



**Asia-Pacific
Economic Cooperation**

Advancing Free Trade
for Asia-Pacific **Prosperity**

APEC Symposium on Developing New Leadership Capabilities in Response to the Work Evolution in the Digital Age

APEC Human Resources Development Working Group

September 2022



**Asia-Pacific
Economic Cooperation**

APEC Symposium on Developing New Leadership Capabilities in Response to The Work Evolution in the Digital Age

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SUMMARY REPORT

APEC Human Resources Development Working Group

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INTRODUCTION

On 15-16 June 2022, the ***APEC Symposium on Developing New Leadership Capabilities in Response to the Work Evolution in the Digital Age*** was held *virtually*, co-sponsored by Chile; Hong Kong, China; Malaysia; Japan; New Zealand; Peru; the Philippines; Russia; Chinese Taipei. The symposium was held under the APEC Human Resources Development Working Group with a view to contributing to the implementation of the APEC Leaders' commitment in 2017 "*to strengthening human resources development, including through ... up- and re-skilling to increase workers' employability, mobility and preparedness for the digital age; and ensure that active labor market policies can better match the needs of the labor market with various aspects of skills training and development*", undertaking the **APEC Framework on Human Resources Development in the Digital Age** to boost the regional cooperation for the *Future of Work in the digital age and labour market policy implications* and the **Action Agenda on Advancing Economic, Financial and Social Inclusion** to *strengthen human resource development policies for the digital age and the future of work*.

The Symposium gathered about more than 100 participants, including representatives of related ministries, agencies, experts, scholars, enterprises from APEC member economies, representatives of APEC Human Resources Development Working Group (HRDWG), Policy Partnership on Science, Technology and Innovation (PPSTI) and international organizations such as the United Nations Economic and Social Commission for Asia and the Pacific (UNÉCAP), the World Bank (WB), the Asian Development Bank (ADB), the International Labour Organization (ILO) and the Organisation for Economic Co-operation and Development (OECD). The Symposium was opened by Ms. Tran Bao Ngoc, Director General of the Department of Multilateral Economic Cooperation, Ministry of Foreign Affairs of Viet Nam, followed by the Keynote Address by Prof. Dong Sun Park, APEC HRDWG Lead Shepherd.

The project's overall objective is to identify and build new leadership capabilities for participants, particularly women entrepreneur in response to the work revolution in the digital age through emphasizing the need to adjust the leadership styles; sharing best practices and exchange knowledge in managing the integration of technology in the workforce and promote the inclusion. Furthermore, the objective of the project is more important than ever, when the number of unemployment has been increased and the shift in global value chains, the nature of work has been accelerated due to COVID-19 as the project's objective would contribute to improve the capacities of leaders to manage their labors effectively for the resilience and responsiveness of their business towards future economic disruption. Recommendations will be reported to the HRDWG to contribute to the implementation of the 2021 Aotearoa Plan of Action.

KEY ISSUES DISCUSSED

The symposium was opened by the Remarks of Ms. Tran Bao Ngoc, Director-General of the Department of Multilateral Economic Cooperation, Ministry of Foreign Affairs of Viet Nam, followed by the Keynote Address by Prof. Dong Sun Park, APEC HRDWG Lead Shepherd.

The two-day symposium was then divided into 4 sessions.

SESSION 1

The First Session on “Work Evolution In The Digital Age-Redefining And Rethinking The Role Of Leadership” was chaired by Dr. Nguyen Duc Tung, Director General, Office of the National Private Economic Development Research Board.

Mr. Jonathan Wong, Chief of Technology and Innovation of the Trade, Investment and Innovation Division of ESCAP started his presentation with a brief introduction of ESCAP’s work on technology and innovation.

After going through the current situation, Mr. Jonathan Wong stressed the need to develop the next generation of public servants and institutions in the digital age. The key question was “how can we equip public servants with the digital know-how and skills to deliver more efficient and effective public services in the digital age?”. The ESCAP has been focusing on the public sector, more specifically public workers and leaders by equipping them with necessary digital skills to succeed in the digital age.

Furthermore, Mr. Wong believed that there are many different factors that can contribute to leadership capabilities and that we should complement digital skills with existing philosophies and ethical skills as it is equally important within the digital world that raises many ethical dilemmas.

Better coordination with the private sectors has also been highlighted as the key factor to delivering sustainable and inclusive development objectives in the digital age as the private sector constantly drives digital transformation.

In this regards, Mr. Jonathan Wong focused on 3 following key questions:

- Will workers’ protection be displaced by frontier technologies?
- How can we develop technology for inclusive and sustainable development?
- How can we develop cost-effective technologies for the poorest people to benefit from?

Lastly, he concluded his presentation with 4 key messages:

- Prioritise both digital and non-digital skills to develop next generation public servants for the digital age.
- Consider the pros and cons of engagement with tech companies to deliver more efficient and effective public services.

- Provide incentives to the private sector to incentive re-skilling and life-long learning particularly to protect the workers most vulnerable to technological job displacement.
- Provide incentives and an enabling environment for the next generation of tech business leaders to (i) think about the people and the planet along with profit; and (ii) develop inclusive business models.

Mr. Thomas Abell, Advisor and Chief of Digital Technology for Development Digital Technology for Development Unit, Asian Development Bank listed the Key Technologies Driving Exponential Change, including Microprocessors, Memory, Wireless Communications, Cloud Computing, Social Networks, Fintech, e-Commerce, Solar Power, Batteries, AI, Robotics, Genetics, VR/AR, Quantum.

Mr. Thomas Abell also raised the question about the main driver of digital technology. According to Moore's Law, Transistor count doubles every 24 months, 10,000,000 x improvement over 50 years. Then he went to conclude that Semiconductor technology is the core driver of all digital technologies.

Taking a deeper thought in the role of leadership, Mr. Thomas Abell confirmed that Digital leaders must understand hype cycles which is split up to 2 types: hype and anti-hype.

Mr. Thomas Abell raised the key questions for leaders. About this one, Amara's Law showed that we have overestimated the change that will occur in the next two years and underestimated the change that will occur in the next ten.

