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INDONESIA

POST-PANDEMIC OUTLOOK:

Rethinking Health and Economics Post-COVID-19

Editors:
Anthony Paulo Sunjaya
Yoko Brigitte Wang
Riani Sagita
Dwi Sugiharti



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INDONESIA

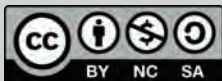
POST-PANDEMIC OUTLOOK:

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Publisher's Note

As a scientific publisher, BRIN Publishing holds a high responsibility to enlighten society's intelligence and awareness through the provision of qualified publications available to the public at large. The fulfillment of this statutory obligation is one of the publisher's roles in promoting the educational and intellectual life of the nation as mandated by the Preamble of the 1945 Constitution. Furthermore, this book has encountered quality control mechanisms through the editorial process, including peer review.

This book is one of the four book series titled *Indonesia Post-Pandemic Outlook* written by Indonesian scholars abroad to offer multidisciplinary strategies for Indonesia to recover stronger post-pandemic. In the discussions of this book series, the contributors propose their policy recommendations by referring to the Sustainable Development Goals, Indonesia's Long Term National Development Plan (RPJP), and the United Nations Research Roadmap for COVID-19 Recovery.

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Indonesia Post-Pandemic Outlook: Rethinking Health and Economics Post-COVID-19 focuses on Indonesia's post-pandemic recovery effort from three main aspects: *Digital Transformation*, *Building Future-Ready Resilient Societies*, and *Equitable, Sustainable, and Green Development*. This book is arranged in a multidisciplinary manner, combining perspectives across the health, economics, as well as tourism and creative economy sectors.

On this account, we hope that this book can offer valuable inputs and great recommendations for policymakers and stakeholders. Besides, it is expected that this book can hopefully contribute to the creation of a healthy and sustainable society that will undoubtedly impact the birth of a prosperous, competitive, and resilient nation.

As a final note, we would like to deliver our heartfelt gratitude to everyone taking part in the process of this book.

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Opening Remarks Minister of State-owned Enterprises, Republic of Indonesia

The Covid-19 pandemic has caused a huge shock to the world, mainly in terms of health and the economy. More than 6 million people died worldwide, causing profound social disruptions. This situation also created an unparalleled economic shock that occurred worldwide, unemployment rose sharply, and many businesses had to go out of business which may take years to recover. We may never have imagined this circumstance before. This Covid-19 has aggravated inequalities and highlighted cleavages between rich and poor locally and between North and South globally. Therefore, we should have the ability to adapt to change, be agile in overcoming challenges and continue to rise from adversity.

In recovering the condition of society at large during and after the pandemic, the Government of Indonesia (GoI) has been holding the hands of all parties, including State-owned enterprises (SOEs), to make recovery faster. Our SOEs rank among the world's largest companies and have a potentially important role in national health and economic recovery. Even the world bank admits our SOEs play an important role in dealing with the Covid-19 pandemic in Indonesia.

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In the health recovery effort, the Ministry of SOEs has at least five main initiatives, including the establishment of emergency hospitals in various regions, production of ventilators, procurement of masks and personal protective equipment, supply of oxygen, and supply of medicines and vaccines. Even SOEs have held a mass vaccination program nationwide since Q1 2021. Indonesia Healthcare Corporation (IHC) is also developing Indonesian vaccines in collaboration with domestic and foreign research entities that can be used on our own and help developing countries.

Peduli Lindungi platform was initiated by the Ministry of SOE in collaboration with the Ministry of Communication and Informatics and PT Telkom Indonesia to prevent the spread of viruses. The European Union has authorized the use of the Peduli Lindungi Platform in their 27 member states to recognize each other's Covid-19 vaccination certificates. With this implementation, the Covid-19 vaccination certificate issued by the GoI is equivalent to that issued by EU Government.

In the economic recovery effort, the Ministry of SOEs supports SMEs to lead the recovery through the ultra-micro holding company programs such as the Mekaar. At a time when industries in urban areas let go of their workers due to the impact of the Covid-19 pandemic, the Mekaar Program has been able to empower women and absorb up to 7.1 million workers. To date, the Mekaar Program has served 12.71 million people with a distribution of Rp 46.72 trillion. Our State Electricity Company (Perusahaan Listrik Negara/PLN) has also been distributing subsidies to more than 30 million customers to reduce public expenditure. We also continue to improve internet services throughout the archipelago. Not only expanding internet coverage, but we are also committed to supporting the digital entrepreneurship ecosystem, which is proliferating as a result of this pandemic. Even though they must serve the nation, SOEs can be resilient during the Covid-19 pandemic. In 2021, SOEs recorded an 869% profit increase from Rp 13 trillion to Rp 126 trillion yoy.

As Indonesia and the world emerge from the pandemic, lawmakers, regulators, and society must confront global changes. New rules and policies must be made to accommodate new realities, rebuild the economy, help those in need, and strengthen good governance after a global crisis. This task of rebuilding presents great challenges but also the opportunity to build back better, for instance, by taking sustainability goals and principles of good governance in reopening strategies and post-pandemic policies to ensure a resilient and inclusive post-covid-19 recovery.

We develop and organize SOEs to assist the President in achieving the national target, escaping the middle-income trap, and developing a solid foundation for preparing Indonesia as an advanced and high-income country in 2045. We have 5 (five) priorities: economic and social value for Indonesia, business model innovation, technology leadership, boosting investments, and talent development. We also develop breakthrough programs such as down-streaming natural resources, establishing the electric vehicle ecosystem, fostering decarbonization initiatives, and developing tech-savvy human resources. We must be optimistic that Indonesia's economy will continue to grow until 2045, and it is paramount to maintain the consistency of this growth. We believe in these priorities; together with all SOEs and our stakeholders, we can Recover Together, Recover Stronger.

We really appreciate PPI Dunia, who has participated in looking for ideas and providing input for Indonesia's post-pandemic recovery strategies through this book. The ideas in this book on digital transformation, building future-ready resilient societies; and equitable, sustainable, and green development will be highly beneficial for stakeholders and policymakers. With the intellectual of the writers and all Indonesian students abroad, we all hope these brilliant ideas will not just be a piece of paper but will lead to implementation.

Minister of State-owned Enterprises, Republic of Indonesia
H.E. Erick Thohir

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Opening Remarks Coordinator of OISAA

The history noted that on October 25, 1908, Indische Vereeniging was established as an Hindia students' association in Leiden, Netherlands. In 1922, the name was changed to Indonesische Vereeniging or Indonesian Students Association, with Mohammad Hatta as one of its leaders (1926–1930). In Australia in 2007, the Indonesian Students Association, which has spread worldwide, agreed to declare itself as an alliance. Since then, this organization is called Overseas Indonesian Students' Association Alliance (OISAA) or Perhimpunan Pelajar Indonesia Dunia (PPI Dunia), becoming the most extensive Indonesian students' organization comprising 60 member countries spread across three regions: Asian-Oceania, America-Europe, and Middle East-Africa. In its journey, OISAA has contributed to various activities such as education, research/study, training/workshop, and community service as the commitment to achieving Golden Indonesia 2045.

In the OISAA Cabinet of “*Cendekia APIK*”, we focus on the strategy and approach called “Penta Helix” strategy and approach

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as a methodology for integrating multi-stakeholder and governance in response to all the current challenges and issues in Indonesia. With this model, OISAA has collaborated and synergized with the government, universities, industries, media, and community. It takes a strategic synergy between the whole elements of Penta Helix so that the goals of Golden Indonesia 2045 can be accomplished. These components are linked to the five directorates and three bureaus; one is the Directorate of Research and Policy Studies (Ditlitka), which focuses on facilitating Indonesian scholars to contribute their scientific knowledge to Indonesia's development.

The Indonesia Post-Pandemic Outlook series is one of the most crucial works by Ditlitka of OISAA. The books highlight the persistent changes and impacts due to the outbreak of COVID-19. Not only that matter, but the essence of these books will also articulate the mitigation plans for the future pandemic or crises in Indonesia. Written and researched carefully by the authors, the books tell various topics within four categories: "Rethinking Health and Economics Post-COVID-19", "Social Perspectives", "Environment and Technology Role for Indonesia Development", and "Strategy towards Net-Zero Emissions by 2060 from the Renewables and Carbon-Neutral Energy Perspective".

Above all, what are the hope and possible solution to this global super-pandemic for all humanity, especially Indonesia? Those are the areas we are trying to address in these books, to see the outlook beyond COVID-19 in Indonesia based on the UN Research Roadmap for the post-pandemic recovery. These books will be presented and promoted to the government and related stakeholders such as scholars, policymakers, and, most importantly, society. This condition will ensure that the quintessence of these books will positively impact the nation towards the Indonesia's greater. I think this book series can be helpful as a beautiful masterpiece that provides valuable insights and mitigation plans for crises in Indonesia, in the same manner as we have learned from this super pandemic that caused the global disruptions.

In this opportunity, I greatly appreciate all the parties involved in finishing this book series, namely the authors, editors, reviewers, board of directors, commission chairs and members, and the National Research and Innovation Agency publishing house (BRIN Publishing). After all, the collaboration from all the parties who worked tirelessly has enabled the achievement of this critical goal.

Although many possibilities and challenges will happen in the future, I believe these books will encourage legacy to the scientific knowledge in Indonesia. Moreover, this legacy is proof of Indonesian students' awareness of their country, even though they live and study worldwide.

Faruq Ibnul Haqi, S.T., M.RgnlUrbPlan., Ph.D. (Cand.)
President of Overseas Indonesian Students' Association Alliance
(OISAA)

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Opening Remarks Directorate of Research and Policy Studies OISAA

The Directorate of Research and Policy Studies (Ditlitka) of the Overseas Indonesian Students' Association Alliance (OISAA), commonly known as PPI Dunia, focuses on facilitating Indonesian scholars to contribute their scientific knowledge to the development of Indonesia by promoting knowledge translation and evidence-based policy making.

COVID-19 has ravaged the world's economy in the past two years, upended existing social support structures, and strongly impacted global geopolitics. Written by over 85 scholars from 22 countries, which are part of the Directorate's nine commissions, this book series titled *Indonesia Post-Pandemic Outlook* aims to present the perspectives of Indonesian scholars on the current pandemic and propose multidisciplinary strategies for Indonesia to recover stronger post-pandemic.

In brief, four books constitute the series as follows:

- 1) Rethinking Health and the Post-COVID-19 Economy by the Health, Economics, and Tourism & Creative Economy Commis-

sions, covering a wide range of topics, including digital health, virtual tourism, international corporate taxation, and green bonds.

- 2) Social Perspectives by the Education, Culture, and International Relations Commissions, covering a wide range of topics, including international relations, social and culture, and education.
- 3) Role of Environment and Technology for Indonesia's Development by the Environment and Technology Commissions covering a wide range of topics, including disaster and greening management, food defense, and security, waste and pollution management, as well as human resource and public service.
- 4) Strategy towards Net-Zero Emissions by 2060 from the Renewables and Carbon-Neutral Energy Perspectives by the Energy Commission, covering a wide range of topics, including renewable energy and carbon-neutral related strategies in achieving Net-Zero Emissions in 2060.

Through this book series, the Directorate strongly believes there are many lessons from the current crisis that provide valuable references as the guides for us to anticipate future pandemics and other crises. The books emphasize the need for comprehensive joint efforts between government agencies and the various components of our nation and the need for forward-looking policies to benefit future generations.

Written with policymakers and the public in mind, the books will be presented to the Indonesian government and relevant stakeholders such as academia, NGOs, and the media and made open access to the public. The authors have also aligned their policy recommendations with the Sustainable Development Goals, Indonesia's Long Term National Development Plan (RPJP), and the United Nations Research Roadmap for COVID-19 Recovery.

The completion of this series is a testament to what is possible when individuals work across siloes and push boundaries to support nation-building. While change and challenges are inevitable for any

nation, we hope this series will leave a lasting positive impact on society and promote a legacy of knowledge translation from OISAA *Cendekia APIK*.

On behalf of the Directorate, we extend our deepest appreciation and gratitude to all the parties involved—authors, reviewers, commission chairs and members, OISAA *Cendekia APIK*'s President and Board, national-level Indonesian Student Association chapters, and the National Research and Innovation Agency publishing house (BRIN Publishing) that made all of this possible.

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Chapter 1

Introduction: Strategies to Recover Ahead of the Curve in Health and Economics

Anthony Paulo Sunjaya, Yoko Brigitte Wang, Riani Sagita, & Dwi Sugiharti

“Health is wealth” is a maxim we often hear. Never has this been truer than when the Coronavirus Disease 2019 (COVID-19) pandemic started in late 2019, altering our ways of life dramatically ever since. Not only overwhelming the health system, but COVID-19 has also disrupted the growth trajectories of many economies and brought numerous businesses into insolvency as well as families to fall below the poverty line at a micro-level.

COVID-19 has, however, presented opportunities to start afresh and allow innovation and positive disruption to flourish. Governments, health systems, industries, and other sectors could push forward transformations, including shifting digital in ten months on what would have usually taken ten years. In line with Indonesia’s

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Group of 20 (G20) Presidency theme in 2022, which is to recover stronger and achieve Indonesia's golden age in 2045, learnings from the pandemic need to be reflected upon and, when forward moving, institutionalized into policies for Indonesia to recover ahead of the curve, both in health and economics.

The Overseas Indonesian Student Association Alliance (OISAA or PPI Dunia in Indonesian), the largest overseas student organization with chapters across 60 countries and over 75 thousand individuals, aims to do this mission through this book. OISAA has a long history of contributing to nation-building and was inspired by *Indonesische Vereeniging*, which in 1921 was led by Mohammad Hatta, a medical doctor who studied in the Netherlands and became Indonesia's inaugural Vice-President, as well as a key figure in Indonesia's independence movement.

Chapters in this book are divided into three main themes, which we find pertinent to Indonesia's and the global response going forward. They are Digital Transformation, Building Future Ready and Resilient Societies, and Equitable, Sustainable, and Green Development. In selecting and constructing these themes, we sought alignment with the Sustainable Development Goals, United Nations COVID-19 Recovery Roadmap, World Health Organization reports, and others.

Section one posits the digitalization theme where authors discuss how digital transformation has provided new ways of working in health, Small Medium Enterprises (SMEs), financing, and the tourism industry. COVID-19 has exposed vulnerable areas in the health sector that jeopardize human capital and long-term economic growth. On the other hand, it has been proved that digital health works can substantially improve the health and well-being of Indonesians. Readers would be able to reflect upon what has been done by Indonesia and other countries, as well as future projections on what digital health might look like in Indonesia.

This theme also explores opportunities for Indonesia's growing e-commerce and digital financing space, currently the largest in Southeast Asia. By analyzing recent data, the authors provide evidence

of the rapid rise of financial technology (fintech) in Indonesia, despite the pandemic and their likely impacts on economic growth. Financiers and economists would find it interesting to be updated on current regulations regarding fintech in Indonesia.

Tourism has long contributed to Indonesia's employment, income, and foreign exchange. "*Visit Indonesia*", and "*Wonderful Indonesia*" were some of the government's programs to promote the beauty of Indonesia's diversity. However, lockdowns and border restrictions have made this condition untenable. In light of this, the authors of chapter five explored opportunities for virtual tourism to bring in revenue and raise awareness of new sights for people to visit once the tourism industry is recovered.

Section two of this book raises the critical question: how can the Indonesian society be more resilient and future-ready to face a future that changes more rapidly than before? Authors of this theme attempt to answer this question through the lens of food systems, mental health, culture, collaborative leadership, communities, and global supply chains.

The authors explored the slew of issues on our food and nutrition resilience that surfaced due to the pandemic. They discussed strategies for mitigating this situation and strengthening human capital during the post-pandemic recovery process, including reinforcing the agricultural and food sector and developing a strategy for mainstreaming essential nutrition.

Aristotle noted that "*Man (and woman) is by nature a social animal*". The pandemic has challenged the notion of connectedness and communities. While social (physical) distancing has become the norm, for some, we have become more connected than ever through technology. The authors of chapter seven argued why this might not be enough, questioned how pandemic burnout remains looming and discussed strategies to improve resilience through improving mental health literacy. These arguments are followed by discussions on fostering collaborative leadership to promote sustainable development with an Indonesian city as a case study, and also discussions on how

reinforcing the development of a creative economy to support the formation of community resilience, maintaining the cultural capital, and building a sense of identity for many Eastern cultures, which has dramatically shifted in this increasingly fluid world.

Globalization has brought supply chains to be longer than ever before. For the past few decades, it has been unsurprising to have most products manufactured in the People's Republic of China, packaged in Europe, branded with an American label, and sold in Indonesia and other countries worldwide. While COVID-19 has brought this into question, authors of the chapter on global value chains presented opportunities that remain present, including in newer fields such as vaccine manufacturing for Indonesia's emerging pharmaceutical sector.

Another global phenomenon covered in this book is climate change. The world is warming, an irrefutable fact presented in the 6th Intergovernmental Panel on Climate Change report in 2021 and 2022. At the same time, the world is becoming more divided and inequitable, with vaccine distribution during the pandemic between countries and within countries being a case in point.

Section three of the book thus presents ideas on what it takes to build a more equitable, sustainable, and greener future without sacrificing prosperity. Economists and health researchers share reflections on how reforms are needed to rebuild the society to be better from the current disruption by looking at the present, reflecting on the past, and supporting research to create future breakthroughs.

The section provides potential scenarios to revert Indonesia's current budget deficit due to COVID-19 through issues of green bonds, implementation of the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (BEPS), and strengthening Indonesia's role as a global manufacturing hub, including through integration with global supply chains. Beyond ideas, the authors also modeled the potential impact of such policies on Indonesia's economic state.

The past few years have shown that evidence-informed decisions are required to be the norm rather than the outlier in developing policy

decisions. We have also seen firsthand how, through rapid research translation such as vaccines, lives, livelihoods, and economies can be saved. The last chapter of this section explores the current landscape of health research in Indonesia, existing gaps, and the various opportunities to support a sustainable health system that can support Indonesia's human development and drive it to achieve prosperity for all as enshrined in Indonesia's Constitution.

In closing, the Editors would like to thank all authors currently undertaking their higher studies worldwide, reviewers, and advisors, both internal and external, who have contributed to making this book a reality.

We hope this book enlightens the readers to be optimistic about our shared future and reflect on the learnings we have gained from the pandemic. As the saying goes, everything happens for a reason. This pandemic might be a blessing in disguise, pushing us to leap forward and recover ahead of the curve towards a more resilient and sustainable future.

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Section 1

Digital Transformation

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Section Overview

Transforming into Digital Universe during COVID-19 and Beyond

Dwi Sugiharti & Radikal Yuda

Since the official statement from the WHO on March 11, 2020, the spread of coronavirus pandemics has devastated the world in all aspects. To control the spread of the virus, governments across the world have imposed lockdowns, either partially or entirely, and executed social distancing restrictions, which in turn have had substantial impacts on vital industries such as aviation, retail, food and beverages, and creative industry.

In Indonesia, many sectors face enormous challenges. However, businesses adopting a proper digital strategy in response to the pandemic impacts have successfully reduced their exposure and seized the opportunities presented by the extraordinary situation arising from COVID-19. On the contrary to the revenue collapses experienced by many industries, an exponential increase in revenue is shared by specific essential industries that rely heavily on the digital platform. These industries comprise e-commerce, online gaming, telemedicine, online education, and Information Technology (IT) services supporting remote working. Even in sectors with brick-and-mortar types in

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delivering services, many businesses have shifted to online channels, applying innovative ways to provide products and services for their customers. This digital adoption includes digital health interventions by launching an application named Peduli Lindungi.

This section reviews digital health interventions in Indonesia and other selected countries such as Egypt, Taiwan, South Korea, Japan, Thailand, and Australia. It compares these countries' mobile health innovations with Indonesia's Peduli Lindungi app. The elaboration shows the significance of having constant improvements as one of the solutions to reach even the remote population in Indonesia.

In the economic sector, Small and Medium-sized Enterprises (SMEs) have faced some issues with digitalization due to the cost of transforming the IT and digital infrastructure. Moreover, their lack of resources for addressing cyber security risks has left them behind compared to giant firms. The pandemic hit SMEs the worst because they rely heavily on a small number of suppliers and customers and do not have the cash reserve and funding support.

This section explores the contribution of the creative economy to community resilience through some efforts to develop digital and cultural capital. This section enlightens the readers to understand the role of cultural and digital capital in the community resilience framework. By identifying the challenges and opportunities faced by the creative economy sector today, especially the creative economy practitioners who empower local communities, this section posits one chapter investigating how to build resilience in local communities through culture and digital capital development. An investigation is also carried out to see how the creative economy positively impacts the recovery process after the COVID-19 pandemic.

There is no doubt that the coronavirus has accelerated the process of digital transformation. With the easing of lockdown and recovery journey post pandemics, digitalization is highly expected to gain further growth momentum in the post-COVID-19 era. Industries are advised to tap into the new wave of digitalization opportunities while developing a robust compliance mechanism to anticipate cybersecurity

and privacy risks. The government is expected to regulate digital applications in many sectors; therefore, there is no more grey area in which digital applications operate.

Onforward, digital capabilities will become increasingly important for industries to respond to changing customer demands, better manage the supply chain, build resilience, and maintain sustainable growth.

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Chapter 2

Bridging a Resilient Post-Pandemic Recovery through Digital Health Transformation

Yudha Eri Saputra, Singgih Bekti Worsito, Dinda Syifa Firdaus, & Ratih Arruum Listiyandini

A. Introduction

The digital revolution in health and the economy is a pivotal approach to post-pandemic recovery (European Public Health Alliance, 2022). Even before the pandemic came, the Government of Indonesia had already implemented digital health implementations such as Makassar's 24-hour-homecare/telemedicine and tele-radiology, National Health Insurance – Healthy Indonesia (BPJS) Mobile, BPJS Digital Claim Verification, digital Acquired Immune Deficiency Syndrome (AIDS) application, TeleECG and Teleradiology, P-Care BPJS, and application for Online Outpatient Registration. Private sectors like Alodokter, Go-Med, Homedika, and others also already contribute to the digital transformation journey in the health sector in Indonesia

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(Deloitte Indonesia, 2019). Digital health is critical in enhancing health system efficacy and increasing access to health services while keeping healthcare costs low, which will bring health systems closer to Universal Health Coverage (UHC). Digital health can contribute to UHC in various ways, such as improving patient access through digital intervention (WHO, 2019). However, current challenges lurking in the health systems like accountability, supply, demand, quality, and affordability, as these factors still become obstacles to maximizing digital health contribution in UHC.

Digital health intervention (DHI) is tightly related to the economy. Their interplay draws on and connects several businesses, including manufacturing, medical technology, medical devices, biotechnology, and pharmaceuticals (ANDHealth, 2019). Telehealth is an excellent example of this orchestration. During the pandemic, telehealth globally attained 65% more consumers, where 57% preferred telehealth services (Betheny et al., 2021). In the United States (U.S.), McKinsey & Co. reported impressive trillion-dollar revenues from telehealth in the third quarter of 2021 and predicted that \$250 billion of U.S healthcare spending could go to virtual-based care. According to Rock Health, the total venture capital investment activity in telehealth at the end of quartile 2 was \$14.7 billion, and the total revenue of the top 60 virtual care players experienced an increase of 83% per annum from 2019/2020. It means digital health contributes to the economy's improvement (Market et al., 2022). Although DHI classified by WHO does not specifically mention part of pharmaceuticals, pharmaceuticals got the advantage from clinical trials (Gomes et al., 2022) to data sharing (IBM, 2019; WIPRO, 2019; McKinsey & Co., 2021). This suggests digital health can be the key to bridging health and economic recovery post-pandemic.

Currently, Indonesia has progressed relatively well in the development and transition into digital health, evident by establishing telemedicine, PeduliLindungi, and 40 other digital platforms that serve as a synchronized database and information source (Sehat Negeriku, 2021). Furthermore, with 199.2 million smartphone owners, Indonesia

holds enormous opportunities to access digital health for inclusive healthcare services. The target market is predicted to achieve 60% of the total population by 2025, with a future revenue of more than 3 million USD for digital fitness and e-health players in Indonesia (Statista, 2022). Nevertheless, there are still many things to learn and challenges to be tackled, such as uneven distribution of healthcare quality, an uneducated market, and a lack of interoperability between healthcare systems and innovations (Wira, 2021; Jakarta Globe, 2021). User hesitancy can also stem from the accessibility limit, lack of technological knowledge or knowledge of technology, lack of integration to current EMR, lack of financial incentives, and increased overtime demands (Mohammed et al., 2021; Mogessie et al., 2021).

According to the World Health Organization (WHO), digital health belongs to the field of science, and its practice is mainly concerned with developing and applying digital technology to enhance health. It involves digital users and several comprehensive ranges of smart and connected devices, including the Internet of Things, advanced computing, big data analytics, artificial intelligence, machine learning, and robotics as applications of digital technology for health (WHO, 2021).

The WHO generally divides digital health interventions (DHI) into four categories depending on the principal user: clients, health workers, health system managers, and data services. Interaction between these principal users is crucial in conducting DHI to solve health system challenges (Table 2.1). Clients are members of the general public who are either potential or current consumers of health services and might benefit from innovations such as client-to-client communication, personal health tracking, citizen-based reports, or on-demand information services. Health professionals can benefit from innovations such as client identification and registration, client health records, health worker decision assistance, telemedicine, and referral coordination. Other advances that can help health system administrators include human resource management, supply chain management, and public health event notification. Finally, cross-cutting

capabilities to enable a wide variety of data collecting, administration, and usage; data coding; location mapping; and data interchange and interoperability are all included in data services initiatives (Healthcare Information for All, 2022).

Table 2.1 The Relationships between Health System Challenges, Digital Health Interventions, and Digital Health System Categories

Challenges in the Healthcare System	Digital Health Intervention	Digital Health System Categories
Insufficient commodity supply	<ul style="list-style-type: none"> a. Oversee the inventory and distribution of health-related products. b. Keep track of health-related stock levels. 	Information System for Logistics Management
Healthcare professionals' failure to follow clinical guidelines	<ul style="list-style-type: none"> a. Provide protocol-compliant prompts and notifications. b. Provide a checklist by the protocol. c. Communication with a healthcare provider and performance feedback (s) <p>Schedule the actions of the healthcare practitioner.</p>	<ul style="list-style-type: none"> a. Telemedicine systems b. Decision support systems
Lack of access to data or information	<ul style="list-style-type: none"> a. Data collection and management for health indicators regularly b. Storage and aggregation of data 	<ul style="list-style-type: none"> a. Information System for Health Management (HMIS) b. Medical Records in an Electronic Format c. Identification registries and directories
Clients are not being followed up on as much as they should be.	<ul style="list-style-type: none"> a. Send customized notifications and reminders to clients (s) b. Send the client tailored notifications and reminders (s) 	<ul style="list-style-type: none"> a. System for client communication b. Medical Records in an Electronic Format

Source: Adopted from Classification of Digital Health Interventions v 1.0 Figure 1. Linkages across Health System Challenges, Digital Health Interventions, and System Categories (hifa.org)

In addition, the WHO identified four critical components in implementing digital health interventions. First and foremost, health content and information must be appropriate, accurate, and in line with industry best practices. Second, digital health treatments must have discrete digital functionality to achieve specific health objectives. Third, text messaging, software, and information and communications technology (ICT) systems are software and communication channels that help offer digital interventions with health content. Finally, ICT and enabling environments include governance, infrastructure, legislation and regulations, workforce, interoperability, and digital architecture (WHO, 2019). Digital health had a tremendous impact during the outbreak since it was first recommended by WHO to reduce physical transmission of the virus. Interventions included telemedicine, monitoring surveillance systems, virtual hospitals, tracing and tracking activities, and even outbreak prediction models (Fagherazzi et al., 2020). As presented in Table 2.2, the four areas of digital health support during COVID-19 include the follows:

- 1) Public communication and information: disseminating information about the epidemic; preventing the spread of incorrect information
- 2) Monitoring and surveillance: modifying current systems to facilitate monitoring, surveillance, and contact tracking; genetic data applications; mobile health
- 3) Artificial intelligence is assisting in the delivery of health care
- 4) Apps that track vaccinations, immunity, and pharmacovigilance (Swayamsiddha et al., 2021; WHO, 2021)

Table 2.2 Type of Support of Digital Health Tools during COVID-19

Area	Type of Support
Communication and Information	Getting the word out to the public about COVID-19 Combating COVID-19 falsehoods
Monitoring and Surveillance	Existing tools are being adapted to help with monitoring, surveillance, and contact tracking. Modelling COVID-19 diffusion using mobility data Detecting and tracking novel variations using genomic data Using data from public databases and social media to aid surveillance and monitoring Contact tracing with the use of mobile applications Supporting symptom monitoring and self-diagnosis with mobile and web-based apps Self-isolation and quarantine are supported or enforced via applications.
Supporting the Delivery of Health-Care Services	Using remote consultations to assist in the delivery of critical care Using digital tools to manage hospital capacity Using AI to identify infections and potential treatments
Vaccination, Immunity, and Pharmacovigilance	Identifying individuals eligible for vaccination Combating vaccine hesitancy Monitoring of adverse reactions Using immunity certificates to support the reopening of economies

Source: Adopted from POLICY BRIEF 42: Use of digital health tools in Europe before, during, and after COVID-19. European Observatory on Health Systems and Policies, a partnership hosted by WHO. Editor: Nick Fahy and Anna Sagan. 2021

Subsequently, this chapter examines challenges in digital health intervention in global, developed countries (United States, Australia, Japan, South Korea, Taiwan), developing countries (Egypt, Thailand) and explore how their digital health tools and strategies in tackling the COVID-19 outbreak, as well as how the tools and strategies can be applied in Indonesia that has a large market.

In the end, this chapter formulates a recovery strategy to assist recovery in the post-pandemic time through digital health transformation.

B. Digital Health Innovations, Comparison with Other Countries

In this DHI comparison, we took examples of developed countries (Australia, South Korea, Japan, Taiwan, and the United States and developing countries (Egypt and Thailand), as well as Indonesia, to participate in a series of questions regarding battling the pandemic through the digital health system. We asked Indonesian students that are currently residing in the countries who are willing to participate (Australia, Taiwan, Egypt, and Thailand) to share their experiences on whether DHI—particularly mobile health applications as one of the required tools that should be used by the Indonesian students in overseas as regulated by each government—is considered helpful for them to get through and recover from the pandemic in the representative countries.

1. Australia

The first COVID-19 case in Australia was recorded on January 25, 2020 (Chen & Assefa, 2021). The aim of the public health policy in Australia during the pandemic has been to ‘flatten the curve’- reducing the rate of COVID-19 spread among communities, minimizing the number of deaths, and helping health care facilities to cope. Telemedicine or telehealth is now an important approach in Australia, and Medicare (Australia’s UHC scheme) has fully supported telehealth sessions through the permanent Medicare Benefits Schedule (MBS) since March 2020 (Davenport et al., 2020). Collaborations were also made with other countries to develop real-time transmission tracking, quarantine, and peer-to-peer consultation apps. One example is the Australian tracing app COVIDSafe, launched on April 14, 2020, and its use is highly encouraged by the government (Yang et al., 2020). Other health informatics systems used include patient triage, registration, COVID-19 screening clinic operations, electronic ordering, prescribing and documentation, reporting, analytics, and research (Cheng et al., 2021).

2. Egypt

As one of the first countries to monitor infectious disease through a national surveillance system, with an Acute Respiratory Infection plan that was developed in 2007 (Abu El Sood et al., 2021), a national task force for coronavirus was promptly established in Egypt's first case on February 14, 2020 (Beschel Jr., 2021). The government immediately launched a website to enable public access to case and mortality information on COVID-19 (Ghannam & Sebae, 2021); established a 24-hour counseling hotline; and an app with a map of local hospitals, proximity alerts, and self-reporting mechanism (Megahed, 2020). The Egypt Health Passport app provides Egyptian citizens with a COVID-19 vaccination tracker, dosage information, and a "vaccination certificate".

3. South Korea

Digital health in South Korea ranges from surveillance, testing, contact tracing, and strict quarantine (Whitelaw et al., 2020), and its use helped alleviate overload in tertiary hospitals (Kim et al., 2021). The use of big data in South Korea was implemented by using credit cards, GPS, and CCTV data to track people's movements (OECD, 2022) and the adoption of gadgets such as wristbands (Yonhap, 2020).

"My Healthy Way" app is the Korean Government initiative to integrate medical check-up data (from National Health Insurance records), prescription data (from the Health Insurance Review and Assessment Service), and immunization history (from the Disease Control and Prevention Agency) in a single system. In 2022, interoperability issues in My Healthy Way are planned to be solved, while in 2023, the integration hopefully will expand to personal financial and administrative data (Jung, 2021).

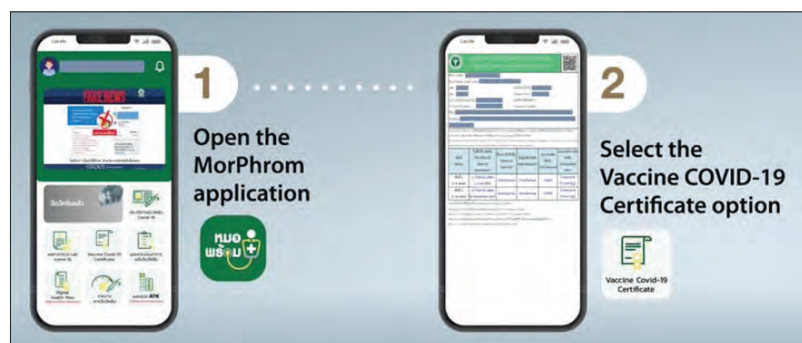
4. Japan

Robots in hotels and hospitals were instructed to take care of non-critical patients and those who need to stay-at-home to minimize human contact. In addition, the COCOA app was launched to trace

people contacted with positive test result citizens, with a decentralized framework to ensure tracking without requesting personal information (Sayeed & Hossain, 2020; Nakamoto et al., 2020). However, low connectivity persists in rural Japan, causing delayed data sharing.

5. Thailand

Digital methods and technologies are becoming more and more important in tourism-dependent Thailand (Bangkok Post, 2021). The Mor Prom application (Figure 2.1), launched by the Ministry of Health of Thailand, provides residents with access to vaccination services such as vaccine booking and tracking and up-to-date information on COVID-19. It also includes checking for side effects by monitoring after vaccination (Bangkok Hospital, 2022).



Source: Bangkok Hospital, 2022

Figure 2.1 MorPhrom App

The Phuket Sandbox Program allows foreign t to visit Phuket Province without being quarantined. Before traveling anywhere in Phuket for leisure activities, the RTPCR test result must be negative. This program is very important for Thailand as a country that depends on the tourism sector (Thai Embassy, 2022).

6. Taiwan

Taiwan became the first country to screen and implement 14-day quarantine with phone monitoring for all passengers from Wuhan when the first case was confirmed in December 2019. Along with establishing notifiable disease reporting and laboratory surveillance of SARS-COV2 within Central Epidemic Command Centers (CECC) (Jian et al., 2020; Han et al., 2020); every Taiwanese and foreigner can connect with Taiwan's single-payer national health insurance (NHI) (Han et al., 2020). Quick Response (QR) Code was also implemented since the beginning of the pandemic (Han et al., 2020) by locating designated traveling and contact history with a VPN query and face mask-rationing policy where the purchases of masks can be tracked by name. Other innovations include an entry quarantine system; a home quarantine tracking system by using LINE chatbot; a digital fencing system; Taiwan Social Distancing exposure notification app; QR-Code connected to free-of-charge SMS (that is still functional within low internet connectivity) as well as a user-friendly layout (Lo et al., 2021; Garrett et al., 2021).

7. United States of America

Despite its public health benefits, privacy groups in the US have raised concerns about how personal data would be secured, maintained, and deidentified (Cho et al., 2020; Valentino-DeVries et al., 2020). COVID-19 Exposure Notification App that Google-Apple backed up works well, at least in Alabama, Colorado, Connecticut, Louisiana, Minnesota, Nevada, North Carolina, Pennsylvania, Utah, Virginia, and Washington. Still, some states like Oklahoma, Texas, and Idaho do not deploy the app due to limited mobile phone service in remote locations or conflicting objectives such as vaccine distribution initiatives (U.S. Government Accountability Office, 2021).

C. COVID-19 and Digital Health in Indonesia

1. Digital Health during COVID-19 in Indonesia

UNDP supports national efforts to meet the 2030 SDG indicator 3.8.1 and the national priority in Rencana Pembangunan Jangka Menengah Nasional (RPJMN) 2020–2024 to increase access and quality of health services through the Health Governance Cluster. Work on health technology, financial management of Aids, Tuberculosis, Malaria programs, and waste management are among the initiatives' projects (UNVP, 2022). Since the beginning of telemedicine practice during the COVID-19 pandemic, simple digital health intervention has been deployed by both government and private sectors, such as digital learning packages based on web and mobile health for training; cloud and mobile-based for self-care; QR Code based/wearable systems for real-time transmission; intelligent systems for early detection, screening, and triage; and social media for burden analysis (Niakan et al., 2021). It involves digital users and a more comprehensive range of smart and connected devices, the Internet of Things, advanced computing, big data analytics, artificial intelligence, machine learning, and robotics service as applications of digital technology for health.

To combat the COVID-19 pandemic, the Indonesian government has made extensive utilization of digital information technology for (1) testing, (2) tracking, and (3) treating COVID-19. Consequently, the positive rate has dropped to 0.88% by early 2022, and COVID-19 cases dropped to 58% within two weeks after the height of the second wave in July 2021 (Widyawati. 2021). Based on the four important factors of surge capacity: staff (healthcare professionals), things (supply), structure (hospital beds and medical waste treatment), and system, Mahendradhata et al. (2021) investigated the potency of Indonesia's healthcare system to respond to COVID-19 (referral and essential health services). Indonesia's limited healthcare system capacity should motivate the government to implement numerous DHI. A virtual monitoring and assessment of vital health services and a digital triage system to complement the existing referral system (Lai et al., 2020)

were advocated to allow early identification of service interruptions (Mahendradhata et al., 2021).

A study by Widyawati (2021) showed that the Indonesian government reinforced a few digital health projects during the COVID-19 outbreak. During COVID-19 testing, a New All Record (NAR) database was created as an integrated system to record COVID-19 test results and link them to the national civil registration system, known as SILACAK. Another breakthrough was a test result tracking app, which was also developed using information technology through collaboration amongst health officials, TNI and Polri, and volunteers for its implementation. In less than six weeks, this innovation raised the tracing ratio by 1,000%. The Ministry of Health has created a telemedicine service to help COVID-19 patients who were self-isolating at home and to cope with the limited capacity of health professionals to meet patient in-person for the high demand of consultation, especially in mid of 2022. This service offers automated WhatsApp messaging for free remote consultations and drug delivery from pharmacies, thanks to a collaboration with 15 telemedicine companies and WhatsApp as a part of the Meta company. The Ministry of Health has also employed an integrated COVID-19 Big Data system to assess the COVID-19 status at all levels, from city/district to province. It has made the data available to be open and accountable to the public. The Ministry of Health was working on a long-term strategy to cope with COVID-19 by focusing on the health ecosystem, service efficiency, and data integration for data-driven policies (Widyawati, 2021).

From the private sector, one of the most prominent telemedicine platforms in Indonesia is Halodoc. The number of Halodoc app downloads has doubled since the pandemic, in line with the Ministry of Health's appeal to reduce in-person hospital visits (Uly, 2021). Meanwhile, from the government sector, the government's requirement for the public to use the services of applications provided by the government is becoming increasingly crucial. PeduliLindungi, for example, is an application designed to assist relevant government

entities in tracking and preventing the spread of Coronavirus Disease (COVID-19). This application has several advantages: (1) giving warnings to users, (2) surveillance, (3) downloading vaccination certificates, (4) obtaining information on COVID-19 test results, and (5) as evidence for accessing public services (Satuan Tugas Penanganan COVID-19, 2021). Introducing various unknown performance flaws or difficulties is a hurdle in designing smartphone apps; thus, users must be informed and pushed to update the apps frequently.

2. The Opportunities in Digital Health in Indonesia

Indonesia owns a large market for digital innovation. There are 170 million web clients in Indonesia (64.8% of the overall population), with a youthful populace of 110 million, 90% of whom utilize the internet (APJII, 2019). Over 96% of Indonesians access the internet through smartphones, while 15% do so through a home desktop (United Nations, 2019). Furthermore, Indonesia has also demonstrated potency for computerized commerce, including computerized digital health businesses (United Nations, 2019). Given that Indonesia is the biggest (\$54 billion) and quickest developing internet economy in Southeast Asia, it is estimated that Indonesia's internet economy will reach \$174 billion by 2025 at a compounded yearly development rate of over 40% (e-Conomy SEA, 2019).

Other key players include pharmaceutical companies, healthcare companies, and open and private health centers. Two of Indonesia's biggest pharmaceutical companies, Kalbe Farma and Deka Group, support digital health platforms KlikDokter (Kalbe Farma) and GoApotek (Deka Group), along with non-profit companies (Deloitte Indonesia, 2019). There are currently over 318,000 health apps accessible on the Google Play and Apple app stores in 2017, with over 200 well-being apps being included daily (IQVIA, 2017; Startup Health, 2019).

During the pandemic, healthcare startups learned how to cope with the situation in Indonesia (Reuters, 2020). Two upcoming Indonesian digital startups can be proposed as case studies. First, HELFA offers electronic kiosks for hospitals that are integrated with

mobile applications, where patients can utilize brokers or stand-ins for the long queues and administrative procedures in the hospital until the patient's turn has arrived. This innovation has begun to clear clinic waiting rooms and diminish persistent wait times, and HELFA is currently planning an expansion outside Jakarta. However, as with many application developments, there are still many performance problems and bugs. Privacy and security of health data are also challenges that arise (Pardede & Hakim, 2021). In the U.S., for example, privacy and security are already regulated for all solutions by Health Insurance Portability and Accountability Act (HIPAA) and Health Information Technology for Economic and Clinical Health (HITECH) Act (SGR Law, 2019). Another case study involves Sehati/TeleCTG. Sehati (Sehati, 2022) while TeleCTG (TeleCTG, 2022). This innovation reduces maternal and newborn mortality and is currently accessible in six of Indonesia's territories. An essential portion of TeleCTG's computerized health solution is a simple transducer gadget that can detect fetal pulse and uterine contractions; transmits the results to a midwife's smartphone and a specialist obstetrician-gynecologist.

However, the Indonesian government has yet to regulate digital health applications, leaving a grey area where digital health applications operate in silos—between existing (but separate) health and technology regulations. Indonesian digital health companies are taking full advantage of the regulatory grey area like data privacy and security, where for example, the law is still limited only to telehealth and online distribution medicine (Pardede & Hakim, 2021), but are aware of the impact that government intervention and regulation may have in the future, and engaging the government to be involved in the process of four giant tech unicorns in Indonesia (Gojek, Tokopedia, Traveloka, and Bukalapak) that has created momentum for other startups to penetrate the Indonesian market, with 70–600% percent increase in the development of online travel, ride-hailing, and e-commerce in 2015–2018 alone. Disruptions to healthcare may follow the wide-scale disruptions seen in other businesses in Indonesia, such as transport (with the arrival of Gojek, Get, and Uber) and E-commerce (with

Bukalapak and Tokopedia). In addition, the Indonesian government has strived to find another tech unicorn, with a yearly summit called Nexticorn (Another Indonesian Unicorn) for up-and-coming startups (Timorria, 2018). The government is extending web infiltration to inaccessible zones through the Palapa Ring Venture, which aims to bring the broadband web to Indonesia's populace with over 36,000 km of fiber-optic cable. (Kominfo, 2018) With this market, advanced digital health incomes are anticipated to expand in Indonesia from \$85 million in 2017 to \$973 million in 2022, at a compounded yearly development rate of over 60% (Consultancy Asia, 2018; Pardede & Hakim, 2021).

As stated in the Digital Economy Working Group of the G-20 presidency of Indonesia, for reducing the digital Blue and Green Economy (G20, 2022b), the Minister of Information and Communication suggested that there are four opportunities for f in Indonesia that can be addressed:

- 1) A shift to electronic health records
- 2) Partnership with stakeholders to build global cooperatives for health technology
- 3) The business-to-business partnership between G20 countries
- 4) Providing e-health issue customization on each G20 country according to their necessities (Hayati, 2022).

Currently, some of these recommendations are being developed in Indonesia, as it's important part of health technology (G20, 2022a) and pandemic management (WHO, 2020), such as:

a. Mobile health/telemedicine

Patients' interactions are moving to a new model by using smart-phones to communicate with health facilities, while practitioners use the new technology to accept consultations, monitor their health and

medicine consumption, and expedite administrative operations such as appointments, prescriptions, and billing.

b. Wearable and sensor devices

In diagnosis and treatment management, wearable devices measuring vital signs are utilized with audio and video technology. The ‘Internet of Things (IoT) revolution is a significant component of this expected future in digital health. In the trend toward precision medicine, these devices offer individualized patient treatment increasingly.

c. Data science

In the healthcare industry, AI/machine learning reduces labor on regular back-office chores, such as using speech recognition technology to quickly transcribe the doctor’s notes. Clinical data is also used alongside data science to facilitate the transition to personalized medicine for certain patients.

d. Cloud computing

Electronic health records are in the early stages of being transformed by cloud computing. This technology improves efficiency by minimizing silos and duplication in records management systems. It will also supply a large amount of aggregate data for studies. This is also a priority of the Digital Economy Working Group during Indonesia G20 Presidency in 2022.

e. Blockchain

In the healthcare industry, blockchain technology protects patient confidentiality while allowing for data aggregation that might be valuable for medical research and improving patient outcomes.

To compare digital health innovations in Indonesia, we further analyzed and compared the mobile health apps released by the government of each country, which consist of PeduliLindungi (Indonesia); Egypt Health Passport (Egypt); National Health Insurance, and Taiwan Social Distancing (Taiwan); Corona 100m, Self-Check, and Self Quarantine Safety Protection (South Korea); COCOA (Japan);

MorPhrom (Thailand); COVIDSafe (Australia); and some apps from U.S. Finally, we listed each feature of the apps on Table 2.3.

