# EDUCATION IN DIGITAL ERA AS A KEY SECTOR IN DEVELOPING SOCIAL AND ECONOMIC PROGRESS

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| Keyword | Abstract |
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| *Education, Digital Era, Social and Economic* | *The EV-DCI 2022 survey pointed out that the underlying problem in Indonesia is the lack of digital competence development in the curriculum. The education sector is an important sector in growing the economic development of Indonesia, including the digital economy across key sectors. Indonesia needs to upskill its digital talent to support the development of Indonesia's digital economy. Several actions can be taken to keep up the momentum of the digital transformation in the education industry— namely, utilizing massive open online courses (MOOC), and encouraging collaboration and integration between stakeholders. Global Innovation Index 2021 rankings of Indonesia in 87th rank. This number drop 2 points from 85th Global Innovation Index 2020 rank. Indicators of Human capital and research aspect are education in rank of 106th, tertiary education in rank of 93th, and research and development (R&D) on 57th rank (WIPO, 2021). In a digital era, education is being transformed by the new digital environment.* |

## INTRODUCTION

Global Innovation Index 2021 rankings of Indonesia in 87th rank. This number drop 2 points from 85th Global Innovation Index 2020 rank. Innovation performance at different income levels in 2021 make Indonesia as an upper middle-income group. Indicators of Human capital and research aspect are education in rank of 106th, tertiary education in rank of 93th, and research and development (R&D) on 57th rank (WIPO, 2021)

Partnerships among stakeholders are vital to build education systems and digitally skilled educators that will increase workforce absorption from various educational levels following the technology development and changing eras.

Furthermore, in building the digital society, it needs to be supported by the education system improvement and upskilling digital talent while focusing on the growth of digital technology adoption in various economic sectors. Subsequently, these aspects need to be strengthened by implementing sustainability principles through Environmental, Social, and Governance (ESG) to maintain the digital economy growth in the long run (East ventures, 2022)

How is the push in preparing our human capital to take advantage of the digital economy's growth momentum optimally? Prototyping. The goal is to ensure that the startup development ecosystem could be replicated, especially by state universities.

In the digital era, implementing learning is growing from a traditional face-to-face system to digital based learning (Syaputra, 2022). The fact that technology plays a much larger role in the digital era than it did for previous generations as made today's generation having a high level of technological literacy (Hashim, 2018).

## METHOD

This paper is a literature review. Based on some reports refer to Global Innovation Index 2021, and Digital Competitiveness Index 2022

## RESULTS AND DISCUSSION

### 3.1. Rapid Digital Transformation Amid the Pandemic

The effects of the COVID-19 pandemic have been unanticipated and significant, especially in causing major disruptions to in-person learning on an unprecedented scale. According to the Ministry of Education, Culture, Research and Technology in August 2020, approximately 68 million students (preschool (PAUD) to senior high school (SMA) has been affected by the COVID-19 pandemic as they had to shift to distance learning.

Consequently, the government has increased the budget allocation for education to support students and education units affected by the pandemic. In Indonesia, 20% of the national budget is allocated to the education sector. In response to the pandemic, the government has increased the national budget by 19.5% in 2019- 2021 to IDR 550 trillion in 2021.

With more budget, Kemendikbud Ristek has introduced initiatives to facilitate remote learning, expediting the adoption of digital technology. The introduction of Rumah Belajar is a good example. Rumah Belajar is a learning portal that provides learning materials and communication facilities that support interaction between communities. This portal comprises four main features developed to support online learning, namely virtual classes, learning resources, question banks, and virtual laboratories. In addition to the main features, there are also supporting features such as augmented reality (AR), Edugames, cultural maps, and other features to optimize online learning. As of February 2022, the numbers of students and teachers who have joined the platform have reached over 667,000 and 278,000, respectively. Moreover, Kemendikbudristek is building GovTech as an instrument to synergise cross-function government in order to strengthen education through technology. This initiative is aligned with the World Bank version of GovTech, which aims to increase digital literacy and modernize the public sector equally. Alkalai (2004) mention that digital literacy involves more than the mere ability to use software or operate a digital device.

The pandemic, which accelerated the adoption of digital technology in the education sector, has also expedited the growth of EduTech startups in Indonesia. For instance, Ruangguru, the largest EduTech company in Southeast Asia, recorded a 46% increase in its number of users to reach 22 million users in 2020 in Indonesia. The startup has introduced many initiatives that have benefited different stakeholders during the pandemic. For instance, the startup opened up access to 250 free training modules for teachers that were accessed by over 200,000 teachers in 2020.

However, despite the growth, Indonesia is still facing challenges in improving education systems. This is reflected in the human development index (HDI), which is a summary of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable, and having a decent standard of living.

### 3.2. Challenges in the Education Sector Hinder the Advancement of Human Capital Development

The education sector is an important sector in growing the economic development of Indonesia, including the digital economy across key sectors. There are several key challenges for education in Indonesia, such as education equality.