The key questions for leaders are the following:

- What technology changes will occur in your environment?
- What technology adoption will your organisation drive directly?
- What changes will require cross-sector collaboration?

Finally, he listed Development Implications of Digital Technologies:

- Social Protection: new models needed for "Gig Economy" workers who are a new class of informal workers.
- Cyber-security: Citizens and businesses need help addressing the increasing challenges.
- Data Privacy: Digital platforms collect tremendous information about their customers.
- Data Regionalization: Economies have a difficult regulatory challenge in trying to keep data on citizens within their regulatory control without losing access to global platforms.
- Alternative Models: Different approaches to digital platforms may evolve to solve some of the challenges.

Mr. Christian Viegelahn, regional Labour Economist from the International Labour Organization presented Digitalization, Leadership and Jobs for a human-centred recovery.

Firstly, he presented 2 charts showing that the COVID-19 crisis has led to significant working hour losses and widespread employment, especially among women. Besides, he showed that APEC has been witnessing unequal impact, uneven recovery and employment uncertainty since 2019.

Furthermore, there was also a slight decrease in the automation and digitalization of workplaces in 2019 and 2020 when compared to the previous 2 years while attitudes and perceptions towards digitalization in the labour market context tend to be largely positive

Mr. Viegelahn Christian emphasised that Accelerated digitalization requires leadership to maximising opportunities and addressing challenges.

He also noted that Digital skills are core skills for life and work. However, the future of work is not high-skilled alone.

In fact, Digitalization, amongst other factors, is changing sectors, occupations and tasks. It could supports people through transitions and people could use digitalization as a tool to improve employment and skills policies

Dr. Abla Safir, Senior Economist from the World Bank talked about Leadership and other socio-behavioural skills in the digital age.

Dr. Safir presented the 3 key findings from the research made by the World Bank in 4 developing South-East Asia economies (Malaysia, Cambodia, Viet Nam and Thailand) to identify the skills required in the digital age in this region.

- Highly digital jobs are still uncommon in developing South-East Asia. Only 4,7% of workers can be classified as working in “highly digital” occupations.
- Employers ask for digital skills in all jobs, regardless of how digitally intensive those jobs are. All the 127 occupations listed in the 3-digit International Standard Classification of Occupations (ISCO), even low-digital jobs, require some use of digital technologies.
- Non-digital skills are highly demanded even in highly digital occupations.

Looking deeper into socio-behaviour skills, Dr. Safir showed that these skills include leadership and other dimensions that relate to leadership. While 6 percent of skills defined in highly digital occupations are socio-emotional, 12 percent of skills required by very-low-digital occupations are socio-emotional, as compared to 5-8 percent of skills for low and medium digital occupation levels. Breaking down by skills subsets, relationship skills (a socio-emotional skill) are a few percentage points more expected in very-low-digital occupations than in highly digital occupations.

Statistics also showed that leadership and related skills are in high demand while leaders tend to specialise in more basic or intermediate digital skills

In conclusion, Dr. Abla Safir highlighted 3 lessons:

- Cognitive, socio-behavioural, and job-specific knowledge are certainly still needed, even in highly digital occupations.
- Basic digital skills are in demand across the board and all workers and students, need to learn them.

- Intermediate and advanced digital skills are needed by a small share of workers and students in the short-run, though this demand will grow as technological adoption continues.

SESSION 2

The Second Session on “Building Leadership In The Digital Age Best Practices And Success Stories In The Asia - Pacific” was chaired by Mr. Christian Viegelahn, regional Labour Economist from the International Labour Organization.

Dr. Nguyen Duc Tung, Director General, Office of the National Private Economic Development Research Board discussed the shifting Management and Leadership Roles in the Digital Age in the case of Viet Nam.

Dr. Nguyen Duc Tung started his presentation with an introduction of the structure of the presentation: (1) The shaping of management and leading in the digital age, (2) The roles of leadership and management in the digital age, (3) Advantages and Challenges, (4) Suggested solutions, (5) The case of Viet Nam.

(1) Business leaders and managers are changed daily and disruptive technology presents new opportunities and challenges for them.

(2) The roles of the leader include requiring the right questions instead of just providing the right answers; managing the changes; supporting employees to adapt to digital transformation; making data-driven decisions.

(3) The challenges are presented as: how to apply social media tools to foster collaboration across all departments; how leaders adapt to the rise of the on-demand economy (Airbnb, Amazon, Binance, etc.); how can leaders create a workplace free of harassment and discrimination for employees,...

(4) To solve challenges, he provided 4 solutions for digital leaders and managers:

- Actively absorbing to improve the ability to catch up with new technology trends under the impact of the digital era on leadership and management;
- Proactively detect and assess emerging business models or threats early and identify new technologies and their potential impacts;
- Putting in place strategies to deal with the knowledge gaps they and their employees lack;
- Building an open, fair working environment and encouraging creativity from different levels in the organisation/enterprise.

(5) Dr. Nguyen Duc Tung presented of the case of PNJ with some impressive figures. The company was founded in 1988, grew from 2 to 353 shops, reached 4000 employees and recorded a growth of 12% during the pandemic.

The key strategies applied by PNJ were: empowering young people to lead; leading the changes and controlling the changes; innovating when they're nearing the top, not preparing to reach the top; experimenting with new technologies and business models; Applying new governance models on digital platforms and encouraging creativity; Building a harmony working place with corporate culture.

Mr. Ruben Alexis Ocampo Corrales, Labor Economics Specialist, Ministry of Labor and Employment Promotion of Peru talked about Ethical Leadership in an Era of Complexity and Digital Change.

Mr. Ruben Alexis Ocampo Corrales posed the problem of difficulties and high costs of access to labour information due to the scattered labour market information, different information needs, not fully exploited information, high transaction costs to access information and Non-standardized information.

