International Labour Organization

National Workshop: Lack of skilled ICT personnel in Indonesia: can we still compete?

Summary report
(19 May 2022)

I. Opening remarks

Introduction

1. On 19 May 2022, the International Labour Organization (ILO) held a virtual national workshop entitled "Lack of skilled ICT personnel in Indonesia: can we still compete?". The webinar was held with a view to sharing the findings of an ILO research project conducted between 2017 and 2020 on skills shortages, skills development strategies and the governance of international labour migration of information and communications technology (ICT) specialists in seven different countries: Canada, China, Germany, India, Indonesia, Singapore and Thailand. Given that many countries, including Indonesia, faced challenges in fulfilling the growing demand for highly skilled ICT personnel, the webinar aimed to foster a discussion on the competitiveness of the Indonesian digital economy.

List of speakers

Moderator

Mr Casper N. Edmonds (Head of Unit (E2M), Sectoral Policies Department, ILO)

Opening remarks

Ms Michiko Miyamoto (Director, ILO Country Office for the Indonesia and Timor-Leste)

Presentation of research findings

Ms Shreya Goel (Technical (Project Jr) Officer, Sectoral Policies Department, ILO)

Panellists

Mr Muhammad Arif Hidayat (Head, Ministry of Manpower Cooperation Bureau)

Mr Danang Girindrawardana (Executive Director, Indonesian Employers' Association (APINDO))

Ms Janti Gunawan (Researcher and Lecture, Technology Institute of Sepuluh Nopember (ITS))

Mr Wiliam Hendradjaja (Co-founder, Skilvul)

Mr Djoko Wahyudi (Chair, Trade Union Federation of the Panasonic Gobel)

Closing remarks

Mr Shinichi Akiyama (Deputy Director, Sectoral Policies Department, ILO)

I. Opening remarks

2. **Ms Miyamoto** said that ICTs were a trending topic of discussion. This industry was developing at a rapid pace. It was estimated that in Indonesia in 2021, approximately 202 million internet users contributed USD 70 billion to the national digital economy, which was expected to grow to USD 146 billion by 2025. The country had some 2,300 tech start-ups, including a dozen with "unicorn" status, valued at USD 1 billion. That vast digital economy would need 9 million additional talents by 2030.

3. Between 2017 and 2020, the ILO had conducted a global study of supply and demand within the digital talent pool in seven countries. Much had changed since 2020, including a shift from a pre- to a post-pandemic context, giving rise to new challenges, such as different types of employment contracts providing lower levels of protection, as well as new opportunities.

4. The digital economy had a high potential for growth but limited access to talent. The ILO encouraged continued dialogue with all stakeholders in order to better support the development of skills, workers and the industry.

II. Presentation of findings

5. **Ms Goel** provided an overview of the findings of "The Future of Work in ICT" project, particularly with reference to Indonesia. The ILO project, carried out between 2017 and 2020, had focused on anticipated needs, investment in ICT education and training, and governance of ICT specialist migration flows in seven target countries. The ICT sector in Indonesia had experienced rapid growth in recent years, primarily driven by the services subsector and, to a certain extent, the creative industries. It was an important contributor to the economy. Thus, demand for ICT specialists was high and would continue to grow.

6. There was increasing demand for ICT specialists across all sectors of the economy, including in retail and financial services. ICT personnel constituted a mobile workforce and there was global competition for talent, with migrant specialists often recruited to fill short-term skills shortages. While sending countries were concerned about a potential "brain drain", the ILO's findings indicated that migration had a positive impact in the form of "brain circulation", namely the exchange of knowledge and skills, including through international university internship programmes.

7. ICT specialists were highly educated and commanded higher wages than other workers. In Indonesia, the highest paid workers were employed in telecommunications, computer programming, consultancy and the manufacture of optical products.

8. While women working in the Indonesian telecommunication sector earned higher wages than their male counterparts, ICT occupations in general were male dominated, although that gender discrepancy was somewhat less pronounced in Indonesia than in some other countries. The gender imbalance could be addressed by combating gender stereotypes, promoting women's enrolment in higher education and providing flexible working arrangements to ensure a better work-life balance. Although several countries had implemented policy measures to that end, a transformative agenda was required.

9. Self-employment was prevalent in the ICT sector, including temporary contracts and freelance work, often to cover short-term skills shortages for projects. While such arrangements offered greater flexibility, they also posed challenges – including long working hours and diminished social protection.

10. There were significant gaps in specific skills. Shortages also varied by level of educational attainment and talent was particularly difficult to recruit for certain roles, including in web development, graphic design, and Java and Android development. Emerging technologies led to changes in skills requirements: at present, skills relating to cloud computing and artificial intelligence were in particularly high demand, especially in the animation sector. Measures were required at the sectoral and industry levels to meet those needs.