Table 2.3 Mobile Health Application from Government in Indonesia and Other Selected Countries that Supporting Combating COVID-19

Country	Mobile Health App Name	Features
Indonesia	PeduliLindungi	Digital Passport, Risk Zone Notification, Track and Tracing, QR Code, Integrated e-Haq Service, Teledoctor, COVID-19 Statistic
Egypt	Egypt Health Passport	Vaccination Status, Dosage Information, QR Code, Travel Document
Taiwan	National Health Insurance	Single-Payer System, Comprehensive Medical Coverage, Access to Healthcare, Medical Information, NHI e-referral system, Telemedicine, NHI MediCloud, Name-based Mask Distribution
	Taiwan Social Distancing	Exposure notification, QR Code connected to 1922 SMS, App introduction, Daily Summary, Upload Anonymous IDs, Privacy Policy and Terms of Use, Exposure Notification Setting, Help.
South Korea	Corona 100m	Contact Tracing
	Self-Check	Self-Diagnosis
Japan	Self-Quarantine Safety Protection	Self-Diagnosis, Self Quarantine Information, Emergency Contact, Motion Detection
	COVID-19 Contact-Confirming Application (COCOA)	Contact Information, Symptoms Checker
Thailand	Mor Phrom	Vaccine Reservation and Tracking, Post Vaccination Monitoring
Australia	COVIDSafe app	Bluetooth Notification

Country	Mobile Health App Name	Features
United States of America	GuideSafe Alabama	Exposure Detection, Complete Healthcheck, Share GuideSafe, Review Health Guidance
	COVID Watch Arizona	Exposure Notifications Alert, Add Test Result, How to Get a Vaccine
	COVID Alert Delaware	Updates, COVID-19 Alert, Exposure Notifications, Exposure Alert, Settings
	Aloha Safe Hawaii	Exposure notification, Exchange secure anonymous token (Exposure Alert), COVID-19 information and guidance.
	COVID Defense Louisiana	Exposure notification, Self quarantine information, Privacy protection information
	Michigan Covid Alert	Exposure alert by using Bluetooth Low Energy (BLE)), Exposure notification, Privacy protection information
	COVIDAware Minnesota	Exposure notifications, Exposure alert, Privacy protection information, COVID-19 information, and guidance
	COVID Alert New Jersey	Updates (latest information and statistics related to the COVID-19 pandemic; and survey), Exposure notification, COVID-19 Check-In (symptoms tracker and guidance), Settings, Public health representative contact
	COVID Alert New York	Exposure notification, New York COVID Data, My Health Log, MY COVID Analysis, AppSettings, Health Advisor call-back
	SlowCOVID North Carolina	Exposures (Exposure notifications), Notify Others (Exposure Alert), More Information (Privacy protection information; and COVID-19 information and guidance); How it Works, Stats.
	Care19 Alert North Dakota and Wyoming	Exposures, Notify Others, Affiliates, Info
	COVID Alert Pennsylvania	Updates, COVID-19 Check-In, Exposure Alert, Settings
	COVIDWISE Virginia	Exposures, Notify Others, Virtual Virginia Department Health, Share, Stats

Source: App Store (2021)

In the countries we analyzed, the mobile health solution for COVID-19 has been implemented in line with the increase in mobile device usage during the pandemic (Pandya & Lodha, 2021). In Taiwan, the QR code-based tracking system was connected to the phone provider through Short Message Service to improve connectivity with remote areas without downloading any other app. Egypt Health Passport data integrity could be updated and maintained without an internet connection. Since PeduliLindungi relies on internet connection, even for the “offline check-in” feature, there is a challenge to reach remote areas that cannot afford internet connections.

Japan's COCOA paid special attention to privacy issues, where no personally identifiable information was collected for contact tracing except for GPS location. COVIDSafe in Australia does not record its user location, and the encrypted information cannot be accessed by anyone, including the user (Australian Government Department of Health, 2021). User personal data in the PeduliLindungi app are stored for purposes that need to be communicated in detail to the public, even though the Minister of Information and Communication promised to delete user data after the pandemic (Wira, 2020).

My Healthy Way app from South Korea is a national-level, fully integrative, and interoperable Personal Health Record project fully supported by the national health system for health information exchange, which can be a goal for further developments of the PeduliLindungi App (Lee et al., 2021). Likewise, the MorChana app and Digital Health Pass in Thailand declared that the collected data would help the Ministry of Public Health of Thailand to assess the vaccine effectiveness and adverse event, which could also be followed by PeduliLindungi (Morchana, 2021).

According to Table. 2.3, most of U.S. Exposure Notification apps have at least four features so far (Exposure Notification, Exposure Alert, Privacy Protection Information, and How it Works). Information regarding the privacy protection information and how the system works are improvements that can be added to PeduliLindungi app updates since it's highly important to educate society regarding

their private information and digital literacy of COVID-19-related technology (Rothstein, 2020; Martinez-Alcalá et al., 2021).

D. Conclusion

From our findings, we conclude that mobile health solutions, as one example of DHI, have been well implemented in all the countries we searched so far, where the features in PeduliLindungi app as Indonesia's solution can be comparable with the existing solutions from other countries, and also the developers can adopting what has not yet adopted in the current version to fill the existing gaps to meet the implementation in its ideal condition. Even better, improving it's features for the untapped users in Indonesia. In all the countries we analyzed, digital health intervention was taken to foster the recovery from the pandemic and improve their countries' digital health initiatives. We believe the key to bouncing back post-pandemic by implementing digital health transformation is to stick with Global Strategy on Digital Health 2020–2024, in line with Strategy Transformasi Kesehatan Digital 2024. Engaging academic and researchers, public, private, and social sectors, and civil society is an unreplaceable element to foster the bounce back from the pandemic and accomplish all digital health transformation goals before 2024. Future steps may include mapping current DHIs and evaluating their impact, increasing collaboration with other stakeholders, and disseminating the use of DHI to the general public. It is crucial to keep improving existing solutions while improving infrastructure and building new solutions to reach even the unreachable population in Indonesia and to recover together, recover stronger.

E. Future Directions and Recommendations

As we mentioned in our findings where DHI example, mobile health solutions, has been implemented across the globe, including Indonesia with its PeduliLindungi app. Although the PeduliLindungi app is comparable with the other solutions, it's still needed some improvement. We strongly suggest that the Global Strategy on Digital Health

2020–2024 from WHO, and the blueprint Strategy Transformasi Kesehatan Digital 2024 from the Ministry of Health Indonesia, are several references that need to be considered improving for what's next, as it would also fill the gap for what hasn't been done or need to be done. As mobile health is just one example, the blueprint Strategy Transformasi Kesehatan Digital 2024 addresses larger DHI examples.

Previously, under the leadership of Minister of Health, Budi G. Sadikin, Strategi Transformasi Digital Kesehatan 2024's blueprint was made with support from United Nations Development Programme (UNDP) and Japan Government. As a result, more than 400 digital health application was developed by the country-level and local-level government. Three priority agendas on the blueprint cover the following: 1) widening telemedicine and implementing a regulatory sandbox for biotechnology-based innovation; 2) architecture design of integrated EHR, health system interoperabilities, security, and infrastructure; and 3) ecosystem assessment and trials health regulatory sandbox.

Meanwhile, according to Sumarsono (2020), fast broadband is required to connect healthcare practitioners and professionals with patients and their families via e-health infrastructure. Information fragmentation, lack of accessibility, disaggregation, and inequities in health care are present issues, but a solid health information system can bring answers. The Ministry of Health's initiatives can significantly impact by promoting and encouraging the adoption of national telehealth programs to boost national health plans. This process will be substantially accelerated by collaboration between health education and research institutions (or rather, all relevant government agencies), integration of research and teaching institutions in sophisticated academic networks, and academic-government-business alliances.

To accomplish this, the strategy should emphasize e-health components such as the electronic medical record (or electronic clinical history), telehealth (including telemedicine), mHealth (or health services delivered via mobile devices), e-learning (including training or distance education), ICT continuing education, and standardiza-

tion and interoperability between various software and application technologies. WHO has formulated a Global Digital Strategy on Digital Health to promote global collaboration and knowledge transfer in digital health. In the future, digital health governance must be strengthened at all levels, and its application must remain people-centered. This is a potential roadmap on how digital initiatives should be mapped in Indonesia (UNDP, 2021). Most importantly, integrating the current Digital Health Transformation Roadmap with WHO's Digital Strategy on Digital Health under the current digital health solution for combating COVID-19 will help researchers, innovators, policymakers, and stakeholders in every sector to prepare better for the upcoming health challenges and quickly recover from the current pandemic. We also propose several recovery strategies for helping Indonesia bounce back from the pandemic from the point of view of digital health (Figure 2.2), which consist of the following:

- 1) Mapping the current challenges of digital health interventions that have been implemented and problems that have not yet been solved in Indonesia.
- 2) Classify all the challenges and the existing solutions based on Global Strategy on Digital Health 2020–2024.
- 3) Connect the dots between the challenges and solutions; discover the unmet needs; and inlining the results with Digital Health Transformation Roadmap 2024
- 4) Attract all stakeholders from private, public, and social sectors; academics; researchers; and civil society from local and global to solve the discovered challenges, the unmet needs, and the inlined results
- 5) Measure the solved initiative from a health, economic, and social point of view while keep improving the quality of the solution and controlling the digital health interventions output together



Source: Authors

Figure 2.2 Digital Health Inclusive Recovery Strategy Post COVID-19

Following examples from Indonesia and the rest of the world, and considering Indonesia's current digital health landscape and possibilities for the future, Sumarsono (2020) proposes some recommendations:

- 1) National institutions (governments, universities, NGOs, and the private sector) and international organizations must strengthen and expand distance communication media to collect data from operational units, manage and implement the national health plan, and assess and recommend procedures.
- 2) National institutions (governments, universities, NGOs, and the private sector) and international organizations need to participate in advanced academic networks to gather data on formal and practical knowledge growth, suggest processes within the topic network, and help health managers, researchers, professors, residents, students, and professionals to be integrated into the networks.
- 3) National Telemedicine Programs should foster distant learning, collaborate on research, organize remote assistance, and monitor and assess their implementation and success.

- 4) Universities, teaching hospitals, and public and private research centers should share various models, progress, proposals, and projects with the Ministry of Health for the evaluation and consolidation of the academic-government-enterprise consortium, as well as their alignment with the government's priority theme areas (Sumarsono, 2020).

For specific stakeholders, we also recommend that academics and researchers map and evaluate the current DHI that help tackle the pandemic in Indonesia based on the Digital Health Transformation Roadmap 2024, in line with the WHO Digital Strategy on Digital Health 2020–2024; to keep providing recommendations and suggestions on Indonesia's recovering journey from the pandemic from the point of view of digital health intervention through international collaborations and to help educate civil society about the existing digital health intervention for combating COVID-19 in Indonesia along with the Digital Health Transformation Roadmap 2024 and WHO Digital Strategy on Digital Health 2020–2024.

For private sectors, we encourage to take the opportunity to collaborate with other stakeholders based on the Digital Health Transformation Roadmap 2024 that in line with the WHO Digital Strategy on Digital Health 2020–2024; and to provide additional solutions for the existing and not yet existing solutions of COVID-19 related digital health intervention in Indonesia.

For the public sector, we recommend evaluating the current COVID-19 related digital health intervention, along with Digital Health Transformation Roadmap 2024, and disseminating to disseminate in public any challenges and progress on Digital Health Transformation Roadmap 2024.

For the social sector, we encourage to look for the impact of existing COVID-19 digital health intervention in Indonesia on non-profit sectors; and to take the opportunity to collaborate with other stakeholders based on Digital Health Transformation Roadmap 2024 together with WHO Digital Strategy on Digital Health 2020–2024.

For civil society, we recommend to support all stakeholders in the Digital Health Transformation Roadmap 2024; and to keep aware of, report, and evaluate any COVID-19 related digital health intervention from other stakeholders.

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Chapter 3

An Unexpected Surge in E-Commerce and Accelerated Digital Transformation: A Blessing in Disguise from COVID-19

Christian Ricky, Anak Agung Ayu Putri Ardyanti, & Kevin Govinda

A. Introduction

The COVID-19 pandemic has had a significant impact on all aspects of life. To reduce the spread of COVID-19, governments worldwide have taken aggressive steps that are beneficial to preventing the spread of the virus. The government's two most crucial steps are social distancing rules and staying-at-home regulation. According to the United States Centers for Disease Control and Prevention, social distancing can be achieved by maintaining safe spaces between people. The stay-at-home regulation has forced many food services, shopping malls, and airlines to close their businesses. For example, in the food service industry, the business model has been massively changed from dine-in to online takeaway orders. Furthermore, international borders were

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closed to prevent the spread of the virus from inbound sources. The lockdown implementation in many countries has exacerbated the situation, making the economy paralyzed.

In Indonesia, the recommendation from WHO is implemented by imposing lockdowns partially in big cities and small towns. Due to the COVID-19 pandemic, people mobilization has become limited and drastically shifted the economic condition, including a shift in the digital world. Shifts occurred in the digital world cause both positive and negative impacts. One example of the negative impact early in the pandemic was the travel industry, where many airlines went bankrupt and closed their businesses (i.e., Air Italy and Alitalia). In addition, hotel occupancy rates at every accommodation type have also decreased dramatically due to the absence of tourists because of travel restrictions. Meanwhile, the positive impact of the digital world is the unexpected growth in e-commerce, food delivery services, online education, and digital marketing (Santoso, 2020).

Following the government regulations, restaurants have changed their business models from dine-in to taking away and prioritizing online orders. The food industry is transforming rapidly to online ordering in the pandemic era. This change was made possible by advances and developments in electronics, as an “offline to online” (O2O) model. O2O refers to a platform allowing customers to purchase products or services online from companies (Zanetta et al., 2021). The concept of O2O initially emerged from an e-commerce service provider, then developed into a Food Delivery Application (FDA). The FDA acts as a bridge connecting restaurants and markets with their consumers, making it possible to receive food at home. In addition, according to Zanetta et al. (2021), the online shopping method can reduce stress levels and the risk of being exposed to viruses due to traveling.

Concerning e-commerce transactions during the COVID-19 pandemic, some extraordinary facts were also found on major e-commerce sites. Several world retail websites such as Amazon and e-Bay have shown significant growth during the COVID-19 pandemic. In 2020

sales, the highest record was recorded by Amazon.com, as much as \$4.059 billion, followed by Ebay.com with sales of \$1.227 billion (Bhatti et al., 2020). However, this condition was the opposite in travel and tourism, especially in the airline industry. Within 2020–2021, major airlines such as Air Italy and Alitalia filed for bankruptcy. Philippine Airlines has already left the business, and Thai Airways is struggling to prevent airlines from bankruptcy in South-East Asia. Meanwhile, Indonesia's leading airline, Garuda Indonesia, was also plagued by enormous debt and attempted to avoid bankruptcy.

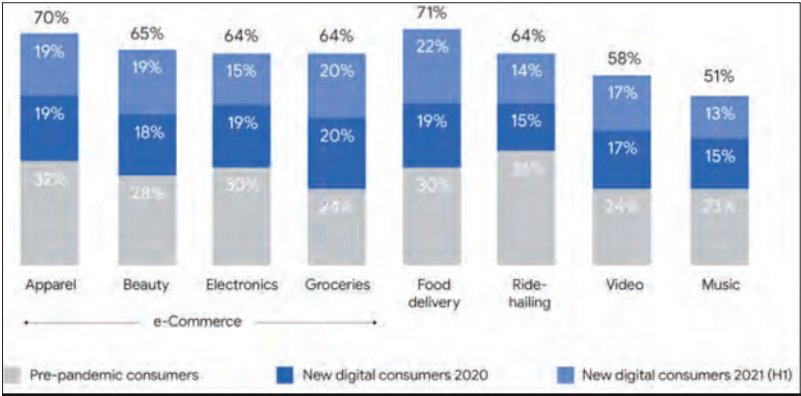
As the airline industry weakened and e-commerce boomed, one crucial issue must be discussed. Has the digital shift accelerated the restitution of Indonesia's national economy amidst the COVID-19 pandemic? Using three emphasized curative summaries: e-commerce, the travel industry, and online food ordering, the authors describe the problems and effects that have emerged in Indonesia. This chapter mainly discusses the rise of digital adoption and consumption in driving the wheels of the national economy. Eventually, the author hopes that the issues raised can be used as a source of knowledge and contribution to global society.

B. Google Perspective: Indonesia Has Potential Growth in Digital Consumers in 2025

Google has predicted that Indonesia will experience exponential digital customer growth in 2025. Based on Sea e-Conomy Research 2021¹ report, the number of new digital services in Indonesia has rapidly increased by 21 million new digital customers since the beginning of the COVID-19 pandemic. A 'digital consumer' is defined as any internet user who has paid for an online service in any vertical business before or after the pandemic (Baijal et al., 2021). A vertical is a business opportunity where a vendor fulfills a specific request for a particular customer. Pre-pandemic users who used the services

¹ SEA e-Conomy Research Report is a report produced by Google, Temasek, Bain. The reported data includes insight for e-Commerce, transport & food, online travel, online media, financial services.

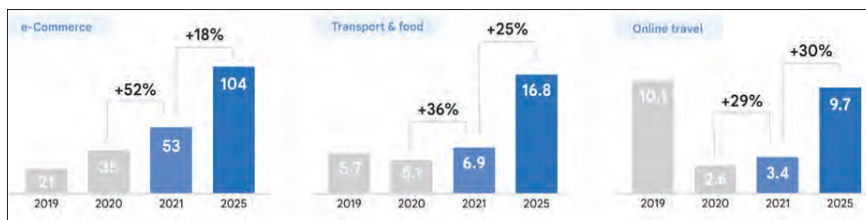
before the pandemic had increased the usage of their digital services by roughly 3.6 higher services since the pandemic. 96% of customers had digital services, and 99% continue to use digital applications. The highest category in e-commerce reported in apparel (70%), and outside the e-commerce is food delivery (71% depicted in Figure 3.1).



Source: Adopted from Baijal et al. (2021)

Figure 3.1 Percentage of Internet Users Across Digital Services Year to Year, based on Southeast Asia (Including Indonesia)

Resilience gives way to resurgence. In 2021, Indonesia’s Gross Merchandise Value (GMV) reached \$70 billion and got a 49% year-over-year (YoY) surge. This number was based on signifying the growth of the population. Overall, all segments in digital will bounce back with YoY development. For instance, based on Figure 3.2, by 2021, 52% growth in e-commerce supports digital services rises. All sectors are predicted to double growth by 2025, with e-commerce as the digital service leader. Accordingly, by that respective year, Indonesia will be the most aggressive digital financial services hub for fintech and digital platforms (Baijal et al., 2021). The development of fintech positively affects all e-commerce and other digital services.



Source: Baijal et al. (2021)

Figure 3.2 Indonesia GMV per Sector (\$B)

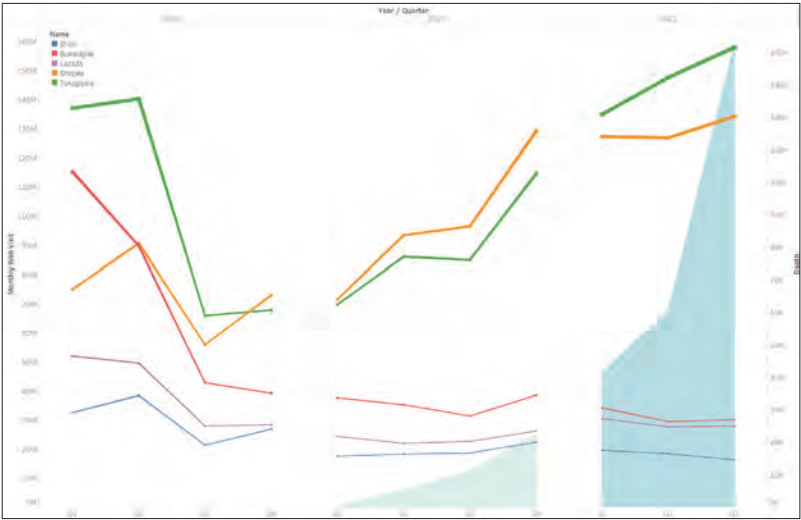
C. Indonesia's Economic Transformation through E-Commerce Penetration during the COVID-19 Pandemic

The internet is the primary device for selling or buying products in this digital era. Goods trading, traditionally done face-to-face, is now recommended to be done online. As a result, the rise of the digital economy is increasing very rapidly. Daily business activities such as buying and selling, advertising, marketing, consumer support, shipping, and payments extensively utilize websites and internet applications as their primary medium. Companies with suppliers or business partners use technology to trade and professionally do their business. Companies can reduce operational costs for trading activities through e-commerce, and buyers can choose suitable logistic methods to receive faster delivery.

Since the beginning of the COVID-19 pandemic in Indonesia, the utilization of e-commerce has experienced a rapid increase to meet daily needs (Rakhmawati et al., 2021). Data from iPrice, a company that compiles product prices from several e-commerce sites in South-east Asia, provides insight into Indonesian e-commerce sites. Figure 3.3 shows the e-commerce data with more than 10 million visitors. After combining the data with the COVID-19 cases, the data shows increasing e-commerce traffic during the pandemic.

However, according to the Central Bureau of Statistics (BPS), efforts to inhibit the spread of the COVID-19 virus have been hampered

economic activity, and society feels its impact on the level of social welfare. 72.39% of e-commerce business owners suffer decreased business income. In comparison, around 9.72% felt income increases. Only 17.89% of business practices claimed not to be disturbed by the COVID-19 pandemic, or their revenue remained unaffected as before the pandemic (BPS, 2021). Furthermore, e-commerce industries experienced decreased transaction volume of 71.83%. 18.40% had the same transaction volume as the volume of transactions before the COVID-19 pandemic. 9.77% of business owners experienced an increase in volume during the pandemic (BPS, 2021). The unseen impact of the pandemic is the transformation of the business from offline to e-commerce (online), digital service satisfaction level increases, massive adoption of internet technology, and the massive use of digital marketing (Santoso, 2020). Businesses that use the internet and digital marketing as a base are experiencing significant growth, such as online entertainment, food delivery, online education, and remote work (Orinaldi, 2020).



Source: Processed Data from iPrice insights (2019–2021)

Figure 3.3 Indonesia E-Commerce Site Monthly Visit and COVID-19 Cases

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In addition to data from the Central Bureau of Statistics and iPrice, another data report that uses cumulative data based on Statista reports a significant increase in the number of people buying consumer goods via the internet (Kemp, 2022). The number of people purchasing goods online is reported as follows: (1) January 2020: 168.3 million people, (2) January 2021: 138.1 million people, and (3) February 2022: 158.6 million people. Thus, this data indicates an e-commerce trend that started going down in the pandemic and is slowly moving up. Based on the trend, it might be possible to reach higher in 2023 and come back to the trend of 2020 (before the pandemic).

From the data presented by the Central Bureau of Statistics, e-commerce increased sharply between the 2021 period during the pandemic. However, this increase was not necessarily distributed evenly throughout Indonesia and at all levels of society. Small Medium Enterprises (SMEs) that can use digital platforms will prevail, but conventional SMEs will more likely go out of business and bankrupt. There is another factor; customers in specific locations have different preferences. For example, researchers found that on Java Island, purchase preference is mainly based on hedonic motivation, convenience, and economic motive. Meanwhile, on Sumatra Island, the only factors that impact purchase preference are social forces and facilitating needs (Alfanur & Kadono, 2019).

Another essential factor described by the Central Bureau of Statistics is that the reach and internet access of households in Indonesia are not evenly distributed. The World Bank states that the use and proportion of internet usage for business activities depend on household income. The use of the internet is much higher for wealthy households than for low-income families. However, the internet is not the only factor that can recover Indonesia's economy. Another critical factor is the ease of transportation for logistics and delivery of goods (KEMENPERIN RI, 2018). Delivery costs significantly affect the worth of an item in an area and cause the price of goods to be unequal on every island in Indonesia. Nevertheless, the Indonesian government can strengthen logistics by developing infrastructures

such as toll roads (Business Sweden, 2018). As the e-commerce market continues to grow and logistics infrastructure is advancing, Indonesia can emerge from the COVID-19 pandemic in the future.

D. What Shifts Have Occurred in the Tourism Industry due to COVID-19?

This section explores the challenges of the economy in the Indonesian tourism industry—particularly in travel agencies, airlines, and hotels—due to the COVID-19 pandemic. Tourism is generally divided into four major categories: transportation, accommodation, ancillary services, sales, and distribution (Camilleri, 2018). Transportation assists tourists in reaching a particular destination using a means of transport. Accommodation helps to house tourists while staying in a destination. Additional services include activities and attractions that entertain and engage tourists while on their visit. Lastly, sales and distribution—i.e., travel agencies—provide support services. The sales distribution system helps sell the tourism product to the prospective buyer through intermediaries, including service providers, wholesalers, and retailers.

Transportation is crucial in the operation and availability of support services in the international tourism industry. In addition, transport links tourists and tourism experiences in determining travel preferences. Travel accommodation selection greatly varies in quality and budget range to attract different travelers. Choices include family hotel, budget hotel, bed and breakfast, leisure activity hotel (farmhouse, camping, or educational accommodation), and Air BnB shared accommodation model. In selecting the accommodation, price and facilities are important factors. For example, backpackers prefer cheaper accommodations that only provide the essentials—compared to families that request more high-end accommodation with many amenities and services. It is also important to note the additional services encompassing tourist publications, public service, financial service, food and beverage, entertainment, retail facilities, tourist guides, and courier services.

Today’s consumers search for information and buy travel products from online travel agents. Travel agencies that provide online services compete better than those that sell face-to-face (offline) services. With the online condition, customers can easily choose the package that fits their budget, allowing them to have online discussions in advance. Nevertheless, due to COVID-19, Indonesia’s travel industry is quite problematic. COVID-19 damaged Indonesia’s airline business, one of the essential tourism factors. Based on the Central Bureau of Statistics (BPS, n.d.), depicted in Table 3.1, the number of international visitor arrivals has significantly declined from Q1 2020—where COVID-19 fears started—and continued to drop in the following quarters. The most significant dip was between Q1 2020 and Q2 2020, when the average number of international arrivals dropped by approximately 99.66%. As a result of the pandemic, there have been no visible signs of recovery in the airline business as the number of international arrivals is still not fully recovered.

Table 3.1 Indonesia International Visitor Arrivals from Q1 2019 to Q4 2021

Year	Q1	Q2	Q3	Q4
2021	21.693	48.600	13.532	53.417
2020	1.639.068	2.752	19.788	51.964
2019	2.197.042	2.312.334	2.853.312	2.472.018

Source: Processed Data from BPS (2019–2021)

The COVID-19 pandemic affected international arrivals into Indonesia and produced a sizeable impact on domestic departures. Bali is chosen as a case study to benchmark Indonesia’s tourism performance as the spearhead of tourism in Indonesia. Table 3.2 explain the four main Indonesian airports. The data clearly shows the decline in departures from 2019 to 2020, with Ngurah Rai Airport (Bali) experiencing the steepest decline—a 64% reduction in departures. Despite the performance in 2020 and 2021 not showing a good trend, the rate of decline across all airports has slowed, which offers an encouraging sign for the airline industry’s recovery—and continued vaccination efforts might trigger more travel demand shortly.

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Table 3.2 Indonesia's Main Airport Domestic Departures

Airports	2019	2020		2021	
	Domestic	Domestic	YoY Change (%)	Domestic	YoY Change (%)
Soekarno Hatta	19.265.062	8.621.796	-55	7.945.377	-8
Juanda	6.288.591	2.747.248	-56	2.471.367	-10
Ngurah Rai	4.955.803	1.775.528	-64	1.825.064	3
Hasanuddin	3.353.765	1.797.572	-46	1.763.972	-2

Source: Processed Data from BPS (2019–2021)

On the airline business side, the pandemic affected the airline industry, with Garuda Indonesia facing severe challenges due to the COVID-19 pandemic. Data from Garuda's 2020 annual report (Garuda Indonesia, n.d.), indicates that total domestic passengers have significantly dropped from 15.4 million passengers in 2019 to approximately 4.54 million in 2020. It means a 54.46% downfall. While total international passengers also exhibited a similar downward trend from 4.27 million to 0.77 million over the same period—approximately 69.44% decrease in international passengers. As a result, Garuda Indonesia's financial performance declined in 2020.

Despite the airline industry suffering a massive blow in flights due to the COVID-19 pandemic, low-cost airline shows resistance to the pandemic. Indonesia National Air Carriers Association (INACA) reported that Lion Air Group (Wings Air, Batik Air, Lion Air), which is a leading Indonesia low-cost airline group, shows a Seat Load Factor (SLF) well above 50%, especially for the domestic market (INACA, 2021). Additionally, in the pandemic era, a new flight provider—Super Air Jet—entered the Indonesian market in March 2021. Super Air Jet's business model revolves around the low-cost carrier model and explicitly targets the millennial or young generation. As of March 2022, Super Air Jet currently had 16 aircraft in total in service. Based on Garuda Indonesia, Lion Air, and Super Air Jet case, in sum, the Indonesian airlines business looks sluggish but slowly recovered the market.

E. What Shift Arose in the Hotel Industry due to Pandemics?

As shown in Table 3.3, the national hotel occupancy rate has significantly dipped in 2020 relative to previous years due to the pandemic. The hotel room occupancy rate reached 15.61% in Q2 2020—its lowest point in the last five years. This illustrates the devastating impact COVID-19 has on the hotel industry. Despite the record low occupancy rate in Q2 2020, the occupancy rate managed to increase to 31.04% in Q3 2020 and provided a dose of optimism for recovery. The recovery trend continued until Q3 2021 when the occupancy rate dipped below 30% again since Q2 2020 but was halted due to the delta variant outbreak. Nevertheless, the hotel occupancy rate bounced back strong in Q4 2021 at 48.34%, the highest point since the outbreak.

Table 3.3 Room Occupancy Rate of Classified Hotels from 2016 to 2021 (%)

Year	Q1	Q2	Q3	Q4
2021	32,94	35,05	28,03	48,34
2020	43,54	15,61	31,04	39,47
2019	52,26	49,9	54,8	58,25
2018	55,07	54,44	59,42	59,59
2017	52,64	54,08	57,98	58,11
2016	51,45	52,82	54,38	56,13

Source: Processed Data from BPS (2016-2021)

When speaking about the tourism industry, Bali is crucial for Indonesia. Bali has a role in increasing foreign exchange from the tourism sector, creating a potential market for local goods and services (Antara & Sumarniasih, 2017). Nevertheless, the COVID-19 pandemic greatly affected Bali’s tourist arrivals. Table 3.4 depict the devastating international arrivals during a pandemic. The most severe decline was during Q2 2020—where arrivals declined from 1,058,709 to 317 or a 99.97% reduction, signifying the harsh hit to Bali’s tourism sector. Arrival statistics in 2021 emphasized the crushing effect of COVID-19

on the tourism business—indicated by only 43 international arrivals in 2021—and provided a bleak picture of the current state of Bali.

Table 3.4 International Arrivals to Bali

Year	Q1	Q2	Q3	Q4
2021	17	18	0	8
2020	1.058.709	317	36	136
2019	1.329.681	1.509.515	1.796.751	1.603.596
2018	1.273.842	1.582.886	1.751.531	1.417.501

Source: Processed Data from BPS (2018–2021)

The lack of international arrivals due to the COVID-19 pandemic also negatively affected Bali hotel occupancy rates, as shown in Table 3.5. Before the pandemic, hotel occupancy rates rose around 60–65% from 2017 to 2019 and dropped to around 13–15% from 2020 to 2021. The most significant drop-off occurred in Q2 2020, when hotel occupancy rates reached a record low of 2.45%, equivalent to a 94.37% decrease compared to Q1 2020. Although hotel occupancy rates slightly increased to around 12% in Q4 2020, the recovery in subsequent quarters has been sluggish and dropped below 10% in Q3 2021—coinciding with the delta variant outbreak—but results in Q4 2021 provide room for hope as hotel occupancy rates reached its highest point since the COVID-19 outbreak.

Table 3.5 Occupancy Rate in Bali Hotel (%)

Year	Q1	Q2	Q3	Q4
2021	10,13	12,37	6,49	23,02
2020	43,56	2,45	3,84	12,62
2019	55,06	57,42	64,01	61,77
2018	60,27	67,13	72,58	60,53
2017	59	62,39	73,27	56,89

Source: Processed Data from BPS (2017–2021)

F. Hidden Opportunity: Indonesia Food Services Business Growth

Indonesia's GMV growth from quartile 1 2021 has been surpassing the deal values of each of the last four years of Indonesia's GMV. Indonesia will rise at an exponential rate of growth in digital consumers and the population. GMV of Indonesian Food Delivery Services was \$3.7 billion in 2020, the highest in Southeast Asia (Jayani, 2021). 74.4% of internet users in Indonesia used food delivery applications in 2020, and this percentage is the highest in the world (Lidwina, 2021).

Grab Food and Gojek's Food are the two most extensive food delivery services in Southeast Asia and exist in Indonesia. GMV of Grab's food delivery service reached \$7.6 billion or around Rp109,4 trillion in 2021, an increase of 28.8% from the previous year of \$5.9 billion, thus making Grab Food the best food delivery service in Southeast Asia (Rizaty, 2021). Meanwhile, Gojek's GMV rank is third in Southeast Asia at \$2 billion or Rp28.8 trillion. According to Rizaty (2021), a food delivery service has three strengths: lower costs, local leadership with product localization, and strong relationships with local governments.

Several aspects affect users in using the FDA, especially in Southeast Asia. Two countries from Southeast Asia, Indonesia, and Thailand are compared because these countries employ food delivery services from the same company: Grab Food and Go Food (GET in Thailand). As shown in Table 3.6, researchers used the Unified Theory of Acceptance and Use of Technology (UTAUT) based on the planned behavior theory to explain the customer experience when using the FDA (Chotigo & Kadono, 2021; Purnamaningsih et al., 2019; Widanengsih et al., 2022). The use of technology can be measured by UTAUT, which comprises four main determining dimensions (performance, effort, social, and facilities (Macedo, 2017).

Table 3.6 Comparison of Studies on Food Delivery Services.

	Indonesia	Thailand
Sources	Purnamaningsih et al., 2019 Widanengsih et al., 2022	Chotigo & Kadono, 2021
Before the Pan- demic	100 respondents Cost and benefit are constant problems when it comes to business. Additionally, competitive prices to the user and new customers must be offered as a competitive advantage (Purnamaningsih et al., 2019).	220 respondents Before the pandemic, price value is the essential feature of user satisfaction. Someone will have a habit of using the FDA if they are entirely pleased with the application (Chotigo & Kadono, 2021).
During the pan- demic	100 respondents User intentions when they use the food delivery services are highly affected by the easiness of the FDA and usage behavior. (Widanengsih et al., 2022).	250 respondents When using FDA, user satisfaction is affected by convenience, social influence, trust, and application quality. Interestingly, the price of a product does not have any impact. However, findings from user satisfaction when using the FDA during the COVID-19 describe a similar experience before the COVID-19. (Chotigo & Kadono, 2021).

Based on the findings in Table 3.6, both in Thailand and Indonesia, contactless food delivery has become a top priority for consumers in the pandemic era (Chotigo & Kadono, 2021; Widanengsih et al., 2022). Customers cherish food delivery safety factors such as handling, preservation, packaging, and logistics (Chotigo & Kadono, 2021). Before the pandemic, the FDA was influenced by price value in Indonesia, but not during the pandemic (Widanengsih et al., 2022). Before the pandemic, a person's habits did not affect the change in the type of food ordered, but during the pandemic, boredom caused someone to change food every time they ordered. Additionally, orders from online food delivery are highly determined by human emotions,

such as sophisticated food packaging and unboxing experiences. Chotigo & Kadono (2021) pointed out that amidst the COVID-19 pandemic, food delivery businesses using online services were highly popular among food lovers who were easily tempted by premium offers. Interestingly, customers showed a higher desire to order food for a meal or dinner at home when inviting friends.

G. Conclusion

The pandemic that has occurred worldwide is causing concerns about economic growth. The economy, which should grow every year, has turned upside down. The impact of the pandemic is the closure of international logistics and transportation, which significantly affects export and import trade relations between countries. This trade relationship immediately stopped and caused a country's balance sheet to experience a decline due to the pandemics. For Indonesia, economic resilience is proven by the growth rate of e-commerce. Fortunately, demand for domestic goods has not been affected during the pandemic. Another good thing is the high rate of FDA adoption of online food ordering. Other factors such as stay-at-home regulation have played a role in suppressing the spread of COVID-19 and increasing food orders online.

The current situation for tourism has not improved. Central Bureau of Statistics reported that Indonesia's tourism industry had not shifted, especially visitors from foreign countries. However, although the hotel occupancy rate has not increased for the hotel industry, there has been a shift in the business model. The business model that previously rented hotels to guests has now become a quarantine place for COVID-19 patients without symptoms or with symptoms. Thus, this encouraged them to create a new business model to maintain resilience in the hotel industry.

A report published by PWC—a public accounting firm—in 2015 (Hawksworth & Chan, 2015) predicts that Indonesia 2050 will become the fourth largest economy globally. Although the information was published when there was no indication of a worldwide

pandemic, Indonesia still has strong potency in the future with the 2045 Golden Generation program. Indonesia has both great power and great substantial capital to achieve mutual prosperity. The youths building Indonesia today will become dynamic leaders in the future who will synergize with each other, producing wealth and glory for all Indonesian people.

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Chapter 4

Digital Finance Acceleration during COVID-19 Pandemic in Indonesia

Annisa Ika Rahmawati & Riani Sagita

A. Indonesia Digital Economy

Indonesia's digital economy has rapidly grown and is the largest in Southeast Asia (World Bank, 2021). Therefore, the acceleration of digital financing has been expected to have a huge economic potential, and it has been projected to support economic recovery while reducing inequality simultaneously. Digital transformation in the financial services sector has provided many custom-made alternative services, such as settlement, financing, insurance, and asset formation. It has facilitated cashless services and improved financial access to a low-cost and convenient environment. Globally, financial services are expected to contribute to economic stability and economic freedom, as well as improve higher living standards and income equality.

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The exponential growth of smartphone usage in Indonesia has led to immense improvement in digital financial services. Central Bureau of Statistics (2020) reported that Indonesia's household internet use reached 78.18% in 2020. It had significantly increased compared to 2016 when only 25.37% of the residents had internet access. Moreover, Indonesia ranks 4th among smartphone users, following China, India, and the USA in the 2020 survey (Pusparisa, 2021). It has been reported that there were 160.23 million smartphone users in 2020 (Pusparisa, 2021).

In 2020 the COVID-19 pandemic forced many countries, including Indonesia, to strictly lock their country down to prevent the spread of the virus. This condition has caused a downturn in the economy and the global economy went through an abrupt halt. People must do activities, work from home, and even their children must study from home. As a result, the considerable increase in smartphone usage in 2020 is also affected by this pandemic.

This economic change from the conventional way to the digital way may offer many opportunities, thus, this chapter will assess the implementation of digital finance acceleration as the instrument to reignite Indonesia's economy during and post the COVID-19 pandemic. The term acceleration in this chapter is defined as the utilization of digital finance amidst the COVID-19 pandemic to maintain the smoothness of their activity.

This chapter notably examines the fintech payment and lending transaction value development during the COVID-19 pandemic. Besides, this chapter analyses the fintech industry's contribution to boosting national economic recovery and the future of Indonesia's economy. This chapter also suggests that the fintech payment and lending transaction values relatively show resilient trends during COVID-19. On the other hand, internet banking transaction values provide the highest contribution compared to the other fintech instruments. It also finds that the contribution of fintech development has supported the national economy recovery through National Cashless Program, Pre-employment cards, digital marketplace integration

through QRIS, and financial education through digital platforms. This chapter covers some key components that might need to be considered in accelerating digital finance in Indonesia, especially during pandemic that could offer valuable inputs for governments, educational institutions, industry, and the community.

B. Review on National Digital Finance based on National Statistical Data

The Financial Stability Board (FSB) defines *fintech* as part of technology innovation in financial services that could result in new business models, applications, processes, or products with an associated significant effect on financial markets and institutions and the provision of financial services (FSB, 2019). From a global perspective, fintech has potentially benefits financial stability from many aspects. First, fintech may optimize the decentralization and diversification function in many areas. Second, fintech may create innovation in financial services that boost efficiency. Third, fintech encourages transparency by enhancing data potency and avoiding information asymmetries. Lastly, fintech offers more comprehensive access and convenience in financial services (FSB, 2017).

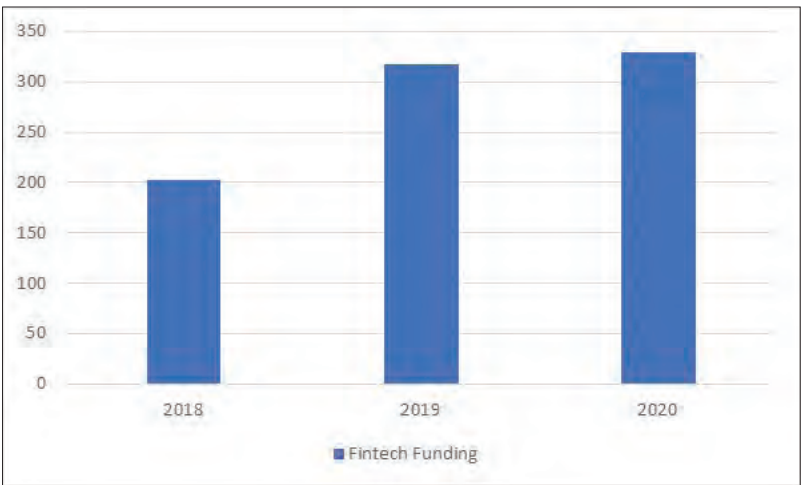
The development of fintech is in line with the growth of internet access, mobile phone penetration, and digital financial services, such as e-banking and other online platforms. Digital finance innovation in Indonesia is categorized into four major clusters: digital payments, digital banking, peer-to-peer lending, and crowdfunding. As the regulator, Financial Services Authority (Otoritas Jasa Keuangan-OJK) has conducted several strategies to accelerate the development of fintech in Indonesia, which are establishing research, policies, and regulations, creating business models and business governance samples, conducting workshops and seminars, facilitating co-working space and consultation, as well as expanding the collaboration among regulators, fintech hubs, and international organizations (OJK, 2020c).

The fact that the transaction values of phone banking, mobile banking, internet banking, electronic money, and peer-to-peer lend-

ing are not directly impacted by the COVID-19 pandemic (Sugandi, 2021) means that this industry can potentially support Indonesia's national economic recovery. For example, it has contributed to a pre-employment card program to distribute cashless social aid to people impacted by COVID-19 (Sugandi, 2021).

Furthermore, innovation development is fundamental to creating a stable, contributed, inclusive, and sustainable digital financial environment. The synergy among fintech companies, financial institutions, microfinance, cooperatives, and community agents are crucial aspects to be conducted. Nonetheless, the inclusive and sustainable financial sector should be supported by stakeholders' shared vision and clear strategy (Batunanggar, 2019).

The utilization of fintech before and amid the COVID-19 pandemic is explained in Figure 4.1.

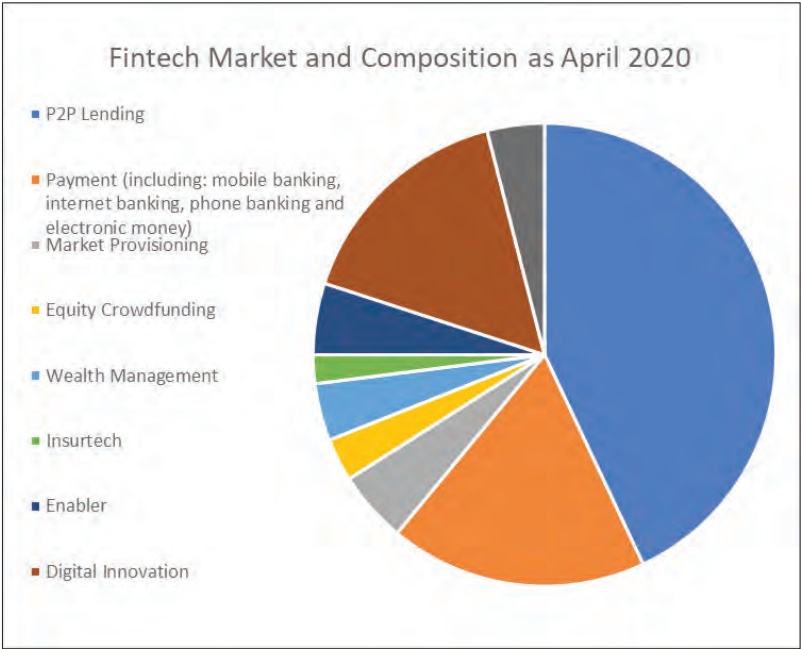


Source: Medici (2021)

Figure 4.1 Fintech Transaction (Values in USD million)

According to Medici (2021), the total fintech transaction values have gradually increased from 2018 to 2020. Fintech contributed 203 million USD in 2018. This trend significantly increased 56% or 317 million USD in 2019. Then, it was slightly increased to 3.79% or 329

million USD in 2020 as described in Figure 4.1. The critical factor of the gradual growth is the massive internet penetration and number of smartphone users in Indonesia (Medici, 2021)¹.



Source: OJK (2020c)

Figure 4.2 Fintech Market Composition

Figure 4.2 illustrates the fintech market compositions in Indonesia by category. As per April 2020, among the 364 fintech companies in Indonesia, Peer-to-Peer (P2P) lending has the largest proportion covering 43% or 161 registered companies in OJK2. The second position was placed by fintech payment companies with 18% of the total proportion. The types of fintech payment recorded by Bank Indonesia are phone banking, mobile banking, internet banking, and electronic

1 152 million internet users in Indonesia in 2019; Compared to 92 million in 2015, it almost doubled for 5 years (Indonesia Fintech Report, Medici, 2021)
2 87.71 trillion IDR fund has been distributed to society (OJK, 2020b).

money. Meanwhile, the rest of the compositions consist of market provisioning, wealth management, crowdfunding, insurtech, enabler, digital finance innovation, and others.

Table 4.1 Fintech Ranking Index in ASEAN countries

2019 Rank	Country	Score 2019	Rank 2018	Score 2018	Rank 2017	Score 2017
1	Singapore	51.83	1	44.35	1	37.47
2	Indonesia	51.47	2	39.37	2	30.40
3	Thailand	30.91	4	24.29	4	18.52
4	Malaysia	29.28	3	24.70	3	20.92
5	Philippines	23.99	5	18.65	5	13.85
6	Vietnam	18.61	6	15.20	6	11.77
7	Brunei Darussalam	10.59	7	9.60	7	8.50
8	Cambodia	9.34	9	6.57	9	4.90
9	Myanmar	9.13	8	7.65	8	6.02
10	Laos	6.19	10	4.93	10	3.86

Source: Huong, et al. (2021)

Table 4.1 shows the fintech ranking among ASEAN countries. We can see that Indonesia occupied the second highest position after Singapore, with an index score of 51.47 in 2019. The score has significantly increased from 39.37 and 30.40 in 2018 and 2017, respectively, although Indonesia also ranked second then. The ranking was based on an index of fintech indicators such as mobile post-payment, digital commerce, crowdfunding, crowd investing, digital remittances, Robo-advisors, crowdlending, and market lending. The formulation is measured based on the transaction values of each instrument, the number of users, and the average transaction value per user (Huong et al., 2021).