One solution that has been offered is Peru's Labour Market Information System (SIMEL). It is a Network that provides institutional and technological support to integrate and analyse labour market information which comes from various public and private sources in Peru. It delivers labour information services with a user-centred approach that allows them to make informed decisions. The introduction of SIMEL contributes to reducing transaction costs and serves as an unified and easy-to-access source of information for academics and policymakers.

He also stated that information needs varies between different actors, including Public servants; Employers and education entities; Internal ministry offices in charge of designing and implementing SNE services...

The services at SIMEL are:

- Labour Market Information Service (CE)
- Web repository of labour indicators (.STAT)
- Discover Occupations and academic training modules
- Indicators derived from job searching websites scrapping
- Monitoring Dashboards
- Press releases
- Research documents
- Website
- Microdata
- Georeferenced labour information query system
- OSEL Document Repository
- The inter-institutional database sharing mechanism

Until now, the three key components of SIMEL are: Vocational Orientation, Occupational data outlook, Publications and databases. SIMEL is directed to improving the lives of everyone with an emphasis on the worker, including less unemployment and inactivity by reducing transaction costs associated with information imperfections, Improving employability by helping coordinate between the education system and the labour market.

Mr. Alain Del Pascua, Undersecretary for Administration, Department of Education, the Philippines sent a pre-recorded presentation on the topic of Politics, Leadership and ICT Governance.

Mr. Alain Del Pascua emphasised the critical role of leadership and encouraged leaders today to deal with the unprecedented changes of the digital age, such as transitions, disruptions, uncertainty, and ambiguity. The Philippines is now doing its best to ensure that all sectors are provided with equal opportunity and access to education in order and to secure the stability, employability, and competitiveness of the labour market in the era of the Fourth Industrial Revolution.

Talking about the issue of leadership, Mr. Del Pascua defined strong leadership as responding proactively in consideration, using available resources to support initiatives, and heading towards the goal of providing high quality education.

ICT Governance holds an important responsibility in providing information and communications technology services for education. In the use of ICT, school public teachers are witnessed to actively join empowerment training programs online and capacity-building sessions.

In the end, Mr. Del Pascua encouraged the community to fight and innovate for the youth to be competitive and valuable in the global industry.

Mrs. Katherine Vergara, Undersecretariat of International Economic Affairs, Ministry of Foreign Affairs of Chile presented the eradicating Gender Inequality in Promoting the Role of Female Leadership in the Digital Age

In the beginning, Mrs. Vergara presented research on the *Gender Gap in technology*, particularly *in studying computer science in the United States*. According to the research, in the past, very few women studied computer science in the U.S. However, since 2010, we witnessed a change in which women took up more roles in the science industry.

Fortunately, there is a difference in people's perspectives on women in the old paradigm and digital age paradigm and the latter seems to be more positive.

In the end, Mrs. Vergara called for trust in women's leadership. She was successful in motivating women in developing themselves and also persuading the audience to accept women in all areas of the digital era.

SESSION 3

The Third Session "Exploring Innovative Solutions To Improving Leadership In The Digital Age" was chaired by Professor MAEDA Mitsuhiro, Advanced Institute of Industrial Technology of Japan, Secretary General, Asia Professional Education Network (APEN)

Prof. Dennis Galvan, Dean and Vice Provost for the Division of Global Engagement, Vice Provost for Strategic Initiatives, University of Oregon presented innovative solutions to improve workplace effectiveness in the digital age and promote transformational leadership from a higher education perspective.

Prof. Galvan presented the 4 imperatives for all people in the era of work evolution, especially those concerned with education and training:

- (i) Agile and easy connection across digital media to make sure that education and training work well in social media and meeting platforms;

- (ii) Cross-cultural humility and savvy, especially for people whose cultures are positioned more widely and more dominantly in the Asia Pacific economy;
- (iii) Re-skilling without heavy investment of time and energy;
- (iv) Leadership (“teamship”) skills.

From a higher education perspective, Prof. Galvan emphasized the need for promoting the inclusion of hands on experiential education within the curriculum so that the students will have the opportunities to practice the skills that they have learned. Furthermore, experiential education could be tied directly to the industry, to the needs of government and other societal partners. However, universities have to remain focused on the core values while making them more relevant to the need of our economies.

Additionally, the COVID-19 has accelerated latent crisis of relevance higher education, especially given the widening of access alongside cost explosion. The pandemic has also put business models at risk and speeded up conversion to experiential learning, expanded inclusivity, partner relevance... making all mediated on digital platforms.

Prof. Dennis Galvan gave some example about how the University of Oregon reinvented higher education and training for the digital era: 1) #NoPassportNeeded - a virtual study abroad program and #NoVisaNeeded – a virtual international enrollment program; 2) APRU - a Virtual Student Exchange program; 3) Teaching Online Webinar Series via APRU; 4) APRU Climate Change Simulation; 5) Virtual Global Leadership Challenges; 6) Corona Corps; 7) Virtual Internships-based Degrees.

Prof. Dennis Galvan then emphasized the need to recognize following next generation needs and demands: Tangibility of skills; Application; Career readiness; Value proposition. It is also important to hold to the idea that educators are mentors, not just some other kind of service providers and make sure education includes things students may not know they want...

In conclusion, Prof. Dennis Galvan suggested some lessons for APEC economies, such as reformulating education around experiential learning and external partnerships, enhancing ministerial coordination, fostering diffusion and adaptation, Up and down the higher education “food chain”.

Ms. Mahuran Saro Sariki, Vice President of Group Research, Development & Policy, and Malaysian Professional Talent, discussed how to create a Sustainable Workforce through Digitalization and explored different Workplace Practices to Increase Employee Engagement.

Ms. Mahuran presented a report entitled “**Work Re-imagined Employer Survey 2020**”, addressing the situation in which most employees require flexibility in work and showing that most companies have an interest in extensive hybrid work changes. The strategy for this phenomenon contains two tactics: (1) Retaining talent and (2) Attracting talent.

Then, Ms. Mahuran truly appreciated the flexibility in work arrangements, particularly in working times (allowing workers to choose the starting and ending time), workplace, and working hours (allowing employees to have time off).

