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主旨：檢送本處2024年執行「APEC促進照顧相關數位健康科技之
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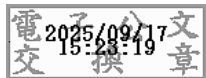
- 一、本處於2023年申請旨揭APEC計畫，獲11個經濟體共同支持
及APEC經費補助，並於2024年執行完竣，包括舉辦2場國際
專家線上諮詢訪談會議及1場國際研討會，就確保照顧相關
數位科技產品之研發符合照顧者需求之具體做法，產出相
關政策建議。
- 二、檢附旨揭計畫成果英文報告及中文摘要，請協助轉知所屬
及所轄業者，以做為於政策措施及產品研發中融入性別觀
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APEC「促進照顧相關數位健康科技之性別平等與包容性」計畫

一、背景

我國於 2023 年向 APEC 提出「促進照顧相關數位健康科技之性別平等與包容性」(Promoting Gender Equality and Inclusion in Digital Health Technology for Caregivers)計畫申請，獲 11 個經濟體共同支持，並獲 APEC 經費補助。本計畫業於 2024 年執行完畢，包括舉辦 2 場線上諮詢訪談會議及 1 場國際研討會。本報告呈現諮詢訪談會議與研討會之發現與成果摘要，並據以提出政策建議。

二、計畫成果摘要

科技的進步帶動健康照顧產業的數位轉型，各種不同的數位健康科技應運而生，包括健康監控應用程式、數位長照輔具與服務、遠距醫療等。女性在全球各地擔負了大多數的無酬及有酬照顧工作—除了在亞太地區有 80%之無酬照顧工作由女性所從事，全球健康產業工作者中也有 70%為女性。女性因此成為數位健康科技之潛在主要使用者。然而，許多因素恐限制女性照顧者於此等發展中受惠，如數位性別落差及產品設計中缺乏女性觀點。

因此，推動數位健康科技發展中之性別平等與包容性，對提升女性照顧者之可及性與使用率至關重要。此不僅有助減輕無酬照顧者之負擔，同時提升有酬照護者之工作效率與安全。世界衛生組織指出，數位健康涵蓋運用數位技術促進健康的知識與實踐，包括物聯網、先進運算、大數據分析、人工智慧與機器人等。

本計畫聚焦應用於照顧工作之數位健康科技，並設定三大目標：

- (一) 了解照顧者需求，並探討如何於科技發展中導入性別主流化。
- (二) 辨識推動數位健康科技性別平等與包容性之途徑。
- (三) 提升對於性別主流化在相關政策與科技應用中重要性之認識，及女性照顧者可受惠之處。

為達成目標，本計畫於 2024 年 4 月舉辦 2 場線上諮詢訪談會議，了解照顧者在使用數位健康科技之需求與挑戰，並討論如何讓科技開發更具性別包容性，及政府應制定之相關政策，以確保照顧者能獲取並使用此等技術。並於 2024 年 9 月舉辦國際研討會與實地參訪，透過專家演講、座談交流與現場觀摩，分享最佳實例並提出政策建議，增進 APEC 成員對如何確保有酬與無酬女性照顧者受惠於數位健康科技應用之理解與能力。

三、諮詢訪談會議結論

本計畫於 2024 年 4 月 3 日及 4 月 9 日舉辦 2 場 APEC 線上諮詢訪談會議，透過焦點團體的形式進行，訪談目標包括：

- (一) 了解無酬及有酬照顧工作者在應用數位健康科技於照顧工作方面之需求和挑戰。
- (二) 了解如何讓數位健康科技的研發過程更符合性別平等，並能符合照顧者之需求。
- (三) 指出可如何透過政策，讓數位健康之發展更具性別包容性。

在 2 場諮詢訪談會議中，共有 27 位參與者出席，分別來自澳洲、汶萊、加拿大、智利、日本、馬來西亞、墨西哥、紐西蘭、菲律賓、俄羅斯、新加坡、我國、泰國等 13 個經濟體，各自代表不同的利害關係人，包括政府官員、數位健康科技開發人員、有酬及無酬照顧工作者、學者等。

諮詢訪談會議彙整以下 4 項結論：

- (一) 數位健康科技可以成為為照顧者賦權的工具，但首要之急是要解決影響照顧者使用這些科技的阻礙。
- (二) 無論是數位健康科技之開發或相關政策之制定，都應肯認照顧者之多樣性，並採取交織性方法，以確保沒有人被遺落。
- (三) 照顧是一個以人為核心的工作，因此當論及照顧相關科技之研發過程，「人」的面向應優先於技術本身。

(四) 儘管此計畫旨在促進女性照顧者取得與使用數位健康科技，惟並非要強化傳統性別角色分工，計畫最終目的仍希望肯認照顧之價值，弭平照顧工作中之不平等。

四、國際研討會概要

在諮詢訪談會議之基礎上，本計畫於 2024 年 9 月 10 日至 11 日舉辦 APEC 國際研討會暨參訪，包括 1.5 天之會議與半天之實地參訪，透過專家演講、最佳範例分享、座談討論等形式，使來自亞太地區公私部門的參與者了解如何促進數位健康科技研發的性別平等與包容性，以及如何增加女性照顧者取得與使用數位健康科技，以確保她們能受惠於健康照顧產業數位轉型的趨勢。另透過照顧咖啡館與臺北醫學大學的實地參訪，分享我國最佳範例，使與會者了解數位科技如何應用於照顧工作中，及如何支持照顧者福祉。

共有來自 15 國之 115 位公私部門代表於線上及實體共同與會，包括政府單位、照顧者組織、照顧機構與醫療院所、數位健康科技公司、學界等代表。會議由行政院政務委員林明昕、APEC 婦女與經濟政策夥伴(PPWE)主席 Chantelle Stratford 及 APEC 衛生工作小組(HWG)主席 Alberto Tejada 致開幕詞，強調此次會議之討論不應僅聚焦於科技本身，而是探討如何運用數位科技賦權女性，並為照顧者提供更好的支持。荷蘭台夫特理工大學數位健康助理教授 Caroline Figueroa 在專題演講中指出照顧工作、科技研發與性別之交織性，應將不同背景之女性納入數位健康之發展過程，並增加女性在數位健康產業領導位置之代表性。

會議分別從照顧端、科技產業端與政府政策端角度出發，探討數位健康科技在照顧工作中之運用及性別意涵。場次一中，來自我國、菲律賓與智利的講者分享數位科技如何支持專業照顧人員與無酬家庭照顧者，強調照顧科技必須以人為中心，並應提升照顧者的意識。場次二中，來自我國、加拿大、印尼與越南之業界代表與學者分享如何確保科技之研發與導入照顧場域符合照顧者需求，包括顧及不同年齡、語言和偏遠地區之使用者，並指出科技可成為賦權照顧者的工具。

場次三由來自我國、馬來西亞、墨西哥與智利之政府部門代表分享各自經濟體如何透過不同之政策支持照顧者，強調應肯認照顧工作之價值並，消除照顧工作中之性別不平等，且於照顧經濟上應投入更多資源。

會議第二日為 APEC 跨論壇會議，共計有 19 位 APEC 經濟體代表參與，會中由 HWG 主席、馬來西亞 HWG 代表、泰國科技、技術及創新政策夥伴(PPSTI)代表，及我國人力資源發展工作小組(HRDWG)代表分享不同部門在性別平等、數位健康或照顧議題上之努力，並共同討論不同 APEC 工作小組如何合作以促進照顧相關數位健康科技之性別平等。

最後，本計畫安排 APEC 經濟體代表前往參訪位於復華長青多元服務中心、由家庭照顧者關懷總會經營的照顧咖啡館，該咖啡館不但作為社區長照情報站，且提供家庭照顧者喘息紓壓活動和支持性服務。參訪過程讓與會者了解我國照顧者議題與服務推動，及復華長青多元服務中心作為老人日照中心的服務經驗。另外，也前往臺北醫學大學了解智慧化醫療管理系統、智慧護理與自動化藥物管理系統的實務操作，及如何協助專業醫療照護人員減輕負擔、提升工作效率。