C. Digital Finance and Economic Growth

As we may have ever heard the term “disruptive technology” at the beginning of the 2000s when massive technological developments evolved, we now might could learn the correlation between digital

financial and economic growth, which currently represents a growing interest. By using mathematical analysis³, Yoshino and Kaji (2020) argue in general that fintech has several impacts on society and the economy, as follows:

- 1) Fintech would likely improve bank efficiency, which leads to increased interest rates on deposits and improves households' utility.
- 2) Fintech could reduce the cost of the bank, which is likely to reduce the loan rate and increase the deposit rate.
- 3) Fintech also may reduce the transaction cost of capital, which increases the possibility of a country raising money from abroad.

Khiewngamdee and Yan (2019) suggested that fintech impacts the APEC countries' economy, particularly encouraging growth and productivity through e-payment, as well as lowering price volatility and inequality. Furthermore, Khere et al. (2021) found that the component of digital finance has a positive correlation with the GDP per capita growth rate, suggesting that its inclusion is likely to speed up economic growth. In country-level studies, Narayan (2019) indicated that fintech start-ups in Indonesia have a positive association with its economic growth in the second year forward; based on the fact that, in the first year, fintech has disruptive effects. Moreover, a study on the innovation of fintech in China would likely stimulate the green economic growth (Zhou et al., 2022).

Even though the study on the impact of digital finance on economic growth is still limited, it can be inferred that digital finance is likely to promote the economy's growth through inclusiveness. Even though this study only focuses on the utilization of digital finance during the COVID-19 pandemic, it could encourage more scholars to conduct further research on digital finance and economic growth.

3 The detail can be found in Yoshino & Kaji (2020), The Macroeconomic Effects on Fintech.

D. Analysis of Fintech Acceleration during COVID-19 Pandemic

1. Fintech Payment and Lending Transaction Values during Pandemic COVID-19

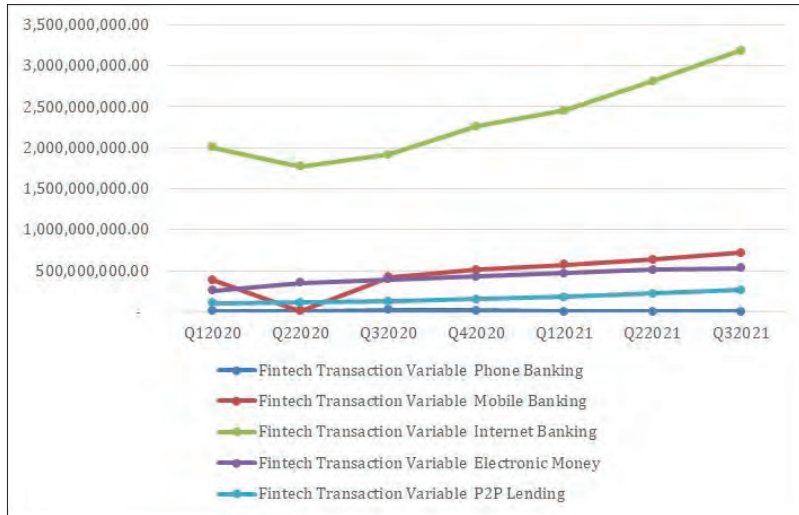
Table 4.2 Fintech Transaction Values during COVID-19 Pandemic (Quarterly)

Period	Phone Banking	Quarterly Growth	Mobile Banking	Quarterly Growth	Internet Banking	Quarterly Growth	Electronic Money	Quarterly Growth	P2P Lending	Quarterly Growth
Q12020	9760785,85		384266352,14		2008612364,33		257078749,00		102534393,51	
Q22020	11628791,04	19,14%	11628791,04	-96,97%	1772741172,91	-11,74%	353587670,00	37,54%	113460536,67	10,66%
Q32020	20717937,85	78,16%	422985815,77	3537,40%	1914178379,74	7,98%	393904001,00	11,40%	128698493,17	13,43%
Q42020	18875762,93	-8,89%	511185320,76	20,85%	2263296023,17	18,24%	432281380,00	9,74%	155902554,22	21,14%
Q12021	194519,11	-98,97%	571089198,02	11,72%	2454558017,29	8,45%	470811351,00	8,91%	181671309,83	16,53%
Q22021	130605,21	-32,86%	637594343,08	11,65%	2809674007,91	14,47%	511254525,00	8,59%	221566741,07	21,96%
Q32021	110066,04	-15,73%	717661993,14	12,56%	3186963938,26	13,43%	530664510,00	3,80%	262933664,82	18,67%

Sources: BI (2021 a & b) and OJK (2021b)

Table 4.2 illustrates the fintech transaction values from Q1 2020 to Q3 2021, which are categorized as payment and lending transaction values. Phone banking, mobile banking, internet banking, and electronic money are identified as fintech payment transactions. Meanwhile, fintech peer-to-peer lending is recognized as fintech lending transactions. This classification considers because fintech payment and lending dominate the total fintech market composition. Besides, these variables are periodically reported to BI and OJK.

Q1 2020 and Q3 2021 is the COVID-19 pandemic period. During this period, the trend of internet banking transactions was increasing, and the values were the highest trend among other variables. On the contrary, the trend of phone banking transactions decreased, and the values were identified as the lowest. In addition, in Q2 2020, there is a decrease in fintech usage, especially mobile banking and internet banking, likely due to the post-Chinese New Year season (Sugandi, 2021). However, this trend gradually increased by Q3 2021. This was likely due to the limitation of people's mobility during COVID-19, which encourages internet utilization. Overall, the fluctuations of the transaction value movements, except for phone banking, constantly increase amid the COVID-19 shock. It shows that the transaction values of fintech payment and lending were relatively resilient during the COVID-19 period, as depicted in Figure 4.3.



Sources: Author, BI (2021a), OJK (2021b)

Figure 4.3 Fintech Transaction Values during Pandemic

This chapter categorized fintech payment into phone banking, mobile banking, internet banking, and electronic money. Essentially, these instruments utilize the digital system or internet connectivity in their service transactions. The utilizations are distinguished from the access. Internet banking access only through the bank's website, meanwhile mobile banking access through the application. In another hand, electronic money is defined as payment in electronic from where the value of money is stored in certain electronic media. Users must first deposit their money to the issuer and store it in electronic media. The use of electronic money is widely believed as an innovative and practical means of payment. It is expected to help payment transactions for mass, fast, and micro economic activities such as tolls, public transportation, minimarkets, food court, or parking (Bank Indonesia, 2020). Lastly, phone banking also categorizes as fintech because it's a part of digital banking. Phone banking provides transaction services through bank's contact center (OJK, n.d.).

Internet Banking service, the most contributed fintech variable, is a banking customer service that provides information and transactions from an internet connection through the bank's website. This service is accessible through computer desktops, laptops, tablets, or smartphone devices. Internet banking features encompass saving accounts, deposits, credit cards, account mutation information, and interest rates. Internet banking also provides payment and transfer transactions ranging from daily routine until the scope of business (OJK, n.d.).

During the COVID-19 pandemic, internet banking's transactions values experienced a slight shock at Q2 2020. However, the movement was gradually rising to Q3 2021. This fact is in line with the implementation of a large-scale social restriction for most physical activities in early Q2 2020. The policy urges society to utilize contactless financial transaction instruments such as internet banking to sustain day-to-day activities, for instance, daily food orders, grocery shopping, regular payment, and banking transfer.

Phone Banking, a banking call center service, provides information and banking transactions through the bank's contact center. The features of the phone banking consist of the information services about interest rates, a bank's product, ATM and bank's branch's location, banking transactions, payment transactions, and transfer transactions (sikapiuangmu.com). According to Table 4.2 and Figure 4.3, phone banking transaction values are relatively stable until they undergo a significant drop from Q4 2020 to Q1 2021.

Mobile Banking is a transactions service that utilizes applications downloaded through smartphones. The benefits include banking information, transfer, and payment transactions (sikapiuangmu.com). Mobile Banking transaction values constantly increased during the period, except in Q2 2020, which the trend was drastically dropped. The declining might occur due to the external factors such as economic fluctuations that impact economic transactions and people preference to utilize another financial instrument.

Electronic Money is a payment instrument in banking computer systems that may facilitate electronic transactions. Electronic Money is mainly used for mass economic activities such as toll road transactions, transportation transactions, and groceries transactions (sikapiuangmu.com). According to Figure 4.3, Electronic Money transaction values have a stable and constant trend during the period. This trend describes the electronic money utilization in society has provided convenience for cashless transactions. Inline with the statement from CNBC (2020) that E-money is very applicable for mass transactions with small values of transactions but high frequency, such as transportation, parking, toll roads, fast food, and supermarket. Moreover, in the big cities, business communities utilize various e-money payment methods, which offer faster connections. Meanwhile, from the side of the government, many programs such as non-cash social assistance uses e-money as a distribution instrument.

Peer-to-peer (P2P) lending is a lending transaction service that connects the lender and borrower directly through digital technology. P2P lending provides an immediate submission process and non-underlying assets as a guarantee. The growth of fintech P2P lending is currently growing rapidly and is easily accessible to people who are still finds difficult to access loan funds and for MSME actors for business development capital. P2P lending fintech provides access to loans for those who need education and health care funds with their respective standards, ranging from loan creditworthiness, loan nominal and tenor, interest rates, and security levels. According to the statistic, per February 19, 2020, the total P2P lending fintech registered in OJK was 161 companies (OJK, 2020c).

2. Fintech Regulation in Indonesia

The two supervisory bodies, the Bank of Indonesia (BI) and Otoritas Jasa Keuangan (OJK), regulate Indonesia's fintech industry. BI governs the fintech industry of payment policy, digital financial service, digital identity, and fraud sharing databases. Meanwhile, OJK regulates digital financial innovation, equity crowdfunding, online mutual funds

agents’ transaction, and fraud sharing database (OJK, 2020c). In terms of statistic data, BI also records the transaction values and volume transactions of phone banking, mobile banking, internet banking, and electronic money in Indonesia. On the other hand, OJK records peer-to-peer lending, marketplaces, balance sheet lending, crowdfunding platforms, insurtech, investment and personal financial management providers, and market aggregators.

Furthermore, OJK has appointed AFTECH as an association of the digital finance innovation organizer as the representative of the industry side. In terms of function, AFTECH accommodates fintech’s shareholder’s contributions to drive innovative technology and strengthen the national fintech’s industry competitiveness (AFTECH, 2020).

Along with the journey, in 2021, OJK has issued Digital Finance Innovation Road Map and Action Plan 2020–2024. The roadmap explains the OJK strategies to support digital financial innovation in Indonesia, enabling a balanced framework, agile regulations, and market conduct supervision (OJK, 2020c). BI and OJK have issued regulations that cover most of the fintech categories. The existing fintech regulation in Indonesia are classified in detail as follows:

Table 4.3 Existing Fintech Regulation in Indonesia

Verticals	Regulations	Regulator	Description
Online lending	POJK 77/ POJK.01/2016	OJK	Regulate the fintech-lending platforms.
Digital Financial Innovation	POJK 13/ POJK.02/2018	OJK	Fintech regulatory sandbox provides regulatory clarity for fintech categories that have not been specifically regulated by BI/OJK/other ministries.
Payment Gateway	PBI 18/40/ PBI/2016	BI	Regulates the licensing policy and procedure that apply to all payment systems, including payment gateway, e-wallet, switching, and clearing.
E-wallet	PBI 18/40/ PBI/2016	BI	

Verticals	Regulations	Regulator	Description
E-Money	PBI 20/6/ PBI/2018	BI	Regulates the e-money operation, including the licensing and transactions.
Remittance	PBI 19/12/ PBI/2017	BI	Regulates the payment gateway system through financial technology
Security Crowdfunding (SCF)	POJK 57 POJK.04/2020	OJK	POJK 57 is the latest FinTech regulation published, which flesh out the POJK 37. It essentially regulates three main stakeholders involved in the SCF business model: the SCF platform, the equity issuer, and retail investors.

Sources: AFTECH (2020)

As explained in Table 4.3, fintech regulations in Indonesia have been relatively established in a comprehensive manner. The respective regulators have created the frameworks and reached the fintech industry's general scope, including online lending, digital financial innovation, payment gateway, e-wallet, e-money, remittance, and equity crowdfunding. The high demand for fintech products and the market dynamics are expected to align with the solid and balanced regulations. However, this digital platform does not necessarily run without any risks, such as shadow banking, fraud, cyber-attack, and money laundry that would be treated as challenges in the digitalization era for the country. In mitigating those digital challenges, in terms of regulatory and sup, OJK has established action plan strategies to be implemented and evaluated yearly. Among of key initiatives of the actions are, first, enhancing consumer protection in the digital age, including digital financial literacy and complaint management practices. Second, providing data privacy and protection. Third, enhancing regulation and supervision fintech, including the regulatory and supervisory aspects. Fourth, improving dialogue and support for innovation such as innovation hub, knowledge-sharing sessions and dialogues, regulatory sandbox, regional, and global coordination. Fifth, focusing on improving safety and soundness practices in the emerging fintech industry including cybersecurity, fraud prevention, and risk management, etc. (OJK c, 2020).

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The synergy among the fintech industry is also essential in fintech development and supervisory. AFTECH, a fintech association, has collaborated with 335 registered fintech companies, eight financial institutions, and seven technology partnerships. The related regulators and technology authorities include the Bank Indonesia, OJK, National Financial Inclusion Strategy, the Ministry of Communication and Information, the Ministry of Industry, and the Ministry of Finance. Therefore, the collaboration among industry, regulators, and associations would be beneficial in providing interconnected databases, exchanging the current and updated information, as well as in exposing transparent interaction among fintech players and regulators.

3. Fintech Contribution to National Economic Recovery

The fintech industry has supported the government in the national economic recovery program. According to Ardianto (2021), per end of 2020, P2P lending has distributed 262.26 million IDR national economic recovery funding. The funding was allocated to 48.629 borrowers' accounts (Ardianto, 2021).

Amid the COVID-19 pandemic, the government also has involved fintech industry in the national economic program. The government controls the fintech companies to support the distribution of non-cash social aid for poor societies impacted by COVID-19, named the Pre-employment card (Sugandi, 2021). The mechanism of Pre-employment cards is that the government distributes the cards to 5.3 million recipients. The program provides skill/competence development and entrepreneurship training to the participants. After joining the training or the courses, the funds are transferred through a fintech instrument such as a digital account or e-wallet (Sugandi, 2021). The program also optimizes the digital marketplace utilization to associate job seekers and SMEs.

Cashless National Action is one of the government's national economic programs that specifically regulate fintech during the national economic recovery. The Government interconnects customers and marketplaces through Quick Response Code Indonesian

Standard (QRIS). As a follow-up to the QRIS initiative, many fintech e-money platforms support this program, such as ShopeePay, Dana, and Kredivo.

ShopeePay, on the other hand, provides cashback and discount promotion programs to encourage customer preference to do contactless shopping/transactions. Moreover, *Dana*, a fintech e-wallet company, enable cashless transaction in society. Dana provides applications as a platform for shopping and delivery service transactions. Besides, Dana reached the regional market and created an ecosystem to educate the community.

Another program called *Kredivo*, a peer-to-peer lending company, provides a credit restructuring program for the society affected by COVID-19. In addition, *Kredivo* initiated financial literacy action named *Generasi Jempolan*. The program aims to educate millennial consumers about technology savvy and financial education.

E. The utilization of Securities Crowd Funding (SCF): Case Study in Indonesia

Apart from what has been discussed previously, this chapter sheds light on the acceleration in the fintech industry, “the crowdfunding”. Crowdfunding in Indonesia started when the regulation for peer-to-peer lending was released in 2016. As the demand for financing-based technology increased, at the end of 2018, OJK released a regulation for Equity Crowdfunding (ECF) as alternate funding for SMEs to obtain financing from the capital market sector.

According to POJK 37/2018, ECF is a digital service of share offering conducted by the issuer to sell shares or stocks directly to the investors through an electronic system (platform) that is open to the public. Investors would get a dividend as a profit from their investment. However, ECF has limited scope as it is only applied to the issuance of stocks. On the other hand, SMEs have a high demand for the issuance of project bonds. Consequently, at the beginning of 2020, OJK fleshed out ECF regulation into Securities Crowdfunding (SCF) and issued a new regulation named POJK 57/2020.

SCF is a mechanism of securities offering services through an electronic system network that is opened to the public to issue securities such as limited stock and debt issuance. The process is similar to the Initial Public Offering (IPO); however, the scope is limited, and SCF is conducted through a platform, not an Exchange. POJK 57/2020 regulates the licensing process for the SCF platform, as well as the definition and limitation for Issuers and Investors. Several economic terms are required to be understood in this process, as follows:

- 1) **Platform** is an Indonesian business entity that provides, manages, and operates crowdfunding services.
- 2) **Issuers** is an Indonesian business entity in the form of a legal entity or any other business entity that issues Securities through crowdfunding services.
- 3) **Investor** is an individual and/or a firm that purchases Securities through crowdfunding services.
- 4) **Securities** that can be offered include the debt acknowledgments letter, commercial securities, shares, bonds, proof of debt, participation units in collective investment contracts, futures contracts on Securities, and other Securities derivatives.



Source: OJK (2020a)

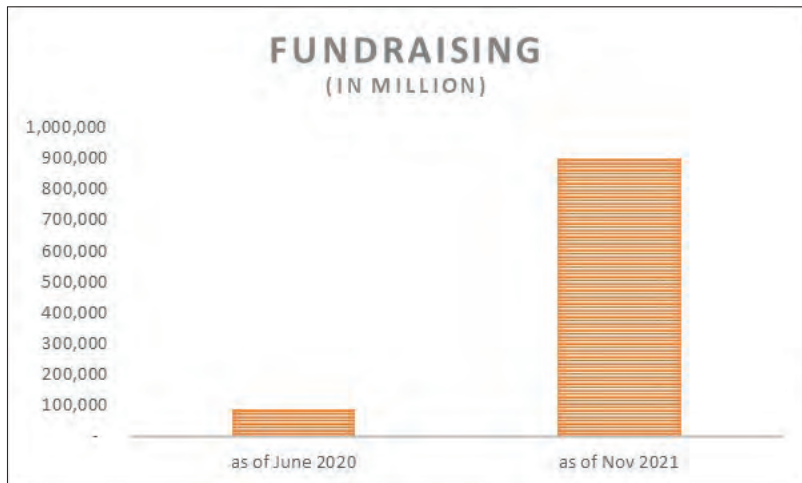
Figure 4.4 Securities Crowd Funding Business Process

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Figure 4.4 shows the workflow of the Securities Crowd Funding (SCF) business process. The first step is to get a license from OJK and collaborate with the Custodian Bank and KSEI for the securities depository procedure. The platforms should satisfy some required documents and information to get a license and be registered in Indonesia FSA. All those requirements are stated in the POJK 57/2020. Once the platform gets the license, it then plays a role as an intermediary, connecting the issuers to the investors to get the funds by using SCF instruments.

SCF Business Process

Upon release, just three ECF platforms obtained the license from OJK. However, the total fundraising from these three platforms was approximately 88 billion IDR, 69 issuers, and 7.928 investors (as of June 2020). This amount grows significantly during COVID-19 recovery, as illustrated in Figure 4.5.



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Source: OJK SCF Statistic (2021a)

Figure 4.5 Securities Crowd Funding Statistics

In 2020, Institute for Development of Economics and Finance (INDEF) released a report on their study on Equity Crowdfunding (ECF). It was conducted before the SCF was released. According to the report, the profile of the ECF issuers was dominated by the food & beverages sectors. It accounted for 42%, followed by the property sector for 34%. INDEF (2020) suggested that 97% of ECF issuers were non-bankable, while only 3% that bankable. On the other hand, the profile of ECF inventors was dominated by the group of age 26–30 years at 34% and followed by the group of age 20–25 years at 26% (INDEF, 2020). Therefore, it can be inferred that millennials are more likely to be interested in this type of investment. Furthermore, this report indicates that ECF positively impacts the national economy by lowering the unemployment rate and increasing the income rate. The report also suggests that ECF has the potential impact on reducing poverty in several areas.

As the utilization of ECF/SCF proliferated during COVID-19, SCF can be considered an alternative solution in supporting Indonesia's SMEs to reignite their business. SCF also becomes an alternative

investment for investors to own a company with a smaller amount than investing directly in the stock or bond market. The data above indicates that the millennials dominate SCF investor profiles; thus, the demography of the Indonesian population dominated by the young generation also offers a potency to be an investor in SCF.

In the greater objective, SCF indirectly induces start-ups and financial technology companies to grow, which has been expected to boost economic growth in the foreseeable future. However, to reach this goal, it might be important to consider the application of a credible and valid supervisory technology system in the platforms to gain investor trust, as well as the introduction and the improvement of financial and digital literacy to improve the knowledge of millennial investors on financial technology.

F. Summary and Recommendations

The statistics showed that the development of fintech payment and lending transaction values was resilient during COVID-19. The considerable growth of this digital finance can be identified through the transaction values during the COVID-19 period as well as in the increasing growth of fintech companies from 2019 to 2020. The most significant number of transaction values among the variables is internet banking. The necessity for digital transactions in all aspects of life during COVID-19 has become the primary factor of internet banking utilization. In addition, the large-scale social restriction urges digital utilization in many ways. As a result, fintech will likely undertake the traditional digital transaction from daily routine to business transactions.

The fintech utilization contributes positively to national economic recovery in Indonesia during COVID-19. Fintech can accelerate funding distribution to MSMEs through peer-to-peer lending utilization and non-cash social aid to help poor society through the fintech e-wallet. In promoting the application of fintech in national economic recovery programs, the Government as the policymaker has initiated action programs, including cashless national action, Pre-employment

cards, digital marketplace integration through QRIS, and financial education through digital platforms.

Overall, the digital finance utilization during COVID-19 is relatively accelerated. It has been shown by optimizing the fintech industry's potential and the mushrooming fintech instruments as an alternative economic transaction during COVID-19. Fintech payment, lending, and Securities Crowdfunding are among fintech instruments that contribute greatly during COVID-19. They play a crucial role in boosting the financial transaction, distributing social aid, and encouraging start-ups and financial technology companies to grow.

Although digital finance has been well accelerated, there is still an opportunity for improvements in the current fintech, which includes comprehensive regulation and supervisory arrangements, as well as greater collaboration among fintech stakeholders. Below are some possible improvements that the related institutions can commence.

1. Recommendation for Regulators

- a) Strengthening the technology safety standards in the fintech industry.

Cyber-attack, data misuse, and high interconnectivity are the major challenges in the fintech industry. Besides conducting a balance of regulatory technology and supervisory technology, the government should strengthen technology safety. The enhancement of technology safety might be done by the established standard of the safety system in the fintech industry. Solid cooperation from technology partnerships is also essential to be achieved.

- b) Creating an adaptive and balanced regulatory ecosystem

The basic digitalization characteristics are wide range, dynamic, and multi-dimension. Implementing an adaptive and balanced regulatory system is the key to answering those challenges. Adaptive means that the regulatory concept should be flexible and adjustable to the market situation, politics, economy, and recent issues. Cooperation among institutions at national and

international levels is also essential to ease exchanging information and study comparison regarding digitalization issues.

c) Continuous fintech socialization and education.

Fintech nowadays has become a need and a lifestyle for society. However, the massive development of fintech is still centered in big cities and not equally distributed in Indonesia; whereas still many potential unbanked societies. Continuous socialization and education in the community are needed to enhance their digital finance literacy to ensure they understand the services they need to access properly. Besides, adequate information and regulation are also critical to protect them from the potential risk of fintech such as illegal investment, cybercrime, shadow banking, etc.

2. Recommendation for Society

Optimizing the role of fintech association to enhance cooperation and synergy among stakeholders.

Synergy among stakeholders is essential to create solid collaborations and innovations in the fintech industry. Fintech stakeholders include industry, institutions, technology partnerships, and academicians. Fintech association's primary function is to optimize the role of each stakeholder and address the related issues. Fintech associations should be capable to accommodate policy advocacy, initiate community collaboration, transfer updated information, and developing knowledge and innovation. A solid and accommodative fintech association is expected to encourage self-governance and supervision in the industry.

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Chapter 5

Tourism and Beyond: The Innovative and Remunerative Virtual Excursions Amidst the Pandemic

Octari Nabila Yestri, Siti Ayu Nadila, & Hira Audyna Putri

A. Introduction

Indonesia is a maritime country consisting of many different cultures and ethnicities. Those cultures have shaped them until today, which leaves beautiful marks in Indonesia as a country with a wide variety of cultures. From ancient times, as Majapahit succeeded in uniting the entire population in Indonesia, Indonesian culture held a spirit of unity. Until now, those cultures are still held by Indonesian citizens. However, as time goes by, the advancement of technology leaves enormous changes in how people live. With the transformation of progress with technology, everything is now digitalized. Digitalization has been one of the most significant impacts on our daily lives and has changed human work ethic. As recently, due to the COVID-19

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pandemic, like it or not, everything has changed from conventional (face-to-face interaction) to online (virtual interaction). This digitalization technology brings changes for the better to our lives because it connects all of us from different places. Consequently, it also brings a massive impact on our economy.

Quoted from Investopedia, economic growth is an increase in production ranging from goods to economic services from one period to another. Economic growth can be measured symbolically and concretely (adjusted for inflation). Economic growth is a benchmark in a country because it can affect many conditions. As is the case in Indonesia, the creative economy is an economy that has a more extensive view beyond the electricity, gas, and other economic sectors. The creative economy is an economy that focuses on developing various creative ideas since ideas are used as the primary reference in the movement of an economy. This system relies on creativity and ideas from human resources as the primary point in economic activity (Shaid, 2022). As Indonesians, of course, we also want to know about economic growth and development in our nation. Many things can be used as a benchmark for the creative economy itself, mainly the government's main focus to make Indonesia a country with good creative economic growth and accelerate the development of SMEs today.

Indonesia has a wide variety of cultures which potentially become our economic resources. For example, the beautiful island of Bali can attract many tourists to Indonesia, which shows our potential economy in the tourism sector. Furthermore, the wide variety of cultures, especially in the arts sector, such as traditional dance or other performing arts, has developed and potentially led to our creative economic sector. The impacts of the creative economy include the entertainment industry, culinary, MSME businesses, and other industries. During the pandemic, many people lose jobs, and their incomes drop drastically. These force them to change their professions due to the pandemic regulations. As we know, the creative industries require spaces to craft their work. For example, behind performing

arts, there were a bunch of professions that only can be done at that time, such as engineering men, sound system men, etc.

Many parts of the economy are wrecked due to the social distancing policy. This downturn occurred because not all activity can be implemented successfully through virtual platforms. During the pandemic in Indonesia, there have been many changes in the form of many things, including the creative economy and tourism sector, several places were closed due to security purposes, and many facilities and policies were neglected so that their functionality was reduced. Where these changes lead us to what things must be addressed or improved. Alvin Toffler (1980) mentioned three waves of economic evolution. The first is the wave of the agricultural economy, where this economy is a relatively new branch that functions primarily based on natural resources so that they can be produced according to economic needs. The second is the wave of the industrial economy, focusing on industries, markets, and companies of all sizes. The third is the wave of the information economy. Lastly, the fourth wave potentially is a creative economy oriented towards creative ideas. Furthermore, several experts also mention the characteristics of the creative economy that intellectual creation requires collaboration, and its distribution can be direct and indirect. (Permana, 2021).

The limited mobility of the community due to the COVID-19 pandemic and the closure of recreational and entertainment places had a considerable economic impact on the tourism sector. The COVID-19 pandemic for several years has made the government implement a system of restrictions on the community to limit outdoor activities. Large-Scale Social Restrictions (PSBB) are established to encourage people to be more active at home. As a result, the occupancy rate of hotel rooms and restaurants has decreased drastically due to this. However, the community is also dragged into various problems because of a sudden pandemic without being given enough time for any special preparation (Fauzan, 2020).

B. The Key Message of Pandemic: The Synchronisation Strategies

Many business actors in the tourism industry and the creative economy cannot survive during the pandemic due to a drastic decrease in income or turnover due to the declining purchasing power of the public. The phenomenon that emerged from the impact of the pandemic encouraged the tourism industry and the creative economy to think optimistically, be enthusiastic and rise up face challenges, open up opportunities, and accelerate inflation and transformation by continuing to adapt current and after the COVID-19 pandemic.

The government should be able to see the hidden message of the COVID-19 pandemic, which might encourage tourism and the creative economy to be more resilient, adaptive, and competitive. The tourism sector and creative economy can spread information and creative artwork ideas worldwide through various digital platforms. Especially in the creative industry, the ideas of business behavior whose value is very significant require a considerable strategy to attract people. The creative economy includes the great potency of every country to stabilize the country and build the nation's image and identity. The actors in the tourism sector must upgrade themselves, which means they must possess extraordinary capabilities to attract potential customers, including their concern for creating Health Safety Environment (HSE). Then to increase new capabilities with this digital platform to maintain their business amidst a pandemic like this. However, this pandemic has also created opportunities for tourism and creative business actors, including changing the business model from traditional tourism management to digital tourism management. This will be an opportunity to maintain and restore the national tourism sector. The digital-based creative economy sector can also increase its contribution to GDP and market segment changes from foreign tourists to domestic tourists, as stated by Prof. Dr. Ginta Ginting, M.B.A in Knowledge Sharing Forum (KSF) of Universitas Terbuka (Universitas Terbuka, 2021).

This phase is expected to be a benchmark for developing creative economy tourism by initiating various ideas that can later show the level of the economy from time to time. The government's focus must also be improved again. One of them is to focus on synchronizing the improvement of health status so that the system of creative economic trends can work. Along with realizing it, the trend of the creative economy during the pandemic has continued to increase over time, starting with the creativity of the nation's children for entertainment content that can be accessed through various platforms. Creative economy actors also continue to vary, as young Indonesians must be able to take the opportunity to introduce Indonesian cultural content that multiple countries can see. As adults, we must also give confidence to our young generation in advancing the creative industry, which can range from education to entertainment.

Neil Himam, Deputy of Digital and Economic Creative in Indonesia, stated that the most important thing to highlight is developing creative ideas to be adaptable, firm, and goal-oriented products/services. A good ecosystem must support the strengthening of creative economy products. This ecosystem should have several essential components. First and foremost, talented human resources and talents will be the driving force in conceptualizing ideas and goals in doing business creatively. Young generations could act as leaders to make this successful. Nowadays, they are eager to show their talents and interest by contributing to art events to showcase their creativity and talent. Second is the availability of other resources, including radio frequencies as a means of communication. The third is artificial resources such as numbering, IP addresses, domains, and others (Nur, 2021). The experts must also be able to see the market and opportunities. Several countries have already opened their borders to take great opportunities to build attractive destinations, introduce culture, and develop a creative industry.

C. The Importance of Virtual Platforms

The visual media such as handphone, laptop, and television is also one of the opportunities, as they provide a virtual trip service application that later tourists can access with various kinds of payments because digital transformation simplifies operational processes to be much more effective. In addition, using the digital ecosystem is also beneficial to make the company more developed because digital technology creates a more modern work environment. Using a digital platform can help people facilitate all their activities and needs. Utilizing digitalization can increase efficiency in space, time, and distance. So, the benefits are not only felt by consumers but also by producers. This digital ecosystem will help make marketing more accessible, especially in some of the leading sectors of the creative industry, which is very useful in this digital economy because there are forms and goods. However, all sub-sectors of the creative economy can enter this digital ecosystem with various innovations and collaborations with all parties.

Therefore, various news and events around the creative economy can encourage the younger generation to continue doing business or initiate ideas to advance creative economy tourism. For instance, they were using developed innovations, such as start-up technology, which is currently loved by the millennial generation. This can be one factor leading us to the country's economic recovery. Working hand in hand to create innovation is also one of the government's strategies to achieve this target. Innovation is the breath of the sustainability of the creative industry in Indonesia. Economic recovery, especially the creative economy, will grow if innovation and creativity go hand in hand.

D. Challenges and Opportunities of Tourism and Beyond Amidst the Pandemic

The number of tourist arrivals to Indonesia has shown an increasing trend. The number of tourists visiting in 2017 reached 14.04 million visits, an increase of 21.88% compared to only 11.52 million visits in

2016 (Kemenparekraf, 2017). Several parts of the economy have been devastated by social distancing policies. One of them is the sellers who experienced decreased income due to COVID-19. The number of tourists coming to Indonesia has declined since February 2020. During the last five years before 2020, the number of foreign visits to Indonesia has increased yearly. In 2019, Indonesia's highest number of foreign arrivals was 16.11 million visits. However, since COVID-19 began in March 2020, which occurred in almost all countries in the world, especially in Indonesia, the number of foreign arrivals has only reached 4.05 million visits, meaning that this has decreased by 74.84% compared to 2019 (Badan Pusat Statistik, 2022). The peak occurred in April 2020, with only 158,000 tourists, according to data published by the Ministry of Tourism and Creative Economic of Indonesia (Kemenparekraf, 2020). Artists suffered huge losses because art or cultural exhibitions that used to display their work in a physical room and were seen by tourists no longer feel the glory. Today, all industries need to conform to the general policy of turning their work, performance, or product into something accessible digital or online.

As mentioned above, one sector that almost calls it quits is the field of art. Many artists, including the engineer behind the art performance, have lost their job and regular income due to these COVID-19 regulations. This happened because the face-to-face art or culture exhibitions could no longer be attended. Nowadays, all industries must adapt to today's situation to transform their job, performance, or product into something that can be digitally reached. The pandemic has forced the government to impose restrictions on traveling and gathering. These restrictions resulted in cultural tourism experiencing a significant decline. Many art performances had to be postponed or canceled due to direct contact restrictions (face-to-face interaction). Many artists quit their jobs due to the impact of COVID-19, leading them to seek other jobs to survive.

There is some positive impact that potentially can be utilized by the creative industry through these digital platforms. By implementing social distancing, there is a potential to enhance the artist's

productivity. The creative industry can utilize digitalization to exhibit creativity and reach a global audience. As we know, a digital platform can connect people worldwide. Through work at home, artists can explore many options to create art that exposes them worldwide.

Creative industries have the characteristic of being innovative and keep advancing their product. Unfortunately, some aspects cannot be done at home. For example, in the art sector, when they want to exhibit a traditional dance performance beside the dancer or the artist itself, take note that there are people behind the stage, such as make-up artists, sound engineers, or stage crew who do their job on the spot. Many people behind the art performances must cancel their job. Furthermore, to execute some art performance requires gathering a mass of people. In the art sector, amidst the pandemic, the artist and the audience who enjoy watching art or cultural performances need to enter the way to enjoy it, namely through online or virtual platforms. The experience between the offline and online art exhibitions reflects different sensations. The difference is in the level of satisfaction obtained. Experiencing the art performance on the spot has the advantage of feeling the direct sensation from the audio and visual experience on the spot. However, it also has disadvantages as not all the audience can get the best spot to watch the performance, which is conversely different from a virtual experience. The audience can watch it on the spot from their screen, wherever they are (Septiyan, 2020).

Indonesia has one factor that the government needs to focus on: developing the usage of technology and its infrastructure as a marketing strategy. Let us take the example of the evolution of K-pop. The Korean government has also made their Korean pop culture/artist one of their economic assets. South Korea has taken the evolution of K-Pop seriously as one of their national interests. The Korean government has established a department solely to promote K-pop in Korea and beyond. We can see that as the K-pop industry grows fast, the government provides full support. The evolution of K-pop is quite substantial because even the small concert held in

the country can create new work fields as the tourists spend a lot of money. Furthermore, K-pop can make the unique tradition of Korean becomes known worldwide. (Kelly, 2018). This phenomenon shows that full hand of government support is highly essential to enhance the Indonesian creative economic industry.

According to studies, the success of K-pop has been driven by the ambitiousness of the Korean Government to develop the usage of the technology and its infrastructure ahead of the rest of the world. The industry sectors realized the potency of internet technologies as one of the important factors contributing to the distribution and marketing of K-pop performances. Koreans technological has become one of the leaders in the world, making the industry like small businesses aware of the potential opportunities of their competitors. Furthermore, their internet technologies have small requirements, such as investment and low entry cost for small businesses, compared to prevailing technologies in the late 1990s. Last but not least, the Asian Financial Crisis that hit the Korean Economy in 1997–1998 seemed to have little effect, as, at the same time, there was a rapid emergence of new technologies by Korean producers of information and goods services (Messerlin & Shin, 2017).

As we know, Indonesia still has several areas that the internet has not reached yet. Also, the elders tend to be technologically blind and prefer to use the conventional platform. Some areas in Indonesia still cannot afford an internet connection. In addition, the elderly tend to be less knowledgeable about technology and prefer to use simple ones. Thus, creative industry players need to build a virtual-friendly platform for everyone. Another factor that needs to be considered in selecting the target markets. A relatively high level of competition needs to be made. For example, in Korea, they already have high competition in the domestic market, which forces them to be able to step on the pedal gas that is supported by capital injection from the government as their technological infrastructure advances. Koreans have a high competition to reach their domestic markets, so it pressures them to be more innovative and self-enforcing to boost their

non-Korean markets or exports sector. Such a variety of products or creations has made their price structure generate more products to satisfy both local and international consumers. This intense pressure has made the fast growth of Korean Pop Culture widely exported to the rest of the world. Producing a variety of products and creations certainly can in the market capacity. The chances of their Korean culture are exposed worldwide and satisfy consumers' broader range of tastes from other countries. Thus, it is crucial to advance technology and internet infrastructure to support the growth of the creative economy.

E. Conclusion and Recommendation

Many steps are needed to save Indonesian tourism. Various efforts were made to save the tourism area from the crisis. The primary key for tourism and creative economy actors to survive during a pandemic is good adaptability, innovation, and collaboration. The reason is that community actors are starting to change, and a shift in tourism trends accompanies this. The first example is the freedom of the public to do holiday activities before the pandemic could no longer be carried out. Travelling has also changed to be more friendly with current conditions. So, there is a staycation trend that is considered safe. Unfortunately, staycation activities alone are not enough to excite the hospitality business. Meanwhile, the COVID-19 pandemic has forced many tourist attractions to close due to a lack of visitors. For this reason, tourism actors must take advantage of technological innovations that play an essential role in supporting shifting tourism trends during a pandemic, one of which is virtual tourism for online vacations.

The use of digital platforms to advance Indonesia's tourism sector has received direct support. In short, virtual tours are a new concept for vacationing during a pandemic. Various exciting tourist destinations in Indonesia can be explored by a smart device and an internet network from home. In addition to offering the beauty and uniqueness of each destination, virtual tours allow the visitors to learn more

deeply about the destinations visited. The virtual tour is equipped with a virtual tour guide that explains in sufficient detail the objects visited. Virtual tours during the COVID-19 pandemic have become a new trend for vacations and entertainment suggestions. Virtual tours are an exciting innovation we can use for vacations during a pandemic. Virtual tours simulate existing locations, usually consisting of video sequences or 360° panoramic images. We can only explore various exciting tourist destinations, especially in Indonesia, armed with smart digital devices such as smartphones or laptops and a good internet connection. Interest in virtual tourism continues to increase, and it is one of the strategies we can implement during this pandemic. The virtual tour can display the attractiveness of the places to increase the audience's interest, so one day, they can come to the site directly. Although we cannot say for sure when we can explore it now, with this Virtual Tour, we can let go of our holiday longing and make us curious to visit it directly when the pandemic ends.

The use of technology and the development of internet infrastructure is crucial to support the growth of the creative economy. Indonesia still needs to develop the technology and internet infrastructure to compete with other countries. Especially concerning the unequal distribution of internet networks all over the country. All of this certainly cannot be done without the government's support. As one example, due to the 1997 financial crisis, the South Korean Government give special attention to information technology and creative industries by injecting capital, funds, and tax incentives. Informational technology will provide a positive impact on the other industrial sector. Also, the creative industry sector can increase the export of creative industry products, such as music, films, and fashion (Indradi, 2018). As we know, Indonesia has enormous potential in this industrial sector because of the abundance of art and culture. Until now, there is still no certainty when the COVID-19 pandemic will end, causing uncertainty regarding the economic recovery in the tourism sector and beyond. Therefore, every level of government and local communities must immediately implement the strategies to utilize

the resources of tourism and creative economy through virtual platforms using technological advancement and internet infrastructure. Thus, recovery action for accelerating tourism economic and creative industry beyond must be carried out and focus not only on the future but also on the present, as a mitigation of a basic need. With these various solutions and changes, tourism and beyond will adapt and can gradually follow.

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Section 2

Building Future Ready Resilient Societies

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Section Overview

Sustainable, Resilient, and Prosperous Societies

Gabrielle Kembuan & Yoko Brigitte Wang

COVID-19 pandemic has profoundly affected every aspect of life, impacting every dimension of communities and revealing how fragile our societies can be in facing unprecedented public health threats. After taking control for more than two years, it is now very likely that COVID-19 will become a permanent fixture in our lives. However, this transition to living with COVID-19 will require societies to rapidly adapt to changes at individual, community, country, or global levels, and Indonesia is not apart from this challenge.

Thus, building a resilient society becomes increasingly important to implement during this transition in the recovery post-pandemic, as well as to prepare for the future. This section outlines lessons we can learn and opportunities arising from the pandemic. We also propose strategies and recommendations to cultivate “community resilience”—the ability of communities to withstand disruptions—from health and economic perspectives.

The first two chapters focus on improving health and well-being to secure human capital as a fundamental pillar of a

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resilient society. Chapter 6 discusses the impacts of COVID-19 on Indonesia's nutritional status, food security, and nutrition-related policies. Multiple strategies are elaborated to create a healthy and sustainable food system to secure future human capital. These include a consolidation of agriculture and food sectors to develop a more streamlined agriculture-food chain in aiding food security; and the development of a strategy for mainstreaming essential nutrition that highlights the importance of a healthy lifestyle and well-rounded nutrition. Chapter 7 focuses on pandemic burnout and strategies to improve mental health. The notable disruptions caused by the pandemic have increased the strain on mental health. Burnout became highly prevalent at all levels of society, which has wide-ranging consequences, from decreasing the productivity of healthcare workers to disrupting communities' discipline on pandemic safety and containment measures. However, mental health problems in society are not caused solely by the pandemic. Therefore, we must still perpetually implement mental health awareness and literacy strategies. This chapter provides recommendations and insights for all stakeholders to improve mental health literacy in Indonesia to prevent larger post-pandemic psychiatric problems and build a resilient and future-ready society.

The following two chapters touch on the creative economy, part of the economic pillar in building community resilience, and present an untapped source of economic resources for many. As a country with abundant cultural capital, Indonesia has a very high potential to utilize digital capital, develop a creative economy, and empower local communities. Chapter 8 discusses how collaborative leadership can foster good governance and create a more hospitable ecosystem for a creative economy, both of which would increase the resilience of societies. Using a case study from an Indonesian city, this chapter elaborates on how city-to-city cooperation and network have provided mutual support and knowledge exchange to coordinate collective action.

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As the saying goes, “a chain is only as strong as its weakest link”, coordinated frontline responses throughout regions will undoubtedly improve health and economic security as a whole. In addition, collaborative action will also create a more hospitable niche for the development of the creative economy and the return of tourism. Chapter 9 outlines how the creative economy positively impacts recovery after the COVID-19 pandemic, utilizing secondary data from academic journals and other popular sources. Although the pandemic has caused us massive economic and personal losses, it may also be the perfect stage for us to push the boundaries of creative economy strategies and begin to implement them sustainably in the upcoming decades.

Chapter 10 discusses the importance of the global value chain (GVC) in connecting local and global economies to speed up recovery. These covers evaluate Indonesia’s participation and position in GVC and outline challenges and opportunities ahead for Indonesia to join GVC. This chapter also presents policy recommendations that can be useful to allow increasing participation, improve human resources management, and promote a freer trade to optimize GVC in Indonesia.

Building a future-ready resilient society requires an orchestration of strong human capital and economy. Ensuring health and well-being, supporting a creative economy, and promoting economic transformation are the keys to strengthening a resilient society’s pillars. We hope that the ideas and recommendations presented in this section will contribute to creating a sustainable, resilient, and prosperous Indonesia—a society that will thrive in the recovery process post-pandemic and be ready to face future challenges that may come.

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Chapter 6

Healthy and Sustainable Food System to Secure Future Human Capital

Iskandar Azmy Harahap, Ulfah Najamuddin, Naila Maziya Labiba, & Shindi Annisa Zulfa

A. Introduction

Indonesia is expected to reach its demographic bonus by 2030, where 67.8 % of its population will be dominated by youth in the working-age group. If appropriately managed, this demographic bonus will provide Indonesia with a skilled workforce, a vital component of human capital that will strengthen Indonesia's employment sector and ultimately benefit the economic growth (Adriani & Yustini, 2021) to achieve Indonesia's golden era in 2045. Indonesia has focused on tackling malnutrition, primarily undernutrition, preventing stunting, improving health, and securing its future human capital in the past few decades. However, with many resources diverted to aid COVID-19 for social assistance, the national health status (Djalante et al., 2020) and Indonesia's demographic bonus are at risk.

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Indonesia's current strategies to tackle malnutrition mainly rely on nutritional intervention programs and improvement of healthcare delivery for mothers and children. Food security, affordability, and accessibility in terms of micro-level are critical components of the strategies. COVID-19 disrupts food security (Suryana et al., 2021). It has significantly affected the global food system, caused a widespread economic downturn and disruptions in agricultural-based food supply chains, and crashed the food system (Swinnen & McDermott, 2020). With many restrictions and lockdowns being implemented, access to healthy and nutritious foods has become limited (Rodriguez-leyva & Pierce, 2021). These restriction policies make people more vulnerable to diseases, especially mothers and children. Simultaneously, before climate change, crop yield and nutritional value reductions, as well as exchange between food production and industrial crops, continue to pose obstacles to achieving a balanced diet and a sustainable food system.