Ms. Mahuran Saro Sariki also introduced the trend of making a revolution in the workplace in the future. 4 models of workplaces were given as examples: traditional, semi-flex, mixed, and professional. These were respectively arranged according to their degree of flexibility from low to high.

Mr. Le Dinh Hieu, Founding CEO of G.A.P Institute, Viet Nam shared Connective Leadership: Managing Human Capital in a Changing World.

Mr. Le Dinh Hieu raised the issue of leadership during the COVID-19 pandemic in the digital era. COVID-19 has created significant and unpredictable changes that pose enormous challenges in the operation and optimization of human resources of each organisation or business. Therefore, effective leadership in the context of digitalisation is paramount.

He coined the term "*connective leadership*" which includes four core elements that all leaders should demonstrate and embody. The four elements include: 1) Empathy & Connect; 2) Empowerment; 3) Enabler (Tech, Tools); 4) Ensuring Quality.

To perform "connective leadership" in a changing world (under the impact of the pandemic), leaders need to have skills in managing their own digital talents and outsourced ones.

When it comes to managing their own digital talents, leaders need to focus on the following four requirements: (1) Shared values; (2) Skills; (3) Structure, System & Protocols; (4) Self-management.

On the other hand, to manage outsourced digital personnel, leaders need to prioritise transactional and relational capabilities, specially outlined below:

(i) Architecting (21%) referring to designing transparency and personal development that focus on organisational culture.

(ii) Curating (14%) demonstrating accelerated immersion models for integration and empowerment that focus on team culture.

(iii) Aligning (32%) exposing a matching model that aligns people/ skills with FTE jobs that focus on organisational functionality.

(iv) Orchestrating (32%) determines a hybrid model to plug-and-play for changing needs that focus on organisational flexibility.

In summary, connective leadership is suggested for APEC economies to manage effectively in changing world context. To do that, leaders need to focus on managing their own digital talents and the outsourced ones.

Dr. Chen-Fu Chien, Chair Professor of Department of Industrial Engineering and Engineering Management, National Tsing Hua University, Chinese Taipei blends Traditional and New Skills: Industry 3.5 and Blue Lake Strategies for Emerging Economies.

Dr. Chen-Fu Chien came up with a fairly new term "Industry 3.5" which refers to a Hybrid Strategy between Industry 3.0 and to-be Industry 4.0 via AI, Big Data Analytics, Computing & Digital Decision as disruptive innovations to empower smart production and intelligent manufacturing. According to his point of view,

Industry 3.5 aims to empower human being as “Iron Man”. In other words, humans are empowered by AI to pave the way for smart manufacturing with disruptive innovations.

To prove his point, Dr. Chen-Fu Chien analysed the case study of Everest Textile. This is No. 1 R&D oriented and vertically integrated textile manufacturer that provides high value-added and innovative products to global leading brands in sports, outdoor, city, casual and industrial materials etc. In addition, he also explained detailed steps on applying AI for defect detection in the precision forming industry.

Dr. Chen-Fu Chien expressed the view that increasing competition due to COVID-19 among Enterprise / Ecosystem Camps is posing challenges for smart manufacturing in revamping global supply chains. Based on that situation, he proposed to the APEC economies **the framework of PDCCCR Strategic Decisions for Smart Production**. For details, PDCCCR stands for the interrelated determinants include (P) Pricing strategies, (D) Demand forecast and demand fulfilment planning, (C) Capacity planning and capacity portfolio, (C) Capital expenditure, and (C) Cost structure that will affect the overall financial Return (R).

In short, he presented how Industry 3.5 to humanise Industrial Revolution & Optimise Human Capital in APEC Economies.

SESSION 4

The fourth Session on “Towards The Implementation Of The Aotearoa Plan Of Action: Partnership For 21st Century Technology-driven Leadership” was chaired by Dr. Ha Thi Minh Duc, Deputy Director-General of the Department of International Cooperation, Ministry of Labor, Invalids and Social Affairs of Viet Nam.

Mr. Niti Mekmok, CEO of Synergy Group (Holding) Co., Ltd, Thailand presented how to encourage youth to love sciences, technologies and innovations.

The TIoT (Thai IoT association) was established in 2018 with 4 main objectives, namely awareness, expertise, alliance and usability.

Mr. Niti Mekmok raised the question of “Why do we need to encourage the youth to love sciences, technologies and innovations” and emphasized that the youth is the future of the economy.

There are 13 development values from 2023 to 2027. By applying the sufficiency, economy, philosophy, the concept of sustainable development course and BCtrix economy model, the organisation can build 13 milestones for the development of Thailand economy. The 13 milestones are necessary for young people who are potentially leaders and have leadership capabilities to involve and execute in order to achieve in the short and medium term.

According to a Digital council report, overall digital competitiveness has improved over the past years. Thailand got good scores on several indicators but it’s still not good for the digital workforce.

Thailand has set goals by 2025. The first goal is to increase the number of digital workforce. Secondly, they need to close the gap of the digital workforce’s supply

and demand at 62%. The final goal is to increase the number of notebook computers for students.

Thai TloT developed a SmartFarm IoT device which will combine 2 most important technologies, AI and IoT. The combination allows students to train their own AI models with the collected data.

For the future direction, there will be more modern AI models which improve user experience. Moreover, those model may be integrated simulators for fun and engaged learning experiences

Ms. El Isa Mohamedou, Head of the OECD Centre for Skills presented a Regional Network on Capacity Building for the New Digital Workforce.