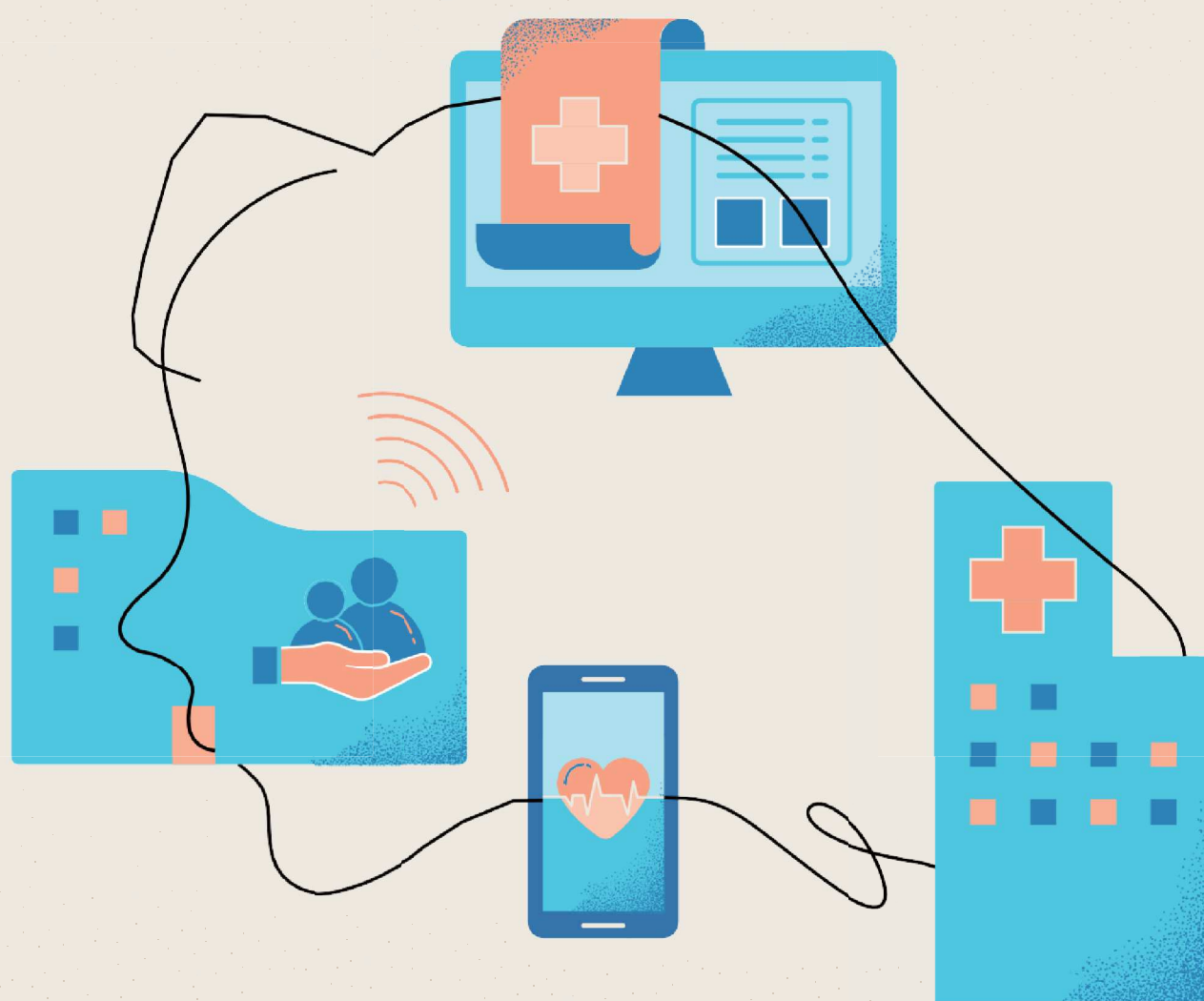
五、政策建議

為確保不同群體之照顧者皆能真正受惠於健康照顧產業之數位轉型趨勢，本計畫期能支持無酬及有酬照顧者於照顧工作中使用數位健康科技，並確保所研發之科技產品符合照顧者需求。為此，本計畫提出三大面向共九項政策建議如下表：

三大面向	建議
(一)照顧者採用數位健康科技	1. 為照顧者提供數位技能培訓與技術支援。 2. 透過加強網路基礎設施或提供離線服務，增加照顧者取得網路以及數位健康科技產品。 3. 透過補助等方式增加數位健康科技之可負

三大面向	建議
	擔性。
(二)科技開發與整合	1. 在科技開發過程採取使用者中心的參與式設計方法，且須注意到照顧者的多樣性，如不同性別、年齡、教育程度等。 2. 在研發過程納入更多女性工程師和設計師，以反映女性觀點。 3. 鼓勵企業進行能回應性別的科技創新，並增加對女性領導數位健康企業的投資。 4. 發展相關法令與標準，以確保數位健康科技整合進照顧場域之協調性，及數據安全與隱私性。
(三)跨部門合作	1. 加強政府之跨部會合作以及公私部門夥伴關係。 2. 鼓勵不同 APEC 論壇的合作，包括共同建立將性別觀點融入數位健康的策略或指引。

PROMOTING GENDER EQUALITY AND INCLUSION IN DIGITAL HEALTH TECHNOLOGY FOR CAREGIVERS



**APEC Policy Partnership on
Women and the Economy
Chinese Taipei**

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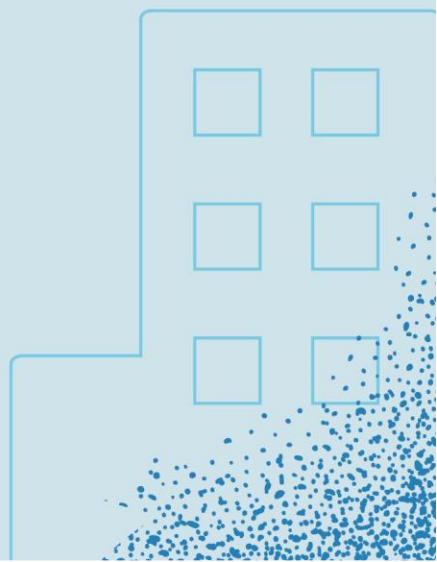
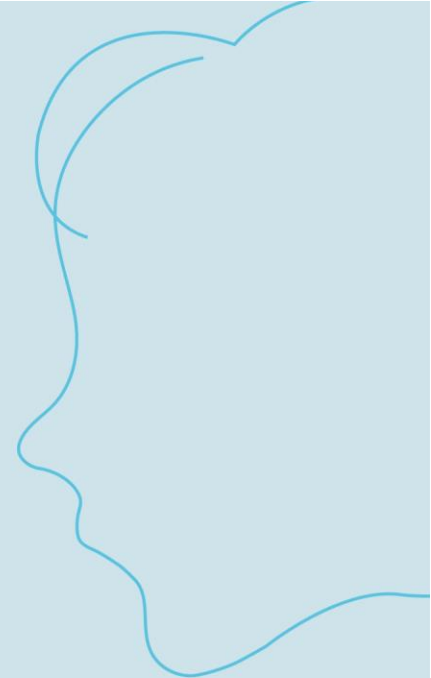
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Table of Contents

Introduction	1
Consultation Interview	3
Seminar and Field Trip	8
Conclusion and Policy Recommendation	23
Annex I: Seminar agenda	27



Introduction

The health industry is undergoing digital transformation, with diverse digital health technologies being developed, such as APPs for monitoring health conditions, technological assisted devices, telemedicine, etc. As women are primary caregivers—perform 80% of unpaid care work in the Asia-Pacific region and consist of 70% of health workers globally—they are major potential users of digital health technologies. However, many factors may prevent female caregivers from benefiting from the advancement of digital health technologies, such as the digital gender gap and the lack of women's perspective in the product design process.

Therefore, it is crucial to promote gender equality and inclusion in the development of digital health technologies to increase female caregivers' access and use of these technologies in care work, which is expected to reduce unpaid caregivers' care burden as well as to increase the work efficiency and safety of paid care providers.

According to World Health Organization, digital health is understood as “the field of knowledge and practice associated with the development and use of digital technologies to improve health” and “encompasses other uses of digital technologies for health such as Internet of Things, advanced computing, big data analytics, artificial intelligence including machine learning, and robotics.”