As an archipelagic country, Indonesia has high biodiversity and can source varieties of foods from its land and sea. However, its potential has not been fully explored, particularly in food security, human capital, and reaction to the pandemic of COVID-19. Hence, this chapter discusses COVID-19's consequences on nutritional status and food security in Indonesia. Additionally, we elaborate on the current state, challenges, and how we can use the potency of Indonesia's biodiversity to improve food security and sustainability—to strengthen human capital in the recovery post-pandemic (Figure 6.1).

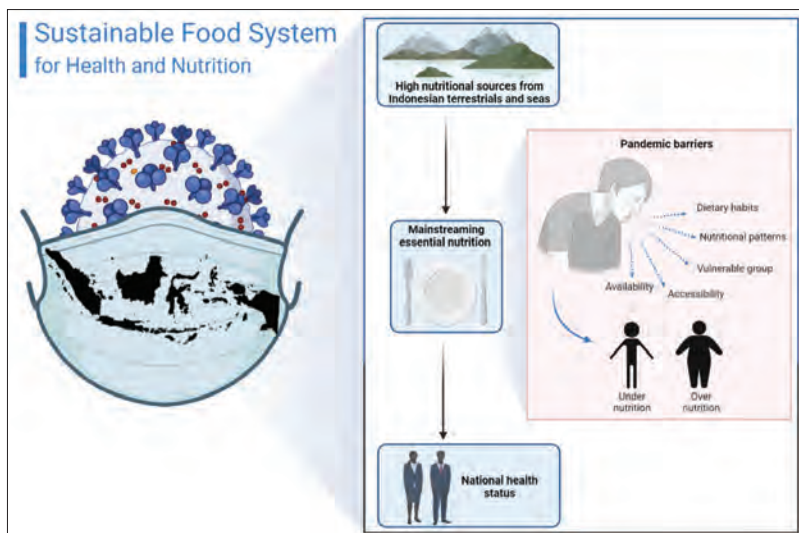


Figure 6.1 Illustration of the Sustainable Food System for National Health Status to Secure Future Human Capital (Figure Made in BioRender.com)

B. COVID-19 pandemic's impacts on nutritional status

Nutritional status has been compromised during the COVID-19 pandemic due to many reasons related to a high catabolic state increased by an inflammatory response to the infection and impacted gastrointestinal (GI) system. That could be manifested as vomiting, diarrhea, nausea, anorexia, and a significant GI mucosal inflammation (Almeida & Chehter, 2020; Silverio et al., 2021). Obesity was highly prevalent in developing and developed countries such as China and the US, with nearly 50% of the hospitalized patients being obese or overweight (Silverio et al., 2021). In addition, malnutrition was very high among hospitalized COVID-19, ranging from 11.57% to 88.39%, according to a meta-analysis study that included China, France, and Italy (Abate et al., 2021). COVID-19 significantly impacted both under- (e.g., stunting and wasting) and over-nutrition (e.g., obesity) cases in Indonesia, not only affecting individuals with pre-existing

malnutrition but also potentially increasing the prevalence of malnutrition in the future (Table 6.1). For example, stunting is a significant and longstanding problem affecting one in three children under five years old in Indonesia (Labolo, 2021). On the other hand, according to the Indonesian Toddler Nutrition Status Survey (SSGI) in 2019, this incidence was reduced to 27.7% compared to *Riskesdas* 2018 (30.8%) (Izwardy, 2020). Furthermore, to accelerate the prevention of stunting through the Governmental Medium-Term Growth Strategy (RPJMN) 2020–2024, the government aim to decrease the national stunting rate to 14% by 2024.

Meanwhile, Indonesia’s number of stunting incidences is predicted to rise due to the COVID-19 outbreak. Due to imposed pandemic restrictions, This condition can be caused by the limited access to optimal health services for mothers and children. For example, it was recorded that only 19.2% of public health centers (*Puskesmas*) continued to carry out integrated health care center (*Posyandu*) activities during the pandemic in 2020 (Rini, 2020). Furthermore, the Ministry of Health also reported decreased visits to antenatal care and health services for infants, toddlers, and children. Thus, immunization services, monitoring activities for the development and growth of infants and toddlers, and maternal and child health intervention may not run optimally (Labolo, 2021).

Table 6.1 Nutritional Issues during the COVID-19 Pandemic

No.	Nutritional issues	Impact		Reference
		Short-term	Long-term	
1.	Underweight (Stunting, Wasting)	<ul style="list-style-type: none"> • The increased mortality from the COVID-19 • Increasing length of hospitalization. • The increased possibility of COVID-19 secondary infection 	<ul style="list-style-type: none"> • The increased risk of community-acquired infectious diseases • Increasing risk of primary immunodeficiency diseases (PID), such as susceptibility to infections, autoimmunity, lymphoproliferations, and atopy 	Golub-nitschaja et al., 2021; Ye et al., 2021

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No.	Nutritional issues	Impact		Reference
		Short-term	Long-term	
2.	Overweight and obesity	<ul style="list-style-type: none"> • A poor outcome for COVID-19 (COVID-19 death rates increase tenfold in nations where more than half of the population is obese) • The increase in hospitality rate and morbidity rate. Around 85 percent of patients with obesity required mechanical ventilation, while 62 percent died of infectious disease) 	Increasing risk for developing NCD	Senthilingam, 2021; Centers for Disease Control and Prevention, 2021; Yan, L. T., 2021.

COVID-19 restrictions may also lead to an increased prevalence of overweight and obesity. The stay-at-home rule and restricted store opening hours have shifted lifestyle habits, resulting in poorer diet quality and decreased physical activity. As a result of widespread anxiety of shortage, panic buying and stockpiling of household commodities, especially food, has grown wider since COVID-19. During the pandemic lockdown period, people consumed more meals at home. (Arora & Grey, 2020), mainly processed meat, potatoes, and dairy products (Evans, 2020). During this period, dietary patterns and food choices were changing as people preferred to buy instant, pre-made or canned foods with a longer shelf life than fresh foods, which are almost undoubtedly unhealthy (Blendon et al., 2004; Mattioli et al., 2020). Furthermore, increasing time spent at home also increases exposure to advertisements for unhealthy diets (e.g., high sodium, energy-dense foods, and sugary beverages) (Nurhasan et al., 2021), snacking behaviors (Bakaloudi et al., 2021), and sedentary lifestyles (Zheng et al., 2020). Prolonged exposure to these behaviors during pandemics may lead to energy imbalance, resulting in unhealthy weight gain, significantly impacting the pandemic infection and mortality rates (Rodriguez-leyva & Pierce, 2021).

COVID-19 infection is thought to be exacerbated by malnutrition (Huizar et al., 2020). Undernourished individuals have a weakened

immune system (Mertens & Peñalvo, 2021). On the other hand, individuals with obesity-associated comorbidities, such as hypertension, cardiovascular and cerebrovascular diseases, and diabetes, have higher predisposed inflammatory status. These conditions put them at a higher risk of developing severe COVID-19 symptoms (Nishiga et al., 2020; Paudel, 2020; Zhu et al., 2020). Obesity or morbid obesity has also been identified as a critical risk factor for high hospitality rates and the ventilator usage of COVID-19 patients (Clemente-Suárez et al., 2021). This condition may lead to an increased length of hospital stays compared to non-ICU patients (Nguyen et al., 2021) and also an increased mortality rate which had a higher percentage (19.2%) in contrast to mortality without morbid obesity (7.8%) (Klang et al., 2020). Therefore, developing strategies to improve nutritional status in the COVID-19 recovery plan is essential.

C. COVID-19 pandemic's impacts on food security

UN report on food security showed an increased rate from 23.3% to 26.4% between 2014 and 2018; before the COVID-19 pandemic, around 10% of the population was undernutrition globally (FAO et al., 2021). In low- and middle-income countries, more than a hundred million were food insecure (FSIN, 2020). It has also been reported that the pandemic impacted the global food supply chain in 2020 (Anthem, 2020; FAO, 2020). Not only that, global warming, disease outbreaks, and military conflicts also pose a threat to the food chain (FSIN, 2020). Food security, comprised of four primary pillars: food availability, food accessibility, food utilization, and food stability (García-Díez et al., 2021), is an essential factor in ensuring nutritional status. On the other hand, the imposed limits and lockdowns in Indonesia weaken the stability of these four pillars, resulting in food insecurity and a potentially dangerous health situation.

1. Availability and accessibility

In the food supply chain, the pandemic has thrown up some new obstacles that led to reduced availability and accessibility to some

foods. According to a report, as the COVID-19 pandemic spread, food supply and distribution, quality, and prices were adversely affected; and food insecurity was closely linked to unemployment-related loss of income, particularly in rural areas (Rodriguez-leyva & Pierce, 2021).

On the consumer end, panic buying and stockpiling induced a massive shortage of staple foods and subsequently increased demand globally (Arora & Grey, 2020). Indonesia's National Food Security Report during the COVID-19 pandemic shows that food production has not changed much regarding food stability and output. Besides that, The National Team for Acceleration of Poverty Reduction confirmed that Indonesia has sufficient assets to meet domestic food needs (Asmanto et al., 2020). However, there is a possibility that a food crisis may occur in the future.

Restrictions, lockdowns, and mandatory isolations for individuals with COVID-19 have also posed challenges in food distribution. As a result, food stocks are not equally distributed in all regions, mainly remote areas. For instance, COVID-19 made things worse for people in Central Sulawesi, especially those who lived in rural areas and worked in agriculture. Sigli, a group of farmers in the Gumbasa irrigation area, had to find something else to do until their irrigation system could be fixed (Lassa, 2021). The combination of shortage and supply chain disruption may worsen food insecurity, especially in households that have experienced food insecurity before the COVID-19 pandemic (Niles et al., 2020). Increasing food insecurity can harm health, as well. Studies have shown that food insecurity and poor diet quality are linked (Niles et al., 2020). For instance, a survey from Leung et al. (2014) reported a strong association ($p < 0.005$) between food insecurity and high intake of a highly palatable diet such as fat-rich dairy products, salted foods, sugary drinks, processed meat, and few vegetable intake than those without food insecurity. Another study found a substantial difference in the psychosocial precursors of healthy eating behaviors, such as self-efficacy for healthy eating, meal planning with vegetables, and the fruit and vegetable diet pattern, between food insecure and secure families. Generally, food-insecure

low-income adults' healthy eating habits and procurement practices were significantly lower than those of food-secure low-income adults (Ranjit et al., 2020). A study by Maulida et al. (2016) on Indonesian adolescents in Jakarta revealed that students from low-income families tend to choose food based on 'convenience and price.' In contrast, students from affluent families tend to choose food based on health factors. This indicates that former students opted for less expensive and more convenient meals over healthier options.

This poor-quality diet could increase the risk of chronic disease in the foreseeable future. An explanatory model presented by Keenan et al. (2021) revealed novel insights into the close association between food insecurity and an unhealthy diet. In addition, a large-scale restriction policy has also reduced food options as access to fresh markets becomes limited and purchasing habits shift into long shelf-life food products, such as canned food, over new products (Naja & Hamadeh, 2020).

2. Utilisation and stability

Many countries' food systems were affected by the COVID-19 pandemic because of the importance placed on food safety and sustainability. The epidemic wreaked havoc on the food system's functions, from the point of origin to the end of use (Giudice et al., 2020). The pandemic, directly and indirectly, impacted the food system by disrupting food delivery stability, high economic burdens, and low purchasing power in rural and urban populations (Ikhsan & Virananda, 2021).

Dudek and Piewak (2022) described possible approaches for food system stakeholders in managing the worsening socio-economic situation during the COVID-19 pandemic. These approaches include:

- a. Controlling the supply chains from food producers to consumers;
- b. Intensifying the additional benefits of offered products, including the nutritional value, the unique taste, the location (locally made preference), and introducing the eco-friendly products;
- c. Expanding the network to increase sales.

This approach adheres to the Food Security Movement policy of the Ministry of Agriculture (2020), which consists of four methods:

- a. Increase food production capacity by accelerating Harvesting Season II (2020) on 6.1 million hectares and establishing 85,456 hectares of marshland in Central Kalimantan.
- b. Local food diversification centered on the essential staple commodities
- c. Strengthen the food system's reserving and logistics by increasing rice deposits in provinces and cities.
- d. Develop contemporary agricultural practices utilizing the "smart farming system".

D. COVID-19 pandemic's impacts on current policies in nutrition

The Indonesian government has implemented various policies to overcome malnutrition and food insecurity to maintain nutritional and health status (Table 6.2). As a result, despite being late and indecisive in crisis management decisions, Indonesia was "lucky" enough to implement some social protection measures ahead of the impending food crisis and hunger (Lassa, 2021). However, many current policies were generated before the pandemic, changing the public food expenses structure. According to Clemente-Suárez et al. (2021), COVID-19 restrictions altered eating habits and dietary patterns in several countries. The form and period of home quarantine, cultural and social trends in the countries studied, the average age of respondents analyzed, and the prevalence of pre-existing obesity are all examples of discrepancies in this context. During the lockdown, for example, teens in Brazil and some European countries like Spain and Italy consumed more vegetables, legumes, and fruit (Ruiz-Roso et al., 2020). In Indonesia, undergraduate students' consumption patterns during the COVID-19 pandemic were categorized as sufficient and close to the general guidelines for balanced nutrition by consuming carbohydrates, animal and vegetable protein, and various other foods (Kristiandi et al., 2022). Although the majority have been successfully

implemented to meet population needs, particularly to maintain food quantity and supply chain across nations, they may no longer be suitable to mitigate potential food crises caused by the pandemic. Thus, concrete action plans, including dietary pattern recommendations for individuals of various ages, cultures, and social groups, are needed to address nutrition concerns during the COVID-19 confinement across Indonesia.

Table 6.2 National Policy for Developing Health and Nutrition Status

No.	Policy	Purpose	Reference
1.	<i>Gerakan Masyarakat Hidup Sehat</i> (GERMAS) 2016, of which the main programs involve education on clean and healthy living behavior, education on healthy food preparation, and nutrient optimization	To raise citizens' awareness and capability to practice a healthy lifestyle for better life quality.	Presidential Regulation No. 42 of 2013 concerning the National Movement for the Acceleration of Nutrition Improvement
2.	Food diversification and prioritization of nutritional needs for increasing pregnant women, breastfeeding women, babies, toddlers, and other vulnerable groups	To improve nutritional needs	Government Regulation No. 17 of 2015 concerning Food Security and Nutrition
3.	<p><i>Rencana Aksi Nasional Pangan dan Gizi</i> (RAN-PG) 2017–2019 with key programmes as follows;</p> <ul style="list-style-type: none"> • Enhancing nutrition surveillance and child development supervision • Improving healthcare accessibility and quality • Promoting health, nutrition, sanitation, hygiene, and child care-related behavior change • Increasing role of community in a nutrition intervention program (ex: A Nutrition Aware Family) • Increasing the effectiveness and efficiency with which nutrition regulations are implemented and evaluated • Increasing cross-sector collaboration in the implementation of targeted nutrition interventions 	<ul style="list-style-type: none"> • To improve the nutritional status of the community. • To increase public food accessibility. • Food quality and safety • Hygiene and healthy habits • Coordinating the development of food and nutrition 	Presidential Decree No. 83 of 2017 concerning Food and Nutrition Strategic Policy

No.	Policy	Purpose	Reference
4.	<p><i>Strategi Nasional Percepatan Pencegahan Anak Kerdil (Stranas Stunting) 2018</i> with a multi-sectoral approach providing two types of interventions with its prioritized groups:</p> <ul style="list-style-type: none"> • Nutrition-specific intervention • Nutrition-sensitive intervention (ex: water, sanitation and hygiene, agriculture and food security) 	<p>The nutrition-specific intervention aims to conquer the immediate aspects of fetal and child nutrition and development.</p> <p>Nutrition-sensitive interventions overcome the other non-related nutrition factors that obtain nutrition status.</p>	National Strategy for the Acceleration of Stunting Prevention of Children (Stranas Stunting) (TNP2K, Bappenas, and Ministry of Home Affairs, 2018)
5.	<p><i>Strategi Pemerintah untuk Mengatasi Dampak COVID-19 terhadap Sektor Pertanian</i> with 5 priorities:</p> <p>(i) ensure the availability of staple food, especially rice and corn; (ii) maintain the country's economic growth by accelerating the export strategies of local commodities; (iii) educate farmers and workers about the Ministry of Health's health protocols to halt the spread of the virus; (iv) The SMERU Research Institute 45 establishes agricultural retailers in each province, increases consumption of regional foods and enhances agricultural commodity logistics and electronic marketing systems; and (v) to counteract the adverse effects of COVID-19, implementing labor-intensive programs in rural areas would help to stimulate agriculture and subsidize rural communities.</p>	Improving food security and economic stability in the wake of the COVID-19 outbreak	Circular of the Secretary General of the Ministry of Agriculture No. 1056/SE/RC.10/03/2020
6	<i>Perluasan Program Perlindungan Sosial Selama Pandemi COVID-19</i>	Allocating more resources for programs that could promote protection and prosperity of the people	Ministry of Social Affairs and DKI Jakarta Provincial Government

Source: Arif et al. (2020)

E. Strategies to secure human capital in the recovery post-pandemic

1. Strengthening agriculture and food sectors

There are several strategies to strengthen the agriculture and food sector in Indonesia. *The first* is increasing local food diversification. “Diversity” is a significant component of sustainable and resilient systems. “Local” is defined as ‘the smallest unit used to describe the origin of food’ (Stein & Santini, 2021). The diversification of carbohydrate sources in Indonesia is an example. Indonesia is the world’s leading rice producer and major wheat importer (Rozaki, 2020). Therefore, it makes sense that rice and wheat-based products have become primary staple foods in Indonesia. However, Indonesia’s available sources of carbohydrates are not just rice or wheat. Indonesia is rich in other sources of carbohydrates that are locally based and could be utilized as a staple food to support food diversification to substitute wheat or rice, including breadfruit, cassava, corn, potatoes, and many other carbohydrate sources (Imelda et al., 2017). Diversifying local foods enables people to manage their dietary patterns and rely on a single food source. This measure can boost the economic worth of various local foods as alternatives, boosting family and national food security. Diversification of food from locals could also empower farmers to use the land for farm crops and other tubers. As a result, a harvest failure or a particular food distribution issue may not affect household food security (Imelda et al., 2017).

In agricultural and food production settings, local food diversification means limiting reliance on external sources, diversifying crops and landscapes, and incorporating cattle into agriculture activities (Bisoffi et al., 2021). A success story of crop diversification from the rice-wheat cropping system (RWCS) with legumes and vegetables of South Asia’s Indo-Gangetic Plains region has successfully enhanced food and nutritional security. This system improves dietary diversity and enriches soil health, resulting in the agroecosystem’s enhanced

system productivity and sustainability (Dwivedi et al., 2017). Therefore, this method may be suitable to adopt in Indonesia.

Moreover, to tackle these multifaceted and vigorous settings and reinforce positive outcomes, we need to consider seven approaches (Blay-Palmer et al., 2020):

- a. Conducting more disaster planning, awareness, and sustainable food systems should be prioritized. The coordination and cooperation between the government and all levels in the system, particularly at local and regional levels where the supply chains are susceptible to decrease, need to be reasonably integrated. For instance, in BULOG's (the Indonesia Logistics Bureau) management, as suggested by Setiadi (2013), the central government may control rice stock centrally for operating, backup, and pipeline stocks. In contrast, local governments manage decentralized backup stocks for emergencies such as natural disasters, regional conflicts, and non-rice food reserves following local foodstuff. Community food stocks are developed by: 1) Maintaining and managing the community's tradition of setting aside a portion of their harvest on an individual basis for food stocks on the local basis, and 2) Maintaining the community's tradition of collectively handling food stocks by building a food warehouse at the local basis. Shifting away from global supply reliance sometimes compromises the livelihoods of landless farmers and smallholders. It focuses more on diversified food systems that are profound to the environment and local cultures. Good coordination between local, regional, and global supply chains, including infrastructural development, is more likely to build food system resilience. Despite its food biodiversity and vast agricultural land, Indonesia often relies on imported food such as rice and soybean. This import reliance is not wise from a sustainability perspective because it is not sustainable. Importing food should only be a short-term option for food shortage and/or securing food availability and not for a long-term solution.

- b. Adopting a systemic approach that prioritizes secure and healthy food systems as the primary goal of food policy and explicitly designating agroecology and renewable agriculture as the best agricultural and food production practices wherever possible. For example, providing training and affordable smallholdings related to organic farming for young generations in Indonesia who are interested in agribusiness.
- c. Strengthening social safety networks to assure the viability of food sources by forging firm commitments among food suppliers, such as farmers, medium-sized enterprises, and authorities, as well as local government, to assure food sustainability and, as a result, social resilience. The government must ensure food availability and demand on a local and regional level by implementing a “stable public procurement” program that provides a universal basic income to stabilize food supply and demand. BULOG (Indonesian Bureau of Logistics) plays a prominent role in achieving these goals by managing and controlling the food stockpiles and their distributions at national and local levels.
- d. Centralizing transfer of knowledge: Place emphasis on storytelling and sharing as a means of conserving best practices and lessons gained and building unity to empower the perspectives of the community seeking answers. These knowledge forms must be appreciated the same way science is valued. Smallholder farmers, indigenous peoples, women, and youth must all have their views heard. For instance, direct communication between leaders and their people in the community can be significantly facilitated by reactivating *Kelompok Pendengar, Pembaca, dan Pemirsa* / Listeners, Readers, and Viewers Group). This program was a gathering activity for farmers and fishers in Indonesia that began during President Suharto’s reign. Outstanding farmers from various regions participated in this activity. They were contested against their intellectual capacity and agricultural knowledge, including good farming practices and fertilizer knowledge. This program took part when Indonesia achieved food self-sufficiency

and received an award from the FAO in 1984. This program could be remodeled as an interactive discussion between local farmers and the government to exchange information between both parties.

- e. Enabling relevant scaled intervention: Encourage as nearly as possible to the grassroots level to allocate resources and decision-making to the proper size, implement scale-appropriate technology, and make institutional governance choices. In addition, decision-making must be inclusive, consistent, and transparent. This intervention could be actualized by utilizing evidence from research or studies, which enables policymakers to avoid bias towards the effectiveness of the proposed interventions or solutions.
- f. Enabling evidence-based decision-making: Collecting data from the successful programs. We require evidence-based study to figure out what works and why it works. This necessitates the democratization of knowledge and its recognition as a public good rather than a commodity. In the Indonesian context, we could make this happen by incorporating all research studies regarding the proposed options for achieving the national food security goals. It is not only from research and development institutions (LITBANG) perspectives but also from those from higher educational institutions, e.g., universities, and makes a food security-related policy brief based on those studies. The following principles govern evidence-based decision-making in public health that could be implemented in Indonesia: 1) setting policy based on the best available peer-reviewed evidence (both quantitative and qualitative research), 2) systematically utilizing data and information systems, 3) implementing program-planning frameworks, 4) involving the general public in assessment and decision-making, 5) implementing reasonable evaluation, and 6) disseminating what is learned to key stakeholders and decision-makers (Brownson et al., 2009). One way to initiate this is by making the research results accessible to the policymaker.

By applying this, the policymakers could also anticipate each decision's risks since it is based on the evidence.

- g. Taking into account the right to food: All authorities should uphold their humanitarian responsibilities to ensure the individuals' access to food. Shocks to the food system and economic hardships are to blame for the rising levels of food insecurity. Acknowledging the human right to food should underpin policy responses to hunger and food insecurity. Rozaki (2021) suggests that food accessibility strongly affects the supply chain. The rice supply chain pattern in Indonesia, for instance, in which each design defines the price at the level of farmers and consumers. The longer the chain is, the higher the price that the consumers must pay. Hence, cutting the unnecessary middleman involvement that might cause the extended supply chain is essential. Understanding the food supply chain can be a win-win solution for farmers and consumers. Farmers can get the best price to improve their productivity, and consumers can get the best price to afford the food to fulfill their demands.

Combining all these seven factors should be authorized and supported across a multi-sectoral approach involving the government from both national and regional as well as local levels and the communities (Blay-Palmer et al., 2020). This approach needs a strong commitment among stakeholders and communities to build sustainable transformation of the green, healthy, and promising food systems.

Second, strengthening food stockpiles and logistics systems. We can learn from China's approach to food system recovery following the COVID-19 pandemic, which included ensuring an adequate allocation of agricultural products and resources. They declared a "green channel policy" for perishable farming commodities and confirmed that agricultural products were transported safely from producers to consumers. They also guarantee that the agricultural resources are sufficient such as breeding animals, newborn chicks, and feedstuffs supply for livestock feeding (Zhan & Chen, 2021). In Indonesia, the Indonesian Bureau of Logistics (BULOG) is in charge

of price stabilization, and the company's rice reserves serve as a buffer stock. Therefore, expanding the business process to include rice and other staple foods like animal products is necessary to address this problem. Utilizing e-commerce and delivery services could be one of the methods to attain effective logistics at the consumer level. As a large-scale social restriction policy had been applied, there was a high demand for in-home delivery services for most of the products, including the food. Introducing and using a contactless delivery app without face-to-face interaction could minimize the risk of infection from direct groceries in the market (Zhan & Chen, 2021).

Third, incorporating advanced technology and innovation, such as smart farming (Musa & Basir, 2021). The application of intelligent farming technologies such as autonomous flight control equipped with 'hyperspectral snapshot cameras' that could calculate and predict the biomass and fertilization level of the crops would reduce the carbon footprints by effectively managing the application of fertilizers and pesticides. It is also more profitable for farmers to limit the inputs of natural resources, which could help them use their capital and labor efficiently. Smart farming could also increase the data reliability, which will help mitigate the potential risks by providing specific information on potential agricultural sites, weather forecast, and the projection of agricultural yield (Walter et al., 2017).

Fourth, economic stimulus. Current policy from the national government to mitigate economic loss by offering financial support and around 25% of the budget is for the low-income community in the form of a social protection policy could help protect the poor and vulnerable people during the COVID-19 pandemic. Another program from Family Hope Program (PKH) has also supported the economic recovery, including pre-employment cards, discounts on electricity rates (for both 450 and 900VA households), cash transfers, and educational support in the form of internet data support for students and teachers. These programs might, at the very least, lessen the burden on the community, particularly low-income populations or those who are socially and economically vulnerable to the spread of

COVID-19 (Hirawan & Verselita, 2020). In addition, farmers' health should also be considered in any relief programs. Pandemic affects farmers' health; small farmers as a low-income group, any issues in agricultural production and logistics severely affect the farmers, which may affect their lives physically and mentally (Daghagh Yazd et al., 2020). It is crucial to approach the farmers as the front lines to support them in adapting to the pandemic conditions and ease their access to health services (Rozaki, 2020). Nevertheless, most of those still getting social assistance said they were getting cash assistance. This number can be explained by the roll-out of village fund direct cash assistance, which made more households eligible for cash assistance programs (UNESCO, 2021).

Fifth is promoting a sustainable healthy diet. According to the Food and Agriculture Organization (FAO), a sustainable diet considers the medical benefits, nutritional quality, and environmental impact. In general, fruits and vegetables, whole grain products, nuts and legumes, and a plant-based diet are the foundation of a healthy diet. The shift to a plant-based diet has been proposed in numerous studies to promote a better health outcome and help reduce the harmful effect of greenhouse gasses on the environment and free up land currently cultivated for feed (MacDiarmid, 2013). This proposal does not imply that people should not consume animal-based diets or that domesticated animals should be prohibited from agriculture. Instead, animal-based diets should be consumed moderately, and cattle should be merged into a circular farming strategy that contributes to soil fertility restoration.

Increasing the diversification of food sources also supports a transition into a sustainable healthy diet. Diversification of dietary intake, in general, can be defined as an effort to expand the variety of food consumed invariably with the principles or guidelines of a balanced diet, resulting in enhanced food quality. Indonesia has at least hundreds of crops that produce flour and sugar as a source of carbohydrates. While the current dietary guidelines have acknowledged the other carbohydrate variants, only a few carbohydrate sources are

widely known and consumed in large quantities, such as rice and wheat. Various local foods, such as corn, cassava, sweet potatoes, and sago, have great potential to be developed as rice substitutes and processed into prestigious foods (Hardono, 2014). Exploring possibilities of using such local foods may boost diversification. Thus, it will provide health benefits and drive the growth of local agriculture and the economy.

To ensure a smooth transition to a sustainable healthy diet, another thing that needs to be considered is individual approaches through health promotion, in this case, promoting a nutritious diet in more sustainable ways. Many reports showing a link between healthier food intakes and the low environmental impact initiate the term ‘sustainable diets,’ which may considerably improve health and the background (Meybeck & Gitz, 2017).

2. Nutrition as a strategy for management of COVID-19

Indonesia is the largest archipelagic country, with thousands of islands spread across the country, making it “a mega-biodiverse country” globally (Nurhasan et al., 2021). Indonesia has many natural resources from forests and seas, creating a wide range of edible and nutritious food sources. Indonesia’s marine fish, for example, contains high essential micronutrients such as calcium, iron, and zinc. In addition, the Ministry of Environment and Forestry reported that Indonesia has hundreds of native food crop cultivars. Despite its mega biodiversity, however, up to now, the agronomic crops productions primarily focus on high-value commodities and high-yielding crops, including rice production. This type of production limits the variability of the kind of food supplied to the market, making the majority of other nutrient-rich food sources underutilized.

The possibility of nutritious and functional foods in managing COVID-19, especially at the individual level, is highly appealing. There is currently no specific medication available to alleviate the complex symptoms that appear during COVID-19. Since the virus can mutate, no particular vaccination is ultimately effective against SARS-

CoV-2. As a result, scientists are working to identify new approaches to managing this global issue. Finding the ultimate cure for various diseases is a difficult task for humankind. In such cases, the emphasis is on making the best food choices to increase immunity and reduce the disease severity. In the current COVID-19 pandemic, Hippocrates' philosophy of "food as medicine," which he preached over 2,500 years ago, is an essential strategy for reducing COVID-19 severe effects. The body can combat the infection if you eat the proper meals. Some reports have shown the positive impact of a nutritious diet in lowering the prevalence of COVID-19 infection and decreasing the disease's incidence (Rodriguez-leyva & Pierce, 2021). In malnourished patients, COVID-19 is more likely to be severe than in those who are otherwise healthy. Besides, more than 50% of COVID-19 patients had severe malnutrition. Although there were still limited studies on the association between nutrition status and the morbidity rates of COVID-19, a study showed a higher mortality rate in elderly with protein deficiency than those without (Rodriguez-leyva & Pierce, 2021).

Nutrients have different responsibilities in preserving the immune system, and it is evident that an adequate and balanced nutrient intake is essential for performing a better immune response. A better nutrition status serves as an effective immune response. In contrast, malnutrition impacts the immune systems' impairments. Both immune dysfunction and the vulnerability to infections can be corrected by improving the quality of nutrient intakes, particularly on the specific immune support (Calder, 2020). Thus, an individual's nutritional status is significantly affected by the body's response to COVID-19 infection and its severity. Below are the lists of certain nutrients, including proteins, vitamins, minerals, and probiotics, that play significant roles in maintaining immunity towards illness, specifically towards viral respiratory infection, which may aid in developing new strategies for preventing and managing COVID-19 (Mortaz et al., 2021).

a. Proteins

Proteins are macronutrients required to synthesize immunoglobulins and cytokines, among other things. Dietary proteins are broken down into amino acid materials, and a protein deficiency lowers the plasma concentrations of most amino acids. Arginine is a conditionally essential amino acid precursor to polyamines necessary for DNA replication and cell division regulation. Furthermore, adequate plasma arginine levels are required for optimal antibody production. Arginine supplementation significantly improves T cell function and number compared to control subjects. It plays a vital role in producing nitric oxide, a compound essential for immune function. Another amino acid required for the structural parts of vital organs that are related to the immunity response is methionine. The deficiency of this type of amino acid alters the lymphocyte functions and the multiplication of cells. Methionine deficiency is associated with a significant decrease in antibody titers and serum IgG, IgA, and IgM levels, lowering the proportion of CD3⁺, CD3⁺/CD8⁺, and CD3⁺/CD4⁺ T lymphocytes. According to methionine's protective function against COVID-19 through T cells above, it has been proven that methionine can prevent and reduce infection. Dietary proteins have been shown to improve immune function in cancer patients. Clinical studies show that giving chemotherapy patients whey protein isolate supplemented with zinc and selenium improves cellular immunity and antioxidant capacity. This type of protein is rich in protein and amino acid composition.

b Vitamins

Vitamins are necessary for better protection against infections, and their consumption significantly affects immune responses. Additionally, having an adequate and balanced proportion of nutrients in the diet, including vitamins, has a beneficial effect on maintaining exercise performance and immune function in individuals who have not eaten in a while. Vitamin A and D, for example, improve a child's body's immune response after getting the influenza vaccine. Following antiviral vaccination, antibody responses were significantly increased in both the humoral and cellular resistant arms of the immune system after taking vitamin A. Vitamin A inhibits the synthesis of

pro-inflammatory cytokines, including TNF and IL 6, by regulating immune cell proliferation and differentiation via the nuclear retinoic acid receptor (Mortaz et al., 2021).

B vitamins are essential for normal metabolism, especially when organic compounds are involved. Furthermore, the immunological role has long been recognized to depend on folic acid, vitamin B12, and vitamin B6. For example, vitamin B6 in its active form, pyridoxal phosphate, functions as a cofactor in some metabolic activities, including the metabolism of critical immunomodulatory mediators and the turnover of amino acids. These metabolic pathways are also linked to viral infections, meaning a sufficient supply of these vitamins is needed to regulate the immune response to viral infections. They regulate innate immune cells and cytotoxic CD8+ lymphocytes' activity, supporting the complete removal of viruses (Mortaz et al., 2021).

Vitamin C enhances phagocytosis, antibody production, immune cell multiplication, and leukocyte transfer to the infected area by promoting cell transmission. Numerous physiological processes, such as endocrine and immunological homeostasis, are also influenced by vitamin C's ability to serve as an essential antioxidant and cofactor in multiple cell processes. Researchers believe it boosts interferon production and responds to the influenza A virus, which could explain its ability to protect against animal coronavirus infection. Pneumonia and other respiratory tract infections are less common when vitamin C levels are higher in the blood. Cold and flu symptoms are less severe and last less time when vitamin C is taken.

Additionally, high-dose intravenous vitamin C therapy is beneficial for patients with viral acute respiratory distress syndrome (ARDS), characterized by severe lung injury, as it aids tissue healing. People with severe COVID-19 are more likely to develop ARDS, which supports the theory that vitamin C could assist in treating the disease. COVID-19 incidence and severity may be linked to a person's vitamin C status, but further study must confirm this possibility (Mortaz et al., 2021).

As a fat-soluble vitamin with numerous roles in the body, including the immune system, vitamin D is well-recognized for its many benefits. Vitamin D receptors can be found on many epithelial and immunological cells in the respiratory system, which cytokines and toll-like receptors can activate. Epidemiological studies show that vitamin D is required to protect against respiratory viral infections like influenza. Researchers have found a link between low vitamin D levels in the blood and exposure to upper and lower respiratory infections. When the vitamin D serum levels are below the requirements standard, the respiratory tract diseases caused by viruses' frequency are reduced twofold. According to the National Institutes of Health, people with low vitamin D levels are more prone to several ailments. Thrombotic events, obesity, and diabetes have all been linked to vitamin D insufficiency. Vitamin D was discovered to inhibit and protect human nasal endothelial cells attacked with SARS-CoV-2S virus infection (Mortaz et al., 2021).

Vitamin E exerts a strong influence on the immune system of the host because of its antioxidant properties. Vitamin E's ability to affect gene transcription can consequently influence a wide range of immunological and inflammatory responses, such as T-cells. Vitamin E deficiency weakens both humoral and cellular immunity. Although a brief pilot study showed that vitamin E supplementation increased the risk of pneumonia in smokers, patients with chronic hepatitis B (HBV) may benefit from it. According to another randomized controlled study, administering children vitamin E boosted their anti-HBe seroconversion. According to a computational investigation of FDA-approved medications to prevent coronavirus binding to ACE2 or transmembrane protease serine 2, vitamin E can modify downstream transcriptome profiles that drastically reduce SARS-CoV-2 infection (TMPRSS2). Clinical studies are needed to clarify this (Mortaz et al., 2021).

c. Minerals

Antiviral immune responses may be improved by supplementing with vitamins, minerals, and other nutrients, such as zinc, copper, and

selenium. Zinc provides immunity, a vital component of the immune system. Torque Teno Virus-infected patients' immune responses benefit from a high zinc dose (TTV). Antibody titers rose following influenza vaccine administration in mice given low amounts of zinc and selenium (Mortaz et al., 2021).

d. Probiotics

Coronavirus infection has both consequences on the gastrointestinal system. Viral entry mechanisms such as ACE2 and TMPRSS2 enhance the release of pro-inflammatory chemokines and cytokines into intestinal epithelial cells. The SARS-CoV-2 virus has been shown to cause an immediate inflammatory response in the intestines, as indicated by elevated serum IL-6 levels and fecal calprotectin, which are linked to diarrhea symptoms. COVID-19 has always relied on hunches regarding pre-and probiotics, as well as other microbiome modulators. Researchers showed that those who got prebiotics containing *Enterococcus faecalis*, *Bacillus subtilis*, and *Lactobacillus rhamnosus* GG had significantly lower ventilator-associated pneumonia rates than those who received a placebo in critically sick patients on mechanical ventilation. This treatment technique may be helpful before the symptoms of severe COVID-19 approximate those of pneumonia-induced acute respiratory distress syndrome. Pathogens (*Roseburia* and *Lachnospiraceae* taxa) appear to have increased in COVID-19 patients, whereas probiotics (*Faecalibacterium prausnitzii*, *Roseburia*, and *Eubacterium ventriosum*) seem to have declined (*Actinomyces viscosus*, *Bacteroides nordii*, and *Clostridium hathewayi*). People with severe COVID-19 may benefit from probiotics or changes to the microbiome. An imbalance in gut microbiota and its metabolites may lead to an unbalanced immune response. This symptom can manifest in various ways, including inflammation and lung illness. Patients with comorbidities including diabetes and cardiovascular disease, are more likely to have an abnormal gut microbiota, which may exacerbate COVID-19. Probiotic use in COVID-19 is justified by circumstantial evidence, so additional research is needed before composing a specific prescription for the probiotic (Mortaz et al., 2021).

F. Conclusion

To achieve Indonesia's demographic bonus by 2030 and golden age by 2045, the country has prioritized improving health and securing its future human capital, including addressing malnutrition. Nevertheless, numerous resources have been diverted to assist COVID-19. As a result, the country's health status and demographic advantage are jeopardized. The COVID-19 outbreak impacted all facets of life, including nutritional status, food security, and government policies. Several strategies can be implemented to improve this condition and strengthen human capital during the post-pandemic recovery process, including supporting the agriculture and food sectors and developing a plan for mainstreaming essential nutrition.

Maintaining food availability throughout the COVID-19 pandemic requires a sufficient quantity and a healthy, balanced, varied, and sustainable approach. Governments can implement an evidence-based policy during the COVID-19 pandemic by ensuring the availability of basic and essential foods, as well as scientifically recommended dietary nutrition guidelines, that are sufficient to meet national food consumption needs across all ages, cultures, and social groups. In addition, the government also needs to ensure the provision of food, primarily through diverse domestic production, so that food intake with balanced nutritional content is met.

To ensure that all citizens have access to sufficient, nutritious, and easy-to-obtain food at all times and reasonable prices, the policymakers must implement policies on the food affordability subsystem. It includes managing the smooth distribution of basic and essential food to remote areas, facilitating food trade between surplus and deficit regions, shortening the food marketing chain from farmers/farmer groups to consumer markets, and developing food marketing through e-commerce. From the sustainability perspective, the suggested efforts that local communities and food producers can execute are to continue and increase the intensity of the use of agricultural production technology, implement irrigation water management to increase cropping index, optimize swamp and dry land for the production

of various types of food, reduce crop loss and processing, as well as intensify efforts to diversify food by developing and promoting a variety of local food. Those efforts also need full support from national and local governments.

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Chapter 7

Improving Mental Health to Mitigate Pandemic Burnout

Laila Rahmah, Yulizar Melianto, & Ainul Mardiah

A. Introduction

The Corona Virus Disease 2019 (COVID-19) pandemic affects socio-economic, physical, and mental health (Wiguna et al., 2020). Before 2020, mental disorders were the driving causes of the health-related burden worldwide, whereas anxiety and depressive problems were the top contributors to this burden (Santomauro et al., 2021). Anxiety and depression prevalence are growing and even doubled in some countries (Organisation for Economic Co-operation and Development, 2021). The rise of the COVID-19 pandemic has created an environment in which numerous determinants of destitute mental well-being are exacerbated (Santomauro et al., 2021). The COVID-19 episode has sparked an open and worldwide mental well-being

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emergency and massive psychosocial problem. Across countries in the general population, unemployed people and those experiencing financial insecurity have the worst mental health status (Organisation for Economic Co-operation and Development, 2021). Government, non-governmental organizations (NGOs), and mental health providers (MHPs) worldwide, especially in Indonesia, can play a treasured part in supporting the well-being of COVID-19 patients and their families, society, and healthcare specialists (Jakovljevic et al., 2020).

The novel COVID-19 pandemic has been under intense pressure on the world in the past two years. Indonesia is the fourth most populous nation in the world and, compared to other less crowded countries, is anticipated to endure tremendous loss (lives, economic loss, educational loss, etc.) over an extended period (Djalante et al., 2020). In Indonesia, the pandemic has affected many determinants of mental health. As a result, the Indonesian government is shifting priorities to control the COVID-19 outbreak, applying measures like social distancing, social quarantine, lockdowns, schooling, and working from home (WFH). It results in a decline in economic activity, loss of livelihoods, reduced access to physical exercise, and a dramatic loss of daily routines that can considerably influence the mental well-being of the population (Santomauro et al., 2021; Wiguna et al., 2020).

Changes in daily routines and adaptations needed to survive a pandemic cause many people to feel uncomfortable, triggering burnout (Anindyajati et al., 2021). As the Indonesian government implemented a WFH program to limit virus transmission during the outbreak, employees' work-life balance was disturbed, directly and indirectly leading to job burnout. Furthermore, burnout is a mediator between work demand and intention to leave (Faaroek, 2020). Limited IT assistance, social isolation, and no defined working hours (Irawanto et al., 2021) contribute to stress and work-life balance, influencing job satisfaction.

Among the mental health problems triggered by the pandemic, burnout is among the most prevalent; some of its causes are extreme changes in daily routines, such as social distancing, social quarantine,

lockdowns, schooling, working from home, etc. (Faaroek, 2020). Referring to World Health Organization (2019), burnout is a disorder caused by stress in a work environment that is still not well-managed. Three dimensions characterize burnout, including feelings of lack of energy or fatigue, increased mental distance from one's work, feelings of cynicism or unfavourability about one's work, and reduced professionalism. As a result of the COVID-19 pandemic, burnout may be experienced by a majority of people, including Health Care Providers (HCPs), the most prominent, and people from other backgrounds like parents, workers, and young people.

Mental health literacy is crucial in dealing with burnout to control this problem. One of five Indonesians experienced burnout and mental health problems during the COVID-19 pandemic (Anindyajati et al., 2021). However, compared to mental health, the affected countries like Indonesia mainly focused on physical health impacts (Ifdil et al., 2020; Nasir, 2020). Accessible information to improve mental health care, health literacy, social connections, a supportive environment, and mental health surveillance is essential to prevent more significant post-pandemic psychiatric problems and build a resilient and future-ready society (Anindyajati et al., 2021).

This chapter can be seen as an evaluation as it gives insights for all stakeholders to improve mental health in Indonesia and adjust existing policies that affect people's mental health. There are four objectives of this chapter. The first is to highlight the pandemic burnout experienced by people in Indonesia. The second is to share awareness about mental health literacy and how to improve it. The third is to analyze the gaps and challenges in available mental health resources in Indonesia. Fourth, to put forward suggestions toward fast, comprehensive, and more precise approaches within the brief- and longer-term related to mental health to build a resilient and future-ready society.

B. Pandemic Burnout

Burnout is being physically, cognitively, and emotionally spent due to excessive and sustained demands (Queen & Harding, 2020). There

are three types of burnout symptoms such as physical (e.g., sleep disturbances), psychological (e.g., helplessness), and social burnout (e.g., conflict with others). Burnout may be experienced by most people from various social backgrounds worldwide due to the COVID-19 pandemic. While healthcare practitioners (HCPs) are among the most prominent, burnout affects other groups such as parents and the general population.

Most pandemic burnout sources in HCPs are from the working environment and household responsibilities, affecting job performance. A survey from sixty countries with more than two thousand HCPs shows that more than half of all participants suffer from burnout, with the main sources being work-related household issues (e.g., childcare), exposure to a contagious work environment (e.g., patients with COVID-19 symptoms), job stress (e.g., deciding patients' lives), and a lack of organizational support (e.g., personal protective equipment (PPE) availability) (Morgantini et al., 2020). Similarly, a cross-sectional study that included twenty-one provinces in Indonesia discovered that direct interaction with patients with COVID-19 symptoms could lead to burnout among HCPs (Sunjaya et al., 2021). Furthermore, a systematic review found other contributing factors to burnout in HCPs: young age, inadequate clinical experience and training, low social support, long working hours and increased workload, PPE, and personnel scarcity. These are all risk factors for nursing burnout. HCPs who are burnt out at work are affected by the pandemic (Galanis et al., 2021). In the same study, the authors concluded three detrimental consequences of burnout during pandemics in HCPs: emotional tiredness, depersonalization or negative attitude toward job and co-workers, and a sense of a loss of personal accomplishments.

Parental burnout is not new, but increasing during the pandemic could detriment children's well-being. Parental burnout is chronic stress-related to fulfilling parenting tasks that manifest as physical and emotional exhaustion (Mikolajczak et al., 2019). Both external and internal factors contribute to parental fatigue during COVID-19.

External factors include uncertainty about the financial situation due to the high unemployment rate and lack of social support and contact from extended family (e.g., grandparents) due to COVID-19 restrictions (Griffith, 2020). Meanwhile, internal factors include parental profiles and perspectives. Upadyaya & Salmela-Aro (2021), who conducted a longitudinal study on 1314 parents in Finland, found that parental profiles, attitudes, and children's ability contribute to parental burnout throughout COVID-19. The same study concluded that latent profiles of parental burnout are associated with different burnouts (Upadyaya & Salmela-Aro, 2021). The three types of latent parental burnout profiles are low parental burnout, high parental burnout, and emotionally distant. High parental burnout has the most significant effect on fatigue and frustration compared to the other profiles. In contrast, emotionally distant parents significantly impact distance from their children during the pandemic. However, parental burnout is low in cases involving parents with a growth mindset and children with academic strength (Upadyaya & Salmela-Aro, 2021).