Megatrends and COVID-19 are changing the skills requirements for the new digital workforce. Some changes in the world, not only economy but also other society changes, like Globalisation, Demographic change or Climate change, may affect the way we work. As those changes continually happen, people have to consider their work skills, skills demand and supply, ways of developing and using skills

As raised by Ms. El Isa Mohamedou, there is a big gap between male and female graduates in information and communication technology. The male takes the most proportion in the graduation of information and communication technology. However, in natural sciences, mathematics and statistics, male and female share the same proportion, with a few differences. It shows that the workforce in natural sciences, mathematics and statistics may have the equality in skills supply. On the contrary, the digital skills among women in work and society are lower than men

To handle the shortage of digital skills in the workforce, there is a project called “Regional Network on Capacity Building for the New Digital Workforce”. There are 5 ways to promote the digital skills, namely:

- Exchange data and latest research
- Promote peer-learning and replicate best practices
- Provide training and capacity development initiatives
- Pool financial and human resources
- Adopt multi-stakeholder approach to skills policies

With those strategies, many areas apply them to their economies by sharing the same objective of increasing digital skills in the workforce. For example, there are European Network for Women in Digital (EWiD), Regional Alliance for the Digitalization of Women in Latin America and the Caribbean and ASEAN Summit on Women’s Empowerment in the Digital Age

Professor MAEDA Mitsuhiro, Advanced Institute of Industrial Technology of Japan, Secretary General, Asia Professional Education Network (APEN) talked about the Japanese Challenges in d-HRD (Digital Human Resource Development) in the Age of DX*.

The Digital Human Resource Development was launched in the mid-16th century. The modernization has been developed through several different stages. The

digitization stage is the latest stage of modernization (informatized society building), after the industrialization stage. The latest sub-stage of digitization is the DX (Digital Transformation) sub-stage.

Digital transformation is the process of transferring from physical data into online/digital data. In other words, by using digital technologies / software / technology tools to create new or modify current work processes to adapt to changes and market requirements.

The difference between Digital transformation and Industry 4.0 is what the centre is. Digital transformation focuses on user interface which is user-centric, whereas Industry 4.0 concentrates on manufacturing which is factory-based.

In the digital transformation era, the workforce should have standard skills to be able to work in the related environment. Those skills can be divided into 4 categories: Programming, system development, system integration and digital coordination

Developing and training digital skills are crucial in Japan. Only having high skilled workforce can make the economy sustainable with global unforeseen changes

CONCLUSION

Work in the digital era, especially during crises, is a new subject that poses significant challenges and requires tremendous attention.

Digital infrastructure (broadband internet, affordable smart mobile ...) are number one priority of APEC economies because two billion people in the Asia-Pacific region whose women and disadvantaged groups make up the majority do not have access to the digital world.

APEC economies also should complement digital skills with existing philosophies and ethical skills as it is equally important within the digital world that raises many ethical dilemmas. Great power comes with great responsibility. Digital technology enables the potential of talented people from urban areas, giving them chances to approach millions of users online. Meanwhile, if those talents lack foundation education and civil manners, it could create a significant negative impact on society.

From an ethical perspective, organisations have an obligation to contribute both to society and their employees in times of crisis. In times of crisis such as pandemics, this means that companies should prevent outbreaks such as COVID-19 by enabling remote working and in this way hindering the spread of the disease and protecting the society. In times of other kinds of crises such as wars or terrorism when people could be threatened to travel to work or would not be able to go to work, a high degree of digitality would help the companies to protect their employees. This thesis has an important societal implication as it found the support of efficient digital leaders and high degrees of digital maturity to be an important part of building an organisation resistant to future crises.

In terms of worker's protection, an initiative from Singapore has offered adult personal skills future credit accounts which they can use to buy life long training. Note that massive open online courses (Coursera, Khan Academy ...) are great examples demonstrating how digital technology can bring top quality education to the public, where professors from top universities could deliver their lectures to people all over the world. It also uses a mix of grand programs and tax incentives to encourage firms to invest more in low-wage workers in order to protect the poorest workers that are likely to be displaced by the 4th industrial revolution.

From the perspective of a manager, lessons learned from the discussion is that managers that lead their teams using digital tools require specific social and task-related skills in order to efficiently communicate with their team in times of crisis. Moreover, the conducted research also found the support of efficient digital leaders and high degrees of digital maturity to be an important part of building an organisation resistant to future crises. In relation to the restrictions of digital communication, it is important to emphasise the lack of social interactions as the major difficulty of exclusively digital communication. While the new way of conducting their tasks was perceived in many regards as more efficient and comfortable, the lack of social and informal interactions at the office were being missed. The respondents found that these types of interactions were to them a source of energy that could not be felt when communicating digitally. In addition, it was also perceived by the respondents that these types of informal interactions

were a medium of knowledge sharing and brainstorming and that nothing that they had done digitally felt the same or was equally successful.

The discussion also frames the COVID-19 pandemic as a driver of organisational change towards digitalization and digital transformation. The evidence suggests that in addition to providing competitive advantages in an increasingly digital environment, higher digital maturity of an organisation also shields it from pandemics. Organisations that have the necessary digital infrastructure, digitally skilled workforce and agile operations have and will be more prepared for similar types of events in the future. Therefore, it is clear that after COVID-19, digitization and digital transformation will no longer be a collateral solution, but rather a vital part of any business that wants to survive the next crisis.

Speakers also explored how high digitization and digital leadership can function as a vital part of building a crisis-resistant organisation against future pandemics. From an organisational perspective, the study contributes to practise by showing that organisations that have the necessary digital infrastructure, digitally skilled workforce, and agile operations have and will be more prepared for similar events in the future. Correspondingly, **it is recommended that** organisations should invest in technology and training that focuses on improving leaders' competences and makes them more ready to efficiently communicate through digital tools.

It also could be beneficial for managers to re-evaluate their key performance indicators when leading their employees digitally, as key performance indicators might differ compared to times where the job is not performed through a completely digital platform. Furthermore, discussed content could be of support to companies that want to digitise as it gives them a perspective of the challenges that their managers might face when leading virtual or sub virtual teams and communicating through digital tools. In addition, by gathering knowledge from professionals, IT firms from address economies could aid in the development of future digital tools as it identifies key limitations in functionality that digital leaders perceive restrict them in having more efficient communication with their teams.

SURVEY RESULTS

The Asia-Pacific Economic Cooperation conducted a survey for the audience who participated in APEC Symposium on *Developing New Leadership Capabilities in Response to the Work Evolution in the Digital Age*. The result has been done, which deeply illustrated participants' views on the role of leadership in the digital age.