**Education Equality**

The distribution of education in Indonesia is unequal with regard to aspects such as the quality of teachers and education infrastructure, which is caused by Indonesia's uneven economic development. According to the EV-DCI 2022 survey, 90% of the digital companies agreed that the quality of teachers is the main factor that contributes to the unequal education quality in Indonesia. According to BPS, the percentage of qualified teachers (those with at least Diploma 4/Bachelor's Degree) has actually increased from 89.3% in 2018/19 to 95.8% in 2020/21. However, the distribution of qualified teachers has been unequal with provinces in western regions of Indonesia having higher percentage of qualified teachers. According to BPS, the average percentage of qualified primary school teachers in western provinces is 95.1%, higher than that of eastern provinces with 89.2%.

Additionally, according to the EVDCI 2022 survey, 83.3% of the digital companies agreed that the facilities and infrastructure is another major factor that contributes to the unequal quality of education in Indonesia. This is supported by the data presented by BPS for the school year 2020/2021. According to BPS, the percentage of primary school classes in good condition varies between provinces and the gap between the provinces with the highest and lowest percentage is huge, with Jakarta's 72.9% and Bengkulu's 36.3%, respectively.

Consequently, the unequal distribution of quality education and infrastructure development has created roadblocks that impede the advancement of Indonesia's human capital development. According to the Program for International Student Assessments (PISA) 2018, which assesses 15-year-olds' scholastic performance on mathematics, science and reading, Indonesia was ranked 71st out of 79 countries, with an average score of 382. This number is far from that of comparable neighboring countries, such as Singapore and Malaysia, which were ranked 2nd (556) and 48th (431), respectively.

### 3.3. Transformation in the Education Industry

While the pandemic presents challenges to the education sector, it has indeed presented opportunities that expedite the adoption of digital technology in the sector. Several actions can be taken to keep up the momentum of the digital transformation in the education industry—namely, utilizing massive open online courses (MOOC), and encouraging collaboration and integration between stakeholders.

**Utilizing MOOC Improve Inclusivity in Education and Upskilling**

Two prominent problems in the education sector in Indonesia are the unoptimised absorption rate of new graduates in the labor market and the low participation rate in pursuing higher education among students. To overcome these problems, one solution is to optimize the MOOC platform.

MOOC is a digital product that provides opportunities for anyone to obtain an equitable and quality education. Indonesia currently has MOOC platforms such as MOOC Indonesia, which provide online learning access from different institutions. However, when compared to the quality of MOOCs abroad such as Coursera and edX, the MOOC platforms in Indonesia are still lagging behind. This is due to the lack of university partners, which results in the provision of limited courses. For instance, MOOC Indonesia, which was created by the University of Indonesia (UI), only provides 3 courses. Additionally, MOOCs in Indonesia are only regarded as an additional learning resource. This means that the learning process undertaken by students on the platforms cannot be recognized as credits or part of assessment components.

One prominent way to optimize MOOCs in Indonesia is to encourage collaboration between multiple stakeholders such as domestic and foreign higher education institutions, industries, EduTech startups, research institutions and the government. For example, learn from the

Malaysian government, which collaborates with a MOOC platform, namely Open Learning. The collaboration between the government and Open learning has opened access to collaborations with more than 190 global institutions, allowing students in Malaysia to access more than 10,000 courses.

The government plays a vital role in facilitating the adoption of such programmes to overcome the limited capacity of higher education institutions and providing equitable education. Therefore, it is vital for the government to start recognising the legitimacy of MOOC certifications to enable these certificates to be used for credits for higher education. For instance, the Massachusetts Institute of Technology (MIT) accepts MicroMasters programme certificates from edX for credit, which will accelerate students' pursuit of a degree. Additionally, the 'mini bachelor programme' has been implemented by various leading institutions, such as Harvard University, IBM, and New York University, through the edX platform as an effort to provide an equitable and quality education.

Moreover, MOOC platforms in Indonesia can utilize quality courses to build digital talent through upskilling. MOOC platforms can collaborate with the National Education Standardization, Curriculum, and Assessment Agency (BSKAP) credible professional institutions such as the Corporate Finance Institutions (CFI), and companies that issue special certifications such as Alibaba and Amazon to develop MOOCs. This will not only increase the number of partners, but also the popularity and recognition of the certifications obtained by participants.

In Indonesia, the government has introduced the Kartu Prakerja to facilitate upskilling. The programme is intended for the working population to gain access to training that can improve their skills and competency. Currently, Kartu Prakerja has collaborated with 176 training institutions and platforms such as Skill Academy by Ruangguru, Hacktiv8 and Zenius. As of October 2021, the number of participants have reached over 11 million, spreading across 514 regencies and cities. According to a study by Presisi, an independent research institution, the programme has successfully improved the skills of participants and increased wages by 31.6% on average. Therefore, such efforts need to continuously be embraced and improved by different stakeholders to improve the quality of Indonesia's human capital.