With a specific focus on digital health technologies that are applied in care work and used by paid and unpaid caregivers, this project has the following 3 objectives:

1. To understand the needs of caregivers for digital health technologies and how to apply a gender mainstreaming approach in the development of digital health technologies.
2. To identify approaches to promote gender equality and inclusion in the development of digital health technologies for care work.
3. To raise awareness on the importance of applying a gender mainstreaming approach into the digital health technologies for care and related policies as well as the benefits female caregivers can gain from it.

To achieve the goals, this project first conducted two sessions of online consultation interview in April 2024, to understand caregivers' needs and challenges in using digital health technologies in care work, how to make the technology development process more

gender inclusive to meet the needs of diverse caregivers, and the government policies required to ensure caregivers' access and use of digital health technologies in caregiving.

Furthermore, this project held a seminar and a field trip in September 2024, aiming to enhance the capacity of APEC members in understanding how to ensure both paid and unpaid female caregivers can truly benefit from the application of digital health technology in care work. Through expert presentation, panel discussion, and site visits, best practices were shared, and policy recommendations were proposed to catalyze the promotion of gender equality and inclusion in digital health technology for caregivers.

In this Summary Report, the consultation interview findings and the seminar summary are presented, together with conclusions and policy recommendations.

Consultation Interview

Date: April 3 & April 9, 2024

Format: Online focus group

Participating economies: Australia; Brunei Darussalam; Canada; Chile; Japan; Malaysia; Mexico; New Zealand; the Philippines; Russia; Singapore; Chinese Taipei; Thailand

Overview

The consultation interview was held online on April 3 and April 9, 2024 by using the method of focus group, with the following objectives:

1. To understand the needs and challenges of caregivers, both paid and unpaid, in terms of using digital health technologies in care work;
2. To understand what can be done in the research and development process to make digital health technologies more gender inclusive and meet the needs of caregivers;
3. To identify the government policies that are existing and lacking in terms of making the digital health development more gender inclusive.

A total of 27 participants from 13 economies participated in the 2 sessions of the consultation interview. The participants represented various stakeholders including government officials, digital health technology developers, paid and unpaid care providers, and scholars.

In the consultation interview, the participants were asked to share their experience and opinions regarding questions centering around the use of digital technology by unpaid and paid caregivers in caregiving work, the research and development of technology for care, and recommendations for increasing female caregivers' access and use of digital health technologies.

Interview findings

1. The use of digital technology in caregiving work

According to the participants, digital technology has been applied in various aspects of care, including telemedicine, online appointment and consultation, patient monitoring, nursing information system, online communities for carers, care service mapping, and caregiver scheduling.

Upon becoming caregivers, women may not have the knowledge of how to provide proper care, especially when there are medical conditions involved that require specific measures for caregiving. In addition, caregiving can be a lonely and exhausting experience. Technology has the potential to support caregivers' wellbeing and their caregiving role, including providing reliable information and providing a network of mutual support among caregivers.

However, there are many obstacles hindering caregivers' uptake of technologies for care work. The primary obstacles identified by the interview participants are as follows:

- (1) The lack of digital literacy and the low acceptance of new technology, especially for middle- and older-aged family caregivers;
- (2) The high complexity of the technology and the lack of technical support for caregivers;
- (3) The lack of internet infrastructure and connectivity, especially in rural and remote areas;
- (4) The high cost associated with the acquisition and maintenance of the technologies, especially for family caregivers who may have to sacrifice their career to care for their loved ones;
- (5) The language and cultural barriers faced by migrant workers.

Accordingly, noticing the intersectionality of caregivers is important. Factors that influence caregivers' use of digital health technology in care work include gender, age, educational level, economic status, living area, and cultural and language differences.

2. The research and development of digital health technology for care

The participants pointed out the challenges in the research and development process of digital health technology, and also provided suggestions regarding how to make the technology more gender inclusive and meet the needs of caregivers. Their opinions can be categorized into the following aspects:

(1) User-centered technology development approach

While women are often the major caregivers and possess abundant caregiving experiences, their voice and experience are seldom heard and taken into account. In fact, the technology development process is often reduced and considered as an engineering problem, rather than a human problem. However, caregiving is a human-centered task. If the technology development lacks the user aspect, the technology uptake would not be successful.

In addition, caregivers are not a homogenous group. They feature different cultural

backgrounds, ages, educational levels, living areas, and socioeconomic status. Therefore, it can be challenging to adequately represent the diverse experiences and needs across different user groups.

To ensure that the technology development is human-centered, and caregivers' voices are heard, the participants proposed the following suggestions:

- A. Adopt the co-design approach for technology development. Caregivers of diverse backgrounds should be included in the early design stage, and researchers can collaborate with them in their workplaces to understand the issues they want to cope with.
- B. Conduct participatory research to identify the needs and the major concerns of caregivers, while taking into account their different genders, ages, educational levels, living areas, languages, and cultural backgrounds.
- C. Conduct inclusive research to examine how gender may influence technology adoption and use
- D. Conduct pilot tests and evaluations with caregivers to obtain their direct feedback.

(2) More women as developers

Technology has been predominantly associated with men throughout history, and gender bias and stereotypes have limited women's participation in science and technology. Therefore, it is critical to change the narrative and support more women to participate in technology development. Particularly, as the majority of the caregivers are women, more women developers should be recruited in developing technologies for care work.

From the institutional side, it was suggested that research institutions can support gender inclusive and equitable research by setting gender balance or gender inclusivity as a criterion for funding. This can not only incentivize research teams to recruit more female researchers but also increase their awareness on gender diversity, inclusion, and equality.

(3) An inclusive AI system

While artificial intelligence (AI) provides the opportunity to develop easy-to-use and user-friendly technology devices and interfaces, it may be based on biased data and therefore produce biased results. Diversity is a key issue in order to make technology useful for all people. Therefore, when collecting data and designing the AI system, special attention should be paid to ensure diversity and inclusion.

3. Future actions for different stakeholders

To ensure that diverse groups of caregivers can all easily access and use digital health technologies for care work, it was suggested that policies should be reinforced to address challenges mentioned above, including accessibility, digital education, affordability, and language barriers. Accordingly, the participants proposed a number of recommendations for different stakeholders to take future actions, including government, research institutions, technology companies, and care institutions.

(1) Providing digital training and technical support for caregivers

The lack of digital literacy and skills among caregivers, especially unpaid family caregivers, was identified as the primary obstacle to their adoption of technologies in caregiving. Therefore, the government should provide training programs and educational resources to enhance family caregivers' digital literacy and technology skills, with curriculum tailored to home-based learners and flexible scheduling available to them. The government is also suggested to establish peer training and networking opportunities within the community to support caregivers' ongoing learning and application of ICT skills.

In terms of professional caregivers, when a new technology is introduced into a caregiving space (e.g., nursing homes and hospitals), care institutions or technology companies should introduce the technology to all care workers, explaining why they need this technology, how it can help improve their work quality, and what kind of data it will collect. Care workers should also be involved in the evaluation of the collected data and its application. At the same time, digital skill training is necessary to equip care workers with the abilities to use these technologies efficiently.

Equally important, after the delivery of digital skill training and technology introduction, technology companies should still provide ongoing technical support to help cope with complex technical problems.

(2) Enhancing Internet infrastructure and developing offline features

Limited internet connectivity and infrastructure, especially in rural and remote areas, can pose challenges for caregivers in accessing digital health technology. Hence, governments should collaborate with telecommunications providers to improve the Internet infrastructure, expand the Internet access to the underserved communities, and provide subsidies for internet access in rural and remote areas.

In addition, technology companies or research institutes can explore other innovative solutions, such as offline access features or mobile applications that require minimal data usage, to allow caregivers using the devices with limited Internet access.

(3) Increasing affordability

The issue of affordability is related to the high cost of technology, the insufficient government funding or subsidies, and the high possibility for family caregivers to give up their jobs to care for their family members. Therefore, governments are suggested to increase subsidies and its coverage and provide financial assistance programs to make the technology more equitable and affordable for caregivers.

(4) Encouraging inclusive technology development process

To enhance caregivers' adoption and use of digital health technologies, whether the technology devices have simple and user-friendly interface and meet users' needs is the key. Therefore, governments can provide incentives and guidelines to encourage technology companies and research institutes to include caregivers in the design stage and to conduct studies to understand the needs, preferences, and barriers faced by caregivers from diverse backgrounds in accessing and using digital health technologies. The findings can in turn inform policies and technology development practices to develop user-friendly technologies with intuitive interface.