33 participants from 10 economies provided valid responses and there was a higher response rate from Southeast Asia economies. There were both female participants and male participants, respectively 58% and 42% took part in the survey.

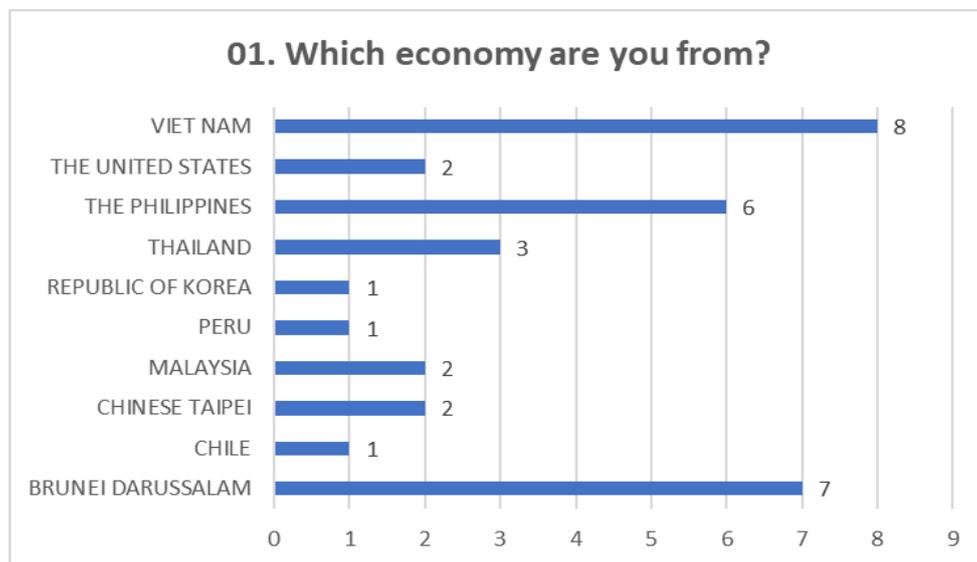


Figure 1. Economy of respondents

The responses received mainly came from people who work in government officials, at 19.58% and from experts or academics, at 9.27%.

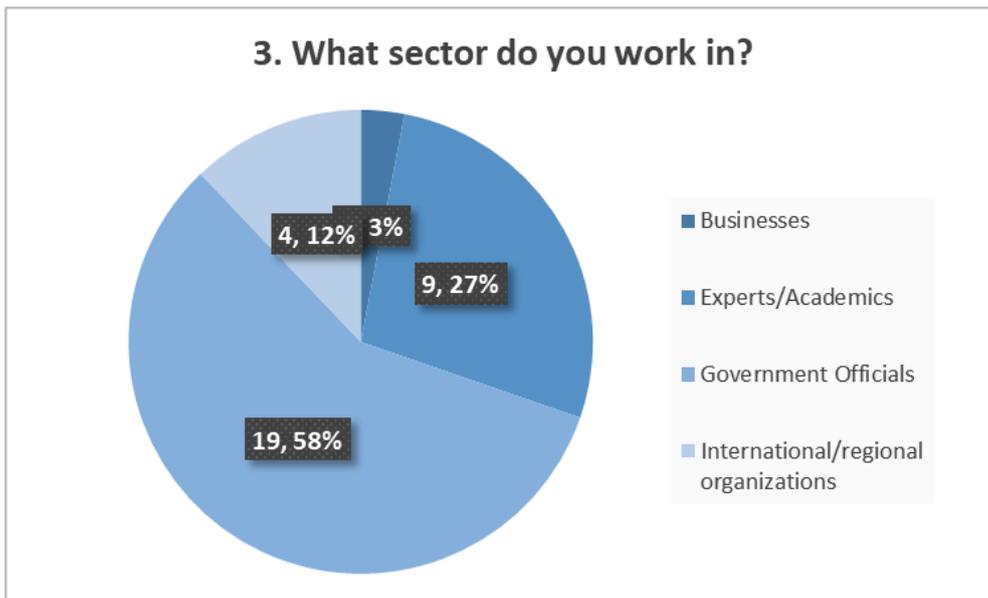


Figure 2. Workplaces of respondents

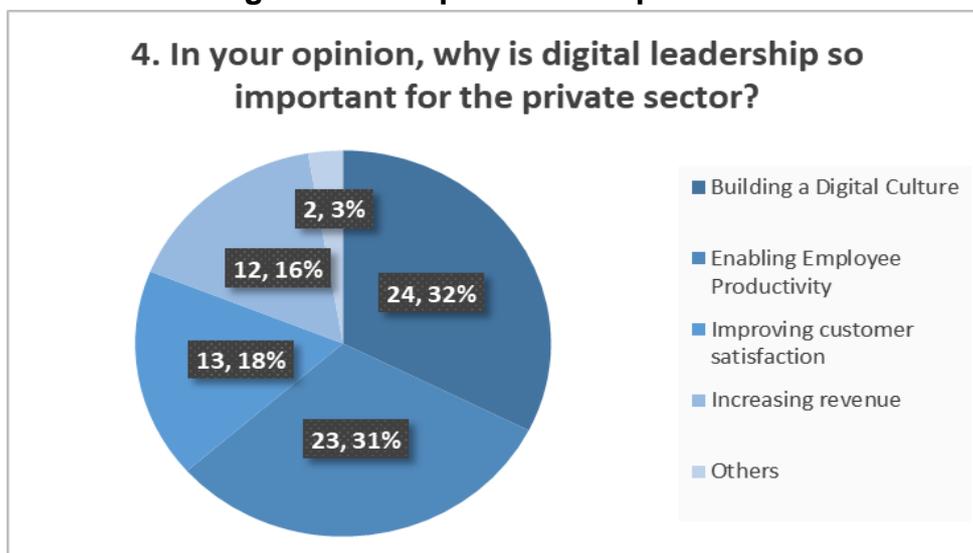


Figure 3. Respondents' opinion on why digital leadership important for the private sector

The participants were asked to give their opinions on the reasons why digital leadership has been an important factor for the private sector. All the respondents tended to agree with all the options provided by the survey. In other words, they all recognized that digital leadership assists the private sector to build a digital culture, enable employee productivity, improve customer satisfaction and increase revenue.