Similarly, the relationship between parents' mental health conditions because of COVID-19 could affect children's positive behavior and stress. This impact varies based on the parent's income, and it is most prominent in families with low socioeconomic status (Kerr et al., 2021). In the context of Indonesians, the relationship between the impact of COVID-19, parental burnout, and children's well-being is slightly complex. This complexity could be seen in an online survey study (Riany & Morawska, 2021), revealing that financial and work burdens can influence parents' psychosocial functions and directly affect children's adjustment and competencies. Results from mediation analysis show that parents' psychosocial situations could also have indirect effects through family interaction. This analysis means that fewer psychosocial function problems for the parents would lead to more enjoyment during family interaction, reducing adverse outcomes on children's adjustment and increasing children's competencies.

Furthermore, according to a study by Susilowati and Azzasyofia (2020), online learning from home may increase parental burnout,

particularly among parents of children in kindergarten and primary school who require greater supervision. Financial concerns, family health, lack of technology expertise, balancing work from home (WFH), domestic tasks, and teaching the children all contribute to parental stress (Susilowati & Azzasyofia, 2020). Learning from home also affects students' academic deficit, reading, and mathematical issues (Panagouli et al., 2021). From the data above, it can be seen that external and internal factors affect parental burnout and children's psychosocial issues.

Lastly, in a larger population, the pandemic has caused mental health problems as most people feel exhaustion related to online access. On the one hand, the internet makes it easier to access information associated with COVID-19 and interact with others during COVID-19 restrictions. On the other hand, it could affect one's well-being due to excessive internet use. A systematic review study (Xiong et al., 2020) argues that uncontrolled use of social media platforms could expose one to disinformation, leading to amplified anxiety and unnecessary fear. In line with that, a survey study in eight developed countries with a total number of 8,806 participants claims that in comparison to persons who access traditional media such as television and health professionals; exposure to internet media, politicians, and personal contacts is associated with disinformation and conspiracy theories (Susilowati & Azzasyofia, 2020). In Indonesia, "infodemic" tends to misguide people's health behavior. A study from Prawira et al. (2021) shows that conspiracy theory and pseudoscientific cures are inversely correlated with social distancing behavior. Cross-sectional research in Bali found that beliefs in conspiracy theories, conventional media, and authoritative sources deeply affect vaccine acceptance (Wirawan et al., 2021).

Pandemic burnout could affect one's well-being and mental health on the personal, professional, and community levels. Thus, it indicates a need to deeply involve mental health management services by improving mental health literacy among the community to mitigate

the impact of COVID-19 pandemic crises related to mental health disorders.

C. Mental Health Literacy

Mental health literacy (MHL) arose from health literacy, which was introduced and defined as “a knowledge and beliefs about mental disorders which aid their recognition, management or prevention” (Jorm et al., 1997). MHL consists of several components: knowledge and beliefs against the risk factors and causes of mental health disorders, the ability to recognize specific conditions, knowledge of how to seek mental health information, knowledge and beliefs against self-treatments and professional help available, and attitudes that encourage recognition and appropriate help-seeking (Jorm et al., 1997). However, MHL was later redefined as an understanding of how to gain and maintain positive mental health, knowledge of mental disorders and their treatment, stigma related to mental disorders, and enhancing help-seeking efficacy—knowing when and where to seek help, and developing competencies designed to improve mental healthcare and self-management abilities (Kutcher et al., 2016).

Adopting good MHL is appropriate for managing mental health. According to Jorm (2012), people with a high level of MHL were more likely to recognize their mental disorders and identify appropriate sources of healthcare than those with a low level of MHL, who tended to use inappropriate coping strategies such as the use of alcohol and other drugs. Therefore, increasing MHL will also increase knowledge of dealing with mental disorders, both for oneself and providing first aid to others (Idham et al., 2019). Nevertheless, Jorm (2012) reported that MHL still did not get the same attention as physical health literacy. Moreover, the research about intervention efforts and improving the lack of MHL among the community, especially the young adult group, were also limited and poorly evaluated (Kelly et al., 2007).

In Indonesia, the information on the current state of MHL among the general population is still limited. However, a study demonstrated that a condition that reflected the low level of MHL among people in

Indonesia was an existing high level of stigma that developed in the community about mental disorders patients (Center for Public Mental Health, 2020). This stigma encourages reluctance to access mental health services in many people (Center for Public Mental Health, 2020). Another evidence that reflects the low level of MHL in Indonesia is the reliance on traditional and informal treatments in many communities, such as visiting religious practitioners and traditional healers as the first aid upon any signs and symptoms related to mental health disorders (Novianty & Hadjam, 2017). Moreover, a study also reported a lower level of MHL in non-mental health practitioners than in mental health practitioners (Praharso et al., 2020). These findings suggested that the level of MHL in the community has remained persistently low. This indication was also suitable with a study that stated that the concept of MHL tended to conflict with traditional folk beliefs, especially in developing countries that assumed the idea only represented Western scientific conceptualizations (Jorm, 2012).

Additionally, Petersen et al. (2011) also revealed that traditional explanatory models and some of the conventional healing models of mental disorders were significantly attributed to the emergence of stigma, discrimination, and human rights abuses in the community. It further led to the delayed decision and their practice to seek any help for mental health care from formal health providers. Therefore, cultural diversity is an essential factor that needs to be considered in approaching the whole community to improve their mental health literacy (Jorm, 2012).

Furthermore, this low level of MHL might be worsened by Indonesia's low prioritization of mental health services (Nasir, 2020). Several studies have revealed that the priority of mental health services in Indonesia remains significantly low and unintegrated in primary health care services (Makkasau, 2013; Marchira, 2011). This low level of priority and attention against mental health services in Indonesia reflects how relevant stakeholders failed to meet the standards for mental health management set by WHO for developing countries (Marchira, 2011). This led to a lack of resources to address mental

health-related cases and stigma against mental health issues according to existing standards (Afifah et al., 2016; Marchira, 2011; Mawarpury et al., 2017).

In Indonesia, several organizations, including the Medical Doctors Association, the Association of Psychiatrists, Indonesian Psychological Association (HIMPSI), the Public Health Association, the Association of Nurses, Into Light Indonesia, Get Happy, Komunitas Peduli Skizofrenia Indonesia, Indonesia Mental Healthcare Foundation, and ISMILE4YOU had provided and delivered education and care to improve health literacy to the general public (Fanada, 2017; Nasir, 2020). Nevertheless, many of the population remain unaware of MHL and these organizations providing mental health services (Jorm, 2000; Syafitri & Wijayanti, 2017). In addition, religious organizations in Indonesia still play little in strengthening health literacy among the general population, either in the COVID-19 crisis or in the future (Nasir, 2020). Thus, this situation indicates the need for immediate action by relevant stakeholders and organizations to develop and apply appropriate planning, strategy, and effort to trigger an increase in MHL in the population (Grace et al., 2020). Moreover, the mental health services must be scaled up and given more resources to do this vital work (Nasir, 2020). Several interventions might be considered to be adopted to improve the MHL of the community potentially, and it includes whole-community campaigns; community campaigns aimed at specific groups as audiences; interventions based in an educational setting through teaching about help-seeking skills, the resilience of mental health, and MHL; mental health first aid training; and web-based interventions through providing of the validated information by mental health experts and relevant organizations regarding MHL and mental disorders management (Jorm, 2012; Kelly et al., 2007).

D. Available Resources for Mental Health

Accessing mental health resources is a crucial step in recovering from pandemic burnout. However, the delivery of mental health resources has to be rapidly modified from in-person, face-to-face formats to

remote delivery through online access (Murphy et al., 2021). These services are still facing challenges and adapting to the pandemic's effect on MHP, and the patients are still being felt. Various mental health resources are currently accessible worldwide, both in-person and online, especially in Indonesia; they are provided by the government, NGOs, and online industries - as listed in Table 7.1.

Table 7.1 List of Mental Health Resources Provided by Government and NGOs

Type of Resources	Name of Services	(G/N)	In-Per-son	On-line	Ac-cess
In-Person - Con-ventional Resource (Ifdil et al., 2020; Morin, 2021; Tala, 2020)	Psychotherapist	G/N	+	+	Glob-ally
	Psychiatrists	G/N			
	Psychologists	G/N			
	Psychoanalysts	G/N			
	Clinical counselors	G/N			
	Peer specialist	G/N			
	Social worker	G/N			
Online Therapy (Bali Bersama Bisa, 2021; Biro Hukum dan Humas Ke-men PPPA, 2021; Philipp, 2020)	Layanan Kesehatan Jiwa (SEJIWA)	G	-	+	Indo-nesia
	<i>Sehat Pedia</i>	G			
	LISA Suicide Prevention Helpline (Love Inside Suicide Awareness)	N			
	The Center for Indonesian Medical Students' Activities (CISMA) and UNICEF	N			
Telemedicine (Rokom, 2021)	Free consultation and perscription: Alodokter, GetWell, Good Doctor and GrabHealth, Halodoc, Klik-Dokter, and KlinikGo. Then Link Sehat, Milvik Doctor, ProSehat, SehatQ, and YesDok	G/OI	-	+	Indo-nesia
Self-Management Mobile App (Morin, 2021)	Free: Mood fit, eMoods (BV), Depres-sion CBT Self-Help Guide, Bearable (BV), PTSD Coach, Todoist (BV)	OI	-	+	Glob-ally
	Commercial: MoodMission, Shine, Calm, Talkspace, Happify, Sanvello,				

Note:G: Government, N: Non-Government Organization, OI: Online Industry, BV: Basic Ver-sion

In-person therapy is any conventional therapy in which the practitioner and the client meet directly in the same room simultaneously in an offline situation (Cruz-Cunha et al., 2010). Traditional mental health resources encompass HCPs who diagnose and treat mental illness, usually provided by the government or NGOs (Tala, 2020). Data on mental health facilities for in-person services other than mental hospitals and general hospitals with mental services are almost entirely unavailable. Until now, psychiatric beds are only available in mental hospitals and a small number of public hospitals. Other service facilities such as shelters, community care homes, daycare treatments, and so on do not yet exist in Indonesia. The psychiatrists per 100,000 population ratio were 0.01 in 2011 and 0.3 in 2014. Human resources in the mental health field other than psychiatrists include nurses as much as 2.67 per 100,000 population, psychologists 0.18 per 100,000 population, and social workers 0.05 per 100,000 population. Data on general practitioners, occupational therapists, and other health workers are unavailable (Idaiani and Riyadi, 2018).

Before the incidence of COVID-19, people suspected of mental health conditions or needing counseling had to make a hospital/clinic appointment with their mental health provider for diagnosis or treatment (Ifdil et al., 2020; Tala, 2020). This face-to-face counseling reduced cortisol levels, the 'stress hormone,' and raised dopamine, the 'happy hormone' (Hart, 2008). In addition, therapeutic presence enables a relationship attachment to grow, as it involves MHP being in the moment entirely on many levels, including relationally and physically (Geller & Greenberg, 2002).

However, in-person therapy during the pandemic was no longer relevant due to increasing challenges and limitations, even as mental health problems among patients and HCPs became more prevalent during the spread of the virus (Ojha & Syed, 2020). Currently, there is insufficient medical staff in Indonesia to bear with elevating demands for taking care of COVID-19 cases due to an unequal geographical distribution of physicians and a low physician-to-population ratio (Mahendradhata et al., 2021). In addition, with the high levels of

mental and physical stress, the psychological and physical well-being of HCPs adds another challenge (Tyssen, 2019). Patients understandably feared contracting the virus and refused to attend the few services that remained open (Murphy et al., 2021). This overall condition causes the number of untreated mental disorder patients to increase, even as the number of HCPs remains relatively limited and going away from the ideal ratio by WHO 1 doctor per 2,500 population. Significant changes in lifestyle that have become very restricted due to the lockdown have rendered face-to-face impossible (Pfefferbaum & North, 2020). Therefore, web-based intervention like online therapy can quickly solve this problem by continuing consultations without having to meet face-to-face and helps to stop the spreading of the virus in this pandemic.

Online therapy for psychological problems is a treatment (evident-base) for anxiety and depression. It is progressively being offered through various mediums of long-distance communication, including telephone, video conferencing, email, text, and web-based messaging between patients and their HCPs (Hasselfeld, 2021; Hyder & Razzak, 2020; Irvine et al., 2020; Tatum, 2021). These various methods are sometimes collectively referred to as ‘telepsychology’ or ‘mental telemedicine’ (Irvine et al., 2020). Before the onset of COVID-19, most therapists had concerns about mental telemedicine and only cared for patients face-to-face. However, during the COVID-19 lockdown, patients still need therapy, but face-to-face therapy sessions have become unsafe (Sampaio et al., 2021). Several Internet startups have been developed and tested for common mental disorders. Evidence suggests that these treatments often produce the same results as face-to-face psychotherapy and are relatively cost-effective (Andersson & Titov, 2014).

These days, mental telemedicine has spread beyond developed countries and entered prevalent use in developing countries, including Indonesia (Koh, 2019). In Indonesia, the government and NGOs own their mental telemedicine platform, as shown in Table 7.1. In addition, the Indonesian Ministry of Health is collaborating with

11 telemedicine service platforms as the government's response to monitor self-isolating patients and ensure the fulfillment of people's mental health rights during the COVID-19 pandemic. In contrast, it also improves public MHL; education, consultation, and psychological assistance are free (Biro Hukum dan Humas Kemen PPPA, 2021; Koh, 2019; Philipp, 2020).

Although the government, NGOs, and healthcare industry are rapidly combining new ways of treating people with mental health conditions with advances in technology (Ojha & Syed, 2020), these technologies cannot be applied equally in the nation due to the different distribution of healthcare resources (Wiseman et al., 2018). Especially in Indonesia, there are gaps in the district's public health system, resulting in a wider gap between those who receive adequate care for mental illness and those who do not. Therefore, it is necessary to evaluate the country's healthcare system's capacity to assimilate and suit the shifting healthcare requests (Mahendradhata et al., 2021). Most mental health patients (98.3%) were internet users, but there remains a substantial gap in high-quality internet access among urban and rural households (Allain-Dupré et al., 2021). Unfortunately, telemedicine options that require high-quality internet access, especially for video and audio services, are not as helpful. Only 60 % of people in rural areas have a good quality of internet, compared to over 95 % of people in the urban area (Anderson & Singh, 2021).

Online-based treatment and self-management for mental health have expanded the scope of treatment supply. The beneficial effects of self-management of mental health include improving well-being and lowering mortality, morbidity, and costs of medical care. In addition, there is a developing acknowledgment of the need for individuals with unremitting mental well-being conditions to expect duty for their well-being and be actively involved in self-management (Riegel et al., 2021). The ever-wider availability of mental health related-self management mobile applications, as listed in Table 7.1, permits clients to get to their feature at any time, seek specialists and medication while remaining anonymous, and offer a few ways to stay engaged,

like regular updates, sentiments to trackers, and inexhaustible learning material (Morin, 2021).

Still, although these mobile apps can be incredible tools to assist patients in self-manage their well-being concerns and medication, they are ideally meant to supplement a licensed therapist (Ifdil et al., 2020). Mental telemedicine inevitably still faces some limitations regarding the missing non-verbal communication. Research shows that 55% of communication on feelings and demeanor is passed on through facial expressions (7% passed on vocally, and the rest 38% by how things are said) (Hart, 2008). In this manner, much of what is communicated by a patient, both in the evaluation and within continuous treatment, will be misplaced in online counseling, as clinicians would have picked up critical information from the client not only through words but also through gestures, eye contact, and bodily movements. Without such information, the recovery rate will be impacted due to decreased quality of treatment (Geller & Greenberg, 2002).

There also exists a discrepancy in age, as data shows that younger patients search for information about diseases psychiatrists and communicate with other patients more frequently than older patients. Due to the lack of MHL, only a small percentage of individuals have previously used online self-management interventions. In the future, more people have communicated interest in utilizing online self-management interventions, especially for the younger patient. A study showed that 59.2% of patients with college degrees, 52.3% with high school degrees, and patients with mandatory degrees had expressed interest in using self-management intervention (Bali Bersama Bisa, 2021; Biro Hukum dan Humas Kemen PPPA, 2021; Philipp, 2020). Prove appears that improved MHL creates better mindfulness of looking for assistance and medication and advances early recognizable proof of mental disorders. Therefore, MHL is essential to improve mental health outcomes and increase health services in person or online (Wei et al., 2015).

E. Conclusion

COVID-19 pandemic affects not only socioeconomic and physical health but also mental health. Mental disorders were the driving causes of the health-related burden around the world. Indonesia is the fourth most populous nation in the world and, compared to other less crowded countries, is anticipated to endure massive losses over a more extended period. Among the mental health problems triggered by the pandemic, burnout is the most prevalent, caused by extreme changes in daily routines (such as social distancing, social quarantine, lockdowns, schooling and working from home, etc.). Due to the COVID-19 pandemic, burnout may be experienced by a majority of people, including HCPs as the most prominent and people from other various backgrounds like parents, workers, and young people.

Adopting good MHL is expected to be an appropriate option to manage mental health and improve stress from burnout. Accessible information to improve mental health literacy, health care, social connections, a supportive environment, and mental health surveillance is essential to prevent more significant post-pandemic psychiatric problems. In Indonesia, various mental health resources are currently provided by the government and NGOs and are accessible both in-person and online. Unfortunately, personal services are still remarkably lacking, with small psychiatric beds available in mental and general hospitals. Conversely, the ratio of HCP in Indonesia for mental health is still less at 2 per 100,000 population. The government should be concerned about this number and put some measures to increase it because generally, this number remains relatively low and goes away from the ideal ratio by WHO 1 doctor per 2,500. On the other hand, for online services to improve mental health, the Indonesian Ministry of Health is collaborating with 11 telemedicine service platforms as the government's response to monitor self-isolating patients and ensure the fulfillment of people's mental health rights during the COVID-19 pandemic. It also aimed to improve public MHL with free education, consultation, and psychological assistance.

It is essential to improve the mental health system in various countries due to the emergence of the COVID-19 pandemic. Prevention strategies can consolidate ways to make strides in mental health and target the clincher of the low mental health level and activities to care for those with a mental disorder. Therefore, this chapter can be seen as an evaluation as it gives insights for all stakeholders to improve mental health in Indonesia and adjust existing policies that affect people's mental health. The authors have suggested fast, comprehensive, and more precise approaches within the brief and longer-term mental health to build a resilient and future-ready society, especially for workers, young people, and HCPs.

F. Recommendations for Improving Mental Health

It is essential to improve the mental health system in various countries due to the emergence of the COVID-19 pandemic. Prevention strategies can consolidate ways to improve mental health and target the clincher of low mental health levels and activities to care for those with a mental disorder. It is not an option to not take action to overcome the burnout caused by the COVID-19 pandemic. There is no option not to take action to overcome the burnout caused by the COVID-19 pandemic. The rise of the COVID-19 pandemic in 2020 has increased numerous questions concerning its rapid psychological effects and long-term financial and social concern (Santomauro et al., 2021).

Indonesia still has a massive gap between the reality (<2 per 100,000 population) and the ideal (1 per 2,500 population) ratio for HCP in mental health (Pfefferbaum & North, 2020). For accessing online mental health services, there also remains a substantial gap in high-quality internet access among urban (90%) and rural households (60%) (Anderson & Singh, 2021). Moreover, a discrepancy in patient age and educational background exists in to search for information about mental health problems (Wei et al., 2015). Therefore, due to these gaps, we recommend the government (Adit, 2020):

1. Prevent mental health crises during and after the pandemic by facilitating the results of surveillance of mental health problems

and health resources and providing support for access to reliable information and technology.

2. Provide mental health and psychosocial support for productive and vulnerable age groups by facilitating adaptation to work and study from home, strengthening interactions within the family, social security, and health.
3. Expand the reach of mental health services in the community by facilitating access (including self-checking technology and teleconsultation), integrated physical health services, standardized service guidelines, and active outreach in the community.
4. Ensure continuity of mental health services for people with mental disorders through the development of telemedicine, drug access policies, and prevention of physical health risks.

According to OECD (2021), people between 15 to 24 years old have mental health that deteriorates significantly by 2020–2021. Their mental health support is severely compromised, notably in schools, college, and the workplace (Xu & Banks, 2020). The protective factors that help maintain good mental health, such as social interaction and daily routines, are weakened by the closure of educational institutions at all levels, especially in underprivileged backgrounds (UNESCO, 2021). In addition, the impact of COVID-19 on the labor market disproportionately affects youth, reduces work-based learning for students and part-time job opportunities, and exposes prospective and recent graduates to the daunting task of finding and keeping jobs, placing them at high risk of developing health problems. Mentally throughout life (Churchill, 2021). Therefore, to protect the mental health of young people, it is necessary to build a resilient and future-ready society; an integrated policy response is needed, both short and long term, including:

1. Prioritizing support through information dissemination for mental health, through telephone, web-based services, and face-to-face services that can be accessed quickly (OECD, 2021) because the foundation to promote mental health in young people is the need to gain MHL (Jorm, et al., 2012). Alternatives must

be sought immediately in case mental health support services in educational institutions cannot continue;

2. Supporting young students at risk of dropping out of school early, including those with mental health problems, should be prioritized. COVID-19 has disproportionately impacted labor market outcomes leaving young graduates to experience an uphill challenge to seek, retain and stay in work (OECD, 2021). This is to maintain socio-economic aspect and prevent long-term problems as unemployment has been shown to hurt self-esteem and increase depression (Churchill, 2021);
3. Ensuring managers and staff in the workplace and school have a good MHL and contributing factors for well-being is essential to promote better mental health among young adults and to achieve high performing workplace and school (OECD, 2021; Idham et al., 2019).

HCPs role in the pandemic caused them to experience noticeable challenges and stressors that may negatively affect their physical, mental, and emotional well-being (Svold et al., 2021). Front-line healthcare providers and those who worked in low-resource settings were the most vulnerable. Due to HCP's mental health being directly related to health service quality, more attention has been paid to improve their mental well-being (Hayashino et al., 2012; Khanal et al., 2020; Muller et al., 2020). We offer some recommendations to improve mental health in HCPs and to build a resilient and future-ready society:

1. Increase the MHL of health workers by creating a national knowledge base containing essential information, tools, and resources to improve workers' resilience and welfare in times of crisis and rebuilding. Digital technology and other innovative approaches can ensure access to ongoing support, guidance, and training, especially for frontline workers (Thatrimontrichai et al., 2021).
2. Adequate staffing, appropriate work shift, and regular breaks must be ensured, as long shifts and high demand can pressure health care staff. Indirectly, this may cause staff shortages as workers

get sick or stay home because of stress and anxiety or for other reasons (Thatrimontrichai et al., 2021).

3. Clear communication with healthcare workers is critical to identify and acknowledge the most common concerns of healthcare workers. Struggling providers must be encouraged to seek support and help, and the availability of appropriate support resources must be ensured. (Knaak et al., 2017; Thatrimontrichai et al., 2021).
4. The stigmatization of healthcare workers must be condemned and reduced by educating the community about mental health stigma and negative stigma on healthcare workers. Any workplace culture that does not support mental well-being must also be revised. (Knaak et al., 2017).

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Chapter 8

The Role of Collaborative Leadership in Handling Pandemic and Drive a Sustainable Recovery

Faruq Ibnul Haqi, Muhammad Zidan Atabik, & Rahmat Aldi

A. Introduction

The COVID-19 pandemic has hit the heart of Indonesian cities, with reports of confirmed cases more prominent in urban rather than rural areas. There are several vulnerabilities in infection control in cities, including high-density residences, public transport, cultural and social gatherings, diverse businesses, and creative networks (Kiaghadi et al., 2020).

The dynamics in handling this pandemic have opened the veil and confirmed the natural perspectives, abilities, and behavior of the government, business actors, and communities up to the individual level. Not all countries globally seem capable of handling the existing situation, including Indonesia (Dubicka & Carlson, 2020). On the

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other hand, countries considered “ordinary” can appear to be more responsive in managing the situation. The pandemic and crisis have made the state, market, and society’s capacity more transparent (Jing, 2021; Sarkar, 2020).

This crisis has forced all levels of government to take action in a context of great uncertainty and under heavy social and economic pressure (Morris, 2021). All levels of government, national, provincial, or local, have uncertainty in relying on appropriate and straight policy actions to get out of the crisis and rise from adversity (Hidayat et al., 2021). However, the government must take action; the steps must be linear and synchronous in all sectors. At the beginning of the pandemic crisis, according to the study of Suwarno and Rahayu (2021), the central government tried several “best formulas” for developing health protocols following crisis conditions. Cross-sectoral collaboration is a must in conditions of a global crisis. This flexibility and adaptability required governments to reassess their multi-level governance systems and reconsider their regional development priorities.

In its implementation, the Indonesian government involves health actors and elements of the military and police (Setijadi, 2021). Medical personnel carries out their health services duties, while the army and the police carry out strict supervision to implement health protocols. They have implemented cross-sectoral cooperation in a structured and sustainable manner. Meanwhile, the mayor has the duty and authority to lead the municipality’s administration based on the policies established by the city council. They must be at the front line handling COVID-19, protecting and restoring public health and economic security (Turnipseed & VandeWaa, 2022). Generally, cities’ networks provide a source of mutual support, collaborative leadership, and knowledge exchange as traditional multilateral systems struggle to harmonize collective action.

This chapter discusses the role of collaborative leadership, which emphasizes how the mayor as a city manager enhances and implements policies to deal with the pandemic crisis by implementing cross-sectoral collaboration in two or more sectors to promote sustainable

recovery. This chapter draws upon appropriate literature concentrating on collaborative leadership models in handling pandemics, emphasizing the City of Bogor. The qualitative analysis method was used to analyze the data we collected. Hence, this chapter examines the component of collaborative leadership instead of focusing on a particular aspect of leadership. Handling cross-sectoral collaboration to improve effectiveness involves recognizing the governance arrangements which support inter-organizational and inter-sectoral efforts. Evidence shows collaborative leadership is essential in regulating crises and facilitating and implementing policies.

B. Role of various levels of government in responding to the pandemic

The pandemic's global crisis persists even though the virus has mutated into various variants. Cities are in a particularly vulnerable position during the pandemic. Developing several towns with a prevalence of informal settlements and slums faced rapid transmission. One study conducted by Wahyudin (2021) and supported by a collaboration study between DKI Jakarta Health Office and health institutions found that nearly half of the residents of slum areas in Jakarta had COVID-19, higher than the proportion outside of slum areas (Jakarta, 2021). The dense and unhygienic environment of slums creates a hospitable environment for transmitting the COVID disease. Therefore, city leaders must carry out strict tracking to mitigate the spread. In addition, many economic and social problems have emerged in the community, such as employee layoffs, bankruptcy, unemployment, community psychological disorders, and school closure that may affect children.

However, policies for handling the pandemic are nationally-decided, although regionally implemented (Setijadi, 2021). In that position, the mayor must prioritize steps to ensure public health can be achieved: policies on using masks, maintaining distance, washing hands, and face-to-face arrangements for each school and university. In addition, the government is also preparing vaccination

standards for the community so that the target of herd immunity can be achieved. Cities are transforming to stop the virus from spreading, discovering ways to provide direct support to vulnerable groups, such as cash transfer initiatives to tax relief. Several regions in Indonesia have distributed social assistance to ensure the condition of their citizens during the Covid-19 pandemic, one of which is the city of Bogor, where they distribute their budget from the APBD. Hence, cross-sectoral collaboration is a must in conditions of a global crisis. This need for adaptability and flexibility prompted governments to reassess their multi-level governance “collaborative” systems and reconsider their regional recovery priorities.

The central government, provincial, and regency/city governments throughout Indonesia worked together to complete the work according to the constitutional mandate (Setijadi, 2021). Steps were taken to anticipate and reduce the worst impacts of health emergencies on people’s lives and the impact on the economic, social, security, and defense sectors (Bahtiar et al., 2021; Setiawati et al., 2021). Presidential Instruction No. 6 of 2020 concerning Improvement of Discipline and Law Enforcement of Health Protocols and Control of COVID-19 contains 4 (four) orders addressed to Ministers, Cabinet Secretaries, Commander of the Indonesian Armed Forces, Head of Indonesian Police, Head of Non-ministerial Government Institutions, Governors, and Regents/Mayors throughout the area (Hidayat et al., 2021). The first order is addressed to all parties to take the necessary steps according to their respective duties, functions, and authorities to ensure legal certainty, strengthen efforts, and increase the effectiveness of the prevention and control of COVID-19 in all provincial districts/cities in Indonesia. The second order was addressed explicitly to the Coordinating Minister for Political, Legal, and Security Affairs; Minister of Home Affairs; Head of BNPB; TNI Commander; Police chief; and the Governors and Regents/Mayors. At the same time, the third and fourth orders are related to financing charged to the APBN, APBD, and other legitimate sources according to the provisions and requests to carry out these instructions with full responsibility (Hidayat et al., 2021).

As previously mentioned, Bogor City is one of the cities in Indonesia that issued a policy of assistance to its citizens. The city of Bogor has swiftly responded to the problem of COVID-19 to prevent the impact of the public health emergency on various dimensions. Swift preparedness and anticipation were done by issuing strategic policies through regulation. One of the regulations is Bogor Mayor Regulation Number 38 of 2021. These regulations are usually in the form of a regional legal product. Synergy, solidity, and coordination with the West Java Provincial Government and other Regency/City Governments throughout Bodebek (Bogor, Depok, and Bekasi) have made the Bogor City Government issue several policies with regulations for preventing and handling COVID-19. Other rules enforced in the city of Bogor follow the central government's restrictions. For example, malls or shopping centers could operate, restaurants or restaurants could eat on the spot within 60 minutes, and several sports venues were reopened to conduct simulations for face-to-face learning in schools (Indonesia, 2022).

C. Leaders' characteristics in pandemic

Leadership have been variably defined; however, it is not a straightforward concept in local development. There have not been many published studies that have systematically analyzed this sort of leadership. Nevertheless, it is necessary to try to explain what makes up good leadership. At the same time, many interpret leadership as just a 'great person' (Hoffman et al., 2011; Isaac Mostovicz et al., 2009; Spector, 2016). Leadership concepts have changed from great man and trait theories to transformational leadership theories (Maloş, 2012). Following these hypotheses, Bolden et al. (2003) deduced that leaders are exceptional people with specific personalities and extraordinary qualities and those born to be leaders. Thenceforth, the situational leadership theory reveals that no one method is appropriate for everything, but everything should be adapted to the current situation. For example (Bolden et al., 2003), the injunction method could be suitable for highly repetitive, monotonous, and systematic settings.

The participatory approach may fit better for more alive, active, and vibrant environments. However, collaborative leadership is a practical and effective way to address complex problems and challenges in the current global pandemic crisis. Collaborative leadership can bring people with different views and perspectives together to discuss issues openly. Collaborative leadership focuses on building trust and sharing power so that collaboration between stakeholders can be easily achieved.

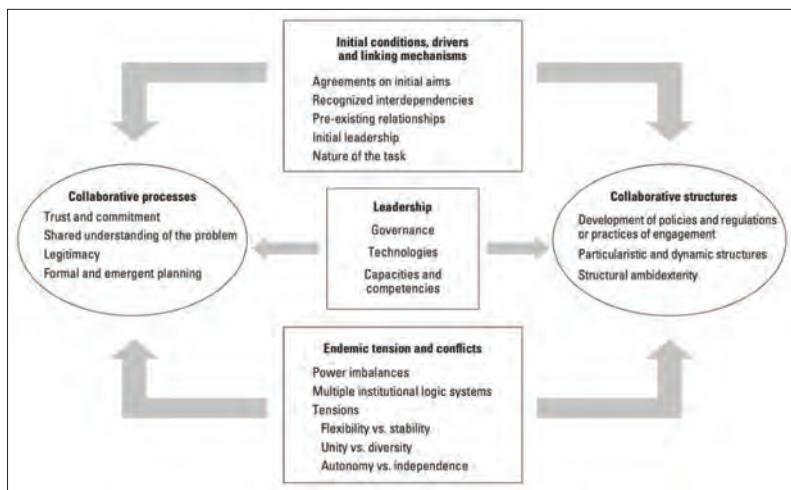
Several scholars such as Ansell and Gash (2008); Cullen et al. (2010); Innes and Booher (2003); Johnston et al. (2011), stated that collaborative arrangements require interpersonal relationships, and Billett et al. (2007) added that this manifests itself in the form of trust, facilitative behavior, and shared norms. Therefore, the mayor as city manager is essential in creating, developing, and guiding collaboration. Thus, the leader's characteristics, such as personality, environment, and experience, might influence the form of collaboration (Ansell & Gash, 2008; Booher & Innes, 2002; Innes & Booher, 2018; Ryan, 2001).

While the central government continues to evaluate the handling of the pandemic and recovery plans to build collaborative leadership, both at the central, provincial, and local governments, through the National COVID-19 Task Force (Morris, 2021). Local leaders must also address the existential crisis by committing to transformational recovery (Martin, 2021). Local leaders aim for a rebuilt economy and society that will result in more equitable, inclusive, and sustainable cities. It begins with an emphasis on equality and reaching the most vulnerable first; simultaneously, they see the need to 'fast-track' action on climate change and recognize the need to invest in infrastructure supporting a green COVID-19 recovery. During the pandemic, the Mayor of Bogor applied a moderation program to small and medium business sectors that had been hit hard by the COVID-19 pandemic, which helped them bounce back. The Mayor of Bogor said that the current economic data in the City of Bogor shows a positive, above-average direction. Credit started to recover before the Covid-19

pandemic, which means that the wheels of the economy have begun to move into economic recovery or even economic rebound.

The analysis of the implemented policies results from efforts to overcome the health crisis and its impacts on recovering economic revival. This condition shows that the type of political leadership carried out in each city and region is decisive. This phenomenon is also in line with what has been observed by the Organization for Economic Cooperation and Development (OECD). Public trust in local government authorities and collaborating with stakeholders have proven indispensable assets in dealing with the pandemic.

The COVID-19 pandemic also made us aware of the importance of science and scientific knowledge as the basis for sound decision-making; leaders must have experts who can be trusted to provide appropriate information, expertise, and comprehensive data. Leaders must also have an open mind regarding this crisis condition and be balanced with a wise leadership style, especially in decision-making (Haqi & Dühr, 2022; Haqi & Pandangwati, 2021). A leadership style that uses a collaborative approach also reduces complex vertical bureaucracy. This type of leader optimizes the function of public services and a more horizontal organizational system. A priority scale is needed to manage a very complex crisis, and collective intelligence must be channeled into action. The lack of a solid institutional framework has hindered the efforts of many countries' governments to respond effectively to the urgent needs that have arisen as a result of the crisis. Figure 8.1 portrays a theoretical framework for collaboration and leadership skills.



Source: Bryson et al. (2015)

Figure 8.1 Hypothetical Framework for Collaboration and Leadership Skills

Collaborative leadership can break the outdated paradigm and provide ideas that cross-sectoral cooperation can be built through co-management, co-creation, and co-evaluation. However, collaboration cannot arise instantly nor be forced, but it comes from self-awareness. To realize a collaborative system takes trust in both individuals and institutions. This way, the steps will promote collaborative policies across all sectors and encourage the transition from a competition to a collaboration culture.

Based on Figure 8.1, Bryson et al. (2015) have acknowledged several essential leadership competencies:

- a) **Organizational leadership:** The ability to create effective organizations and maintain them, with a focus on organizational goals and design, internal and external change, and inclusive community building;
- b) **Team leadership:** The ability to create compelling workgroups. The crucial aspects of this type are recruitment, communication and empowerment, and leadership skills among team members;

- c) Visionary leadership: The ability to describe reality and project a shared future vision. This type involves the ability to provide an image of the future and communicate its meaning for the future;
- d) Political leadership: The ability to make decisions in various areas, such as the executive, legislative, and organizational forums. This type requires forming coalitions that will strengthen the change being pursued;
- e) Leadership in context: The ability to recognize the issue of economic, political, social, and other contexts and their possibility for transformation. It is significant to deal with concerns that affect the public as a whole, not just the elite, the middle class, or the poor;
- f) Ethical leadership: The ability to sanction unethical behavior and be able to make fair decisions on disputes to determine what is right (legitimate) and wrong;
- g) Policy entrepreneurship: The ability to harmonize leadership goals throughout the policy change cycle;
- h) Personal leadership: The ability for individual exploration to identify strengths, weaknesses, and assets that are relevant to a worthwhile change goal;

D. Collaborative leadership needed to drive recovery

Different plans are needed to deal with COVID-19 with a high level of complexity to follow the changing trends. The issuance of policies followed this other planning specifically to deal with these emergency conditions. The most important thing is policy consistency. When the government put the large scale social restrictions (PSBB) policy as a solution to limit the transmission of COVID-19, consistency is needed in its elaboration and implementation. Without consistency, the implementing bureaucracy will become confused and reduce public trust in the government. It takes a strong leadership attitude to deal with these conditions.

Even though leadership involves leaders and followers (Couto, 2010), this process is still centered on a single dominant actor called a leader (Gianoli, 2010). Leaders can come from different actors involved in the urban governance process. Some literature discusses the role of the mayor as the most significant actor in urban governance in driving the recovery of their region. Leadership has become the most crucial issue in good governance at the regional, provincial, and central levels since the COVID-19 pandemic crisis (Montiel et al., 2021). At the regional level, the mayor becomes an important figure who has a vital role in implementing policies from the central government.

The collaborative governance concept has been developed since early 2000. This model has the character of a 'way of approaching' by simultaneously bringing together various stakeholders in a shared forum, which public agencies typically lead to consensus decisions (Westerink et al., 2016). The principle emphasized in the discussion is that the approach leads to results and achievements that can satisfy all parties involved in the process. In the analysis of Innes and Booher (2004), there are mutual features such as consensus rule-making, policy consensus, community visioning, and collaborative network structures in collaborative governance. They also argue that collaborative governance patterns must be engaged in "authentic dialogue" with diverse patrons legitimately representing their interests, but with 'special note' that they must have willingness commitment and an 'open minded' to 'seek mutual solutions.'

This is in line with the study of Healey (2006), which stated that collaborative schemes play a vital role in dealing with the complexity and diversity of the city governance fields. In other words, empirically proving that appropriate and efficient management by involving all stakeholders in the collaborative governance process would produce power to create a strengthening cycle of trust, understanding, commitment, and communication. This result is an indicator of the success of collaborative government.

Within the city of Bogor, we can see that the Mayor of Bogor is a local, regional leader who tried to improve the city's adaptability during the pandemic (Bogor, 2021). He took a firm stance in increasing this supervision by strengthening mediation with regional officials, especially when he ordered all provincial officials to go "All-Out." The mayor reminds residents about health protocols and ensures that Micro and Community-Scale Social Restrictions (PSMBK) policies could work in the field. For instance, the mayor knows that the most severe impact due to Covid-19 is the tourism sector, especially in the business sector in hotels and restaurants. The mitigation that needs to be done immediately is first, a social protection program for workers working in the tourism sector.

The impact of the COVID-19 pandemic affects the pattern of society and the leadership pattern of regional leaders, as the community constantly demands regional heads to take action to manage and mobilize the community properly. A city leader must also control and take responsibility for the community's economic conditions during a pandemic, significantly affecting communities' prosperity. This is where quality leadership is needed at various levels, nationally and regionally, to deal with the complexity of the existing system/problem. Both are directly related to COVID-19 or the increasingly complex challenges of a rapid and sudden change in the future.

Both large and small businesses have felt the effect of the pandemic. In response, the Bogor Government created a platform to support business actors, especially SMEs and creative industries. One of the forms of adaptation during the pandemic is digitizing data, such as what the Bogor City Cooperatives and UKM Office did in the launch of the Bogor City SOLUSI (Business Service and Promotional Facilities Operational System) application. It helps collect business data owned, consult business actors, and provide training materials for SME and creative industry actors in Bogor City (Amini & Navalino, 2021).

To survive in running a business during the pandemic, SMEs must be able to find solutions and re-management of their business

so that they can stay running their business and not lose money. All efforts must, of course, be made so that SMEs remain one of the strategic supporting sectors of the national economy. During a pandemic, they maintain their position by selling SME products through online marketing and offering products at affordable but quality prices.

E. Conclusion

It is undeniable that collaborative leadership is crucial in handling the pandemic and post-pandemic recovery. Evidence shows collaborative leadership is essential in governance, building recovery, and driving cross-sectoral collaboration. It integrates various interests for one goal of post-pandemic recovery. Several circumstances influence leadership performance, including external and internal aspects.

Drawing on the key findings of various documents and literature and analysis of a qualitative approach, this chapter finds a close relationship between collaborative leadership, handling pandemics, and recovery processes. Based on the case study in this chapter, the high-quality leadership of the Mayor of Bogor, who can communicate and dialogue with multiple sectors, collaborative leadership is very beneficial for achieving collaborative governance. This is because the mayor understands how to prioritize the priority scale for handling the pandemic and catalyze economic recovery with various policies integrated with the provincial and central governments. One of the policies issued to assist economic recovery, primarily to support SMEs and the creative economy, is the digitization of SME products and the creative economy. Not only digitizing products but also providing training, business consulting, and assistance in product marketing.

F. Contributorship Statement

Faruq Ibnul Haqi, Muhammad Zidan Atabik, and Rahmat Aldi contributed to preparing the concept of this chapter and early drafts. Faruq Ibnul Haqi ascertained the relevant methodologies to utilize, conducted data analysis, visualization, revised the chapter and prepared the final version for publication.

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Chapter 9

Exploring the Role of Culture and Digital Capital in Establishing Community Resilience through Creative Economy in Indonesia

Radikal Yuda, Muhamad Ansori, & Umar Shodiq Al Faruqi

A. Introduction

Contributing to one in four of all new jobs created across the world and employing 10.6% (334 million) of the world's workforces, the creative economy, alongside the tourism sector, is the one of the largest sectors in the world in encouraging socio-economic development and creating jobs (World Travel & Tourism Council, 2021) Thus, encouraging the sustainability of this sector will have a substantial impact on people's welfare.

Before the pandemic hit in 2020, Indonesia's tourism sector contributed IDR 280 trillion in 2019. The creative economy sector is estimated to make an enormous contribution in the upcoming years and become the leading sector for Indonesia's development, with revenues of IDR 1153 trillion in the same year (Ministry of Tourism

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and Creative Economy, 2020). Growth in the creative economy sector is estimated to be even more significant after 2019, but Covid-19 thwarted that estimation. Covid-19 hit almost all countries significantly.

The restrictions on movement and human interaction during the Covid-19 pandemic have disrupted the economy of all countries. UNTWO reported that due to the massive decline in international travel during the January – June 2020 period, export revenues from the global tourism sector suffered a loss of US\$460 billion. Within the next two months, July and August 2020 losses increased by US\$270 billion (UNWTO, 2021). The Asia Pacific region experienced the most significant loss of 96% from August 2019 to August 2020. Meanwhile, the Southeast Asian region experienced a decline of 73.5% in the same period (UNWTO, 2021). Due to the Covid-19, it is estimated that this sector accounts for around 2.9% of the increase in unemployment worldwide. This figure is equivalent to 100.8 million jobs (UNWTO, 2021).

Covid-19 made a significant change in human activities, especially technology adoption. We see a phenomenon where almost everyone is doing their activities from home. Employees work from their rooms. Students learn from their homes. During Covid-19, internet usage increased significantly (Király et al., 2020). At the same time, the digitalisation of the economy is snowballing. For businesses with adaptive capacity, a significant change in people's lifestyles from offline to online is captured as a positive opportunity to develop business and create innovation, including practitioners' creative economy. Digital capital plays an essential role in recovering from the Covid-19 crisis, not only to recover but some creative economy players can develop their businesses.

This chapter explores the role of creative economic actors in Indonesia in creating a resilient society with the support of cultural and technological factors. Through this, current challenges and opportunities for the creative economy will be presented as well as the role they play in creating cultural and community resilience in Indonesia.

B. Community Empowerment

According to Elliott et al. (2019), community empowerment is a collaborative process involving the community to create change in society through the development of social energy and influence on the aspects necessary. According to Perkins & Zimmerman (1995), empowerment is a construct that links individual strengths and competencies, social systems, and proactive behaviour to social policy and social change. In theory, this construct connects the existence of individuals with other individuals to help each other and create a standard response (Christens, 2012).

A study by Christens (2012) explains that empowering the community contributes simultaneously to development at the individual and community levels and positive changes in a system. It is driven by the formation of power, resilience, and control in individuals, organisations, and society. The concept of empowerment is widely adopted to create economic strength, improve the quality of education, and promote global mental health (Christens, 2012). Admittedly, community empowerment is a hot topic to promote economic and social change in many countries in line with the sustainable development goals (SDGs) of 2045. Empowerment is often defined as a mechanism whereby individuals, organisations and communities build joint solutions to various problems (Christens, 2012).

In a broader sense, empowerment is defined as 'a group-based, participatory, developmental process through which marginalised or oppressed individuals and groups gain greater control over their life and environment. Moreover, empowerment acquires valued resources and fundamental rights, achieve essential life goals, and reduce societal marginalisation (Maton, 2008).

Put it simply, community empowerment is basically a mechanism to put the bottom line of society as the basis to create changes by mobilising them to play critical roles as an initiator or a worker to generate benefits and values. The same mechanism works for creative economy where community, on one hand, is the main source to create

values and run the business, on the other hand, community is also the one who receives benefits through the empowering process, including psychological and economic strength. Psychological strength is formed through social support and it turns out to be source of resiliency for the local community. While economic strength is built as consequences of their economic activities (Laverack, 2001; Christens, 2012; Laverack, 2001).

C. Creative Economy

The term creative industry has been increasingly popular lately, even though the understanding of this industry is still confusing for some people. Although in the end, the creative industry came to be known as a derivative of the creative economy. According to Rahman & Rasulong (2015), creative activities in this industry are within the framework of realising business innovation by utilising the existing resources, including scientific and technological findings. These findings are then applied to create new products, tools, methods or approaches, and technologies to address market needs.

Rahman & Rasulong (2015) further says that the growth of a creative economy only occurs through the capitalisation of creativity and innovation that produces a product or service with a touch of creativity (Rahman & Rasulong, 2015). The embodiment of this creativity can occur in terms of the content/product itself or the method or approach in carrying out its business activities.