11. Alongside technical expertise, there was also a shortage of soft skills in the ICT sector. It was therefore important to promote effective, lifelong learning and foster the acquisition of skills, including at the secondary education level. Measures were needed to bridge the gap – particularly among recent graduates – between technical knowledge and soft skills, as well as between the skills acquired at educational institutions and those demanded by the industry. However, small and medium-sized enterprises often had less scope to invest in learning and training programmes, including on-the-job training.

12. Given the increasing demand for ICT specialists in other sectors of the economy, there was also a growing need for interdisciplinary skills. It was important to promote interdisciplinary approaches to skills development, including through combined study courses, international faculty exchanges and research exchanges.

13. On the basis of research conducted as part of "The Future of Work in ICT" project, ten potential policy responses had been formulated to address skills shortages, promote continuous training and lifelong learning, increase the participation of women in ICT, improve governance of international labour migration, and strengthen social dialogue. Those responses could help to inform tripartite dialogue and lead to effective policies to advance decent work opportunities for women and men in the digital economy.

III. Panel discussion

14. The moderator, **Mr Edmonds**, opened the discussion, inviting comments relating to government responses to address the skills gap in the digital economy.

15. **Mr Hidayat** provided an overview of government policies and strategies to address the ICT skills shortage in Indonesia and bridge the digital divide. He stressed the need to ensure universal access to digital technology. With regard to the key findings and recommendations arising from the ILO's research, he shared that the Ministry of Manpower was working on transforming the public vocational training centre network – to improve training quality and increase competitiveness – and implementing measures to match jobseekers with employers through training placements to balance supply and demand, and to foster young talent. Work was also under way to develop the digital ecosystem to enhance employment opportunities and competency standards, focusing on both the public and private sectors, and to expand the range of training on offer, including through online or hybrid programmes. To that end, a cooperation network had been established in which the Ministry participated.

16. Collaborative efforts to promote young talent focused on talent hubs, aiming to foster competences, encourage talented entrepreneurs and expand job opportunities, including through "talent corners" at public vocational training centres and talent scouting for young innovators that included coaching services.

17. To help people acquire relevant skills, information and support was provided to jobseekers through the social insurance system, as well as through cross-sectoral coordination, particularly with the Ministry of Education, Culture, Research, and Technology. The Independent Campus, Independent Learning programme (Merdeka Belajar Kampus Merdeka – MBKM) sought to match graduates to employment opportunities to meet the needs of the labour market, reduce unemployment and contribute to formalizing the workforce. In that regard, the Ministry of Manpower stood ready to provide implementation support for internship and entrepreneur programmes. Efforts were also under way to update the Indonesian national qualification framework and the national competency standards system

to ensure alignment across different sectors and services. The Ministry sought to promote intersectoral synergy and coordination to achieve those aims.

18. The moderator, **Mr Edmonds**, welcomed the measures outlined, drawing particular attention to the need to tackle the digital divide to avoid a two-tier system where only certain sections of the population could reap the benefits of the digital economy. He also stressed the importance of efforts to close the skills gap and to upgrade educational curricula for students and training programmes for teaching staff, to ensure that graduates had the skills necessary to contribute to the growth of the sector. Expressing appreciation for the emphasis placed on the importance of social dialogue, he invited comments on the role of employer organizations in closing the skills gap.

19. **Mr Girindrawardana** mentioned that the shortage of skilled ICT personnel was a major concern and posed a range of challenges, including from a regulatory point of view. Unfortunately, ICTs did not currently feature prominently on the educational curriculum. Instead, students in secondary and higher education were learning to use ICTs through informal means, such as social media, often for entertainment rather than educational purposes. Changes to the curriculum were required. Another challenge was to accelerate the acquisition of technical skills and knowledge, including programming and coding. Government authorities needed to focus on promoting technological literacy among young people, to ensure an ICT-literate workforce.

20. It was also vital for all stakeholders to promote the adoption of ICTs in the world of work. To that end, he encouraged collaboration with the ILO and with educational institutions.

21. The moderator, **Mr Edmonds**, welcomed the emphasis on ICTs as tools to build a better future. It was important to create a supportive ecosystem to ensure positive change and drive growth. He asked whether recruiting ICT personnel from abroad posed challenges for Indonesian companies.

22. **Mr Girindrawardana** said that although Indonesia had a regulatory system that facilitated the recruitment of ICT specialists from abroad, the overarching aim was to ensure that demand could be met at the domestic level. Where that was not possible, foreign ICT specialists could be recruited to facilitate the transfer of knowledge and help to foster domestic talent.

23. The moderator, **Mr Edmonds**, said that instead of framing the situation as a "brain drain", one could instead focus on the opportunities provided by "brain circulation", whereby young talent educated abroad would later return to Indonesia. He invited comments on challenges facing the education system with respect to addressing the shortage of skills in the ICT sector.