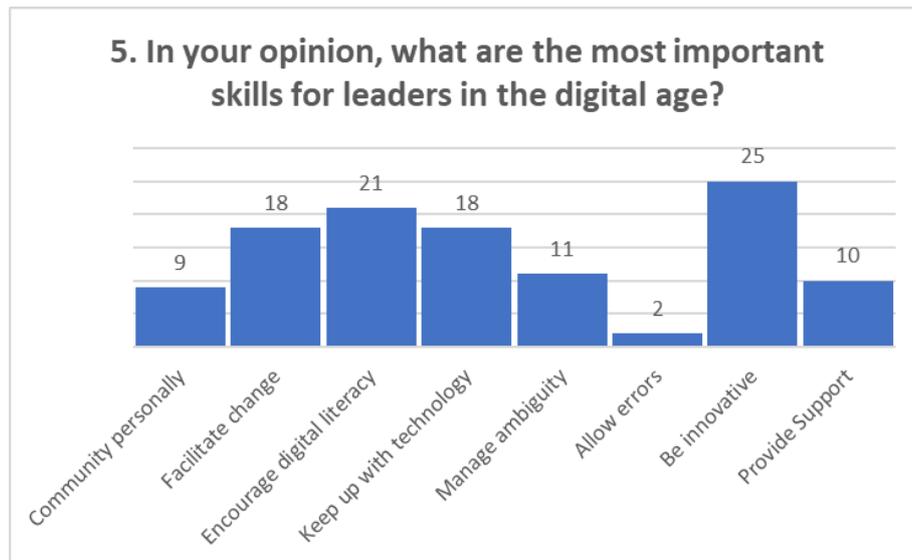


Figure 4. Respondents' opinions on most important skills for leaders in the digital age

According to Figure 4, participants were asked to choose the most critical skills for leaders in the digital age. A high number of the responses, particularly over 25%, went for the ability of being innovative. Moreover, they also opted for facilitating changes, encouraging digital literacy, and keeping up with technology to be significant requirements for a strong leader in the world of digital trends.

When it comes to the question of how to measure the impact of changing leadership styles, while some believe that it is difficult to measure accurately, there are many proposed criteria and methods to evaluate the effectiveness of the new leadership style in the organisation which is divided into two main streams of perspective. On one hand, many support the viewpoint that the impact of leadership style change will be measured by rational indicators such as revenue, profit, work performance, value created for society... On the other hand, many people suggest that in order to evaluate the effectiveness of leadership style change, the organisation should be based on the satisfaction, development, and happiness of employees because the human factor is the key point to creating the culture and sustainable development of the organisation.

Survey respondents also reported the main barriers/challenges hindering the promotion of new leadership capabilities/styles in the digital age. According to their opinions, there are three notable issues as follows:

- (1) Lack of background knowledge and skills in technology;
- (2) Lack of necessary equipment and IT infrastructure;
- (3) Rigid leadership style, unwillingness to change old traditional work habits and not flexible enough to adapt to digital frameworks.

Based on the awareness of these problems, there are a number of proposed solutions for leaders overcome these barriers/challenges including:

- (1) Develop customised training programs on digital knowledge and skills for leaders to assist them be technological proficiency, reskilling and upskilling;
- (2) Invest in necessary equipment to create basic conditions for digital transformation;

- (3) Make efforts to create corporate culture innovation with internal policies that encourage change in which leaders must be at the forefront.

In the current context, the question is how can APEC economies cooperate in order to promote more innovative initiatives to develop the capacity of leaders to meet with business developments, especially in the aftermath of COVID-19?

The recommendations are summarised in the following key points:

Up-to-date research and reporting: APEC economies need in-depth studies and reports on the problems, difficulties and challenges they are facing, and at the same time propose solutions that do not only for an individual economy but for general development.

Multilateral exchange: APEC economies can share advances in science and technology, experience in practical applications, and exchange visions for sustainable cooperation and development. Some proposed activities include investing in exchange programs to train digital human resources, organising online seminars to promote dialogue on issues related to digital transformation; advanced technology transfer...

The promotion of innovative initiatives: Creating an environment and opportunities for leaders, especially the younger generation of leaders, to propose and implement highly applicable initiatives in the context of the digital era. In addition, APEC economies should also have supportive policies to encourage research, education and innovation about digital transformation for disadvantaged groups to promote their potential.

Building a digitalized work culture: Organisations/ businesses need to raise awareness of the role of information technology, especially applying it strategically to form corporate culture. For example, under the impact of COVID-19, many businesses have switched to a hybrid working model that creates flexibility and employee satisfaction, while optimising work efficiency and saving on transportation costs.

In order to realise the recommendations after the Symposium, a number of necessary actions are suggested including:

- (1) Conduct field research, pilot new solutions, then report and learn from experience for expansion;
- (2) Build an intensive training program lasting from 3 to 6 months where Symposium members can empower each other;
- (3) Offer online training courses on leadership styles of the digital age to enhance the professional development of future leaders in all fields;
- (4) Publish an online book/repository that conveys all the important ideas raised in this Workshop and makes it available to all participants for their reference in upcoming work;
- (5) Develop a specific implementation plan, in which responsibilities are assigned to each sector, each locality with specific goals and targets;
- (6) Promote new cooperation policies among APEC economies.