In Indonesia, creative industry covers a broad range of several sectors starting from culinary, fashion, music, film & videos, to advertising, etc. Among them, culinary sector accounts for 41.6 percent, followed by fashion and handicrafts for 16 percent and 15.7 percent (Global Business Guide Indonesia, 2018) (Rahman & Rasulong, 2015). In this chapter, we use a community empowerment framework to investigate how the creative industry promotes the community resilience in terms of financial, economic, and psychological aspects.

The creative industries that empowers community predominantly produce products, such as the arts and antique market, food & beverage, handicrafts, fashion, and performing arts. Another sector that also empowering the community the most is tourism, despite tourism itself is not a separate sector where, other sectors such as culinary, handicrafts, and performing arts are part of it. Tourism, inevitably, relies on local community participation, whether they are acting as individual or micro or small enterprises. Agustang & Adam (2021) supports this idea, where according to this study, globally, tourism is dominated by small businesses, which simultaneously produce goods and services to offer tourists. In reality, tourism is more than that, where its also closely related to hotels, restaurants, fashion, and transportation. Therefore, according to Agustang & Adam (2021); Frederick et al. (2020), tourism is a sector that positively impact the people's welfare, especially those around tourist objects. We admit that the creative economy is not only tourism as we mentioned earlier, but its scope to some extent can draw its role and impact on creative economy in Indonesia as a whole.

The Indonesian government has recently paid great attention to developing the creative economy in line with the enactment of the Law of the Republic of Indonesia number 24/2019 regarding the creative economy. It says that the government plays a significant role accelerating the development of the creative economy by ways of:

- a) Training, technical guidance, and assistance to improve the technical and managerial capabilities of Creative Economy Actors.
- b) Support facilities to deal with technological developments in the business world; and
- c) Business standardisation and professional certification.

Admittedly, the creative industry is broad; therefore, this chapter only focuses on investigating the role of the creative industry that adopts the community empowerment approach. Hopefully, these

observations will become a benchmark that can be developed and input for developing of the creative economy in the future.

D. Community Resilience

Magis (2010) explains that the community has various internal and external resources that can be utilised to respond to change. Economic resources, while important, are only one of the factors that make communities resilient. Besides economic resources, society needs to use social, cultural, political, and human resources collectively and strategically to respond to change. People can intentionally develop resilience because that essential ability is part of their instincts as living beings. However, society, he argues, needs to learn to live and adapt to uncertainty and actively build capacity to thrive in that context (Magis, 2010).

Berkes & Ross (2013) argue that the concept of resilience is assumed to apply to all levels, from individuals to earth systems. According to this study, resilience is a continuous process of personal development to adapt to face difficulties and threats. The process happens because society does not control all the conditions that affect them. However, humans can change many conditions that can increase their resilience. They can build resilience by learning and responding to stress and actively developing resilience during the process. Among the most critical components are people-place connections; values and beliefs; knowledge, skills and learning; social network; governance involved (involving collaborative institutions); a diverse and innovative economy; community infrastructure; leadership; and a positive outlook, including readiness to accept change.

The main point is, as mentioned by Aldrich & Meyer (2015), community resilience is a collective ability of a society to deal with adversity and efficiently continue their lives or even improve their lives after difficult situations (Aldrich & Meyer, 2015).

E. Opportunities and Challenges of the Creative Economy in Indonesia

1. Opportunity

Indonesia's cultural wealth, natural resources, and biodiversity promise prosperity for the community. Even though the challenges faced are complex. Apart from the readiness of creative economy actors, there are also challenges in ecosystem support and structure. According to the Indonesian Minister of Labour, Ida Fauziyah, there are three crucial things that the creative industry must strive for: first, the optimisation of technology usage and information; second, encouragement to adopt a collaborative approach; and third, the establishment of relevant competence (Tempo.co, 2021).

Opportunities for the creative economy in Indonesia are widely open due to internal and external factors. Indonesia is an archipelagic country rich in natural resources, culture, biodiversity, and local wisdom from internal factors. From external factors, there is a fast technological transition where technology provides convenience in all aspects of life, such as transportation, transactions, communication, and others. Now, the beauty of Indonesia and its products can be seen by people worldwide with a single click on the internet. Creative economy actors have a big chance to tap into the international market.

Subsequently, a population of 280 million people is a promising domestic market. This market is an enormous economic value if it can be reached inclusively. The government has been realising efforts to encourage locals to buy domestic products. Some programs include *Program Stimulus Bangga Buatan Indonesia* (PSBBI), initiated by the Minister of Tourism and Creative Economy. This program is just one example of a mass effort by the government to support the creative economy. Under this program, customers get a 50 percent discount. At the same time, MSMEs get a voucher of a maximum of IDR 50 million (Hudayanto, 2021).

Regarding community resilience, this program, if can be continuously encouraged, will bring an impact on first, the economic

resilience of the actors behind the industry, whether they are acting as individuals, or as micro-small enterprises. Second, the psychological resilience that is sharpened by way of social support and institutional support (read: government) they received. Seeing from the lens of pyramid of resilience, the fact that Indonesia has its own resource to develop creative economy, it drives stakeholders to generate a strategic planning at the national level to organise those resources and turn them into value-added product/service. This strategic planning is delivered through collaboration effort among Ministry of Tourism and Creative Economy and several ministries/agencies including the Coordinating Ministry for Maritime Affairs and Investment, Ministry of Finance, Ministry of Investment/ Investment Coordinating Board, Ministry of Law and Human Rights, Ministry of Home Affairs, Investment Coordinating Board (BKPM), the Financial and Development Supervisory Agency, etc. to strategically mobilise those resources to create a dynamic-ecosystem for creative economy to grow (Hudayanto, 2021). Of course, as a result, this ecosystem will create more job opportunities and increase the economic and psychological resiliences of people.

2. Challenges

Along with the massive potential of the creative economy, the significant challenges are to be addressed. These come from various aspects such as geographical challenges, technology, infrastructure, regulation and policy, and intellectual property rights.

a. Lack of capital, technology, and skills

Investment requires sufficient funding to acquire talent and technology to meet market demands in the digital age, such as digital infrastructure, internet, software, and other training. In many sub-sectors of creative industries, capital such as technologies and skills to operate them are not quite ready. Massive efforts are needed to reach areas with great creative economic potential but are not yet digitally connected due to the unreadiness of digital infrastructure, internet, funding, and human skills.

b. Low regulatory capacity and policy coherence

Investment in the creative industry sector is undeniably diverse in its products and services. For example, the film and cinema industry regulations are undoubtedly different from tourism or fashion. Besides the variation of its products and service, the creative industry also varies in business size, business model, location, and the depth of technology adoption. There is no one-fit-all policy to manage them. Therefore, the government needs an extra effort to consolidate many perspectives to make better policies.

Furthermore, the coherence for couple of policies are still overlapping. Due to creative economy development in Indonesia is mainly affected by at least four Ministry, Ministry of Trade, Ministry of Industry, Ministry of Cooperative and SME, and Ministry of Creative Economy. Each ministry has their own policy and implementation plan, and there must be a simplification of those complex procedures and regulations. Vertically, the ministries and local government is in some cases mismatch in term of authority, local wisdom, policy, and realisation plan.

F. Contribution of the creative economy to build economic resilience in society

A creative economy is an economic activity driven by creative industries that respect the role of intellectual property. The creative industry is operated by entrepreneurs who have creativity and innovative ability. What is more, tourism and MSMEs are some of the main components of this industry.

According to data from the Ministry of Cooperatives and Small Businesses in 2018 (Ministry of Cooperatives and Small Businesses, 2018), the number of MSME units in Indonesia was around 64 million and in 2019 it was around 65 million. This increase by around 1 million new units or 1.98 percent growth rate, of course, brings a positive opportunity by creating more jobs for people.

Indonesia has attracted many tourists with its abundant natural wealth, culture, and tourism destinations. In 2018, foreign tourist visits reached almost 16 million, and in 2019, the percentage increased by 1.88 percent (Ministry of Tourism and Creative Economy, 2020). The tourism sector has a vital role in the country's economy and is expected to create jobs and reduce unemployment.

Since 2019, the Covid-19 outbreak has been causing a multidimensional crisis which includes health, economic, and political crises.

One of the badly hit sectors was tourism and the creative economy (Ministry of Tourism and Creative Economy, 2020; World Travel & Tourism Council, 2021). The pandemic has forced people to work and study at home. The government also closed tourism sites to prevent the spread of the virus.

The community is required to survive amid the Covid-19 pandemic. Creativity is needed to create solutions with limited resources and unsupportive situations. The creative economy is considered capable of creating jobs and reducing unemployment.

According to the Ministry of Tourism and Creative Economy, there are 17 sub-sectors of the creative economy in Indonesia, ranging from photography, arts, and culinary to film. With 17 sub-sectors, Indonesia is ranked 3rd in the world regarding its contribution to GDP (gross domestic product) after the US and South Korea. Beyond that rank, labour absorption in the creative industry in Indonesia is more extensive than in the US (Ministry of Tourism and Creative Economy, 2020). In 2019, Indonesia's creative economy absorbed up to 17 million workers. This figure is much higher than the US, with only 4.7 million workers in the creative economy sector. According to the Ministry of Tourism and Creative Economy (2020), the contribution of the creative economy sub-sector to the national gross domestic product (GDP) reached IDR 1,211 trillion.

The development of MSMEs is the government's focus during the pandemic and the tourism sector. This effort is accompanied by helping these business actors to be able to rise and recover during the pandemic and post-Covid-19 pandemic. Various training and

guidance were carried out to rebuild the Indonesian tourism and creative economy sectors.

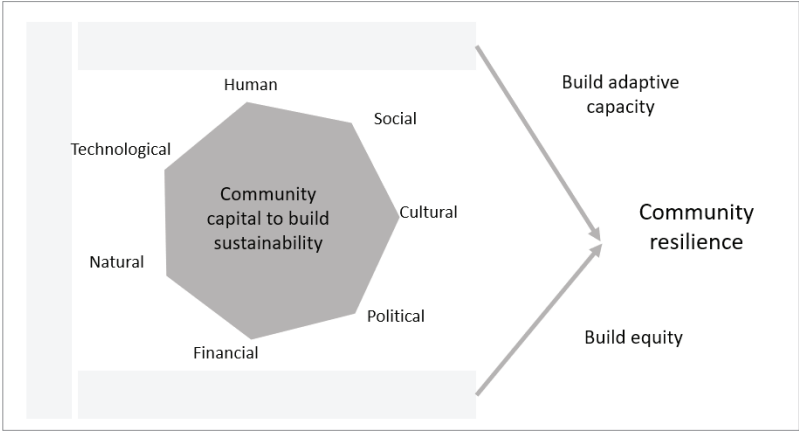
One example is the island of Labuan Bajo in East Nusa Tenggara. In it, there are several beautiful tourist attractions. Such as Kelor Island, Komodo National Park, Manjaritte Island and Padar Island. During Covid-19, these islands are isolated from visitors. The locals who typically make money from the current tourism have no choice except to change their job (Makur, 2021). Another example is a coffee seller, Agustinus, in Labuan Bajo changing his marketing method from traditional selling by motorbike to packaged coffee products. In collaboration with local creative economy actors, Agus has reached many Indonesia regions. The government responded generously by providing BEDAKAN assistance (design training for culinary sellers). BEDAKAN is a program of the ministry of tourism and creative economy aimed at increasing the value of culinary products to be more attractive and able to compete in the market. Agus's Kopituk has tapped into the international market through social media because its distinctive taste (Makur, 2021).

Another instance is the Kopituk Colol-Cobo is processed by a community business group (KUBE). KUBE Suka Maju can network with other creative communities in East Manggarai, on Flores Island, and outside of Flores Island. Their products are marketed through Youtube (Makur, 2021).

In the Indonesian context, we can see that the empowerment approach is naturally embedded in the national culture called *Gotong Royong*. It has been used to build the country and its economy for a long time. Nowadays, the government pushes the effort to utilise empowerment throughout the country by creating policies to make it well-organised and linked to the technological advancement. Seeing the role of culture and technology that impact people's life, undeniably, culture and technology must be counted as two capitals to help community addressing crisis, being resilient during and after crisis Covid-19 pandemic. Discussion of these two capitals will be elaborated afterward.

G. The Framework of Community Resilience Building

We can simplify how a creative economy builds community resilience, as shown in Figure 9.1. This framework is drawn by Cafer et al. (2019). This study explicitly states two essential elements that build resilience in the community: adaptive capacity and equity.



Source: Cafer et al. (2019)

Figure 9.1 Community Resilience Factors

In realising community resilience, capital is needed. Those capitals can be a money, natural resources, social, government support, cultural support, and technology. Without capital, all people will be vulnerable. According to Cafer et al. (2019), these capitals must also be owned even by people who are not dominant in a community structure. They must be given access equally to those capitals.

Adaptive capacity to deal with vulnerabilities is only formed if each person has equal access to the capital. According to Cafer et al. (2019), adaptive capacity is a person or group’s technical and social capabilities to deal with environmental and socio-economic changes. In the creative economy, adaptive capacity can be defined as the ability of entrepreneurs to develop alternative strategies to survive when facing a crisis.

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For example, Raos Magelang, one of the creative economy practitioners in Magelang changed her business model into a packaging producer for export to several countries once COVID-19 pandemic hit the world. Adaptive capacity in this context is also influenced by the ability of the founder to read the market, grab the opportunities, and then turn them into action. In the case of Raos Magelang, which changed its original business from selling culinary to being a packaging producer from bamboo, they utilise the local resources. Bamboo itself is widely available in the village and underutilised. This enterprise empowers local people to involve in their chain production. Villagers are the center of this business. Road redesign the workflow, packaging, product appearance, and marketing while the local people are still being the center as art workers. By redesigning the product to fit the market, Raos can sell the product at a price 20–30 times higher than before.

Cafer et al. (2019) framework does not specify that resilience is limited to certain types of resilience, such as disaster. It is prepared to cover general resilience. General resilience is focused on adapting to the complex, unprecedented, and unexpected disturbances (Biggs et al., 2010; Cafer et al., 2019); furthermore, it is also focused on bolstering a diverse range of the system to increase their interconnectedness, responsiveness, and efficacy to all potential types of disaster or shock, short- and long-term (Kais & Islam, 2016).

H. The Role of Technology and Culture Capital in the Creative Economy

Cafer et al.'s (2019) framework mentioned two factors: technology, and culture, as essential components in creating a resilient society specially under crisis. As we mentioned before, Indonesia since its early development stage, has been strongly influenced by its unique culture called Gotong Royong. This culture was used by founding fathers to mobilise people to build the country and resilience through collective movement in any sector. Besides culture, we consider technology as another main capital which contributes to resilience establishment a

lot. Inevitably, every aspect of human life nowadays is heavily relying on technology. In one device, someone can do everything about his life starting from shopping, working, studying, socializing, and so on. Our need of technology is dramatically increase during Covid-19 pandemic. These capitals will be explored in the following sections.

I. Technological Capital

Today, the vital role of digital technology is undeniable. Digital technology has penetrated almost all aspects of our life, including economic activities. The adoption of digital technology is happening very quickly as an active response to the Covid-19 pandemic. Since being declared a global pandemic by WHO in March 2020, the negative impact of Covid-19 on the creative economy sector is significant, especially in tourism, which covers its economic aspects, job opportunities, public services, livelihoods, and the entire industrial value chain in all countries.

The decline in tourist visitation globally is estimated to be around 58-78 percent, and the decline in tourist spending is around 310 to 570 billion US dollars in 2020 (Ministry of Tourism and Creative Economy, 2020; UNWTO, 2022). In Indonesia, the decline reached 75 percent, from 16.11 million to 4.02 million visits in 2020 Tourism suffered a loss of IDR 202 trillion in 2020; this loss was followed by hotels and restaurants, where 1,139 hotels and 1,033 restaurants closed permanently (Ministry of Tourism and Creative Economy, 2020).

The correct use of digital platforms could positively solve society's problems during a crisis. To illustrate it, we can see the study of Chu & Yang (2020), which was conducted on the Chinese community in Houston, US. The results show that digital platforms enable these communities to build social connections and coordinate various aspects of their lives during disasters, including mobilising social capital and creating community resilience.

The creativity of creative economic actors is needed to answer the challenges of the Covid-19 crisis. They transformed the normal events to be virtual during crisis. Although the concept of the virtual

event has emerged since the 2010s, there were 100 digital platforms used for many virtual events and to accommodate participants in large numbers. Those platforms are AltSpace, Breakroom, Engage, LearnBrite, MootUp, SpotMe, VirBELA, and so on (Ministry of Tourism and Creative Economy, 2020). During the Covid-19 pandemic, the virtual event increased by 1000 percent, and the most frequently used platform is Zoom (Ministry of Tourism and Creative Economy, 2021). Of course, the technology advancement today is expected to bring new approach to operate their business. For example, technology helps our local art worker to reach global market instantly just by a single click. It is truly different marketing practice if we compare years back where internet and digitalization have not yet inclusively touch people's life.

1. Virtual and Hybrid Event

The digital transition happens fast in all countries and covers all aspects of human life. Including the way people get along, interact, work, learn, and do business. The creative economy actors creatively respond to the crisis through digital strategies. One form of response is the implementation of virtual events. Virtual events compromise the continuation of the ongoing economic activities and prevent the spread of the virus. Virtual events are held with various social media platforms such as Zoom, Youtube, Instagram, and Facebook, integrated simultaneously to ease more audiences to join.

An event, virtually, can attract even more audience. Through virtual, participants in remote areas can attend the events quickly and significantly cheaper. With virtual, location and cost are no longer barriers for anyone to be involved in an event—no more costs such as building rent, transportation, accommodation, and consumption.

2. Digital Marketing and Online Selling

Creative economy actors are not at their wit's end to survive the pandemic. Digital strategy is the primary option to continue their economic activities. Digital marketing makes it possible for the actors

to reach more audiences faster and cheaper. SEO, artificial intelligence, and social media marketing have acquired new customers more effectively. It is also driven by the increasing number of users of social media and digital platforms.

Although, on the other hand, business competition is becoming extremely intense, customers can quickly compare the price and quality. However, success opportunities are always open for those who are creative. What is more, anyone can open their business nowadays with little burden. With the availability of couriers, transportation, internet, smartphone, digital marketing, and capital, people can run their business from their rooms.

3. Keep in Touch with Customers.

Another benefit of digital technology is the easiness the creative economy actors perceive to build customer interactions. The business can ask for feedback from customers more efficiently. Likewise, customers can easily convey their feedback to companies or businesses through various platforms. They can submit feedback via social media, WhatsApp, website, or email.

J. Contribution of Cultural Capital for Resilience in Indonesian Community

Besides technology, the contribution of culture in creating resiliency is more fundamental to Indonesia since the culture creates values and norms that become a reference for people to act and act. This article will investigate the impact of the Gotong Royong culture in realising a resilient society through a creative economy.

Gotong Royong is the basic principle used to build the Indonesian nation and achieve resilience in various sectors: economic, educational, political, environmental, and social (ref). Simply put, Gotong Royong is a collective effort made by the community to achieve a common goal. We see many creative economic actors in Indonesia who empower the community to carry out their economic activities. Tourism, for example, is the management of most destinations

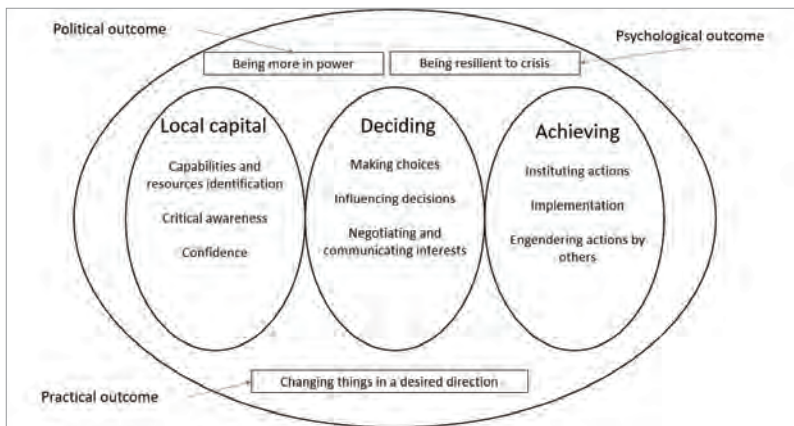
initiated and run by involving the community (Agustang & Adam, 2021; Ministry of Tourism and Creative Economy, 2020; World Travel & Tourism Council, 2021). Likewise, agriculture, medicine, crafts, design, and even fashion maximise community empowerment. The role of the community here can be in the form of suppliers, employees, and partners.

During the Covid-19 pandemic, the business operations cannot be denied having a light impact—especially sectors whose operations are disrupted due to mobility restrictions. However, sectors such as traditional medicine, merchandise, fashion, and entertainment have benefited from Covid-19. For example, Agradaya as a producer of traditional medicine in Yogyakarta, its production and sales increased because people are increasingly concerned about their health. Another example is Kraosan Magelang which produces crafts; the founder said that their sales increased and even exported to several countries. It happens along with the increasing number of new online businesses, and they need creative packaging for their products.

Meanwhile, the Covid-19 pandemic is an exercise for the extent to which a business can respond to the crisis appropriately. Leadership, managerial capabilities, creativity, and flexibility are factors that contribute to the resilience of a business or at least ease the burden of losses that must be borne (Habiyaremye, 2021).

The government takes a vital role to supporting the sustainability of the creative economy. A study by Habiyaremye (2021) says that government intervention is needed to secure the existence of the creative economy by creating supporting policies and facilities. In addition, the government also plays a role in building a mechanism that connects the creative economy with the private sector and other stakeholders, both national and international. Habiyaremye (2021) recommend the Quadruple-Helix Model as a form of collaboration between government, business, academics, and society to achieve sustainability in the industrial era of Industry 4.0. However, the collaboration ecosystem demands a flexible, dynamic, and open platform.

K. Model of Community Empowerment through the Creative Economy



Source: Modified from Ade Kearns (2016)

Figure 9.2 Model of community empowerment through the creative economy

Ade Kearns (2016) argues that in empowering community, the initiator must reveal what kind of resources and capabilities are available. He adds critical awareness and confidence as factors that contribute to make a sense of why such action is important and help someone to drive and organise the resources. This study supports our findings that the ability of founder to critically identify the problem, give them the ability to provide the right solutions. For creative industry such as Agradaya, Raos Magelang, Rumah Kinasih, to successfully empower the locals, they have something in common. First, they are never against the local culture but in opposite, properly use it. Second, they adopt technology to innovate and adapt to change. Creative economy which employs community, first, will have political gain where they have more power to organise the resource. In addition, by working together, of course, will create the psychological strength of everyone when facing difficulties. The last, by having political power and psychological strength, economic goals will be probably achieved.

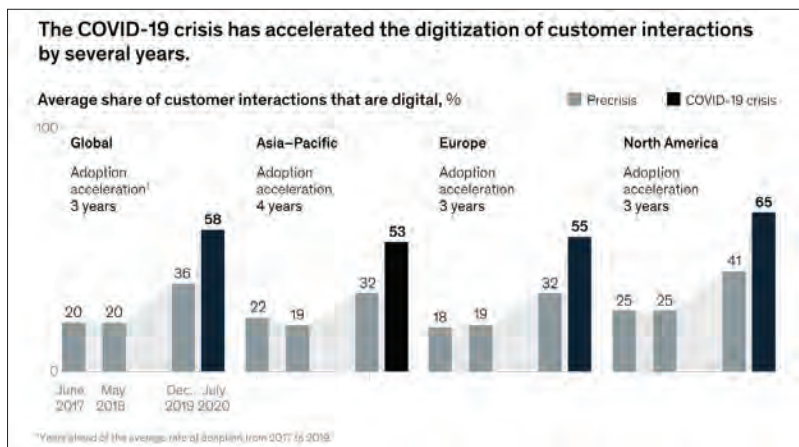
L. Recommendations

1. Quadruple-Helix for the Collaboration Model

Science, policy, industry, and society must work in synergy as this collaboration will make a greater impact (Habiyaremye, 2021). The creative industry's performance is rooted in excellent creativity supported by contributions and interactions between universities, businesses, government, and society. Nowadays, collaboration has been horizontally built amongst ministries in Indonesia to support creative industry to develop gradually make an impact. For example, tourists who visit Lombok, their spending will be distributed on hotel, transportation, culinary, fashion, artwork & crafts, and ticket for concert and everything. In other words, even though different stakeholders play their own roles, they cannot be separated. Just to illustrate, when science generates and validate a specific product, we need industry to massively produce it. Government create a good policy to ensure that process is being protected. Furthermore, we need society to use it or deliver the message to the customer.

M. Acceleration of Digital Technology Adoption

According to McKinsey (2020), consumers have moved dramatically toward online channels during the pandemic, and companies and industries have responded in turn. The survey results confirm the rapid shift toward interacting with customers through digital channels. They also show that adoption rates are years ahead of where they were when previous surveys were conducted—and even more in developed Asia than in other regions Figure 9.3. Respondents are three times likelier now than before the crisis to say that at least 80 per cent of their customer interactions are digital.



Source: McKinsey (2020)

Figure 9.3 Rate of digitalisation adoption

The study results also show that along with the multi-year digital acceleration, the crisis has significantly changed the mindset of executives about the role of technology in business. In our 2017 survey, nearly half of executives ranked cost savings as one of the most important priorities for their digital strategy. Today, only 10 per cent view technology in the same way; in fact, more than half say they are investing in technology for a competitive advantage or are refocusing their entire business around digital technology (McKinsey, 2020).

N. Investing in Skills Development and Technological Capacity

Related to the previous point regarding technology adoption, creative economy actors also need to improve their technical and strategic thinking skills. Developing these skills and capacities is also part of the government's strategy to encourage the creative economy in Indonesia. Therefore, the government drafted the Creative Economy Law no. 24 of 2019, where Article 10 states that Creative Economy Ecosystem

Development is carried out through: 1) Research development; 2) Educational development; 3) Funding and financing; 4) Provision of infrastructure; 5) Development of marketing systems; 6) Incentives; 7) Facilitation of intellectual property; and 8) Creativity protection.

First, educational institutions need to align academic training with industry standards and regulations. Second, the government's role is to facilitate knowledge transfer from foreign technology developers and experts, promote collaboration and joint ventures, and the freedom of professional services.

O. Improvement on Access to Finance and Tap into Impact Investment

Due to Indonesia's environmental, regulatory, and economic landscape risks, commercial banks and investors may be reluctant to invest in the creative economy sector. Therefore, the government needs to provide alternative funding to the creative economy sector. One of them is the Impact Investment program which has been expanded globally. For example, in 2019, the total value of impact investments was estimated at \$715 billion (United Nations Conference on Trade and Development, 2021). The government is advised to create a supportive investment climate so that creative economy actors in Indonesia can become the target of local and global investors.

P. Conclusion

To summarize this chapter, we must acknowledge that the role of the creative economy has a significant impact on society in Indonesia. Supported by two main capitals: technology and culture, the creative economy through a community empowerment approach contribute to not only increase the economic welfare but also creating resilience amongst community, particularly in times of crisis. Technology is adopted as an adaptive strategy under changing environments as it helps community and business to optimise marketing, production, financial management, and the whole process of their business. In

addition, rather than against the local culture, creative industry actors use it to create values. The local culture known as Gotong Royong that is basically the idea how people can be mobilised to achieve a certain purpose.

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Chapter 10

Global Value Chain Impact on Indonesia's Economy and the Way to Make It More Resilient

Krisna Gupta, Irma Tsuraya Choirinnida, & Muhammad Taufik

A. Indonesia's Global Trade

COVID-19 devastates Indonesia's economic growth, with the 2020 growth rate reaching a negative territory of -2.07% (Badan Pusat Statistik, n.d.). As with other countries, the Indonesian government is looking for a source of growth to speed up economic recovery. The manufacturing sector could be the key to economic recovery because the pandemic still limits the service sector. Indeed, the economic transformation toward a manufacturing-based economy seems to be the government's latest strategy, according to Indonesia's Medium-Term National Development Plan, as stated in Presidential Regulation No. 18/2020.

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It is true that many economies, particularly in Asia, rely on manufacturing sectors to catch up with developed countries (Antràs, 2020; Studwell, 2013; World Bank, 2020). Manufacturing produces tradable goods which can be transported physically to many countries much more prosperous than producing countries. In times of a pandemic, manufacturing sectors have a crucial role in providing access to medical goods and other consumables. In Indonesia, manufacturing still provides more formal jobs than the agriculture and service sectors, which are relatively better for workers (Gupta & Mardjono, 2021).

Manufacturing in the last two decades has been characterized by fragmentation of production and hyper-specialization (Antràs, 2020; World Bank, 2020). Thanks to the radical improvement in communication and shipping technologies, the cost of trading across borders, in general, has been dropping significantly. The seamlessness of global trade allows firms to divide their products into fragments of value-added and source each fragment in a country best equipped to produce them. This phenomenon is called The Global Value Chain (GVC).

In this chapter, we explore GVC and why Indonesia needs to incorporate GVC into its economic transformation plan. Not only essential to economic growth in general, but GVC is also crucial in securing important goods to combat the pandemic, such as Personal Protective Equipment (PPE) and vaccines. We also examine Indonesia's position in the GVC and where to contribute. Lastly, we provide a policy discussion to see where Indonesia can move forward in exploiting GVC in its economy.

1. The Global Value Chain and why it is essential

Based on the World Bank (2020) definition, GVC divides the whole product's production process into specific tasks across countries. More formally, Antràs (2020) provides a broad definition of GVC as follows:

“A global value chain or GVC consists of a series of stages involved in producing a product or service sold to consumers. Each stage adds

value, and at least two stages are produced in different countries. A firm participates in a GVC if it produces at least one stage in a GVC.”

For example, the production of Bianchi, a bicycle where each component comes from several countries. The whole production of bicycles is assembled in Taiwan. However, components such as wheels and saddles are made in China, Italy, and Spain. The brake and pedal are made in Japan, Singapore, and Malaysia. The frames are made in China, Italy, and Vietnam. Even the prototype of bicycles which are not a form of raw materials comes from a different country, Italy. Assembling bicycles from other countries increase production efficiency because each country has remarkable capabilities and resources that can be leveraged to collaborate. Since there is value-added from multiple countries in one product, there is no longer “a product of one country” in GVC goods. Instead, GVC goods are the product of the world.

GVC opens new opportunities for small firms and participants from emerging countries as they no longer have to master all the stages of complex production processes to participate in the global market. The differences in natural conditions and geography of each country affect its resources. Some countries are endowed with abundant natural resources but cannot utilize them.

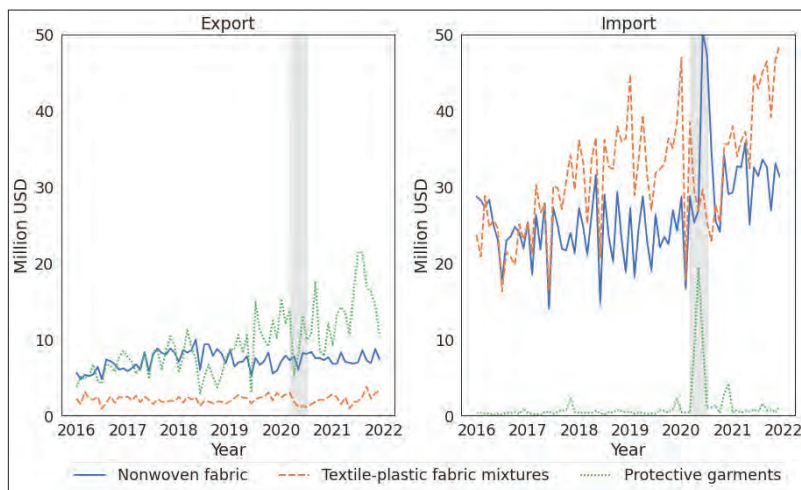
GVC can be a shortcut to exchange natural resources and knowledge so that it does not take a long time for a country, especially a developing country, to acquire new technology through collaboration with a developed country. Furthermore, countries collaborating in production fragmentation can benefit from the technology gap by increasing the average skill intensity (Kummritz et al., 2017). For example, in Bangladesh, participation in GVC has introduced them to a bounded warehouse combined with a “back-to-back” letter of credit (World Bank, 2020). This is one of the pieces of evidence that there is a transfer of knowledge that makes the integration into apparel GVC more efficient.

This productivity-enhancing effect of GVC translates to economic upgrading, higher export performance, and GDP growth for a country

(Antràs, 2020; Kowalski et al., 2015; World Bank, 2020; Chor et al., 2021; Ing et al., 2019). Not only that, GVC plays an essential role in solving the climate crisis by efficiently producing green products (World Bank, 2020). In Indonesia, importing value-added from other countries allows for better pay for workers, lower inequality, and better productivity for firms (Amiti & Cameron, 2012; Amiti & Konings, 2007; Gupta, 2022; Kis-Katos et al., 2018; Kis-Katos & Sparrow, 2015; Vadila & Resosudarmo, 2020). In addition, countries with freer international trade enjoy higher participation from Multinational Corporations (MNCs), which improves GVC participation and absorbs more labor and domestic outsourcing (World Bank, 2020). As a country looking for value-added in manufacturing, increasing GVC participation is one of the best strategies Indonesia can approach.

More than improving the economy, GVC is also crucial in producing COVID-19-related goods (Asian Development Bank, 2020; Bown & Bollyky, 2021; OECD, 2021). Indonesia is one of the major producers of PPE, with an estimated capacity of 17 million PPEs per month (Gumelar, 2020). However, the material used to produce the PPE is highly complicated and capital intensive (Kilinc, 2015). Its material must be impenetrable by microscopic particles to make a proper PPE. This type of material is mainly sourced from foreign countries.

Figure 10.1 shows Indonesia's monthly total export and import in the current US Dollar from January 2016 to December 2021. The goods covered by the graph are protective garments and two primary materials to make it, namely nonwoven fabric and textile fabric mixed with plastics. The grey bar indicates when the Indonesian government banned exports and relaxed its import restrictions on these goods. It shows how big Indonesia's import of PPE materials is, which is vital in making PPEs. Indonesia managed to increase its export of PPE thanks to the foreign value-added in the form of intermediate inputs. This is, of course, in addition to providing the PPE domestically.



Source: BPS via Ministry of Industry

Figure 10.1 Indonesia's Monthly Export and Import of PPE and Its Materials, 2016–2021

GVC is also essential for vaccine provision. While Bio Farma, Indonesia's leading pharmaceutical company, can produce ready-to-deliver COVID-19 vaccines, it still imports them in bulk (Bio Farma, 2021). Moreover, goods that are needed to package and administer COVID-19, such as syringes, dry ice, and freezers, are imported mainly by Indonesia. So, while Indonesia may be able to produce and distribute a vaccine, it requires foreign value added to be efficient.

Table 10.1 Trade of Goods Necessary for Vaccine Production and Administration in USD in 2020

Products	Export	Import
Vials	28,784,402	80,247,077
Stoppers	62,250,049	122,953,947
Vaccine carriers	126,639,193	395,299,253
Cold boxes	36,707,669	86,245,167
Refrigerators/freezer chests	7,360,908	79,238,476
Freezers	228,022	45,962,472
Dry ice	22,285	1,118,121
Syringes	21,705,369	17,161,523
Needles	807,435	43,388,110
Vaccines	61,459,112	134,020,546

Source: BPS via Ministry of Industry

GVC allows for quick economic recovery, and Indonesia is well-positioned to utilize it. But where is Indonesia now in the GVC? To answer this question, we deep dive into how researchers measure GVC. Then, using one of these measures, we try to present where Indonesia is regarding GVC participation, especially compared to its neighbors.

2. Indonesia’s Participation and Position in Global Value Chains

The growing importance of GVC participation leads researchers to look for how to measure GVC. Measuring GVC is more complicated than typical export-import measures because customs usually record only the value of the goods coming in and out of the country. Customs does not collect information on how much foreign value-added is embedded in exported products, nor how importers will use imported products. Additional data like the input-output table is needed.

An input-output table consists of data on the use of the output of a particular industry by other industries, final consumption, or international trade. The World Input-Output Database (WIOD) is generally used worldwide. Indonesia has an input-output table published by

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Badan Pusat Statistik (BPS), Indonesia's statistical body. This input-output table is needed to complement customs data to approximate how much foreign value-added is embedded in a country's products.

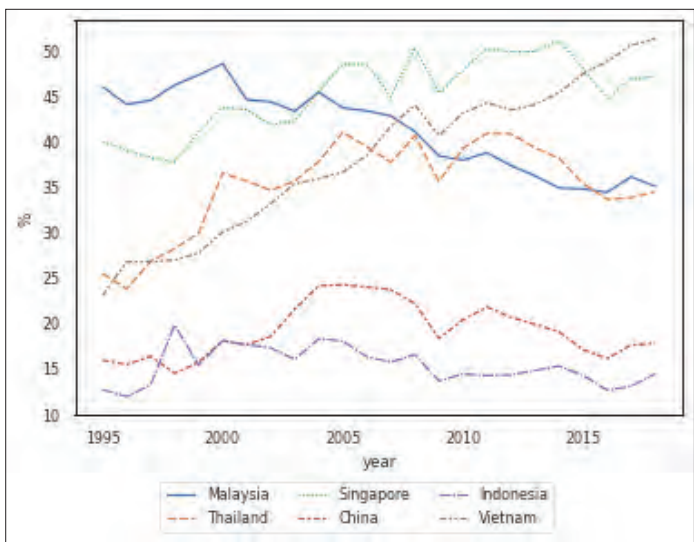
Antras and Chor (2019) design the upstream and downstream measurements using the World Input-Output Database (WIOD). A sector has high "upstreams" if other sectors primarily use the sector's products. A sector is considered to have high "downstream news" if most of its products are consumed by final consumers. WIOD tracks the movement of these values across borders, hence allowing for measuring the value chain globally. This way of measuring GVC is very detailed and allows for a more specific industry-level value chain. A more practical and widely available data on GVC measurement is from using the Trade-in Value Added database (TiVA) constructed by the Organization of Economic Co-operation and Development (OECD) (OECD, n.d.).

Typical trade data records only the export and import of a good without having information on whether there is a foreign value-added embedded in that good. TiVA records only the domestic value-added of an exported good by an industry in a country. For example, consider a shoe exported by Indonesia. The shoe is designed by an American company, while the material for making the shoe is sourced from China. India could source customer service. The Indonesian factory provides only sewing. Suppose the shoe is exported, then customs will record the market value. TiVA tries to disentangle the value-added from other countries; hence the shoe will be valued less in the TiVA database.

Since TiVA (and other measurements of GVC) uses an input-output database, it naturally follows the said database's aggregation. TiVA is not disaggregated per good and is only available in sectoral aggregation. Additionally, TiVA is not fully administrative data, so it may suffer from less accuracy than a customs database. However, TiVA provides enough information to examine countries' GVC participation levels.

Generally, participation in GVC can be classified into forwarding and backward participation (World Bank, 2020). A country is said to be involved in forwarding participation when it exports mainly domestic products used by destination countries to make its export products. Countries that export mainly natural resources usually participate in GVC via forwarding participation. Backward participation is when a country uses imports from other countries for production and embeds those imports in its exports. The shoe example above illustrates Indonesia's backward participation in GVC.

Using the TiVA database, we can construct how much foreign value-added, measured by raw materials and intermediate input imports, is embedded in a country's exports. Figure 10.2 shows this, in the percent, of six selected countries from 1995 to 2018. According to Figure 10.2, Indonesia's export-import component is much smaller than its regional peer countries. While trade generally plays a comparatively more minor role in a larger economy, China still manages to have higher import components of its exports.



Source: TiVA Database (OECD, n.d.)

Figure 10.2 Percentage of Imports Value in Selected Countries Exports, 1995–2018

Generally, GVC slowed down after the Global Financial Crisis (GFC) in 2008. This situation is also the case for all countries in Figure 10.2. However, while Singapore is always an exception, Vietnam's GVC backward participation is unusually high for the region and still increasing. Indonesia, meanwhile, still finds it hard to integrate itself with the GVC. According to Asian Development Bank & Islamic Development Bank (2019: 30), "Indonesia's participation in GVCs experienced decline through forwarding linkages and backward linkages from 2000 to 2017. Forward GVC participation declined from 21.5% in 2000 to 12.9% in 2017, while backward participation declined from 16.9% to 10.1% during the same period".

Asian Development Bank & Islamic Development Bank (2019) found that Indonesia is "moving relatively from upstream to downstream." This result is because most of the shared output gets closer to the final consumer. Indonesia exports intermediate goods to other countries still less. Thus, the position of Indonesia in GVC experienced a decrease. Depending on raw material exports make Indonesia's backward participation low compared to the other countries. The quality of Indonesia's export still does not meet the standard of international trade due to the low technology in the business, low human resource capacity, and the policies used (Ahmad, 2021). Ahmad (2021) suggests four considerable ways in which Indonesia needs to learn from China to develop its GVCs as follows; (1) facilitate the insertion of domestic firms into an international production network, (2) the evolution of production capacities of National firms, (3) the shift of processing trade flows towards the more advanced and technology-intensive sector, and (4) strategic policy framework Indonesian GVCs.

3. Relevant policies to integrate further with GVC

GVC, in principle, bears little difference to the theory of comparative advantage. That is, countries are better off concentrating on making what they do best, exporting the excess of production, and importing goods they do not produce. In turn, just like the usual trade theory suggests, the value chain in which a country is better off joins depends

on its natural comparative advantage. That said, the institutional setting in which a country can successfully join GVC differs significantly.

There are several natural factors for Indonesia to understand in which chain of GVC it can participate. GVC participation is determined by the factor of endowments, geography, and market size. Indonesia is endowed with natural resources and an abundance of labor. In addition, Indonesia has a significant population and a growing middle class, serving as a large market base.

However, the abundant resources and the geographical condition are not only a bonus. It needs to be explored effectively to maintain its sustainability. This endowment of resources and strategic position can be an opportunity and a challenge for Indonesia. With its large population, Indonesia has a potential market share. So does its labor market; it creates diverse human resource expertise. This can be a unique attraction for foreign investors to enter and provide opportunities for the domestic industry to collaborate in terms of capital. But the challenge is that if the existing resources are not managed efficiently, there will be a surplus of human capital, which causes high unemployment and poverty. Moreover, the growth of middle income will trap this society only to consuming foreign products that are massively coming if they cannot compete with the ability and quality of the international market. Meanwhile, it will be depleted in terms of natural resources because Indonesia can only export raw or semi-finished goods.

The critical part of joining the GVC is the institutional setting. The government as a regulator has the authority to formulate policies, including resource management, so Indonesia can increase its participation in the GVC. The first policy that the government can take is infrastructure improvement. Infrastructure investment is needed to increase GVC involvement. Well-integrated infrastructure can simplify the distribution process, fasten the transmission of information, and provide more reliable utility services. Because for an archipelagic country like Indonesia, connectivity between companies from various regions is the primary concern. Information and telecommunications

infrastructure equal between areas are also crucial to make transaction costs more efficient. In addition, reliable utility services are essential in the manufacturing sector, where production is capital intensive. Disruptions in electricity and water supply obstruct the production process, affecting company profits. Improving investment in infrastructure is critical to supporting GVC-related companies because these firms are constantly moving goods across countries. After all, GVC-related firms are attracted to invest in foreign locations with shorter supply lines, low transportation costs, and good market access (Hirshhorn, 2015).

Another policy the government can carry out regarding managing human resources is quality improvement. As mentioned previously, one of the advantages of participation in the GVC is the transfer of knowledge and technology. However, it can also be a boomerang for Indonesia, which has abundant human resources. Companies that shift from labor-intensive to machine-intensive will automatically eliminate some workers. Therefore, the government needs to improve the quality of human resources through training and education programs and increase its research and development expenditure. Training and education programs are necessary to produce human skills that are more competitive in the global labor market. The human capital that is more competent can help the domestic industry absorb knowledge, replicate or even create new technology from foreign companies. They can also process natural resources to be more value-added through innovation capabilities. It also needs to be supported by government research and development expenditure. Research and development help the government know the up-to-date market demand and enhance the higher value of domestic products and services.

It is common knowledge that GVC needs a free flow of goods and services, so free trade is necessary. To increase its involvement in GVC, Indonesia needs policies that are more open to international trade. It can be conducted by reducing tariff and non-tariff barriers such as port inspection and quota licensing. Even though a country has a right to set liberalization standards that prioritize important

economic sectors and actors, national intervention towards foreign investment that is highly restrictive will only be an obstacle to global economic integration.

Indeed, Foreign Direct Investment (FDI) is essential for GVC participation. Many GVC participants are large Multinational companies (MNCs) that do both import and export (World Bank, 2020). These firms have an extensive production network in different countries and act as a center of production in which they absorb local labor and locally made goods and import the rest. For example, in Indonesia, Nestle helps absorb locally made milk from local farmers (RISE Indonesia, 2017) and combines them with foreign-made goods to create significant economies of scale to allow efficient production. As a first-mover in Vietnam, the role of intel, a semiconductor manufacturer, enables Vietnam to become a significant hub for high-tech goods production (UNCTAD, 2008).

The dynamics of the policy-making process related to GVC also affect the foreign investors' preference who want to collaborate in Indonesia (Surianta and Patunru, 2021). Firms need a high degree of legal certainty in conducting trade and business in general. The bureaucratic systems that are too complicated and the politics of negotiation and lobbying centered on certain actors will create an image of an unhealthy investment climate in Indonesia. Therefore, the government needs to make transparent and real-time data regarding regulations and stakeholders' involvement is required. They can also formulate a one-door system and standard of rule and regulation that is simpler for every actor equally. This standard can be a preventive mechanism to avoid ambitious cross-border trade liberalization that is only centralized in certain groups.

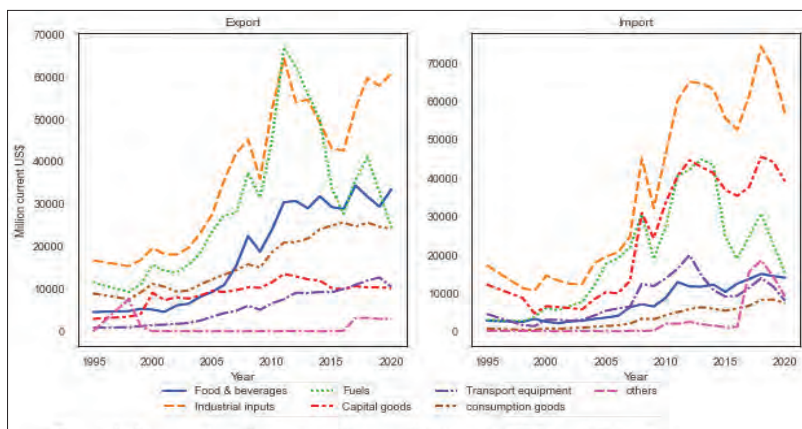
Indonesia has an abundance of labor and natural resources and an attractive market base with a growing middle class to allow for efficient economies of scale. However, Indonesia lacks the technology, know-how, capital goods, and production network, which can be sourced from FDI and backward participation. Therefore, there is room for

Indonesia to still participate in the GVC in the future if Indonesia can face the current challenges and capture the opportunities.