(5) Enhancing data collection and protection

To ensure the developed technology products are suitable for different groups of users, data should be collected from diverse groups of paid and unpaid caregivers, considering their diversity in gender, age, ethnicity, living area, educational level, and socioeconomic status. Governments are suggested to share data with the private sector and provide guidelines regarding data usage and technology development. Robust privacy and security measures should also be implemented to protect sensitive health information.

(6) Strengthening public-private partnership

The collaboration between researchers, developers, care institutions, governments, and civil society is crucial to ensure gender equality and inclusion in digital health technologies for caregivers. Researchers should conduct user-centered research and collaborate with community organizations to reach marginalized populations. The research results should be shared with developers to design technologies that meet the needs of caregivers of diverse backgrounds, and with governments to inform policies.

Governments should coordinate different departments and develop policies to expand technology accessibility and improve usability, including providing training for family caregivers. Care institutions should integrate technologies efficiently and train their professionals. Finally, civil society can participate in evaluation and monitoring to ensure the objectives of equality and inclusion are met.

Seminar and Field Trip

Date: September 10-11, 2024

Venue: Great Skyview Hotel, Taipei, Chinese Taipei

Participating economies: Australia; Canada; Chile; Indonesia; Japan; Malaysia; Mexico; Papua New Guinea; Peru; the Philippines; Chinese Taipei; Thailand; United States; Viet Nam; the Netherlands

Overview

The Seminar was a 2-day event consisting of a 1.5-day seminar and a half-day field trip, including keynote speech, project introduction, 3 panels, and a session of cross-fora sharing. Through expert presentation, best practice sharing, and panel discussion, the seminar aimed to enhance the capacity of APEC members in understanding how to promote gender equality and inclusion in technology development and application and how to increase female caregivers' access and use of digital health technologies for care work.

The field trip included site visits to the Taipei Fuhua Senior Multi-Service Center and the Carer Café, as well as Taipei Medical University Hospital. The field trip aimed to demonstrate best practices and allow in-person discussion on how technology has been used in care work and how to ensure caregivers' well-being.

Summary of Day 1

Opening Remarks

Ming-Hsin Lin, Minister without Portfolio (Chinese Taipei)

Minister Without Portfolio Lin Welcomed all the speakers and participants from 14 economies from both public and private sectors to join the seminar. He pointed out that Chinese Taipei has implemented gender mainstreaming for a long time and identified women's economic participation as one of the domestic policy goals, including promoting gender-friendly workplace that support employment and care and protecting women's economic security. This aligns with the PPWE priorities.

While the healthcare industry is undergoing digital transformation, gender gaps exist. Women perform 80% of unpaid care work in the Asia-Pacific region and consist of 70% of health workers globally, women account for less than 35% of the research and

development personnel in most economies. Therefore, Chinese Taipei proposed the project of Promoting Gender Equality and Inclusion in Digital Health Technology for Caregivers, in the hope to increase gender inclusivity in technology development and application, to ensure female caregivers can benefit from the advancement of digital health technologies.

Chantelle Stratford, Chair, APEC Policy Partnership on Women and the Economy (PPWE)

The PPWE Chair highlighted that closing gender gaps in health care can enable more women participate in the workforce, access to leadership positions, and further contribute to the economic growth. Women are at the forefront of health and wellbeing in our communities, but they are often undervalued and unsupported. The rise of digital health technology presents a unique opportunity to address this inequality and to support caregivers. Therefore, it is vital that the digital transformation is inclusive of women caregivers.

However, women are often excluded from the design, development, and deployment of these new and emerging technologies. They also face barriers such as lack of digital literacy, limited access to devices, and cultural and systemic biases. These not only impact the quality of the care they provide, but also hinder their fair access to the benefits that digital innovations offer. She reminded us that the discussion should not be only focused on technology itself, but on how to harness digital technology to empower women and provide better support for caregivers.

Alberto Tejada, Chair, APEC Health Working Group (HWG)

The HWG Chair pointed out that digital health has the potential to radically transform the way we care for our health, but we must address and overcome the barriers to ensure the transformation is truly inclusive. The technology design, implementation, and accessibility often reflect existing inequalities. Therefore, it is crucial to ensure that these technologies are developed and implemented in ways that promote gender equity and inclusion in all aspects. This involves not only addressing gaps in access to technology, but also including diverse voices in the creation of these solutions.

Through the seminar discussion and collaboration, the HWG Chair hoped that concrete strategies can be identified to improve equity and inclusion in digital health. The goal is to build an ecosystem in which all caregivers have the tools and support they need to provide the best possible care.

Keynote Speech

Caroline Figueroa, Assistant Professor in Digital Health, Delft University of Technology (the Netherlands)

Dr. Caroline Figueroa started by using the Babylon AI symptom checker as an example to show how gender biases are embedded in digital health technology. She then examined how intersectionality translates into technologies from three different perspectives. First, from the perspective of users, women caregivers globally are facing barriers to using digital health technology, such as insufficient digital skills and lack of access to the Internet and digital devices. Particularly, women of color and lower socio-economic status are underrepresented in the research and the use of digital health technology. Second, from the perspective of applications, digital health content is rarely adapted to various levels of digital skills, ages, ethnicities, or socioeconomic statuses. Third, from the perspective of leadership, less than 15% of digital health CEOs in the US are women, and women working in the digital space are paid less, have higher workloads, and often excluded from decision making.

To address these issues, Dr. Figueroa provided several suggestions. First, digital health technology should be designed from an intersectional gender perspective, with inclusive and gender sensitive approach, and women of diverse backgrounds should be involved in the development process. Second, government, companies, academics, and citizens should work together to ensure that new interventions are evidence based and can be safely and sustainably implemented into health systems. Third, gender-responsive policies should be formulated to enhance women's digital skills and technology accessibility as well as to develop safety standards. Finally, more women of diverse backgrounds should be advanced into leadership roles.

Project Introduction

Nai-Ying Ko, Distinguished Professor, Department of Nursing, National Cheng Kung University (Chinese Taipei)

Serving as the project advisor, Dr. Nai-Ying Ko introduced the progress of this project and shared related policies in Chinese Taipei. She started with statistics. In Chinese Taipei, women assume the majority of care work, accounting for 60% of unpaid family caregivers in long-term care, 84% of home care attendants for elderly care, and 83% of nurses and nursing aides in nursing homes. According to the consultation interview results, it is important to provide digital training for caregivers, increase the accessibility and affordability of digital health technology, and adopt an inclusive technology development process to ensure the technology devices meet the needs of caregivers.

In Chinese Taipei, to promote gender equality and inclusion in technology development, the Gender Equality Policy Guidelines identified conducting technological innovation with a gender perspective as one of the gender equality priority issues. All ministries and departments are encouraged to create gendered innovation operation guidelines and to incorporate gender perspective into their scientific research and technological innovation projects. Programs are also implemented to increase women's participation in science and technology research. While this project hopes to increase female caregivers' access and use of digital health technology, the need to address gender inequalities in caregiving and to recognize the value of care work should not be neglected.

Session 1:

Using Digital Health Technology in Caregiving: Opportunities and Challenges

Portia Fernandez-Marcelo, Professor, College of Medicine, University of the Philippines Manila (the Philippines)

Dr. Portia Fernandez-Marcelo first used many international indicators to introduce the current status of the Philippines. For example, the Philippines is ranked the 5th in the ASEAN on the Global Innovation Index 2023. Regarding the eHealth environment, the Philippines is still at the stage of building up. However, in terms of infrastructure, the Inclusive Internet Index 2022 showed that the Philippines is 14th among the 22 economies in Asia, and the gender gap in internet and mobile phone access has widened amidst the Covid-19 pandemic. Additionally, the Philippines slips 9 places in Gender Gap Index 2024.

She reminded us that women in the Philippines have reproductive, productive and community managing roles – they are at the forefront of care work. Equally importantly, women are also at the forefront of technology development and deployment. She herself is part of the National Telehealth Center, and one of the technologies they developed is RxBox, which is a multi-component device designed to provide better access to health care services in isolated and disadvantaged areas. RxBox can capture body signs, measure maternal contraction, and generate reports, thereby reducing workload, increasing efficiency, and increasing confidence on health services. As the Philippine healthcare system is feminized, it is crucial to re-build the bridge to narrow the gender gaps.