24. **Ms Gunawan** shared that the COVID-19 pandemic had given rise to new challenges, including new educational and technological needs. Although not an easy task, it was necessary to adapt the educational curriculum to empower students to acquire digital skills and enhance their self-reliance, awareness and problem-solving capabilities. The pandemic could be viewed as a blessing in disguise, promoting more critical thinking. Curriculum reforms to tackle the ICT skills shortage had included the launch of the Independent Campus, Independent Learning programme (Merdeka Belajar Kampus Merdeka – MBKM), designed to promote independent learning, to build students' confidence and to help them move beyond employee roles to establish their own start-ups. In the future, it was likely that a growing number of graduates would provide services to the ICT sector. Employers needed to provide more opportunities and engage with educational institutions. However, not all companies had the resources or infrastructure to identify and meet needs, including with regard to internships. New approaches such as the MBKM programme would enable students to

identify the skills they could offer to employers, combining theory with practical experience. Although still in a transitional phase, progress was being made to transform the educational curriculum.

25. The moderator, **Mr Edmonds**, welcomed measures to adapt training courses to identify practical ways to empower students to work with small, medium-sized and large companies, and to create a supportive ecosystem for start-ups. He invited the next panellist, Mr Hendradjaja, to comment on strategies to attract more women into careers in science, technology, engineering, and mathematics.

26. **Mr Hendradjaja** stressed the importance of ensuring equal gender representation in science, technology, engineering, and mathematics by providing multi-stakeholder support and using the media and social media platforms to highlight the role of women in male-dominated sectors. When developing new educational programmes, it was important to be mindful of the framing narrative and avoid male bias. Once a programme was operational, it was essential to provide safe and accountable spaces for female students in order to prevent discrimination, and to work towards changing existing mindsets.

27. Efforts to promote ICTs needed to start in early childhood education, including by integrating ICTs into school projects to motivate youngsters to consider careers in science, technology, engineering, and mathematics and to build excitement around ICT-based work. Measures to promote ICTs in the pre-work ecosystem needed to be accompanied by efforts to create a supportive employment environment, with greater flexibility and space to balance work and family life. Policies were needed to raise awareness of and promote women working in the fields of science, technology, engineering, and mathematics, and to create enthusiasm around those subjects among girls and young women that would later translate into ICT-based careers. Flexible arrangements had to be applied to men as well, to ensure equal family partnerships and opportunities for women to develop their careers.

28. The moderator, **Mr Edmonds**, welcomed the emphasis on early investment and the need to create excitement around science, technology, engineering and mathematics. He invited comments on the role of trade unions in addressing challenges faced by the ICT sector.

29. **Mr Djoko Wahyudi** said that it was essential to maximize the use of ICTs, including in assessing workers within the framework of collective bargaining processes. The COVID-19 pandemic had led to an increase in remote working, with an adverse impact on working hours and the ability to monitor health and safety standards. It was important to examine the impact of remote working and identify solutions, whether through policy frameworks or collective bargaining processes.

30. ICTs needed to be optimized to enhance capacity, as increased digital literacy would lead to greater business opportunities. In that regard, he drew attention to a collaborative project with the ILO to train women in science, technology, engineering and mathematics.

31. Trade unions needed to understand and use ICTs, including in the form of webinars and online training. Social dialogue was vital to encourage employers to invest in human resources, to ensure that workers could adapt to technological change through re- or upskilling programmes, and to implement measures such as apprenticeship programmes to ensure that demand could be met at the domestic level without resorting to recruiting foreign talent.

32. Educational curricula were not keeping pace with developments in industry and further efforts were needed to match people to jobs, including by focusing on preparedness and ensuring that workers could acquire relevant skills.

33. It was essential to ensure cooperation, whether on a formal or informal basis, including with companies and educational institutions. The government was urged to avoid using a silo approach and to communicate with industry to meet skills and training needs. Useful approaches included focusing on the role of public vocational training centres in reducing unemployment and creating opportunities, standardizing competencies and qualifications, and developing cross-sectoral career "matchmaking" forums. In addition, further measures were needed to ensure social protection for workers.

34. The moderator, **Mr Edmonds**, stressed the need to break down silos and ensure that all stakeholders worked together to advance the digital economy, including by creating opportunities for harmonious industrial relations and by ensuring decent work and social dialogue.

IV. Closing remarks

35. **Mr Akiyama** thanked the speakers and organizers for an interesting and informative webinar, which underscored the important role of ICTs as the backbone of the economy, and their transformative power. The COVID-19 pandemic had brought into stark relief the important role of digital technologies, including to facilitate remote work and distance learning, keep people safe through screening and tracking programmes, and to digitalize financial, commercial and supply chain operations. The pandemic had also demonstrated the value of digital readiness. He encouraged stakeholders to make use of the outputs of the ILO's research to catalyse progress, and to engage in ongoing social dialogue. Findings from the research project could contribute to addressing skills shortages and advancing decent work for men and women in a more competitive and inclusive digital economy. He thanked the Japanese Ministry of Health, Labour and Welfare for its support.