4. Restarting GVC: Challenges and Opportunity

There are challenges in joining the GVC today compared to the early 2000s. There are signs that GVC is slowing down along with general trade in goods. The growth of trade in goods has been stagnant in the past decade. More importantly, support for free trade has been decreasing even in the advanced countries, traditionally the leading advocate for free trade. The two most prominent examples are Brexit and the rise of Donald Trump. This trend seems to be getting more potent since the pandemic-induced crisis (Evenett, 2020).

Unfortunately, Indonesia has never truly embraced globalization (Hill and Pane, 2018; Kim, 2016) and is also following the trend by turning inward. Tariffs, generally, have been increasing in the past five years, while Non-Trade Barriers have been prominent since the early 2010s (Patunru and Rahardja, 2015; Patunru, 2018; Munadi, 2016; Munadi, 2019). In addition, the government of Indonesia often spread anti-import and narrow nationalistic campaigns amid pressure from business interests masking themselves in the name of nationalism (Negara, 2015; Patunru, 2018). The problem is that most of Indonesia's imports are intermediate inputs and capital goods, while its exports are mostly finished goods, as suggested in Figure 10.3. These anti-import measures have discouraged Indonesia from joining the GVC through backward participation during its peak.



Source: UN COMTRADE (n.d.)

Figure 10.3 Exports and Imports of Indonesia, BEC rev.4 Classifications, 1995–2020

It is not too late to join GVC, however. Research has shown the downside of turning inwards (Evenett, 2020; World Trade Organization, 2021; Bown and Bollyky, 2021; Bonadio et al., 2021). Turning inward reduces efficiency, reducing global production as a whole. Indeed, the efficiency gain from trade is large enough for firms to temporarily decrease output during a short-term shock (Arriola et al., 2020). This efficiency-induced trade is ever more critical in the face of a crisis.

One argument for turning inward is that lower reliance on other sovereign states helps control domestic supply and demand. However, we pull production inward by putting all our eggs in one basket. That is, turning inward exposes a country to a domestic crisis. Moreover, Bonadio et al. (2021) show that fully reshoring production inward will not improve economic resilience amid domestic lockdown. In short, improving economic resilience is not the same as renationalizing production. A country should diversify its sourcing and buyers.

Turning inward does not work. Many countries pledge to continue supporting each other through trade and globalization. Indo-

nesia is part of the Regional Comprehensive Economic Partnership (RCEP), the largest trade bloc in the world with high intensity of value chain movement. Ratifying RCEP is the key to re-joining the GVC through the RCEP regional network. Indonesia also ratified the Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA), an economic partnership with Australia that could help Indonesia in sourcing additional investment and know-how.

A regional trade bloc is even more critical with global political uncertainty. At the time of this writing, the US-China relationship (as well as with US allies in general) has not returned to the pre-Donald Trump era. There are talks to move out of China amid various measures imposed by the US on China and increased labor costs in China (Surianta and Patunru, 2021). Indonesia could potentially be the place to become the new base of production in the region.

From RCEP ratification, Indonesia stands to gain from the G20 presidency. Indonesia's G20 presidency theme is "recover together, recover stronger". The presidency raises three issues related to health, digital transformation, and energy transition toward climate-friendly sources, all requiring close cooperation across borders. GVC is central to these issues, ensuring higher global production of imported goods and services. Issues raised by the GVC can also be addressed in this forum. The G20 presidency allows Indonesia to be influential in setting the stage and ensuring a level playing field among G20 members, which, in turn, can potentially improve global economic integration.

However, the most important part of joining GVC is the Indonesian Government's willingness. A narrow nationalistic and mercantilist view of trade must be rethought. Unlike a person or a business, a country's balance sheet differs. High export does not mean it is "winning" trade, and high import does not imply a country is "losing" to another country. Little evidence suggests that a significant positive trade balance is "good" for manufacturing employment (Lawrence, 2020). The current account deficit can be influenced more by the flow of funds (Pettis, 2022), and tackling any financial-related issue by restricting trade is highly inefficient (Gupta, 2022).

It is now time for Indonesia to join the GVC and reintegrate itself into the global economy. GVC is a vital strategy to increase the production of COVID-related goods such as PPE and vaccines and improve economic growth and employment in general. Not only that, the collaborative nature of GVC will ensure that the region and the global economy recover together and recover stronger, which fits nicely with the theme of the current G20 presidency.

B. Conclusions

GVC is defined as multi-country sourcing of chains of values embedded in one final product. Amid GVC, virtually no manufactured goods are created by just one country. GVC allows firms to optimize their production by sourcing the values from a country that can best produce it. For countries, it helps them by having a factory without having to master all of the value chains. As a result, firms and countries utilizing GVC show the most progress in their manufacturing growth.

With its substantial resources, young, abundant workforce, and extensive market base, Indonesia has the opportunity to join the GVC. Based on Indonesia's imports, it is clear that Indonesia is gearing toward backward participation. However, more needs to be done. GVC requires fast-moving goods, capital, and knowledge. Policies that promote freer trade are optimal for GVC. Indonesia must be able to decrease its logistic costs, reduce trade barriers such as stringent port inspection, and remove unproductive trade barriers like import licensing. As the key player in the GVC, firms require a better investment climate and labor regulation.

At the time of writing, Indonesia is in an excellent position to reiterate its GVC backward participation. Indonesia just recently ratified an economic partnership agreement with Australia and is on its track to ratifying RCEP, an ASEAN+5 agreement. These agreements can be a good start in harmonizing many essential policies such as ports and customs procedures and the standard quality of goods and services. Furthermore, as the G20 2022 presidency chair, Indonesia can further emphasize globalization. Countries need to work together

to not only end the pandemic but also to recover together, recover stronger.

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Section 3

Equitable, Sustainable, and Green Development

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Section Overview

Balancing E.S.G and Economic Growth

Riani Sagita

The fast outbreak of the COVID-19 pandemic had a terrible impact on many sectors worldwide. The COVID-19 pandemic triggered different impacts on Indonesia's economy, especially its monetary policy instruments, compared to the previous big crises. The economic downturn combined with falling production, lower consumption, and investment created a disadvantageous combo for Indonesia's economy.

Furthermore, the pandemic has forced countries to exploit most of their budget in response to such a situation. Around IDR 677 trillion has been budgeted to cope with this situation, which requires sufficient financing. As the primary revenue for Indonesia, pursuing additional tax may be a solution to this financing problem. Auspiciously there is a glimmer of hope that 132 countries agreed to join the two-pillar of tax integration plan to reform international taxation rules, which are expected to benefit Indonesia with additional tax revenue to recover from the post-pandemic situation.

On the other hand, Indonesia's international trade contributes significantly to national economic recovery. During the early period

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of the COVID-19 pandemic, the international trade balance tended to be in deficit and improved at the end of 2021 in line with the national economic recovery process. The industrial, manufacturing, and agricultural sectors significantly contribute to international trade. In addition, Global Supply Chain (GSC) policies for globally competitive industries and Import Substitution Industrialization (ISI) for SMEs could be implemented to achieve the SDG 2030 Agenda.

Post COVID-19 recovery is not merely about the economy itself; to achieve the Sustainable Development Goals, the government must pay attention to how to tackle the climate crisis. Climate change has become a strategic issue since the negative impact has been confirmed and harms our lives directly and indirectly. One hundred ninety-six countries, including Indonesia, signed the Paris Agreement in 2015, committing to reducing greenhouse gas emissions to keep the earth's temperature rise to no more than 2 degrees Celsius with a target of limiting it to 1.5 degrees Celsius. However, those targets cannot be achieved without sufficient financial support. One of the instruments that have been globally implemented is the Green Bond. Since the first issuance by the European Investment Bank in 2007, green bond issuance in developed countries has gained significant growth. Indonesia has experienced challenges in green bond issuance so far. Closed engagement between the financial regulator, the government, and the financial industries has become critical in developing Indonesia's green bonds market.

Healthcare is another significant sector ravaged by COVID-19. Health research translation, which aims to provide more relevant, practical outputs that directly improve population and human health, plays an essential role in implementing health research results into national policies during the COVID-19 pandemic and national health recovery. Hence, Indonesia's research translation is expected to be improved into more equitable, sustainable, and effective policies. However, many challenges are faced mainly because our research backbone is still weak. These challenges certainly impact the recovery

process of the health system. Thus, all aspects of the health research system, policymakers, and society must be involved.

Recovering from COVID-19 would require a substantial economic undertaking, including supporting forward-looking research translation. However, as the authors of chapters in this section have shown, it is possible to foster innovation via research, appropriate taxation, strengthen Indonesia's international trade footprint, and issue green bonds to fund future projects.

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Chapter 11

Taxing the 'Unreachable' as Panacea for Post-Pandemic Recovery

Anggari Dwi Saputra

A. Base Erosion and Profit Shifting (BEPS)

The COVID-19 outbreak raging across the globe has disrupted the global economy. Such catastrophic impacts also struck Indonesia with no apparent sign of immediate decline. Indonesia poured out 34% of its expenditure, or around USD 47 billion, into coping with that pandemic situation. Such funds are utilized to ensure that health care service is fulfilled and to establish a program to stimulate the economy named *Pemulihan Ekonomi Nasional* (PEN) (Ministry of Finance of Indonesia, 2020). Such a large amount of funds requires substantial financing and is highly possible to harm the state budget. Based on *Anggaran Belanja dan Pemerintah Indonesia* (APBN) 2020, total budget deficit to Gross Domestic Product (GDP) has risen from 2.34% as of November 30, 2019, to 5.6% as of November 30, 2020,

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compelling Indonesia to enact a presidential decree Number 72/2020 to accommodate the extraordinary increase in budget deficit due to COVID-19. Moreover, the debt to GDP ratio climbed from 30.03% in 2019 to 39.84% in 2021.

Additional tax revenue can be seen as one essential solution in dealing with this financing crisis amid this pandemic. The tax avoidance issue has harmed Indonesia for a long time and has become a perennial problem. According to the Tax Justice Network (2020) report, Indonesia has lost around USD 4.8 billion from misaligned profits. Multinational Enterprises (MNEs) try to shift their profit to other jurisdictions with lower tax rates. Moreover, Organization for Economic Co-operation and Development (OECD) (2021b) stated that based on the aggregated Country-by-Country Report (CbCR) data, MNEs tend to report their profit in locations—such as Bahamas, Barbados, Bermuda, British Virgin Islands, etc.—where they do not have any economic activities. It means such locations are only utilized to shift their profit due to the benefits of such countries or jurisdictions.

Thankfully, the Organization for Economic Co-operation and Development (OECD) and the Group of Twenty (G20)—Indonesia is one of the members—have prioritized this issue since 2013 and established the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (BEPS) to tackle such issue (OECD, 2021a). Throughout 2017–2020, this inclusive framework discussed a breakthrough to address the tax avoidance issue, notably in the challenges of digitalization of the economy. Eventually, as of July 9, 2021, most of the members of the inclusive framework have agreed to consolidate and try to establish a reform in international taxation rules to deal with this tax avoidance issue carried out by MNEs.

Such reform is established based on two-pillar, pillar one will set the floor on equitable distribution of profits and taxing right among jurisdictions, and pillar two will overcome tax competition among jurisdictions and preserve the tax base in every jurisdiction by introducing a global minimum corporate tax (OECD, 2021a). Those pillars

include numerous mechanics that must be considered and agreed upon among jurisdictions. However, pillar two is expected to be the first agreed and implemented, then pillar one hereinafter.

Those pillars will not affect all scope of taxpayers. Only large MNEs with an enormous profit that passes certain thresholds are expected to be a subject of those new rules. OECD (2020c), in its report, pointed out that introducing those two pillars could increase the investment cost of the MNEs, and might encourage MNEs to relocate their investment away from low-tax jurisdictions. That impact may benefit countries since the competition to draw the investment is no longer based on the rates, leading to a race to the bottom. Moreover, the OECD (2020c) mentioned that additional revenue generated from those pillars would bring advantageous indirect effects. The return of tax revenue from a long-lost source can be used to increase government purchases, especially in this pandemic situation, where countries need ample funds to recover. OECD (2020c) also mentioned the adverse impact in case jurisdictions failed to reach any consensus. If countries do not reach any consensus on that pillar, a different mechanism of tax, namely digital service tax (DSTs), is likely to be implemented by each jurisdiction to tackle the tax issue arising from digitalization. This will lead to a decline in the effectiveness of global investment in the economy. Other than that, such different mechanisms will increase disputes among countries generating additional administration costs.

Regardless of the empirical research reports concerning the two pillars by OECD, it is essential to observe what impacts Indonesia may get if consensus on these two pillars is reached. Each pillar has specific provisions that will be mutually agreed upon; discussing Indonesia's most favorable provisions is also essential before reaching the final consensus. This chapter discusses three parts. The first and second part examines the mechanism of each pillar, as each pillar consider various rule and regulation that are being discussed by the inclusive framework so far. The third part observes what Indonesia may get from implementing those two pillars. Most of the analysis is explained based on the OECD report on these two pillars.

1. Pillar One Proposal

Pillar one proposal is intended to give new taxing rights for market jurisdiction from a share of MNEs' residual profit. This proposal addresses the taxing business income, which only depends on the physical presence. In this current circumstance, countries can only tax MNEs' business profit if MNEs establish their business in that country, indicated by setting up permanent establishments or subsidiaries. If MNEs do not have any physical presence, no taxing right can be entitled to the country. However, with globalization and digitalization, now MNEs could carry out their business abroad without establishing a physical presence. One example is Netflix or Spotify, which can sell their product worldwide without settling any office in Indonesia. Prior to the enactment of Regulation of the Minister of Finance of the Republic Indonesia Number 48/PMK.03/2018¹, Indonesia has no right to impose a tax on Netflix due to its lack of physical presence. However, such regulation only provides value-added tax rights, not a tax on business profit.

Pillar one proposal consists of three key elements: amount A, amount B, and amount C. Amount A is the one that will give new taxing rights to the market jurisdictions. Amount B is in accordance with the arm's length principle, which will set a fixed return for certain marketing and distribution activities. Amount C will provide dispute prevention and resolution related to amount A. As mentioned above, each pillar takes a lot of detail into account. This section may not go into detail about each provision in-depth, thus only providing an overview of the proposal.

Amount A will not cover all MNEs and only include certain MNEs within the scope that will apply these provisions. According to a statement on a two-pillar solution by OECD (2021a), MNEs with global turnover above 20 billion euros and profitability above 10%,

1 Regulation of The Minister of Finance of The Republic Indonesia concerning Procedures for Appointing Collectors, Collection, Remittance, and Filing of Value-Added Tax on The Utilization of Intangible Taxable Goods and/or Taxable Services from the Outside of the Customs and Excises Territory within the Customs and Excises Territory through Electronic Commerce

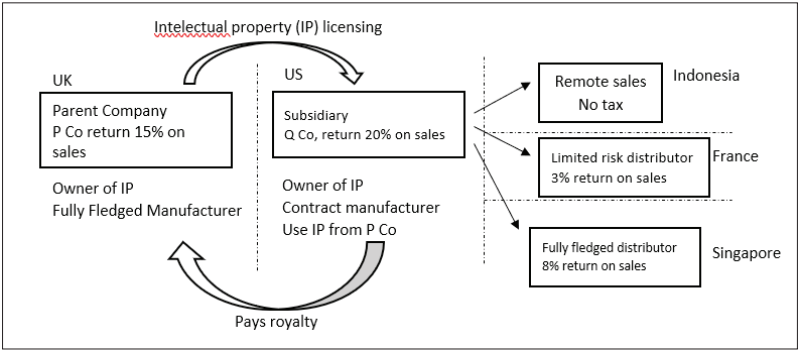
whose categories of activities are Automated Digital Service (ADS) and Consumer Facing Businesses (CFB), will be included in the scope of this amount A. “The definition of ADS comprises a positive list of ADS activities; a negative list of non-ADS activities; and a general definition” (OECD, 2020a, p.19). Meanwhile, CFB businesses are defined as “those that generate revenue from the sale of goods and services of a type commonly sold to consumers, including those selling indirectly through intermediaries and by way of franchising and licensing” (OECD, 2020a, p.21). There are many examples of positive list ADS categories: online advertising services; sale or other alienation of user data; online search engines; social media platforms; online intermediation platforms; digital content services; online gaming; standardized online teaching services; and cloud computing services (OECD, 2020a). CFB businesses can include many goods and services such as clothes, toiletries, cosmetics, automobiles, luxury goods, etc. Several carve-outs are excluded from the scope, including extractive industries, infrastructure businesses, producers, sellers of raw materials and commodities and intermediate products, shipping and air transport, and financial services.

Nexus rules are introduced in this proposal related to the allocation of amount A to the jurisdictions. Nexus rules for ADS and CFB can be different. OECD (2020a) pointed out that the nexus for ADB is merely based on the revenues in the jurisdiction, which exceed a certain level. While for CFB, nexus is based on revenue and the “plus factor,” which indicate the significance and sustainability of the engagement in the market. However, in the statement on a two-pillar solution by OECD (2021a), a new particular purpose nexus rule allows market jurisdiction to get allocation amount A if the revenue from that jurisdiction exceeds 1 million euros, while for smaller jurisdictions with GDP lower than 40 billion euros, the threshold is set at 250,000 euros.

The simple formula below can be considered to calculate how much additional tax revenue will be obtained from this proposal.

Where, denotes additional tax revenue for jurisdiction i. denotes quantum or reallocation percentage. denotes global residual profit, meaning residual profit exceeds threshold mentioned above (10%). denotes the share of jurisdiction i. denotes jurisdiction i share of residual profit. denotes the rate of double tax relief jurisdiction i.

It is essential to provide a simple case, as shown in Figure 11.1, to explain how the mechanism of pillar one proposal works. Such a case is inspired by the case presented by the International Fiscal Association (Case Studies of Pillar One of the OECD Report on Taxation of Digital Economy, 2020a).



Source: Author’s illustration adapted from the International Fiscal Association (2020a) presentation

Figure 11.1 Example Case of Pillar One Proposal

P Co is the group’s parent company located in the United Kingdom (UK), which operates as a fully-fledged manufacturer, and makes and sells their goods for the UK market. P Co owns intangible property (IP) and license it to its subsidiary Q Co located in the United States, which operates as a contract manufacturer, creates, and sells its goods for the UK and overseas market in Indonesia, France, and Singapore. Q Co sells its goods to Indonesia remotely, not via permanent establishment or its subsidiary. Since there is no physical presence, Indonesia has no right to impose a tax on Q Co sales. For France and Singapore markets, Q Co sells its product through

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its subsidiaries, which operate as limited risk distributors and fully fledged distributors.

In the year 2022, the consolidated financial statements of P Co group company are described as follows:

Table 11.1 Consolidated Financial Statement

Consolidated group operating revenue	EUR 3 billion
Consolidated expenses:	
Cost of sales	EUR 1.5 billion
Research and development expenses	EUR 50 million
Selling and distribution expenses	EUR 150 million
Administrative expenses	EUR 50 million
Interest expenses	EUR 50 million
Total expenses	EUR 1.8 billion
Consolidated profit/Earning before tax	EUR 1.2 billion
Consolidate EBT Margin	40%

Source: Author's illustration adapted from the International Fiscal Association (2020a) presentation

Global operating revenue consists of sales to third-party consumers, with 10% of its global revenue from Indonesia, 20% from France, 30% from Singapore, 30% from the US, and 10% from the UK market. As mentioned above, the profit that will be used as allocation (is any profit that exceeds 10%. Since the consolidated EBT margin is 40%, the global residual profit is 30% ($40\% - 10\%$). However, such a number will not be allocated fully; amount A uses quantum as a percentage of residual profit allocated to market jurisdictions. OECD (2021a) stated that the amount of quantum or reallocation percentage is 25%. Therefore, the residual profit that will be allocated is 7.5% ($25\% \times 30\%$) or EUR 900 million ($7.5\% \times \text{EUR } 1.2 \text{ billion}$).

As 10% of the global sales are derived from Indonesia, Indonesia will allocate A $10\% \times \text{EUR } 900 \text{ million}$ or EUR 90 million. This number is multiplied by the tax rate to get the additional tax. For France, it will be allocated $20\% \times \text{EUR } 900 \text{ million}$ or EUR 180 million. For Singapore, it will be allocated $30\% \times \text{EUR } 900 \text{ million}$ or EUR 270 million. However, in Singapore, the subsidiary acts as a fully-fledged

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distributor, and the income is also calculated as the basis of profit allocation. Therefore, there will be double counting. A marketing and distribution safe harbor will be introduced to prevent such issues, which will exempt Singapore from obtaining profit allocation. For the US, it will be allocated $30\% \times \text{EUR } 900 \text{ million}$ or EUR 270 million. However, the entity in the US is booking residual profits outside the UK market. This entity will relieve double taxation for amount A liability in Indonesia and France. Therefore, no amount A liability is available in the US. For the UK, it will be allocated $10\% \times \text{EUR } 900 \text{ million}$ or EUR 90 million. However, this company is booking residual profit for the USA market. This entity can be identified as the paying entity for discharging amount A in the UK; therefore, there is no amount A liability in the UK.

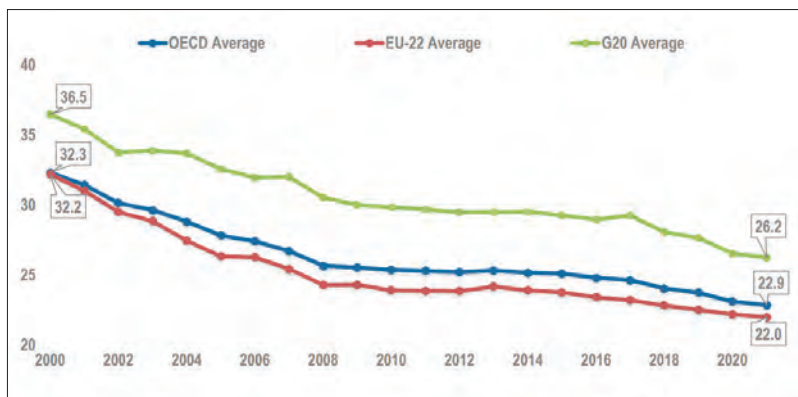
2. Pillar Two Proposal

Pillar two proposal is intended to combat profit shifting and tax competition, leading to a race to the bottom. MNEs use profit shifting to reduce their tax payment by misaligning their profit with a jurisdiction whose tax rate is very low. By introducing a global minimum tax rate, it is expected that MNEs do not have any incentive to set their transaction, so they can shift their profit to reduce their tax payment. Additionally, setting a global minimum tax rate will combat tax competition, encouraging countries to use non-tax investment incentives to draw investment, leading to fair and thriving competition. This race to the bottom phenomenon is not mere nonsense. According to Figure 11.2, we can observe from the year 2000 until 2020 average corporate tax rate has declined significantly. Of course, there are many backgrounds behind such phenomenon, but it cannot be denied that tax competition among countries to attract investment in one of the determining factors.

Pillar two proposal consists of two key elements: Global anti-Base Erosion Rules (GloBE) and Subject to Tax Rule (STTR). GloBE rules consist of Income Inclusion Rule (IIR) and Undertaxed Payment Rule (UTPR). Therefore, this proposal will fundamentally establish three

rules—IIR, UTPR, and STTR—to ensure that the effective tax rate (ETR) of the MNEs group already meets the global minimum tax rate. IIR will impose a top-up tax on the parent entity on its constituent entity's tax that does not meet the global minimum tax rate (OECD, 2020b). UTPR has the same intention as IIR, but instead of requiring the parent entity to pay top-up tax, UTPR obliges taxpayer that is member of the group to adjust with respect to any tax that does not meet the global minimum tax rate. However, UTPR will only apply if the IIR is not adopted. Therefore, IIR has priority over UTPR (OECD, 2020b). IIR is also backed up by the Switch-over Rule (SOR), which allows the state of the parent entity to tax the income of its permanent establishment (PE) up to the minimum tax rate agreed in the provision. Unlike IIR and UTPR, STTR applies to certain payments between two connected persons² which do not meet the minimum rate for STTR. Countries will have the rights to tax the difference in rates that do not meet the minimum rate for such payment.

2 According to article 5(8) OECD Model Tax Conventions, “Two persons are treated as “connected” if one has control of the other or both are under the control of the same person or persons. While the test is based on a de facto control relationship, these control requirements are automatically met where one person possesses directly or indirectly more than 50% of the beneficial interests in the other or if a third person possesses directly or indirectly more than 50% of the beneficial interests in both.”



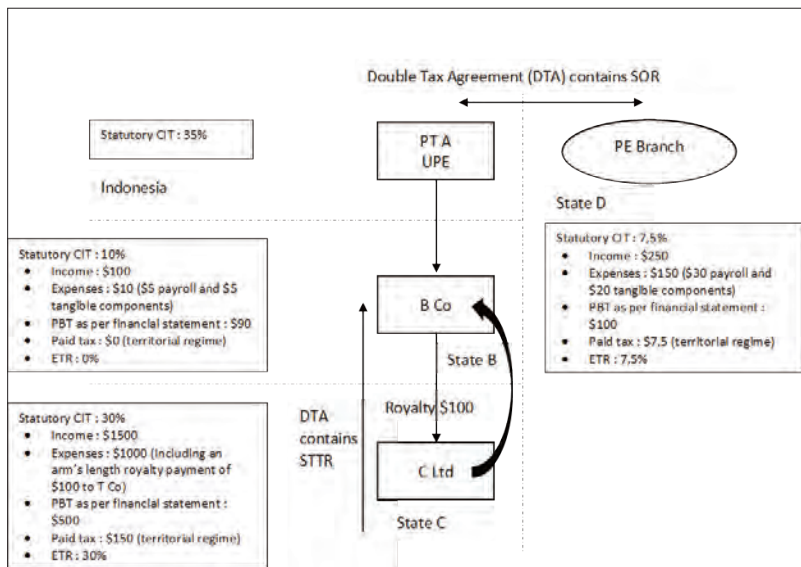
Source: OECD (2021)

Figure 11.2 Average Corporate Income Tax Rate

Similar to pillar one, pillar two will not cover all MNEs in its scope. MNEs with more than EUR 750 million in annual gross revenue in the preceding fiscal year are covered in this proposal's scope (OECD, 2020b). Such thresholds are defined in the Base Erosion and Profit Shifting (BEPS) 13 concerning Transfer Pricing Documentation and Country-by-Country Reporting. There are also categories of taxpayers that are not subject to this proposal, namely government entities, international organizations, non-profit organizations, pension funds, or investment funds that are Ultimate Parent Entities (UPE) of an MNE Group or any holding vehicles used by such entities (OECD, 2021a).

According to the statement on a two-pillar by OECD (2021), the global minimum tax rate used for applying IIR and UTPR is 15%. Meanwhile, the minimum rate for STTR will be 9%. Both of the minimum rates will be calculated based on the ETR, which will be calculated on a jurisdiction basis. There is also a c provision used to exclude an amount of income for calculating top-up tax. The rate of carve-outs provision is 5% of the carrying value of tangible assets and payroll (OECD, 2020b).

Pillar two also consists of many detailed mechanisms, which are very complicated and include many specific definitions. Therefore, providing a simple case as below may explain how the proposal will work. Such a case is inspired by the case presented by the International Fiscal Association (Case Studies of Pillar Two of the OECD Report on Taxation of Digital Economy, 2020b).



Source: Author's illustration adapted from the International Fiscal Association (2020b) presentation

Figure 11.3 Example Case of the Pillar Two Proposal

PT A located in Indonesia, is Ultimate Parent Entity (UPE) of the MNEs group. B co is one of PT A subsidiaries located in state B. C Ltd is also PT A subsidiary located in state C. PT A also has a branch in state D and form PE there. In year X, C Ltd has a profit before tax (PBT) \$500 with the details above and paid tax \$150 so that the ETR is 30%. C Ltd paid a royalty, which we assume the transaction is already arm's length, to B Co. B Co gain income solely from a transaction with C Ltd, and from that transaction, B Co obtained PBT of \$90.

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However, as state B follows a territorial regime, in which only income arising in state B is taxable, B Co did not pay any tax. Prior to the implementation of the STTR rule, the Double Tax Agreement (DTA) between states B and C adheres to the OECD model, where state C does not have rights to tax royalty transactions. In state D, PE of PT A generated an income of \$150, PBT \$100, and paid tax of \$7.5, so the ETR is 7.5%.

Now assume that the implementation of IIR, SOR, and UTPR has been in place. First rule that needs to be applied is STTR since STTR will affect the implementation of IIR. The case above shows that ETR for B Co is 0%. In this regard, STTR will apply. STTR requires a minimum tax rate for certain payments, in which royalty is in the scope of 9%. In this case, B Co paid tax 0 (ETR 0%), below the minimum rate. Therefore, under STTR, State C has the right to tax such royalty payments of 9% (9% - 0%). Therefore, the tax to be paid under STTR is $9\% \times 100 = \$9$.

Next is the transaction of the PE branch in state D, since IIR and SOR have already been implemented, and the ETR of the PE branch is below the minimum rate of IIR (15%). In this case, under IIR and SOR rule, Indonesia has the right to tax the PE branch income that has not met the global minimum rate. Under IIR Rule, PT A should pay top-up tax for the PE branch in 7.5% (15% - 7.5%). However, the base for top-up tax needs to be adjusted under the carve-out rule. The calculation of top-up tax with respect to the PE branch is as follows:

- ETR of PE Branch = 7.5%
- Top up tax under IIR = $15\% - 7.5\% = 7.5\%$
- GloBE tax base = PBT - carve out rule. Carve out rate is 5% of the carrying value of tangible assets and payroll. Therefore, the base is $100 - 5\% \times (50) = 97.5$.
- Tax to be paid by R Co under IIR = $7.5\% \times 97.5 = 7.3125$

Concerning B Co, the initial ETR of B Co is 0%. However, under STTR, a top-up tax needs to be considered in the calculation of IIR. Tax paid under STTR is 90, therefore adjusted ETR is $9/90 = 10\%$.

Since the ETR adjusted is below the global minimum rate of 15%, IIR applies. The calculation of IIR is as follows:

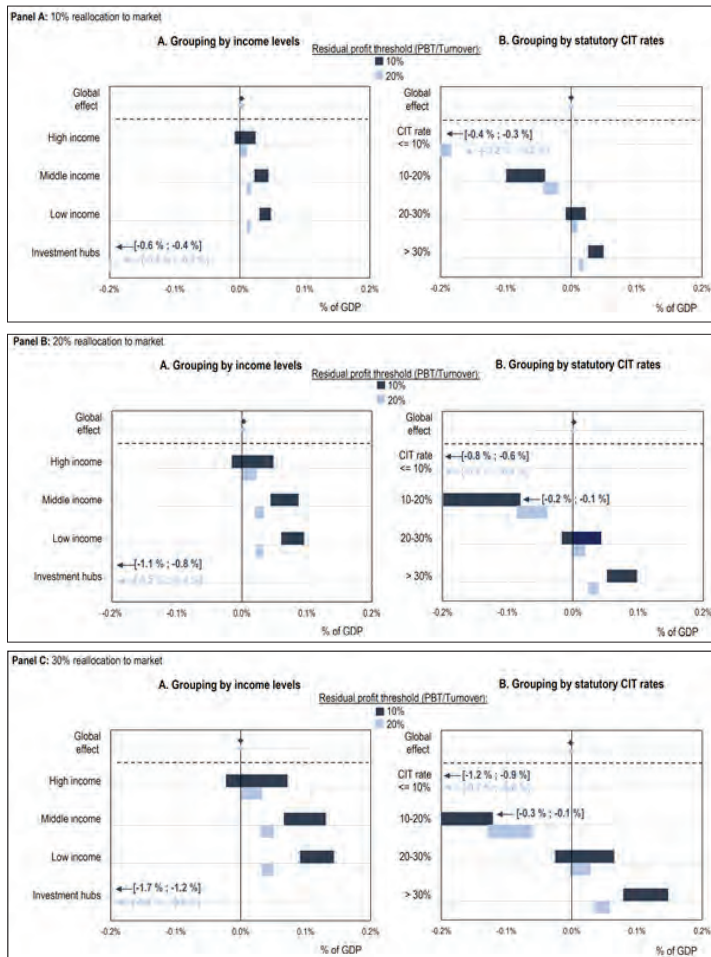
- 1) Adjusted ETR = 10%
- 2) Top up tax under IIR = $15\% - 10\% = 5\%$
- 3) Globe tax base = PBT - carve out rule. Carve out rate is 5% of the carrying value of tangible assets and payroll. Therefore, the base is $90 - 5\% \times (10) = 89.5$
- 4) Tax to be paid under IIR = $5\% \times 89.5 = 4.475$

Therefore, the total tax paid by PT A in Indonesia under IIR is $7.3125 + 4.475 = \$11.7875$. If Indonesia does not implement the IIR rule, in such a case, UTPR will apply. Assume only state S that implements the UTPR rule. Hence under UTPR rule, C Ltd should pay top-up tax concerning its transaction with B Co, or in this case, it is \$4.475. There is no top-up tax regarding the PE branch' ETR, which is below the minimum rate since C Ltd does not directly relate to the PE branch.

B. The Impact of Pillar One and Two Proposals

Several studies have observed the impact of pillars one and two proposals (OECD, 2020; Cobham et al., 2019; Hanappi & Cabral, 2020). Those studies concluded that this would generate additional revenue, although Cobham et al. (2019) stated that such gains main benefit OECD countries and only provide a small portion of the benefits for other countries. OECD (2020) pointed out that the tax revenue' effect of pillar one and two varies across countries within the range 0%–2% of corporate income tax (CIT) revenue for the effect of pillar one and 0%–5% of CIT revenue for pillar two. Cobham et al. (2019) mentioned that the lower income countries only obtain a fraction of a percentage point of CIT revenues, while OECD countries will get 2% on average. Hanappi and Cabral (2020), which observed the expected change in the firm' effective average tax rates (EATRs) and effective marginal tax rate (EMTRs), stated that pillar one would bring a small change in the ETR, while the change in ETR is expected to be significant due to implementation of pillar two.

OECD (2020c) observed the impact of those two proposals under several scenarios based on the features of each proposal. The estimated effect of pillar one according to OECD (2020c) is presented in Figure 11.4.



Source: OECD (2020)

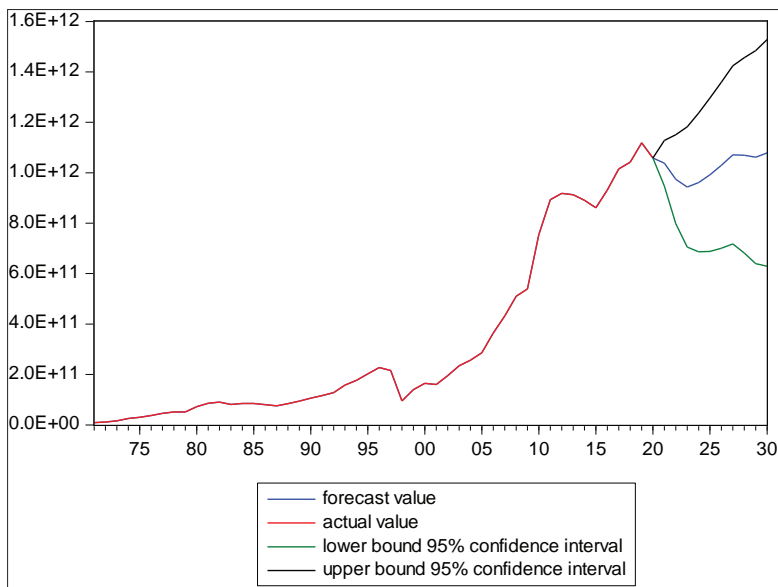
Figure 11.4 Effect of Pillar One Proposal on Tax Base

Based on Figure 11.4, we can observe that the effect varies across countries and depends on the reallocation percentage and profit threshold. In general, the effect is larger for low-income countries, smaller in high-income countries, and for investment hubs countries (tax haven), the effect is negative. If we refer to the 30% reallocation percentage arrangement, middle-income countries, of which Indonesia is included, will obtain an additional tax base of approximately 0.15% of GDP at the highest. We can use this number to forecast the estimated additional tax base Indonesia will get from this proposal. By employing the autoregressive integrated moving average (ARIMA) model, we can forecast Indonesia' future GDP, which can be used to calculate the additional tax base.

$$y_t = \mu + \sum_{i=1}^{13} y_{t-i} + \sum_{i=1}^1 \varepsilon_{t-i}$$

y_t is Indonesia' GDP and ε_t is a representation of error term. GDP data for the year 1971–2020 is then employed to conduct the analysis. The data were extracted from World Bank data³. The ARIMA model is utilized because the GDP trend is not stationer and stochastic with a random walk. Based on the unit root test and considering the correlogram, ARIMA 13.1.1 is used. The results of the estimation are presented in Figure 11.5.

3 Retrieved from <https://databank.worldbank.org/reports.aspx?source=world-development-indicators#>



Source: Author' calculation

Figure 11.5 GDP forecasting.

Table 11.2 Additional revenue estimates from pillar one

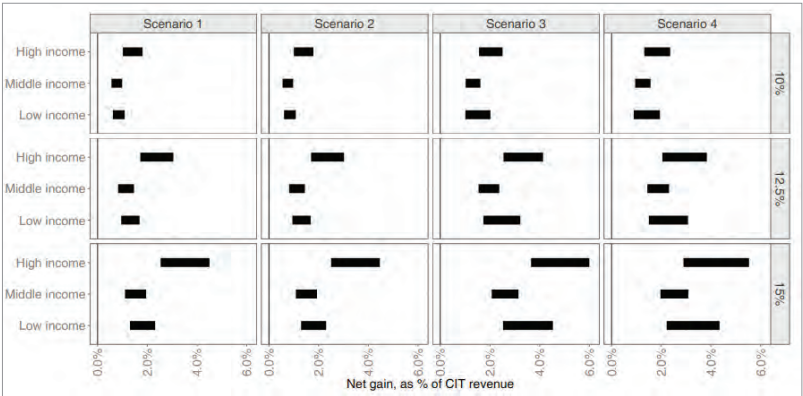
Year	GDP Forecast ARIMA model (in million USD \$)	Additional Tax Base (%)	Additional Tax Base (in million USD \$)	Tax Rate	Additional Tax Revenue (in million USD \$)	Exchange Rate	Additional Tax Revenue (in million Rupiah)	Covid-19 Fund	%
2022	974.120,21	0,15%	1.461,18	22%	321,46	14.366,00	4.618.089,61	87.550.000,00	5,27%
2023	943.662,72	0,15%	1.415,49	22%	311,41	14.366,00	4.473.697,34	87.550.000,00	5,11%
2024	961.444,83	0,15%	1.442,17	22%	317,28	14.366,00	4.557.998,41	87.550.000,00	5,21%
2025	992.142,13	0,15%	1.488,21	22%	327,41	14.366,00	4.703.527,56	87.550.000,00	5,37%
2026	1.029.826,64	0,15%	1.544,74	22%	339,84	14.366,00	4.882.181,53	87.550.000,00	5,58%
2027	1.071.034,36	0,15%	1.606,55	22%	353,44	14.366,00	5.077.538,26	87.550.000,00	5,80%
2028	1.069.122,38	0,15%	1.603,68	22%	352,81	14.366,00	5.068.473,99	87.550.000,00	5,79%
2029	1.061.779,75	0,15%	1.592,67	22%	350,39	14.366,00	5.033.664,20	87.550.000,00	5,75%
2030	1.078.813,77	0,15%	1.618,22	22%	356,01	14.366,00	5.114.418,72	87.550.000,00	5,84%

Source: Author' calculation

As shown in Table 11.2, referring to the OECD' estimated effect of pillar one, Indonesia is estimated to generate additional revenue of around USD 321.46 million if the proposal is implemented in 2022.

Such additional revenue may cover about 5% of health care costs related to COVID-19.

While for pillar two, OECD (2020c) estimated 0.5%–5% net gain, as % of CIT revenue depending on the scenario and the global minimum tax rate. Unlike the estimated effect of pillar one, revenue gains driven by pillar two is larger in high-income and low-income countries and smaller for middle-income countries. Detail of the effect can be seen in Figure 11.6.



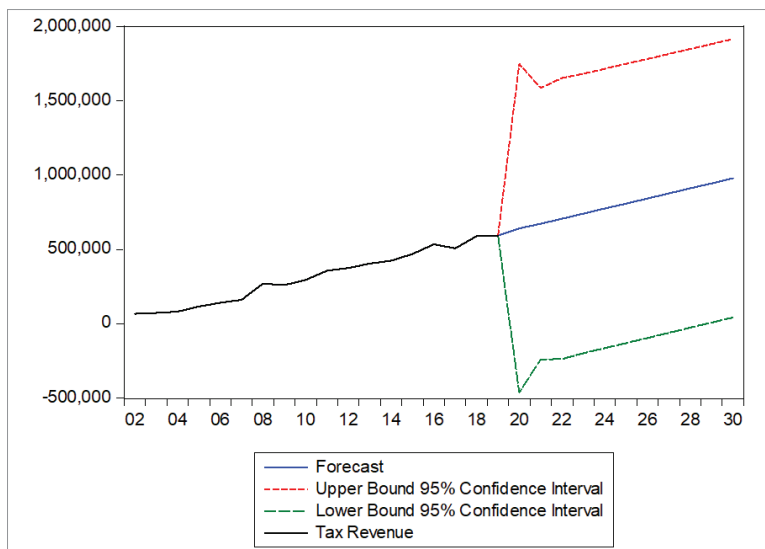
Source: OECD (2020)

Figure 11.6 Pillar two revenue gains

As shown in Figure 11.6, middle-income countries are expected to obtain an additional revenue gain of 3% of CIT revenue. Similar to the analysis above, we can predict Indonesia’s estimated additional revenue from this proposal by forecasting Indonesia’s CIT Revenue. Data from OECD revenue statistics⁴ are employed to forecast the future CIT revenue. As the CIT revenue trend is deterministic, such a trend does not have a unit root. Simple ordinary least square (OLS) with the inclusion of a time variable is then employed⁵. The results of the estimation are presented in Figure 11.7.

4 Retrieved from <https://stats.oecd.org/index.aspx?DataSetCode=REV>

5 I also tried to use ARIMA model, but the result still persists.



Source: Author' calculation

Figure 11.7 CIT revenue forecasting.

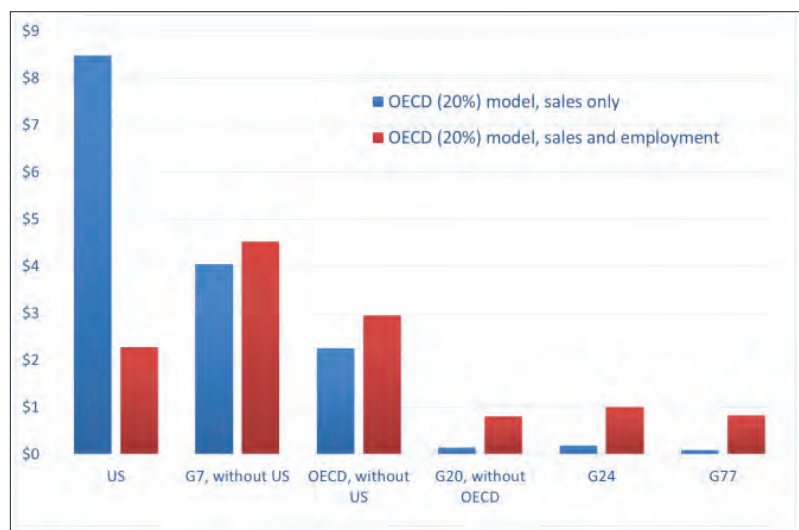
Table 11.3 Additional Revenue Estimates from Pillar Two

Year	OLS with time trend (in billion rupiah)	ARIMA (in billion rupiah)	Additional Revenue Gains (%)	Additional Revenue OLS (in billion rupiah)	Additional Revenue ARIMA (in billion rupiah)	Covid-19 Fund (in billion rupiah)	% additional revenue/covid-19 fund (OLS estimation)	% additional revenue/covid-19 fund (ARIMA estimation)
2020	638.645,40	641.892,83	3%	19159,36	19.256,78	87.550,00	22%	22%
2021	672.433,10	673.329,56	3%	20172,99	20.199,89	87.550,00	23%	23%
2022	706.220,70	707.665,00	3%	21186,62	21.229,95	87.550,00	24%	24%
2023	740.008,40	741.522,03	3%	22200,25	22.245,66	87.550,00	25%	25%
2024	773.796,10	775.458,01	3%	23213,88	23.263,74	87.550,00	27%	27%
2025	807.583,80	809.380,96	3%	24227,51	24.281,43	87.550,00	28%	28%
2026	841.371,50	843.306,07	3%	25241,15	25.299,18	87.550,00	29%	29%
2027	875.159,20	877.230,82	3%	26254,78	26.316,92	87.550,00	30%	30%
2028	908.946,90	911.155,62	3%	27268,41	27.334,67	87.550,00	31%	31%
2029	942.734,60	945.080,42	3%	28282,04	28.352,41	87.550,00	32%	32%
2030	976.522,30	979.005,22	3%	29295,67	29.370,16	87.550,00	33%	34%

Source: Author' calculation

As shown in Table 11.3, the revenue impact generated by pillar two is much higher than pillar one. This estimated additional revenue gain may cover around 22%–34% of the total health-related cost of dealing with COVID-19.

Slightly different from the OECD (2020c) study results, Cobham et al. (2019), which employed a representative sample of CbCR by US large MNEs, mentioned that pillar one proposal only gives \$0.08–\$0.18 increase in per capita revenue for The Group of Twenty (G20) countries. Such a small number compared to \$8 increase for US, \$4 increase for Group of Seven (G7), and \$2 increase for OECD countries. Cobham et al. (2019) further pointed out that the benefits of pillar one mostly go to OECD countries, while other countries only get a little or no benefits. Even in aggregate, lower-middle income countries will experience a revenue loss upon implementing this proposal.