Felipe Cortes Leddy, National Director of Nursing, Ministry of Health (Chile)

Mr. Felipe Cortes Leddy introduced its domestic support and care system “Chile Cuida,” which is an intersectoral and integrated network of public, community, and private initiatives for the provision of care services, targeting both care recipients and caregivers. Among the various programs under Chile Cuida, the Caregiver Credential allows for the

registration of caregivers, who then have access to preferential care at certain public and private institutions. Moreover, the Digital Health Department of the Ministry of Health aims to implement digital technologies to enhance the efficiency, accessibility, and quality of health services. The Department holds many innovative programs, such as mental health program and teleconsultation, and all the services provided are free, with a strong involvement of care providers.

Mr. Felipe Cortes highlighted the importance of humanization of health, that is, to provide personalized care adapted to individual needs. To meet this goal, a series of regulations and guiding principles were formulated for the reference of healthcare specialists. Finally, he stated four major challenges that should be addressed: (1) access to health services and support for caregivers in rural areas; (2) digital literacy among caregivers and patients; (3) harmonizing digital health strategies with existing care systems; and (4) balancing technological advancements with the need for personalized care.

Tsu-Ann Kuo, Vice President, Taiwan Association of Family Caregivers (TAFC) (Chinese Taipei)

Dr. Tsu-Ann Kuo first pointed out that East Asian economies face rapid population aging, and women often have to fulfill multiple caregiving roles, as a daughter and as a wife. In Chinese Taipei, there are about 1 million family caregivers, consisting of 70% women and 30% men. The average caregiving duration is 9.9 years, and the daily caregiving time is 13.6 hours. According to a survey, most working caregivers were frustrated with “loss of personal freedom,” “inability to balance work and caregiving,” and “financial difficulties.” The complex relationships between caregivers and care recipients also create stress in the family.

Chinese Taipei's Long-Term Care 2.0 policy provides significant support to caregivers, including respite care, technical training, psychological support, and high-risk assessments. She particularly introduced a resource website called “Four Pots of Money,” which enabled caregivers to identify their needed services and available resources, including care and professional services, transportation, assistive devices and home modification, and respite care. There is also an online tool for family caregiving planning, to enable family members to discuss the division of care work and financing. Besides, there are 129 carer resource centers across Chinese Taipei to provide support for caregivers, with carer cafés offering respite care services. Dr. Tsu-Ann Kuo highlighted the need to increase caregivers' awareness and self-efficacy to use the universal long-term care services, as well as to help them achieve work-life balance.

Session 2:

Developing inclusive technology for care work

Ya-Ching Hsu, Deputy Secretary-General, Red Heart Association (Chinese Taipei)

As the Red Heart Association runs many day care centers, Ms. Ya-Ching Hsu shared how digital health technologies are applied in long-term care institutions. For example, the information system can help manage health information, and the physiological monitoring system can produce data to be integrated in the information system, enabling caregivers and doctors to monitor progress. The Red Heart Association also developed a multimedia interactive software, which allows carers to assist the elderly with dementia in cognitive rehabilitation.

Ms. Ya-Ching Hsu further explained how they introduced digital health technology to middle- and older-aged female caregivers. The digital technology was first introduced into newly established care institutions. This is to ensure that all caregivers, including middle- and older-aged ones, can adapt to technology usage at the onset of their work. Second is awareness raising, emphasizing that digital health technology can improve efficiency and serve as a protective tool for caregivers in case of disputes. On-the-job training were also provided to help caregivers learn digital skills. Finally is collaborative development, to involve caregivers in the design and development of digital health technology solutions to reduce work stress and better meet their needs.

Susan Nio, CEO, LoveCare (Indonesia)

Ms. Susan Nio introduced the LoveCare app that not only matches families with suitable caregivers but also empowers care workers. Specifically, the app has a reporting system to enable care workers to express concerns, protect them from burnout and potential abuse, and allow family members to stay informed on the status of their loved ones. The app also enables users to provide feedback and contribute to the ongoing development of the care device. Additionally, LoveCare provides comprehensive training for care workers, with offline and hands-on sessions and digital access to a library of learning resources. This ensures that care workers can continue their education anytime and anywhere.

Ms. Susan Nio pointed out that economies worldwide are facing the challenge of population aging; therefore, connecting skilled caregivers across borders has become more crucial than ever. As LoveCare is expanding their services worldwide, they incorporated technology in language learning, helping care workers to quickly acquire language skills. In the near future, they will further launch an AI-powered video call with real-time translation, which allows caregivers and clients to communicate using their

own languages. She concluded that the combination of smart matching, comprehensive training, and AI for communication can respond to the rising demand of caregiving globally.

Chenny Xia, CEO, Gotcare (Canada)

Ms. Chenny Xia firstly reminded us that tech-enabled care is not about replacing human care, but about augmenting care with the right technologies to promote independence and reduce overburden. Gotcare provides take-home devices with customized resources not only to help older adults and their caregivers manage their conditions, but also to make them feel more confident and supportive. To increase technology acceptance, Gotcare shifted the focus from technology itself to daily life improvements. Furthermore, they upskilled home and community care workers with digital health training, who then called Health Ambassadors, to provide in-person technology coaching and encouragement.

She particularly highlighted the importance of diversity. The Health Ambassadors consist of care workers representing over 75 languages across Canada, and they can travel with satellite internet backpacks to provide services for citizens living without Internet access. Moreover, to ensure the technology tailored to users' needs, Gotcare adopted the co-design approach, inviting older adults and caregivers to participate in steering committees or program design workshops. She also emphasized the importance of trust. By allowing the users to control who can access their data and what data are shared, users can feel confident in the security of their personal information. As demonstrated by evidence, such technology-enabled care can reduce hospital visits, improve health outcomes, and make care more accessible for everyone.

Thi Trang Nguyen, Associate Professor, Biomedical and Genetics Department, Hanoi Medical University (Viet Nam)

Dr. Thi Trang Nguyen started with the trend of healthcare digitalization in Viet Nam, which aims to enhance personalized healthcare services through human-centered digital health technology designs. This includes electronic medical records as well as AI application in diagnostic systems and health monitoring devices, which can improve patient data management, increase care quality, and reduce costs and workload. She introduced that AI significantly accelerates the prenatal care screening process and helps develop personalized cancer treatment plans, thereby reducing side effects and improving outcomes. AI-powered telemedicine not only increases underserved population's access to timely and effective care, but also allows medical professionals in rural areas to obtain advanced resources and knowledge.

From a gender perspective, Dr. Thi Trang Nguyen indicated that globally, the proportion of women working in the health sector is high, but women's access to and proficiency with technology remains low. Women's insufficient digital knowledge and skills, their exclusion from technology development, and the biases and limitations inherent in socioeconomic circumstances all exacerbate gender digital divide and hinder the improvement of women's health and empowerment. More importantly, if AI models are not trained with balanced data, the AI applications may replicate the existing gender biases and further produced biased outcomes, particularly in women's health. Therefore, incorporating gender perspectives in AI development is crucial to avoid diagnostic errors.

Session 3: Bringing government policy in

Hsi-Wen Wu, Deputy Director-General, Department of Long-Term Care, Ministry of Health and Welfare (Chinese Taipei)

Ms. Hsi-Wen Wu introduced that the Long-Term Care (LTC) 2.0 policy in Chinese Taipei aims to build a continuum of care that is person-centered and community-based, thereby achieving the goal of aging in place for older adults. According to the policy, four types of home/community-based services are provided, namely care and professional services, transportation services, assistive devices and barrier-free environment improvement at home, and respite care services. The government has continued to develop professional long-term care workforce through training and continuing education. By the end of 2023, there were over 97,000 employed care workers registered in long-term care institutions, consisting of 84% women and 16% men.

Ms. Hsi-Wen Wu further shared how the government promoted the application of intelligent technology in the LTC system, which is expected to enhance the quality of care, improve caregivers' work efficiency and reduce workload, and strengthen monitoring and management. First, technological assistive devices are included in the LTC benefits and payment system for home care. Second, for community care, the government encouraged day care centers to use technological assistive devices by establishing SOPs and incentive mechanisms. Third, residential care facilities are encouraged to adopt information systems and five types of intelligent care assistive technology, namely action sensing, mobility, toileting, bathing, and care support.