## Collaboration Between Multiple Stakeholders to Improve the Quality of Education

Indonesia needs to strengthen the quality of human capital to develop the economy, especially in the Industry 4.0. Therefore, collaborations between multiple stakeholders are vital in improving the quality of education in Indonesia to develop the quality of human capital. Rumpak et al (2022) mention that the Digital Era 4.0 is a new phase in the industrial era that focuses on automation, interconnectivity, machine learning, real time data and automation. Rahmatullah et al (2022) also mention the digital era 4.0 considered important for teachers to master in the 21st century, including the ability of teachers to use digital based learning media.

Higher education institutions need to enhance the curriculum in order to produce graduates with the ability to adapt to changes in society. To develop a curriculum that is relevant, it is important to involve industry players in developing the curriculum. This is crucial to develop the quality of learning to produce graduates with competencies that match the skills needed in the industries. The concept of university-industry collaboration (UIC) in developing a student curriculum has become popular in various developed countries such as the United States, Japan, Russia, and Singapore. Through this collaboration, the government and higher education institutions will be able to provide a more hands-on experience and industry insights to students.

The new learning model will provide students with various learning options through different programmes that are aligned with their future endeavors. Currently, Indonesia is already strengthening cooperation between industry players and other stakeholders to advance the education system. One of which is Kedaireka, a platform to facilitate collaboration between

industry and higher education institutions launched in December 2020. Through Kedaireka, industry can get support from higher education institutions regarding expertise and research-oriented analysis or solutions. On the other hand, higher education institutions can improve the quality of education by being connected with hundreds of industry players to create a more relevant curriculum to encourage the production of competent graduates. Thus, this creates a mutually beneficial relationship between industry players and education institutions that will also improve the quality of education in Indonesia. However, since it is still relatively new, the parties involved need to be committed in participating and developing a programme to realize the full benefits of the programme.

Moreover, it is crucial to encourage collaborations with startups to improve the quality of education in Indonesia. This can be done through collaborations between the regional government and EduTech companies in generating innovations to improve the quality education. So, to advance the education sector in Indonesia, synergy and collaboration with multiple stakeholders is needed. By establishing strong collaborations and synergies, there will be many innovations to improve the quality of education and provide diverse learning options for students in Indonesia.

### Developing Digital Talent Capability Through Improving the Education System and Upskilling

EV-DCI 2022 has shown us that Indonesia's human resources pillar still lacks competitiveness with a gap amongst provinces—scoring a median of 21.8. The EV-DCI 2022 survey pointed out that the underlying problem in Indonesia is the lack of digital competence development in the curriculum. One of the impacts of the current digital capability gap in Indonesia is the supply demand gap of digital talent in the job market.

Indonesia should leverage multistakeholder partnerships directed to nurturing future talents through enhancing the education curriculum, while also upskilling the current workforce. The government could intensify partnerships between stakeholders to assess the necessity of enhancing digital and technology courses in the education curriculum from early up to higher education. This will not only prepare the future generation to keep up with the changing world, but also promote digital inclusion and innovations in the long run. Private sector participation should be encouraged to provide opportunities for learning new skills demanded by the digital economy today and in the future. Moreover, it is important to involve non-governmental educational organizations (e.g. schools, foundations, communities), and volunteers to provide education and upskilling opportunities to the vulnerable population, allowing them to participate and prosper in the digital economy.

### Keeping Up with the Digital Human Capital Development Trend

Startups and corporations play a large part in contributing to upskilling Indonesia's digital talents. Becoming the demand-creator of the talents can also leverage them to play a part in increasing the supply quantity and quality. One of the examples of the involvement is from Hacktiv8, a learning academy, and boot camp startup established in 2016. Hacktiv8 has been helping Indonesian individual learners as well as other startups to accelerate their capability and skills necessary in this digital economy regardless of their background. Hacktiv8 provides data analytics, digital marketing, programming, product management, and web development. They also provide career support and apprenticeship programs to channel their graduates to the digital workforce through partnerships with digital companies, not only in the ICT sector.

Meanwhile, the government also plays a key role in facilitating the human capital upgrade with new skill sets at a national level. A top-down redesign of the education curriculum shall incorporate more digital and cyber-related courses, regardless of the education majors. Engaging

in public-private partnership is also key to boosting the human capital learning opportunity, whether sector specific or to providing learning experience directly from ICT sector leaders

## CONCLUSION

In a digital era, education is being transformed by the new digital environment, leading to new possibilities for teaching, learning and pedagogy (Battro, 2012). Indonesia will enter the demographic bonus in 2030. How is the push towards the readiness of human resources in terms of digital capabilities? Industry 4.0 system causes industrial expansion specifically due to the widespread application of the Distributed Manufacturing concept. The education sector is an important sector in growing the economic development of Indonesia, including the digital economy across key sectors. Indonesia needs to upskill its digital talent to support the development of Indonesia's digital economy. The development revolves around improving capabilities to use and develop digital technologies such as information processing software, data analytics, and the Internet of Things (IoT). More jobs such as developers, cloud engineers, and data scientists are growing in demand to help companies innovate and become more efficient.

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