	high	medium	low	very low

5. Rate your level of knowledge of and skills in the topic <u>after</u> participating in the event:

5	4	3	2	1
very high	high	medium	low	very low

*Explain:*_____

_____

6. How will you apply the project's content and knowledge gained at your workplace? Please provide examples (e.g. develop new policy initiatives, organise trainings, develop work plans/strategies, draft regulations, develop new procedures/tools etc.).

*Explain:*_____

_____

7. What needs to be done next by APEC? Are there plans to link the project's outcomes to subsequent collective actions by fora or individual actions by economies?

_____

_____

8. How could this project have been improved? Please provide comments on how to improve the project, if relevant.

_____

_____

_____

Participant information (identifying information is optional):

Name:

Organisation/Economy:

Email:

Gender: M / F

Thank you. Your evaluation is important in helping us assess this project, improve project quality and plan next steps.