Fatimah Zuraidah Salleh, Principal Assistant Secretary, Ministry of Women, Family and Community Development (Malaysia)

Ms. Fatimah Zuraidah Salleh stated that although the Malaysia government has implemented many care initiatives, women's labor force participation rate has not improved much due to unpaid care responsibilities. Nevertheless, the current government recognized the value of the care economy and initiated a series of workshops to develop the Care Industry Strategy Framework, which outlined the following six main issues: (1) the need to create a care industry ecosystem; (2) the demand and supply for professional care; (3) gaps in expertise in the industry; (4) the economic effects of establishing professional care; (5) existing legislation and policies; and (6) incentive for industry players.

Accordingly, the Framework constitutes a comprehensive care system, which starts from the individual level and extends to community care, formal care services, respite care, and training, and finally includes funding and policies. The system aims to ensure the equal distribution of care work between women and men, as well as among the state, communities, market, and family. Finally, to promote gender equality and inclusion for caregivers, the Malaysia government has five long-term initiatives: (1) inter-ministerial collaboration and engagement with private sector and NGOs; (2) innovative approach to value and invest in the care economy; (3) research and data collection; (4) community-based initiatives; (5) support for care workers in both formal and informal economies through registration, policies, and programs.

Laura Flores Pinto, Head of Office of International Affairs Monitoring, National Institute of Women (Mexico)

Ms. Laura Flores Pinto shared that in Mexico, the domestic care system was constructed to ensure that caregiving is recognized as a right and to incorporate women in the labor market. In 2022, the first survey on care system was conducted to understand the care service demand and coverage, as well as the impact of caregiving on the lives of caregivers. Accordingly, Mexico has created a Care Map, offering geographically localized information and descriptions of care services at different levels provided by different institutions, with a user-friendly visual design.

Complementary to the Care Map, Mexico recently launched the Care Observatory, which is an interactive digital platform providing infographic information on the supply, demand, and infrastructure of care services. It also includes social indicators that show the care challenges in Mexico. In local practice, Utopias was taken as an example, which serve as cultural, recreational, social, and caregiving spaces. In response to technology adoption in the care sector, Ms. Laura Flores Pinto stressed the importance of preventing the reproduction of existing inequalities and addressing the challenges posed by new forms

of work to ensure decent work. She urged economies to reflect on how technological and innovative tools can alleviate care burden, and how each economy can have its own vision and approach to caregiving.

Almendra Orellana Jorquera, Advisor to the Minister's Cabinet, Ministry of Women and Gender Equality (Chile)

Ms. Almendra Orellana Jorquera started with data. In Chile, the gender gap of people not engaged in paid work due to caregiving responsibilities is larger than 30%, and domestic and unpaid care work contributes to 25.6% of the GDP, exceeding the mining industry. To support caregivers, the Chilean government is promoting a domestic system of support and care called Chile Cuida. This system involves Caregiver Registry, which is integrated into the Social Household Registry to track the number of unpaid caregivers economywide. Moreover, to address unpaid caregivers' challenges of time and economic poverty, Caregivers Credential was created to provide caregivers priority access to public services.

Based on this system, the Chilean government has developed policies to deliver direct benefits to caregivers. For example, free smartphones were delivered to more than 1800 caregivers around Chile, accompanied with a training for them to use online platforms. Additionally, the Chile Cuida Business Network was established to provide sponsorship to companies that provide benefits to registered caregivers. Ms. Almendra Orellana Jorquera concluded by articulating the importance of increasing the identification of caregivers, creating more initiatives for women caregivers to reduce their time and economic poverty, and collaborating with the private sector to address the gender gap in caregiving.

Summary of Day 2

Session: Opportunities for cross-fora collaboration

Alberto Tejada, Chair, APEC Health Working Group

The HWG Chair shared that HWG has been working within the framework of the La Serena Roadmap to ensure women's access to quality health services and eliminate gender gaps. This includes the Healthy Women, Healthy Economies (HWHE) initiative and the Roadmap to Promote Sustainable Economic Advancement for Women Through Cervical Cancer Prevention and Control for 2021 to 2025. In response to this year's APEC priorities, HWG identified gender and health as one of their four priorities, which has set gender-related objectives, including closing gaps in women's access to health and promoting health services with a gender perspective.

This year, the Declaration of the 14th High-Level Meeting on Health and the Economy included a section titled “Intersection between Gender and Health,” showing economies’ commitment to women’s health. For cross-fora collaboration, the HWG Chair invited us to reflect on the possibility of creating new spaces for experience exchange and collaboration, and he proposed that a digital hub for women’s health may serve as a collaborative platform to improve women's health in Asia-Pacific.

Zaahirah Mohammad, Public Health Medicine Specialist, Ministry of Health (Malaysia)

From the HWG perspective, Dr. Zaahirah Mohammad first provided a broader picture of elderly population in Malaysia. With the increased life expectancy and reduced fertility rate, there is an increasing need for caregiving. The challenges in caring for the elderly population include ensuring aging in place, managing multiple comorbidities, and providing long-term care services. For the care of older persons, the Malaysian Ministry of Health not only provides health services in primary, secondary, and tertiary care, but also provides training for caregivers.

Moreover, domestic policies and action plans were enacted for child and elderly health, to ensure all children have access to quality health care services and to promote healthy, active, and productive aging. There is also legislation for childcare centers and elderly healthcare facilities. At the same time, the Ministry of Women, Family, and Community Development also has initiatives for older adults, such as financial assistance, elderly activity centers, and home help. Finally, Dr. Zaahirah Mohammad gave some examples of collaborative efforts. The initiative of Integrated Care for Older People is a collaboration between Malaysia government and WHO to conduct person-centered assessment through a mobile app to develop personalized care plan.

Chonnikan Ariyakul, Researcher, National Science and Technology Development Agency (Thailand)

Ms. Chonnikan Ariyakul represents the Partnership on Science, Technology and Innovation. She focused on Thailand’s digital health policy practices and strategies. The long-term care system includes a 3C (Care manager, Caregiver, Care plan) program that allows registration of care managers and caregivers in the database system and facilitates the development of care plans. In particular, caregivers can be registered as “digital caregivers” after taking E-learning courses. In Chiang Mai, the government launched a trial digital health platform, which involves deploying IoT devices in care facilities by healthcare providers, supporting caregivers with an application that allows for remote health monitoring, and providing tele-medicine services.

Moreover, the Ministry of Public Health has developed the Digital Health Strategy, which includes not only the use of ICT and mobile devices for health care but also digital health innovation. One of the key focuses is to create a digitally capable health workforce, including building capacity and digital literacy for health workers. Ms. Chonnikan Ariyakul suggested that it is also important to develop digital health knowledge exchange systems to allow cross-sector collaboration and promote inclusive technology development.

Hao-Ming Chen, Section Chief, Workforce Development Agency, Ministry of Labor
(Chinese Taipei)

As a representative from the Human Resource Development Working Group, Mr. Hao-Ming Chen introduced that the Workforce Development Agency has conducted three APEC projects since 2020 that aimed to close digital skill gaps among caregivers by providing focused training, to enable caregivers to use technology effectively, enhance care quality, and improve work efficiency. With a recognition of women as primary care providers, they offered targeted training programs to enhance women's skills and promote their professional growth. The project outputs include a training package, which serves as a guideline for digital skills training in healthcare services, particularly long-term care.

Mr. Hao-Ming Chen shared the key findings of their projects. As digital skills and technical aids are increasingly crucial in the healthcare sector, enhancing caregivers' digital literacy is indispensable. Since women constitute the majority in the healthcare industry, upskilling of the healthcare workforce also supports women's empowerment. However, careful attention should be paid to the ethical use of digital tools and data privacy. Finally, he mentioned another project series "Women's Economic Empowerment, New Media Digital Upskilling" in collaboration with PPWE. The projects integrated gender awareness into new media marketing training for women.