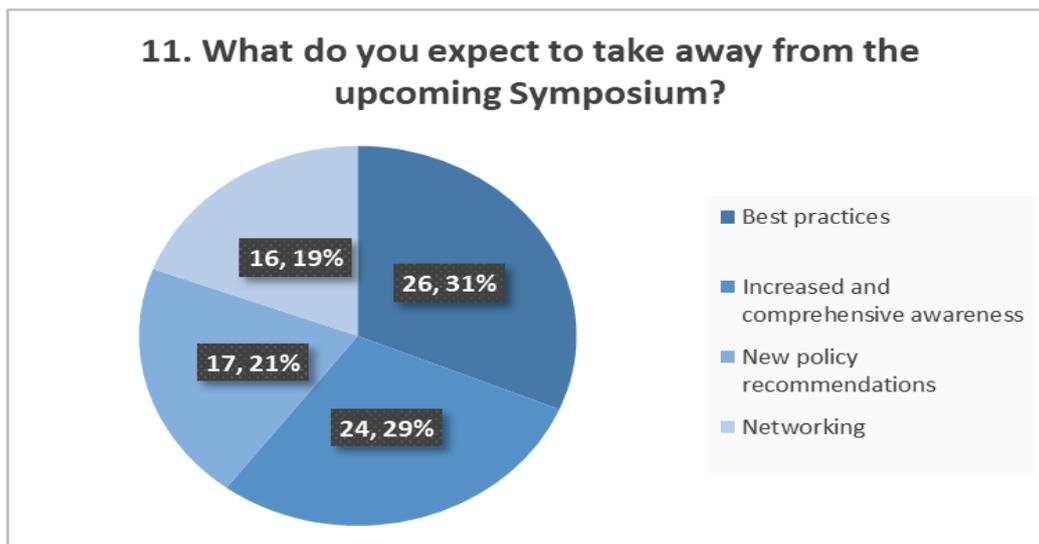


Figure 5. Respondents' expectation for the upcoming Symposium

It can be seen in the above pie chart that 26,31% of survey respondents stated that they would like to have best practices from the upcoming Symposium. Just 2% less than the previous one is a ratio of respondents showing that they prefer increased and comprehensive awareness. The least percentage goes to networking, taking up 16,19%.

In summary, through the survey, the respondents presented their personal views on the issues and challenges that leaders face in the digital era. Moreover, based on their observations, analysis and experiences, they also suggest solutions worth considering to improve leadership capacity in response to the work evolution in the digital age of APEC leaders.

COMPENDIUM OF RECOMMENDATIONS

APEC SYMPOSIUM DEVELOPING NEW LEADERSHIP CAPABILITIES IN RESPONSE TO THE WORK EVOLUTION IN THE DIGITAL AGE

I. Training leadership and other socio-behavioural skills in the digital age

1. Developing the next generation public sector leaders in the digital age
2. Developing the next generation of tech business leaders to think about people and planet as well as profit
3. Equipping the public workers with necessary digital skills to succeed in the digital age
4. Creating an age specific centre for ICT training based in Incheon in the Republic of Korea
5. Building an e-government academy which provides online training and tailored training for economies in the Asia-Pacific region who are looking to implement e-government solutions
6. Providing incentives to the private sector to incentive reskilling and life-long learning particularly to protect the workers most vulnerable to technological job displacement
7. Supporting citizens and businesses to address the increasing challenges of Cyber-security

II. Improving the digital know-how and skills in management of leaders to achieve outstanding results

1. Actively absorbing to improve the ability to catch up with new technology trends under the impact of the digital era on leadership and management;
2. Proactively detect and assess emerging business models or threats early and identify new technologies and their potential impacts;
3. Putting in place strategies to deal with the knowledge gaps they and their employees lack;
4. Building an open, fair working environment and encouraging creativity from different levels in the organisation/enterprise;
5. Improving employability by helping coordinate between the education system and the labour market.

III. Awaring strong leadership as responding proactively in consideration, using available resources to support initiatives, and heading towards the goal of providing high quality education

1. Providing information and communications technology services for education;
2. Building empowerment training programs online and sustainable development courses for the youth with a different concept of learning information technology;

3. Encouraging the community to fight and innovate for greatness for the youth to be competitive and valuable in the global industry;
4. Provide guidance for study and career choices;
5. Strengthening acquisition of numeracy and digital skills in initial education and in adult education.

IV. Exploring innovative solutions to improve workplace effectiveness through transformational leadership

1. Connecting quickly and easily on digital media;
2. Accelerating inclusivity to match market demographics;
3. Reformulating around experiential learning and external partnerships;
4. Providing flexibility in work arrangements, particularly in working times (allowing workers to choose the starting and ending time), workplace, and working hours (allowing employees to have time off).

V. Managing human capital in a changing world with connective leadership framework including: Empathy & Connect; Empowerment; Enabler (Tech, Tools); Ensuring Quality

1. Focusing on managing their own digital talents that requires (1) Shared values; (2) Skills; (3) Structure, System & Protocols; (4) Self-management;
2. Managing outsourced digital personnel that prioritise transactional and relational capabilities.

VI. Applying AI, Big Data Analytics, Computing & Digital Decision in smart manufacturing with the framework of PDCCR Strategic Decisions for Smart Production

- (P) Pricing strategies;
- (D) Demand forecast and demand fulfilment planning;
- (C) Capacity planning and capacity portfolio;
- (C) Capital expenditure;
- (C) Cost structure;
- (R) Return.

VII. Strengthening the digital skills in the workforce for both men and women, even for the youth

1. Encouraging the youth to love sciences, technologies and innovations;
2. Creating a specific model for the youth to practise their digital skills;
3. Implementing learning models in the school curriculum to encourage the youth learning while playing;
4. Closing the gap between female and male in digital skills;
5. Eradicating gender inequality in promoting the role of female leadership in the digital age;
6. Providing additional support for female ICT and STEM students to ensure programme completion and avoid drop-outs;

7. Promoting female role models in ICT and STEM and digitally intensive industries;
8. Making digital technologies and tools in the workplace more accessible for women;
9. Addressing gender-related concerns relating to online safety and security;
10. Promoting the adoption of high-performance work practices (HPWPs) among women;
11. Promoting and support women leaders or managers;
12. Championing diversity in digital-related projects, events, networks and media;
13. Providing digital skills courses, a networking space for stakeholder to connect, and economic opportunities for women;
14. Training digital skills for the workforce in 4 categories: Programming, system development, system integration and digital coordination.