Discussion: Next steps for inclusive future

In the discussion session, the participants were divided into three groups to discuss the following two questions:

1. How different APEC working groups can work together to enhance gender equality and inclusion in digital health technology for care work?
2. What are the possible future actions that can be taken by different stakeholders in your own economies?

For the first question, regarding the cross-fora collaboration within APEC, it was

suggested that gender perspectives can be included in the APEC agenda or framework related to digital health. APEC can also establish a sub-working group dedicated to digital health, with special attention to bridging digital gaps and ensuring accessibility for people from diverse backgrounds. Moreover, workshops and forums can be held to exchange experiences and share best practices among APEC communities and between public and private sectors. The participants also suggested that APEC working groups can work together to increase gender awareness and break gender stereotypes, and to develop strategies for integrating gender inclusion in digital health, such as a gender equality checklist. It is crucial if APEC can establish funding to support the private sector in inclusive technology innovation and caregiver training.

For the second question, regarding the possible future actions taken by different stakeholders, the participants suggested that the first step is to identify the stakeholders and their roles, and then to identify the needs and goals. The suggested concrete actions include formulating standards and regulations on the application of technology in caregiving; improving different types of infrastructure to increase the accessibility of diverse groups; providing training, technical support and financial assistance for caregivers; promoting user-centered design and inviting start-ups to innovate inclusive technologies; and encouraging data sharing while protecting data privacy. All the above actions require the collaboration between different sectors or departments.

Field Trip

The field trip was held in the afternoon of September 11, which included site visits to Taipei Fuhua Senior Multi-Service Center and Care Café, as well as Taipei Medical University Hospital. The purpose was to demonstrate best practices and allow in-person discussion on how technology has been used in care work and how to ensure caregivers' well-being.



1. Taipei Fuhua Senior Multi-Service Center and Care Café

(1) Taipei Fuhua Senior Multi-Service Center

The Taipei Fuhua Senior Multi-Service Center provides elderly day care, home services, and night respite care services. It also serves as a community care station providing courses, activities, and shared meals for older adults. In particular, the Center has a program called ten-minute care circle, which provides

daytime care for older adults living within a ten-minute walking distance to the center, including personalized volunteer care service.

The Center collaborated with technology vendors to develop different systems according to service requirements. For example, the WAP system is for social workers and volunteers to upload and report their care services. Considering the volunteers' age ranging from 60 to 80 years old, the system was designed to be a questionnaire format with clickable options, to increase the ease of use and reduce the possibility of errors. In addition, the system will remind volunteers to complete the record, thus reducing social workers' time spent on checking records. It also has functions such as announcements, individual messages, and surveys to increase the volunteers' engagement.

(2) Care Café

The Care Café, established in 2018, is located on the first floor of Taipei Fuhua Senior Multi-Service Center and managed by TAFC. The café aims to provide a respite space for family caregivers, allowing them to temporarily step away from their demanding caregiving responsibilities and relax.

In Care Café, family caregivers can use "respite coffee vouchers" to redeem for all sorts of drinks and desserts and participate in regularly organized respite activities to foster interaction and support among one another. In addition, the café features a wall called "long-term care map," providing information about long-term care resources. Volunteers also regularly assist by engaging caregivers in warm conversations to help them understand the available resources.

The Care Café welcomes everyone to get some rest and chat. Through this space, we hope to raise awareness in society about the issues faced by family caregivers and ensure that each caregiver feels cared for and supported.



2. Taipei Medical University Hospital

Taipei Medical University Hospital (TMUH), affiliated with Taipei Medical University (TMU), was founded in 1976 and upgraded to a pre-medical center by 2024. With nearly 800 beds and over 2,000 staff, TMUH excels in clinical service, medical research, and education.

TMUH emphasizes digital health technology and telemedicine. TMUH utilizes smart devices, video consultations, smart glasses,

physiological measurement equipment, and smart watch bracelets for real-time medical care. Telemedicine services extend to long-term care institutions, remote areas, and ocean fishing vessels.

The hospital focuses on comprehensive medical services, including cancer, cardiology, geriatrics, pediatrics, and international healthcare. It also engages in community health outreach and has been involved in Eswatini's medical system since 2009.

Conclusion and Policy Recommendation

Conclusion

This Summary Report summarizes the outcomes of the Consultation Interview and Seminar, including the experiences and insights from government officials, digital health technology companies, care providers, and scholars. Based on the findings of these two events, this project can be concluded into the following four points:

1. **While digital health technology can be a tool of empowerment for caregivers, it is critical to address the barriers hindering their technology adoption.** Technology has the potential to support the caregiving role and empower caregivers, such as reducing their time spent on administrative work, providing learning resources, and providing a network of mutual support. However, obstacles to their adoption of digital health technology should be firstly addressed. These include insufficient digital literacy, lack of Internet access in rural areas, high cost of the digital devices, and developed technology not meeting the actual caregiving needs.
2. **Recognizing the diversity among caregivers and adopting an intersectional approach is crucial to ensure no one is left behind.** Caregivers consist of diverse groups of people, varying in gender, age, educational level, living area, socioeconomic status, and language, and they may be professional care workers or unpaid family caregivers. Therefore, digital health technology must be designed from an intersectional perspective and adapted to different skill levels, ages, or languages, in order to meet the needs of various groups of caregivers.
3. **In the development of digital technology for care work, the human aspect should be prioritized over the technology itself.** Caregiving is a human-centered task, but the development of digital health technology is often reduced to merely an engineering problem. Therefore, this project emphasizes more on the caregiving aspect rather than the technical aspect and highlights the importance of including caregivers in the technology design, development, and evaluation processes.
4. **The fundamental goal is to recognize the value of care work and to reduce inequalities in caregiving.** While this project aimed to increase female caregivers' access and use of digital health technology for caregiving, it was not meant to reinforce the gendered division of labor. Instead, by focusing on the relationship between care work and digital technology, this project sought to recognize the value of care work,

encourage support for caregivers and investment in the care economy, and highlight the need to eliminate inequalities in caregiving, including reducing women's caregiving burden and redistributing care work between men and women.

Policy Recommendations

To ensure diverse groups of caregivers can adapt to and truly benefit from the digitalization trend of the healthcare sector, actions should be taken to support caregivers' adoption of digital health technology and to ensure that the developed technology can adequately meet caregivers' needs and support caregiving roles. As this topic is related to multiple stakeholders, including caregivers, care institutions, technology developers or companies, government officials, and academia, cross-sector collaboration is key to achieving the goals.

Therefore, this project proposed policy recommendations in three aspects: technology adoption by caregivers, technology development and integration, and cross-sector collaboration.

1. Technology adoption by caregivers

- **Providing digital training and technical assistance for caregivers**

The lack of digital literacy and skills and the complexity of the technology devices are the main reasons hindering caregivers' adoption of digital health technology, especially for middle- and older-aged female caregivers. Thus, governments, care institutions, and digital health technology companies can provide digital training programs and learning resources to enhance caregivers' digital literacy and skills, with curriculum and schedule tailored to both professional care workers and home-based family caregivers. In addition, digital health technology companies should provide technical assistance to help solve complex technical problems.

- **Enhancing caregivers' access to Internet and digital health technology products**

The operation of digital technology relies heavily on Internet connectivity. Therefore, governments should improve Internet infrastructure to ensure technology adoption by caregivers living in rural and remote areas. At the same time, technology companies can develop offline functions or mobile applications that require minimal data usage to allow caregivers to use devices with limited Internet access. For example, Gotcare from Canada uses satellite internet backpacks to provide services in areas without Internet access.

- **Increasing the affordability of digital health technology products**

Family caregivers have a high possibility of giving up their career to take care of their family members, resulting in economic poverty. However, digital health technology products are often expensive and not covered by government subsidies. Thus, to increase affordability, governments can increase subsidies and coverage for emerging digital health technology products. For example, the Chinese Taipei government added technological assistive devices into the long-term care benefits and payment system.

2. Technology development and integration

- **Adopting user-centered co-design approach**

To ensure that the developed technology is easy to use and meets caregivers' actual needs, it is vital to adopt a user-centered co-design approach in the technology development process. This includes conducting participatory studies to understand caregivers' needs and concerns, involving caregivers in the product design process, and conducting product assessment with caregivers to obtain their direct feedback. Notably, attention should be paid to the diversity of caregivers, such as gender, age, ethnicity, and educational level, to ensure the results are not biased toward a specific group of people.

- **Involving more female engineers and designers in the technology development process**

While caregivers are mostly women, technology developers are predominantly men. Therefore, not only should caregivers be included in the technology design process, but more women engineers should also be part of the development team. For example, it was suggested that gender balance can be set as a funding criterion to encourage research teams to recruit more women. This is to ensure the technology is developed with different perspectives and experiences, increasing its fairness and promoting inclusivity.

- **Encouraging gender-responsive technology innovation and investing in women-led digital health companies**

Technology innovation requires the efforts of the private sector, but private sector may lack funding and gender awareness. Moreover, women are under-represented in the leadership roles in digital health companies, and only 2% of venture capital funding goes to women founded companies. Therefore, governments are suggested to provide incentives and guidelines to encourage gender-responsive technology innovation and invest more in women-led digital health companies.

- **Developing regulations and standards for technology integration and data collection**

To integrate digital health technology in caregiving settings, standards, regulations, and review systems should be developed to ensure the safety and effectiveness of the technology and the harmonization between technology application and the existing care systems. In addition, legal frameworks and guidelines should also be formulated for data collection and sharing involved in technology development and application, to prevent data biases and to enhance the protection of personal information.

3. Cross-sector collaboration

- **Enhancing inter-ministerial collaboration and public-private partnership**

The promotion of gender equality and inclusion in digital health technology for care work is related to the efforts of different ministries and sectors, and thus requires strong inter-ministerial collaboration and public-private partnerships. For example, Malaysia's Ministry of Women, Family and Community Development and Ministry of Health worked together to train volunteers for Home Help Program; the Chilean government established the Chile Cuida Business Network to sponsor companies that provide benefits to registered caregivers. Furthermore, community-based organizations should be included as key partners in identifying local caregivers' needs, delivering training programs or other support services, and facilitating caregivers' access to digital health tools.

- **Encouraging APEC level collaboration**

At APEC level, different APEC working groups can work together to formulate strategies or guidelines to incorporate gender perspectives in digital health, as well as to recognize the value of care work and bridge the gender gaps in caregiving. They should also continue the collaborative efforts on increasing gender awareness, breaking gender stereotypes, and promoting gender equality, such as implementing the La Serena Roadmap. In addition, it is important to hold workshops and conferences for experience exchange and best practice sharing among different working groups.

Annex I: Seminar Agenda

September 10 Venue: Wanda Room	
Time (GMT+8)	Agenda
9:30-10:00	Registration
10:00-10:15	Opening Remarks • Ming-Hsin Lin, Minister without Portfolio (<i>Chinese Taipei</i>) • Chantelle Stratford, Chair, APEC Policy Partnership on Women and the Economy • Alberto Tejada, Chair, APEC Health Working Group
10:15-10:20	Group Photo
10:20-10:40	Keynote: Women in care work and technology development <i>While women undertake the majority of paid and unpaid care work and therefore are the major potential users of digital health technologies, researchers and developers for the digital health technologies are mostly men. The keynote speech aims to provide a broader picture for today's discussion, depicting the nexus between gender, care, and technology.</i> Speaker: Caroline Figueroa, Assistant Professor in Digital Health, Delft University of Technology (<i>the Netherlands</i>)
10:40-11:00	Project Introduction Nai-Ying Ko, Distinguished Professor, Department of Nursing, National Cheng Kung University (<i>Chinese Taipei</i>)
11:00-11:15	Break

11:15-12:20	Session 1: Using Digital Health Technology in Caregiving: Opportunities and Challenges <i>This session aims to depict how digital health technologies are applied in care work and bring opportunities to caregivers, the factors that hinder caregivers' adoption and use of these technologies, and the challenges involved in the development of affordable and user-friendly technology products for caregivers.</i> Moderator: Nai-Ying Ko, Distinguished Professor, Department of Nursing, National Cheng Kung University (<i>Chinese Taipei</i>) Panelists: (15 min each) • Portia Fernandez-Marcelo, Professor, College of Medicine, University of the Philippines Manila (<i>The Philippines</i>) • Felipe Cortes Leddy, National Director of Nursing, Ministry of Health (<i>Chile</i>) • Tsu-Ann Kuo, Vice President, Taiwan Association of Family Caregivers (<i>Chinese Taipei</i>)
12:20-13:50	Lunch
13:50-15:10	Session 2: Developing inclusive technology for care work <i>From the perspective of research and development, this session will explore approaches and share good practices on how to ensure that digital health technologies are inclusive and meet the needs of diverse users, so that caregivers of diverse backgrounds, the majority of whom are women, can easily access and use these technologies.</i> Moderator: Caroline Figueroa, Assistant Professor in Digital Health, Delft University of Technology (<i>The Netherlands</i>) Panelists: (15 min each) • Ya-Ching Hsu, Deputy Secretary-General, Red Heart Association (<i>Chinese Taipei</i>) • Susan Nio, CEO, LoveCare (<i>Indonesia</i>) • Chenny Xia, CEO, Gotcare (<i>Canada</i>) • Thi Trang Nguyen, Associate Professor, Biomedical and Genetics Department, Hanoi Medical University (<i>Viet Nam</i>)

15:10-15:35	Tea Break
15:35-16:55	Session 3: Bringing government policy in <i>In this session, government representatives are invited to share what governments can do to promote gender equality and inclusion in technology development and application, including increasing female caregivers' access and use of technologies for care work, to ensure female caregivers of diverse backgrounds can benefit from the trend of digitalization and technological innovation.</i> Moderator: Ching-Yi Lin, Deputy Minister, Ministry of Health and Welfare (<i>Chinese Taipei</i>) Panelists: (15 min each) • Hsi-Wen Wu, Deputy Director-General, Department of Long-Term Care, Ministry of Health and Welfare (<i>Chinese Taipei</i>) • Fatimah Zuraidah Salleh, Principal Assistant Secretary, Ministry of Women, Family and Community Development (<i>Malaysia</i>) • Laura Flores Pinto, Head of Office of International Affairs Monitoring, National Institute of Women (<i>Mexico</i>) • Almendra Orellana Jorquera, Advisor to the Minister's Cabinet, Ministry of Women and Gender Equality (<i>Chile</i>)
17:30-20:00	Post-Meeting Survey

September 11
Venue: Wanda Room

Time (GMT+8)	Agenda
9:30-10:00	Registration
10:00-10:50	Opportunities for cross-fora collaboration <i>As this seminar touches on cross-cutting issues on gender equality, care work, and technology innovation, this session will provide an opportunity for different APEC fora to share their related work and explore possible collaborations on promoting gender equality and inclusion in digital health technology for caregivers.</i> Moderator: Chantelle Stratford, Chair, APEC Policy Partnership on Women and the Economy Co-moderator: Nai-Ying Ko, Distinguished Professor, Department of Nursing, National Cheng Kung University (Chinese Taipei) Panelists: (10-12 min each) • Alberto Tejada, Chair, APEC Health Working Group • Zaahirah Mohammad, Public Health Medicine Specialist, Ministry of Health (Malaysia) (HWG) • Chonnikan Ariyakul, Researcher, National Science and Technology Development Agency (Thailand) (PPSTI) • Hao-Ming Chen, Section Chief, Workforce Development Agency, Ministry of Labor (Chinese Taipei) (HRDWG)
10:50-11:40	Discussion: Next steps for inclusive future Moderator: Nai-Ying Ko, Distinguished Professor, Department of Nursing, National Cheng Kung University (Chinese Taipei) Co-Moderator: Chantelle Stratford, Chair, APEC Policy Partnership on Women and the Economy <i>Break-out room discussion:</i> 1. How can different APEC working groups work together to enhance gender equality and inclusion in digital health technology for care work? 2. What are the possible future actions that can be taken by different stakeholders in your own economies?

11:40-12:00	Meet at the Lobby
12:00-12:30	Travel
12:30-13:30	Lunch
13:30-15:00	Site Visit 1: Taipei Fuhua Senior Multi-Service Center and Care Café
15:00-15:30	Travel
15:30-17:00	Site Visit 2: Taipei Medical University Hospital



PROMOTING GENDER EQUALITY AND
INCLUSION IN DIGITAL HEALTH TECHNOLOGY
FOR CAREGIVERS