Source: Cobham et al. (2019)

Figure 11.8 Projected per capita revenue increases

Cobham et al. (2019) also emphasized that employment as a factor in determining the jurisdiction share of residual profit plays an important role. The inclusion of employment as a complement to the sales is essential to reflect the actual nexus of MNEs production activity. However, pillar one also consists of other several attributes beside those mentioned by Cobham et al. (2019) that is very substantial in

generating additional revenue. Therefore, to analyze which key factor in shaping the additional revenue, I tried to estimate model below using simple OLS.

$$\ln \text{Average Additional Tax Revenue}_i = \beta_0 + \beta_1 \ln \text{Profit Residual Threshold}_i + \beta_2 \ln \text{Revenue Threshold}_i + \beta_3 \ln \text{Nexus Threshold}_i + \beta_4 \ln \text{Reallocation Percentage}_i$$

Log-log model is utilized to get the elasticities of each attribute. Using data from OECD (2020), the results below are obtained.

Table 11.4 Tax revenue determination on the pillar-one

Variables	og Average Additioal Tax Revenue
Log of Profit Residual Threshold	-0.982*** (0.014)
Log of Revenue Threshold	-0.022*** (0.005)
Log of Nexus Threshold	0.000 (0.007)
Log of Reallocation Percentage	1.000*** (0.010)
Constant	6.482*** (0.048)
Observations	192
R-squared	0.988

From Table 11.4, we can conclude that all factors except the nexus threshold are significantly determining additional tax revenue for pillar one. Profit residual and revenue threshold have negative elasticities to the additional tax revenue. If residual profit threshold increases by 1%, then the additional tax revenue will decrease almost 1%, The elasticities is smaller for revenue threshold. However, perfect elasticity is witnessed in the reallocation percentage, meaning if the reallocation percentage increases by 1%, additional tax revenue will increase by 1%.

Apart from the additional tax revenue effect above, other negative impacts that may arise from the proposal also need to be considered. The one that maybe intriguing is who will bear the burden economically. Large MNEs of course can shift this additional tax burden to the consumer or even their employee. MNEs can increase the price of their products to cover the additional tax and remain to shift their profit to jurisdictions with lower tax rates. Especially if the demand of their products is inelastic. The consumer will not alter their consumption even though the price increases. The tax burden distribution is determined by the elasticity of demand and supply as follows.

$$\frac{\epsilon_s}{\epsilon_s - \epsilon_d} + \frac{-\epsilon_d}{\epsilon_s - \epsilon_d} = 1$$

The $\frac{\epsilon_s}{\epsilon_s - \epsilon_d}$ is the share of tax borne by consumers and $\frac{-\epsilon_d}{\epsilon_s - \epsilon_d}$ is the share of the tax borne by producers. For example, according to 2020 London Business School online survey (as cited in the Consultancy. uk., 2020), the price elasticity of Netflix is inelastic, i.e. -0.13. If the price elasticity of supply, for instance, is 0.5, then consumers will bear 80% of the additional tax through a price increase. Since the demand is inelastic, a price increase will not affect demand too much, so Netflix in this case can share most of their tax burden to consumers.

The other impacts of pillar one and two proposals might be estimated using simplified version of the dynamic stochastic general equilibrium (DSGE). From the simplified DSGE model (Mankiw, 2018), dynamic aggregate demand curve equation can be derived as follows.

$$Y_t = \bar{Y}_t - \frac{\alpha\theta_\pi}{1 + \alpha\theta_Y} (\pi_t - \pi_t^*) + \frac{1}{1 + \alpha\theta_Y} \varepsilon_t$$

Where Y_t is total output of goods and services. \bar{Y}_t is the natural level of output. Parameter α indicates how sensitive demand is to change in real interest rates. θ_π denotes inflation variability and θ_Y

denotes output volatility. π_t is inflation in period t where π_t^* is target inflation. ε_t is demand shock. The dynamic aggregate supply curve is as follows.

$$\pi_t = \pi_{t-1} + \varphi (Y_t - \bar{Y}_t) + v_t$$

Where φ tells about the response of inflation to the deviation of output from its natural level and v_t is random supply shock. The introduction of pillar one and pillar two can be considered as fiscal policy, where the government gets additional revenue to improve government purchases. However, this additional revenue is not obtained from increasing taxes, but rather from maximizing tax potential lost from tax avoidance. Hence it is not considered a contractionary fiscal policy. This expansionary fiscal policy can raise demand for goods and services, raises ε_t , and shifts dynamic aggregate demand (DAD) curve to the right. The rightward shifts of DAD curve will increase output (Y_t) and inflation π_t in the short run. Dynamic aggregate supply (DAS) curve shifts up each period since the rise in inflation increases the expected inflation in the following period. Central bank responds the increase in output and inflation by increasing the nominal and real interest rates, which partly offsetting the expansionary effects of the demand shock. To sum up, based on the simplified DSGE model, this pillar one and pillar two policy shock will increase output or GDP and inflation in the short run. Since the inflation and output rises, the central bank increases nominal and real interest rates, which will decrease investment and partly offset the effects of such policy. Then, economy will move gradually to the natural level of output with higher inflation.

C. Conclusion

Amidst the turmoil of the COVID-19 pandemic engulfing countries, ensuring sufficient funds for handling COVID-19 is necessary. Indonesia has prepared a budget of USD 47 billion to respond to this situation. The need for large funds narrows Indonesia's budget so that the total budget deficit to GDP increases beyond the maximum

threshold. Indonesia is also compelled to increase its debt so the ratio climb to 39.84% in 2021. Such atrocious conditions signify that Indonesia must find additional revenue to restore the post-pandemic situation.

The implementation of pillar one and pillar two proposals is expected to provide additional tax revenue to the jurisdictions. Based on the OECD (2020c) studies, the estimated additional revenue effect of pillar one (with the 30% reallocation) is 0.15% of GDP. Analyzed together with the forecasting from ARIMA model, this number can generate IDR 4–5 trillion, which can be used to finance around 5% of the health-related cost for the COVID-19 response. While the effect is larger for pillar two, this additional tax revenue may cover around 22%–24% of COVID-19 related cost if the proposal is in place.

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Chapter 12

Green Bond in Indonesia: The Challenges and Opportunities

Rezza Frisma Prisandy & Wahyu Widyaningrum

A. Sustainable Financing

Effects caused by the climate crisis have been worsening over time. Increasing areas affected by drought, changes in precipitation patterns, more intense tropical cyclones, and rising sea levels are among the projected phenomenon in mid 21st century (IPCC, 2021). Climate change also poses a climate-related risk (physical and transition risk) that affects multi-dimension aspects: socio-cultural, humanity, and economy (BIS, 2021). To tackle the effect of the climate crisis, signatories countries under the Paris Agreement in 2015 committed to reducing emissions as soon as possible and doing their best to limit global warming below 1.5°C or 2°C (Figueres et al., 2018).

A large amount of financing is needed to mitigate and adapt to the climate crisis. For mitigation, the estimation ranges from USD200

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billion to USD1000 billion in 2030; for adaptation, additional funding ranging from USD 140 billion to USD 300 billion annually in 2030 only for developing countries is needed (UNFCCC, 2008; UN, 2021). These extensive funds cannot come only from the government, especially in recent years when the COVID-19 pandemic has compounded economic activity, causing a freefall in government revenue and a surge in government expenditure. Additional resources are needed, not only from the government but also from the private sector (including banking, capital market, or non-banking financial industry). It may also be required to get funding from the global financial market on a larger scale. In this way, the need to create an investment product that attracts the private sector to involve in fighting the climate crisis is an inevitable thing.

Green bonds are one of the funding resources to address the climate crisis. ICMA (2021) defines a green bond as “any type of bond instrument where the proceeds or an equivalent amount will be exclusively applied to finance or re-finance, in part or in full, new and/or existing eligible Green Projects and which are aligned with Green Bond Principles”. These bonds work in helping to mitigate and adapt the climate change through its usage, that is, ‘the proceeds will be exclusively used to finance or re-finance, in part or in full, new and/or existing eligible green projects’ (ICMA, 2017). The issuers are required to disclose detailed information to the investors that the use of proceeds is for an environmental project to be able to label their products as green bonds. Green bonds have similar features to regular bonds; however, the “green” label comes in the term indicates that the issuer pledge that the use of proceeds concordances with environmental-friendly and fulfils the environmental sustainability objectives (ICMA, 2017). This labeling manner was often used in the past, such as railroad bonds (used for railroad construction), highway bonds (used for highway construction), and war bonds (used to finance the military needs during wartime). All of which are identified as a kind of thematic bond (Wiśniewski & Zieliński, 2019).

Green bonds attract a broad range of investors because of their key features. In addition to the 'green' label, which is closely related to promoting the action to fight climate change, it has a due-diligent process to ensure the issuer of the bonds frequently monitors the environmental-friendly or green project (Reichelt, 2010). This feature is significant for investors pursuing specific environmental strategies or incorporating actions to combat climate change effects. In addition, to comply with the standard in the initial phase, it is also frequently monitored, which facilitates tracking the proceeds used in the environmental project as pledged. Apart from due diligence, other features of green bonds are reputation, transparency, and disclosure (Agliardi & Agliardi, 2019). These features emphasize the integrity of the green bond market, providing more assurance to the market players.

This chapter aims to address issues on the green bond market in Indonesia, including the discussion on its development, challenges, and opportunities, benchmarking to the other countries, and proposing policy and action recommendations to the financial regulator, private sector, and government.

1. Global Green Bonds Development

The European Union has focused on green financing (especially green bonds) for more than ten years. Norway, Sweden, the United Kingdom, France, and Germany became the early movers (CBI, 2018b). European Investment Bank issued the first green bond in 2007 under Climate Awareness Bond (CBI, 2018a). The World Bank also issued a green bond in November 2008, which was earmarked to address the climate crisis, creating the blueprint for the green bond market, and piloting a collaboration model to bridge stakeholders involved (investors, banks, development agencies, and scientists) (World Bank, 2019).

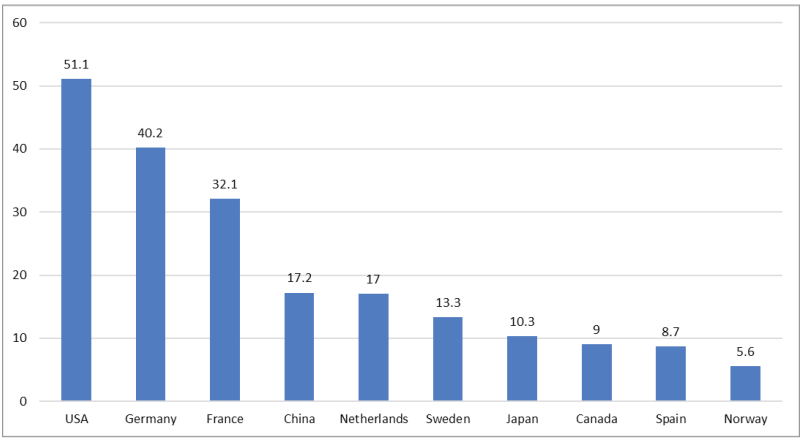
Since its first issuance, green bonds have gained interest from issuers and investors as climate change awareness increases, causing the growth of the green bonds market. Annual green bond volume has increased from USD 807 million in 2007 to USD 258 billion in 2019,

as shown in Figure 12.2. Regarding the bond issuers, various types of issuers have raised the financing using green bonds, which also come in various categories, such as corporate and municipal bonds (Weber & Saravade, 2019). Table 12.1 shows the difference between green bond issuers in the private and public sectors. Meanwhile, the US records the highest amount (USD 51.1 billion) for green bond issuance in 2020. European countries dominate the top 10 countries (Germany, France, Netherlands, Sweden, Spain, and Norway). Other countries that occupy the top 10 are China, Japan, and Canada (Figure 12.1).

Table 12.1 Green Bonds Issuers

Issuers from Private Sector	Issuers from Public Sector
Institutional issuers (private pension funds, insurance companies, etc.)	State-owned or public sector banks
Corporations or multinational companies	Municipalities and state-owned utilities
Commercial and private sector banks	Bilateral trade agencies and development
Private universities	State universities and education boards
Private utility companies	Other state-owned enterprises
Private sector financial services	Multilateral development banks
Private power and renewable energy producers	State-owned financial services and certain institutional issuers (public pension funds, etc.)

Source: Weber & Saravade (2019)

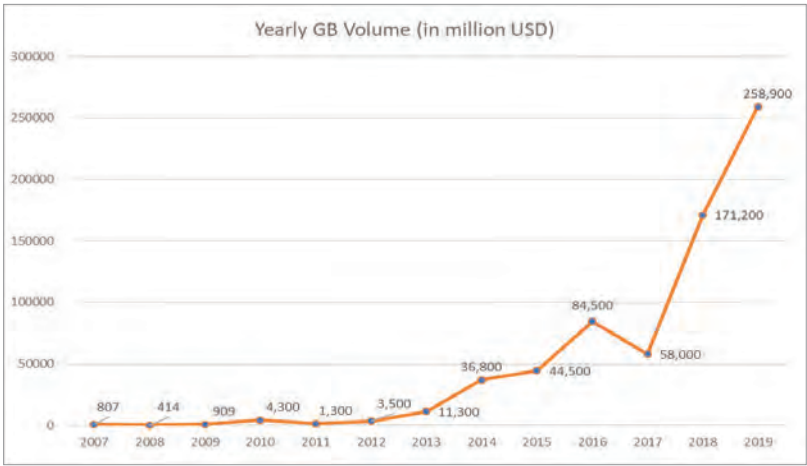


Source: Jones (2021)

Figure 12.1 Annual Green bonds issuance 2020 by country (in billion USD)

Nonetheless, global green bond market shares are relatively low compared to other bonds. It accounts for about 0.8% of the total outstanding bond market (Torvanger et al., 2021). Several factors hinder green bond issuance. Green bonds have a relatively higher price and offer a lower yield to investors (Agliardi & Agliardi, 2019). Although the green bond investors consider the long-term impact of investing in green bonds as a contribution to saving the environment, they also consider the yield they projected to get to determine the investment decision.

In addition to high prices and low yield, green bonds are often perceived as high risk. This perception is not only limited to green bonds but also other climate-themed investments, mainly because of the lack of financial track record and technological risk in building the project for which the procedure is used.



Source: CBI (2020)

Figure 12.2 Annual green bonds volume (in million USD).

2. Green Bonds/Green Sukuk Development in Indonesia

Indonesia is one of the vulnerable countries when it comes to climate change. It ranks 110 and 106 out of 182 countries for vulnerability and

readiness, respectively (countries higher in rank are less-vulnerable and more ready to face climate change) (ND-GAIN, 2019). Some cities are reported to face flooding and sinking. For example, Jakarta is expected to be submerged by 2050, Pekalongan city in Central Java is expected to be 90% covered by water by 2035, and other 100 regions are predicted to be at risk of sinking by 2050 (Steel, 2020; Syam & Okura, 2021; Meidinata, 2021).

The after effect of the climate crisis is projected to be costly. Climate change's total cost in 2050 is estimated at IDR 132 trillion or 1.4% of Indonesia's GDP (Hecht, 2016). This amount comes only from three areas: agriculture, health, and sea level rise. The country also needs to afford the cost of climate change mitigation and adaptation. The required amount to tackle the climate change impact is estimated to reach USD 247.2 billion annually (Ministry of Finance, 2021). With its current GDP, which is expected to reach USD 1,150 billion in 2021, it is challenging work to finance the climate crisis-related needs. The national budget is insufficient; finding other sources is crucial and inevitable. Green bonds/green sukuk are one of the funding resources to address the climate crisis in Indonesia through the capital market channel.

In terms of issuance, most of the products issued by the government are green sukuk. Basically, green sukuk is similar to a green bond, as sukuk and bonds have the same process and tradability patterns; for example, the issuance of both instruments needs to determine a coupon, maturity, and issuance price. However, there are slight differences between sukuk and bonds. Sukuk, which comply with sharia law, are equity- or asset-based instrument, while bonds are structured based on debt. Sukuk holders take partial ownership of the underlying assets, allowing the holders to receive a share of the profit generated by the assets. Meanwhile, bondholders act as a lender, allowing regular interest payments from the issuer—the loan recipient.

Indonesia tapped into green bond/green sukuk issuance in 2018. Since then, the government and corporates have issued several green bonds/green sukuk, and the amount allocated shows steady growth.

Up to December 31, 2020, cumulative issuance of green bond/green sukuk has reached USD 5 billion (Table 12.2), dominating green bonds issuance by amount among ASEAN countries (CBI, 2021a).

Table 12.2 Green bonds/green sukuk issuances in Indonesia (2017–2020)

Issuer name	Amount issued	Issue date	Use of proceeds
Republic of Indonesia	IDR5.4tn (USD383.7m)	Dec-20	Energy, Buildings, Transport, Water, Waste, Land Use
Star Energy Geothermal (Dajarat II) Ltd	IDR4.65tn (USD320m)	Oct-20	Energy
Star Energy Geothermal (Dajarat II) Ltd	IDR11.48tn (USD790m)	Oct-20	Energy
Republic of Indonesia	IDR10.9tn (USD750m)	Jun-20	Energy, Waste, Water
Republic of Indonesia	IDR10.9tn (USD750m)	Feb-19	Energy, Waste, Water
PT Sarana Multi Infrastruktur	IDR500m (USD50m)	July-18	Energy, Transport, Waste, Water, Land Use
Star Energy Geothermal (Wayang Windu) Ltd	IDR8.43tn (USD580m)	April-18	Energy
Republic of Indonesia	IDR18.16tn (USD1.25bn)	Mar-18	Energy, Buildings, Transport, Waste, Land Use
TLFF I Pte Ltd	IDR1.38tn (USD95m)	Feb-18	Land use
Total	USD5bn		

Source: CBI (2021a)

a. Green Sukuk Issuance by the Government

Prior to the first government green sukuk issuance in 2018, the government formulated The Republic of Indonesia Green Bond and Green Sukuk Framework. The formulation of this framework was aimed to provide a higher trust from the investor to subscribe to the green sukuk. This framework describes the introduction of a system used to review and approve a project to be listed as eligible green projects. Under this system, preliminary identification is made by the budget tagging process, which is earmarking the budget for a proposed green project before discussing it with ministries responsible for the processes. This framework excludes some projects from the eligible green project label: new fossil fuel-based electric power generation capacity, large-scale hydro plants, and nuclear and nuclear-related assets.

In March 2018, the government of Indonesia issued its first global green sukuk, which amounted to USD 1.25 billion (Ministry of Finance, 2020). Following this issuance, the government issued other green sukuk, which gained positive responses, such as the green sukuk

issued in February 2019 was oversubscribed by 3.8 times, and issuance in June 2020 was oversubscribed by 7.37 (Ministry of Finance, 2021). The latter notably signaled a positive response toward Indonesian green sukuk issuance because it occurred amidst the COVID-19 pandemic and slowing global economic activity.

Indonesia was the first issuer of global green sukuk in 2018 (CBI, 2021a). Indonesia is also the most prominent green sukuk issuer globally, as the Indonesian government issued 54% of the world's green sukuk (Azhgaliyeva, 2021). The government's cumulative green sukuk issuance value until 2020 reached USD 2.24 billion. However, most were issued as global green sukuk and purchased by international investors. Only 15% of this amount was issued as retail green sukuk. This low share of retail green sukuk poses some problems. As domestic markets have limited access to purchase the "green product", investors have low awareness of these green products, hindering the development of the green bonds market.

b. Issuance by Corporates

Indonesian corporates started to issue green bonds in 2018. Until December 2020, CBI (2021a) recorded five green bond issuance by corporates, with the cumulative amount issued reaching USD 1.84 billion. However, among these issuances, only the issuance by PT Sarana Multi Infrastruktur (Persero) (PT SMI) was sold to the domestic market. PT SMI, a state-owned enterprise under the Ministry of Finance of the Republic of Indonesia, issued USD 50 million of green bonds on July 9, 2018, which its proceeds are used for eligible green projects with the criteria referring to Green Bonds Principle (GBP). In particular, the proceeds were allocated for clean transportation and sustainable water project. In addition to following eligibility criteria in the green bond framework, PT SMI also evaluates the financial viability and assesses the environmental and social risk (World Bank, 2018).

Indonesian corporate's green bond issuances are primarily issued in the global market. Like global green sukuk issued by the

government, domination of global green bonds can hamper domestic green bond markets development, resulting in low issuance of green bonds for domestic markets. Further policies are required to attract the corporation to issue in domestic markets, as well as to increase the local investors' awareness of the green product.

3. Green Bond in Indonesia: The Challenges and Opportunities

a. Challenges

Although Indonesia leads green bonds issuance size (amount) in the ASEAN market, the number of issuers and issuance is relatively small. Between 2017 and 2020, 4 issuers from 3 categories of issuers have launched green bonds: government (Ministry of Finance), financial corporate (PT. SMI), and non-financial corporate (Star Energy Geothermal and TLFF) (CBI, 2021a). These four issuers made nine issuances in total. Other countries saw a more significant number of issuers and deals of green bonds. In Malaysia, 13 issuers from various issuer categories issued 14 green bonds. The Philippines also recorded 14 green bond issuances by eight issuers, making both countries top the green bond issuance number in ASEAN. These numbers indicate that even though Indonesia dominated the size of green bond issuance, the small number of the issuers shows that there is reluctance from potential issuers to issue green bonds.

Some potential reasons explain the slow growth of the number of green bonds issuer. CBI (2019b) identified six obstacles that impede the growth of the green bond in Indonesia:

- a) Limited availability for currency hedging accompanying the foreign investors, as it is costly and uneasy to manage the foreign exchange exposure under the current requirement in Indonesia.
- b) Low liquidity, particularly in the secondary markets, hinders investors' attempts toward price discovery and eventually creates difficulties in pricing for new bonds.

- c) Additional cost incurred specifically for issuing green bonds as the issuers need to confirm the alignment of their green bond with green bonds principles. It includes, for example, the cost of obtaining consultant review, verification, certification, and ratings from qualified third parties. As the issuers must bear this cost, it impedes issuers with a small transaction (less than USD 300 million).
- d) Low international credit ratings, making it less attractive for potential investors to purchase the green bonds issued.
- e) Perceived risks of green project underlying the bonds, e.g., low profitability and cash flows, and the lack of track record as the number of previous issuers was limited.
- f) Lack of awareness and knowledge of green bonds among potential issuers and investors.

b. Opportunities

One of the major challenges to increasing the green bond supply is the lack of green assets and project identification or definitions (World Bank, 2020). The lack of identification of green asset and project financing n potentially increase the company's greenwashing action. Those green classifications are generally called "Green Taxonomy". International Capital Market Association (ICMA) defines the green taxonomy as a "*classification system for identifying activities or investments that will move a country toward meeting specific targets related to priority environmental objectives*".

Indonesia published the Indonesian Green Taxonomy 1.0 (Taksonomi Hijau Indonesia/THI 1.0) in January 2022. The green taxonomy has a purpose as guidance for financial players and the stakeholders to identify which investment or sector can be labeled as "green" in their jurisdiction (World Bank, 2020). THI 1.0 is structured based on Indonesia Standard Industrial Classification (KBLI) and does not focus only on sub-sector/group/business activities categorized as green, but also includes sectors/groups/business activities yet to be classified into the green category. There are 2,733 sectors and sub-

sectors that have been categorized. For classification purposes, the criteria are divided into three categories: green (do no significant harm, apply minimum safeguard, provide a positive impact on the environment, and align with the environmental objective of the taxonomy), yellow (do no significant harm), and red (harmful activities). The publication of THI 1.0 is one of the opportunities to accelerate the development of green financing in Indonesia, including green bonds. Those classifications can make the green financing definition easily established.

Besides the publication of THI 1.0, the other determinant of green bond development opportunities is the rising of capital market investors in Indonesia. The number of retail investors in December 2021 reached more than 7.4 million or increased by more than 92% compared to the previous year. Indonesia Stock Exchange predicts that the number of investors will reach more than 10 million at the end of 2022. With the increase of capital market investors, the room for the green bond market is still open widely.

4. Lesson Learned from Developed Countries

The number of issuers and the issuance amount of green bonds have been proliferating since the first issuance in 2007. Until Q3 2021, the global issuance of green bonds reached USD 354.2 billion (ytd). Green bond issuance continued to grow, even in the COVID-19 phase (2020 and 2021), and will increase in upcoming years. Climate Bond Initiatives predicts that globally, the annual green bond issuance will reach USD 1,000 trillion by 2023 (Figure 12.3).



Source: CBI (2021b)

Figure 12.3 Green Bond Issuance Forecast 2023

Sweden and Norway are the early movers in the green bond market development with faster market growth than most countries. Torvanger et al. (2021) studied that there are six green bond success factors in both countries, which are described as follows:

- Frontrunners and leadership: the financial industry in Sweden and Norway is committed to focusing on sustainable investment and business activities, so the player has formed the financial industry itself.
- Economic structure: there are diversified corporation sectors exist in Norway and Sweden
- Financial markets: Norway has a large financial market with diversified products of debt issuance. The investor's high demand for the green market has formed the green perception among market players.
- Sustainability focus of the finance sector: high demand for green products makes the company compete in issuing the green products
- Business culture: with all the support systems, sustainability culture has been integrated into the Sweden and Norway market.

- Role of government: Swedish Government, together with the private sector, has become the frontrunner in issuing the green bond to the market so that the government not only acts as a catalyst but also has the role of being a market player (green bond issuer).

The empirical studies above show that all financial ecosystems (including market players, financial regulators, and government) must simultaneously accelerate green bond development. The balance of demand and supply in the green bond market needs to be created together; the development of green bonds cannot be viewed from a chicken and egg perspective.

5. COVID-19 Pandemic and Climate Change

KPMG (2020), an accounting firm, argued that economists and market players agreed that COVID-19, which has caused crises in various aspects, including the health crisis as well as the economy, is a valuable lesson in our response to climate change in the future. In this report, KPMG viewed that while climate risk continues to grow, we can learn from the impact of COVID-19 about how to develop better crisis prevention and response. This will require organizations and governments to act rapidly to deliver integrated risk, strategy, governance, and reporting on climate risk.

A survey conducted by IPSOS (2020) on 33,000 respondents concluded that 71% of the global public felt that climate change is just as significant an issue in the long term as COVID-19. In its report, IPSOS has identified five practical learnings from COVID-19 for climate change, namely a need to listen to the expert; preventive measures are as important as a mitigated response; society must come together to protect the most vulnerable; cross-sector collaboration is paramount to success, and the public needs clear, tangible communications and direction. On the other side, KPMG (2020) also mentioned that the lack of existing government and organizational mitigation and response planning highlights the need to ensure we learn from this crisis to better manage other systemic risks in the future.

Green Bonds, as one of the investment products in the capital market, can play a significant role in maintaining the company's condition to avoid transition risks that can broadly threaten the company's going concerns and financial instability. When green bonds have dominated the public offering of bonds, the policy changes due to climate change will not threaten the company's going concerns. In the long term, the green project as the green bond underlying will reduce the physical risk (i.e., flooding, hurricane, etc.) that occurs due to climate change since the green project will be used as the basis of the environment-friendly project.

6. Policy and Action Proposal

The financial regulator is one of the important players in green bond development in Indonesia, especially in green bond issuance. The regulation published by the financial regulation can impact the actions taken by the prospective green bond issuers and the green bond market itself. On the other side, the government must act as a catalyst and role model in issuing green bonds in the domestic market. A considerable amount of green bonds issued by the government can significantly impact. Finally, the industry player needs to move synchronically to accelerate the green bond development.

The strategy of implementing incentives and disincentives for financial industry players can be used to accelerate the development of green bonds in Indonesia. One of the incentive strategies is to reduce green bond issuance fees. This incentive strategy is also implemented by the Hong Kong Monetary Authority (HKMA) and the Monetary Authority of Singapore (MAS) through subsidy schemes for green bond issuance (CBI, 2019a). Indonesia FSA has implemented the issuance fee incentive through the Board of Commissioner Decision No 24/KDK.01/2018, mentioning that the imposed fee for the green bond issuance is 25% of standard fees (0.05% of issuance value based on Government Regulation number 11 the year 2014 on Levies by Indonesia Financial Services Authority). This is an excellent move

to support the green bond development and can positively impact lowering the issuance cost for the issuer.

In line with the incentive strategy, the disincentive strategy can also be implemented by imposing higher fees on conventional bond issuance. Of course, the higher fees for conventional cannot be imposed in a one-time increase since these fees addition may give a shocking effect that can influence market sentiment. The higher fees can be imposed at the staging strategy until they meet a maximum targeted level percentage. Incentive and disincentive strategies can potentially urge the issuer to move gradually to green financing since the cost of green bonds will be lower than conventional bonds.

On the other side, financial players have started being aware that climate risk measurement must begin now. The operational transition to green operation cannot be done in a short time, so it must be started gradually; otherwise, the shocking transition will threaten the company's concern. For example, at COP-26 in Glasgow at the end of 2021, more than 40 countries (including Indonesia) committed to coal phasing out by 2030 and for smaller countries to do it by 2040. It shows that the industries which will be greatly affected are not only the coal industry but also all types of industries that use coal in their operations. Apart from coal phasing out, many other aspects have been targeted to help reduce carbon emissions. With the basis of sustainable business activities, companies can easily turn their projects into underlying green bonds in the market. With the help of pro-green regulations and various incentives, it will be easier for companies to issue green bonds.

The existing mindset where green financing is considered risky needs to be re-analyzed because sustainable activities have a high sustainability value compared to conventional activities, which can be very vulnerable to the impact of climate change. The Bank for International Settlement is currently conducting a study to determine the standard for determining the portion of climate risk companies need to set aside to anticipate the impacts of climate change. It shows that companies that do not pay attention to the effects of climate

change and do not transform to green have a higher risk of being negatively affected than companies that have transformed to green.

The government also has a very strategic role in developing green bonds in Indonesia. The government can act as a catalyst for green bonds in Indonesia through various channels. One policy the government can implement to accelerate the development of green bonds is taxation. The pattern of incentives and disincentive strategies can also be applied to tax incentives. In terms of green bond development, there are needs for a catalyst that directly touches issuers and investors to accelerate the green bond issuance. Tax incentives in the form of low taxation for green projects can be a catalyst for both issuers and investors, increasing the portion of green project profitability. In addition to applying low taxes, a fixed tax rate can also be a catalyst. Green projects usually have long-term project characteristics, potentially creating uncertainty in the taxes imposed. Using a fixed tax rate in the long term can provide certainty to investors and green bond issuers. As a result, the issuance of green bonds can be more attractive than conventional bonds.

B. Conclusions

This chapter discussed some of the challenges and opportunities in issuing green bonds as one of the financing resources in Indonesia. As the impact of climate change is more threatening than before, a large amount of financing is needed to fight these effects, far beyond the government's budget capacity in any country. The urge to create an attractive investment product that enables the private sector to tackle the climate crisis is increasing. In this way, green bonds are seen as one of these financial resources.

The world saw an increasing interest in green bonds, as the awareness of the climate crisis's impact has also risen among issuers and investors. CBI (2020) reported that the green bond amount issued globally in 2019 amounted to US\$258 billion, multiplied by the first issuance in 2007. On the other side, the first green bond in Indonesia was issued in 2018. Until 2020, the issuance for the domestic market

and the interest from issuers and investors have been relatively low. Several factors contribute to this common interest: limited availability for currency hedging accompanying the foreign investors, low liquidity, additional cost incurred, low international credit ratings, perceived risks of green project underlying the bond, and lack of awareness and knowledge of green bonds (CBI, 2019b). However, Indonesia also sees opportunities in green bond development, considering the publication of the Indonesian Green Taxonomy in January 2022 and domestic capital market investors' rising.

Other policies are needed to raise awareness about the vital role of the green bond. At the same time, it is significant to create a broader green bond market to accelerate the development of green bond issuance in Indonesia. The financial regulator can implement incentives and disincentives strategies for financial industry players. On the other side, financial players must start being aware of climate risk measurement and change their wrong mindset that green financing is risky. Finally, the government can play a vital role as a catalyst by using fiscal policies such as tax incentives and disincentive policies.

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Chapter 13

International Trade Policy to Improve Indonesia's Economy in a Sustainable Manner

Malik Cahyadin, Abdus Sihab Patoni, & Untari Eka Setiawati

A. International Trade Worldwide

International trade positively impacts the domestic economy and global market competitiveness, such as the availability of consumer products, capital products, and raw materials under a competitive price and a certain level of product quality. Unfortunately, in early 2020 COVID-19 spread worldwide and affected the global economy. It has suppressed the development of the domestic economy of all countries. As a developing country, Indonesia is experiencing significant economic pressures, including fluctuations in international trade. The literature has revealed that the COVID-19 pandemic produced implications for international trade. For example, Hayakawa and Mukunoki (2021) found that the COVID-19 pandemic hurt trade levels in 34 exporting countries and 173 trading partner countries

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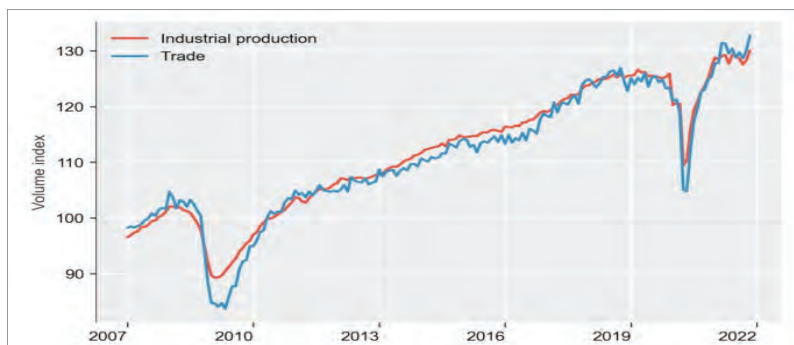
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from January 2019–August 2020. Importing countries have received an insignificant impact due to COVID-19 since July 2020, while exporting countries are still under pressure until August 2020. Moreover, some industries that have benefited from the COVID-19 pandemic consist of medical/drug product providers, while the industries face risks due to COVID-19 covering labor-based industries in exporting countries. The same study also argues that the footwear and transportation (equipment) industry has been significantly and negatively impacted.

The negative impact of COVID-19 on trade has also been revealed by Li and Lin (2021) that about 26 exporting countries suffer from COVID-19. They argued that the United States is most affected by the COVID-19 pandemic compared to the European Union and China. Specifically, the case of a limited sample was carried out by Lu et al. (2021), who studied the impact of the COVID-19 pandemic at the Xinfadi Market, Beijing, and the strategy of maintaining trade in food products due to the policy of restricting movement. They argue that the COVID-19 pandemic significantly impacts trade in food products, so traders in the market must comply with the policy by limiting the number of buyers who come directly to the market. Adherence to the policy of limiting direct purchases has implications for the continuity of trading transactions in the market, so there is no need for a stricter movement restriction policy. Bontempi and Coccia (2021) added that the spread of COVID-19 cannot be separated from international trade activities because it involves mobility patterns, the potential for economic activity, and social interaction. The higher level of international trade activity will stimulate the higher spread of COVID-19.



Note: Seasonally adjusted (2010=100)

Source: OECD (2022)

Figure 13.1 Volume of World Trade and Industrial Production

Figure 13.1 depicts the global trade and industrial production levels in the global market during 2007–2021. The figure demonstrates that before the COVID-19 pandemic, trade and industrial production levels increased over time. However, during the global financial crisis of 2008–2009, both levels decreased significantly following the V-shaped. The V-shaped also happened during the COVID-19 pandemic towards a sharp decline in international trade and production. Thus, the figure was relevant to the previous studies that the COVID-19 pandemic undermines international trade.

In particular, Indonesia also paid more attention to enhancing trade transactions during the COVID-19 pandemic. An empirical study published by Ing and Vadila (2022) found some interesting evidence of COVID-19 and Indonesia's export and import. They revealed that from January 2017–December 2020, (a) COVID-19 delivered a negative impact on export consists of coming down of 4.6% in volume and 5.6% in value, while COVID-19 created decreasing import volume of 7.3% and import value of 11.6%, (b) Difference-in-Difference (DID) estimation exhibited cutting down of 10.7% in export volume and 13.4% in export value, while the slowdown level of import volume is about 16.4% and import value is about 25.9%.

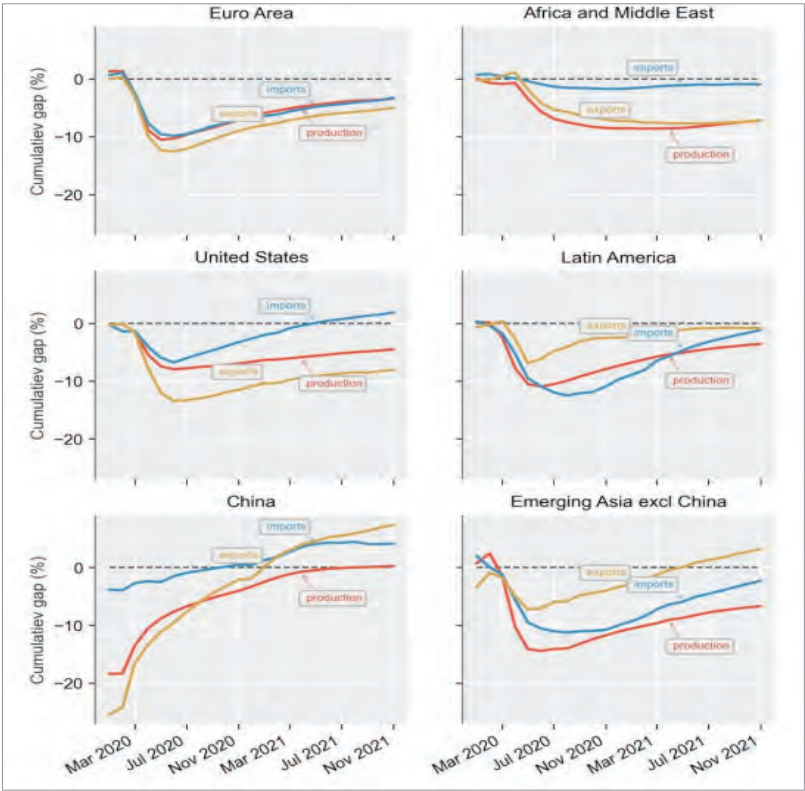
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Moreover, the government of Indonesia has conducted some trade policies to anticipate a negative impact of COVID-19 in early 2020, such as export deregulation, import deregulation, import acceleration for reputable importers, suppressing logistic costs, and enhancing efficiency in logistic distribution using Indonesia National Single Window and National Logistics Ecosystem (Antara, 2020).

Another empirical study published by Nchanji and Lutomia (2021) argued that Sub-Saharan African countries are experiencing pressures for sustainable production and consumption, especially vegetable, fish, and fruit products, due to the COVID-19 pandemic. They provide several strategic steps for policymakers, including shortening the food supply chain, optimizing local raw food materials, and improving institutional quality. The strategy to improve the supply chain was also put forward by Zhang et al. (2021) related to the trade in fish commodities in China. In addition to supply chains, the government is also advised to look for alternative markets and improve the quality of international trade cooperation. One of the factors supporting trade cooperation is the availability of the shipping industry (sea transportation). Previous studies have explained that the sea transportation industry is also affected by the COVID-19 pandemic, especially in export transactions, while a relatively small impact occurs in import transactions (Xu et al., 2021). Weersink et al. (2021) focused on the condition of the supply chain of agricultural food products, suggesting that sales through online media became one of the opportunities to maintain business in the short term. Meanwhile, in the long-term, COVID-19 impacts global marketing and production levels in developing countries, which tend to be uncertain and can affect poverty reduction.

In more detail, compared to Indonesia's trade published by Ing and Vadila (2022), the level of trade and production for some major traders in the global market during 2020–2021 depict negative gaps. It indicates that the major traders face trade deficit risks following Figure 13.2. Interestingly, China has gotten beneficial impacts of trade surplus since early 2021. Next, Emerging Asia, excluding China, can

also enhance the higher export level in the middle of 2021. Thus, the figure denotes that some countries can stimulate the domestic economy towards a recovery process.



Note: Data include intra-regional trade

Source: OECD (2022)

Figure 13.2 Trade and Production Gaps for Major Traders during COVID-19 Pandemic

This chapter describes Indonesia’s strategy of international trade policies to encourage national economic recovery during the COVID-19 pandemic and formulate policy recommendations for

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sustainable development. The objectives are broken down into several specific goals: analyze Indonesia's international trade performance during the COVID-19 pandemic, evaluate the strategic policies of Indonesia's international trade to support the national economic recovery, reveal the largest export and import contributor commodities during the COVID-19 pandemic, especially in the case of coffee commodity, and formulate Indonesia's international trade policies.

Furthermore, this chapter contributes to several aspects. The first aspect is Indonesia's international trade policy which emphasizes the efficiency of Indonesia's international trade bureaucracy, both at the regional level of origin of goods, export-import document processing, and international ports/airports. In this case, international trade policies can be driven by two international business strategies: (1) the Global Supply Chain (GSC), which aims to be export-oriented and globally competitive in medium- and large-scale industries, and (2) Import Substitution Industrialization (ISI), which is focused on Small and Medium Enterprises (SMEs) to suppress the dependency level of imports. The second aspect is the institutional strengthening of fiscal and non-fiscal facilitation of export-import transactions to industries in GSC and ISI strategies.

B. Indonesia's International Trade Performance during the COVID-19 Pandemic

International trade is one aspect that is greatly affected by the pandemic of COVID-19. Being Southeast Asia's largest economy, Indonesia also had a dramatic drop in trade. As Ing and Vadila (2022) estimated, in 2020, Indonesia's exports and imports will decrease by 11.3% and 6.6%, respectively. Moreover, since early 2018, Indonesia's exports have declined faster than its imports, even before the outbreak. That means the pandemic has worsened the problems.

Surprisingly, the Ministry of Trade of Indonesia (2021) reported that from January–June 2021, Indonesia benefited from a trade surplus due to export growth of 34.78%, while import growth was 28.36%. The trade surplus comes from trade transactions with the United

States, the Philippines, and India, while the trade deficit occurs with trading partners such as China, Australia, and Singapore. During the same period, the export structure was contributed by four primary sectors, with each growth rate being oil and gas (48.04%), mining (41.21%), industry (33.45%), and agriculture (14.05%). Furthermore, some commodities that contribute significantly to export include vegetable-animal fats and oils, mineral fuels, iron and steel, footwear, and rubber and rubber products.

On December 15, 2021, the Central Bureau of Statistics (BPS) released Indonesia's exports performance through the website that from January–November 2021, the level of exports of processing industry products, agriculture, and mining increased (compared to the same period in 2020) by 35.42%, 4.03%, and 94.28%, respectively. The largest export destinations with a total contribution of 44.61% consist of China, the United States, and Japan.

Moreover, the Indonesian Ministry of Trade (2021) has also noted that during the period January–June 2021, the import transaction was contributed by raw material commodities of 75.88%, while imports of consumer products and imports of capital products increased by 22.55% and 19.68%, respectively. The net imported commodities include mechanical machinery and equipment, electrical machinery and equipment, plastics and plastic goods, organic chemicals, and cereals in more detail.

Besides, BPS (2021) has reported Indonesia's imports from January to November 2021. It stated that in November, the increase in imports of non-oil and gas was the largest compared to October 2021, consisting of machinery/electrical equipment and parts by 25.61%, while a significant decrease occurred in cereals, reaching 26.78%. Furthermore, by category of use of products, the value of imports increased in consumption products by 36.73%, raw/auxiliary materials by 41.65%, and capital products by 19.92%. In the same period, Indonesia's imports came from three countries, including China (32.42%), Japan (8.69%), and Thailand (5.37%).

Historically, Indonesia's international trade (net export) fluctuated with a downward trend during the COVID-19 pandemic. During the COVID-19 pandemic, trade pressure was significant, as seen by the negative trend of the growth value of traded commodities. The components of international trade activities consist of export and import transactions. Table 13.1 explains the export transaction by commodity group during 2018–2020.

Table 13.1 illustrates that biofuels, polishing materials, and related materials contribute significantly to the national export structure. However, this contribution level decreased substantially during the COVID-19 pandemic period. For example, in 2018 and 2020, the contribution rates were 23.21% and 15.63%, respectively. It is also confirmed through its growth rate, which decreases significantly by -25.22% in 2020.

Table 13.1 Indonesia's Export by Group of Commodities during 2018–2020 (%)

Group of Commodities	Share			Growth	
	2018	2019	2020	2019	2020
0. Food and live animals	7,28	7,89	8,93	0,92	10,13
1. Drinks and tobacco	0,74	0,79	0,76	-0,43	-6,64
2. Raw material, not for eating	9,79	8,88	8,60	-15,50	-5,78
3. Biofuels, polishing materials, and related materials	23,21	20,34	15,63	-18,37	-25,22
4. Fats, animal, and vegetable oils	10,74	10,01	12,08	-13,19	17,46
5. Chemicals materials	7,91	7,80	7,76	-8,14	-3,21
6. Factory-made product by materials	14,63	15,75	17,52	0,27	8,26
7. Machinery and transport equipment	12,56	13,86	13,12	2,78	-7,86
8. Various factory-made products	11,98	12,51	12,14	-2,68	-5,62
9. Items not specified	1,16	2,17	3,47	74,42	56,07
Total	100,00	100,00	100,00	-6,85	-2,68

Source: Central Bureau of Statistics (processed)

A positive signal comes from the category of factory-made commodities contributing to Indonesia's export structure with an increasing trend before and during the COVID-19 pandemic. For example, in 2018 and 2020, the contribution of this group was 14.63% and 17.52%, respectively. This condition is also supported by a significant increase in export growth of this group of 8.26% in 2020.

Indonesia's imports by commodity group are described in Table 13.2 before and during the COVID-19 pandemic. Table 13.2 shows that the category of machinery and transportation equipment commodities contributes significantly to an increasing trend. For example, in 2018 and 2020, the contribution rates of this group were 31.73% and 33.02%, respectively. However, the growth of this group decreased significantly during the COVID-19 pandemic, which was 16.35%. Other commodities contributing relatively significantly include pelican fuel, polishing materials, and other materials. Besides, the commodity of the manufactured industry has a fluctuating import contribution level. Interestingly, in 2021 the import level demonstrates two conditions: the share of each commodity is similar to that in 2020, and the level of growth is positive and higher than in previous years. It indicates that in 2021 Indonesia will increase import levels to stimulate the domestic economy.

Table 13.2 Indonesia's Imports by Group of Commodities during 2018–2021 (%)

Group of Commodities	Share				Growth		
	2018	2019	2020	2021	2019	2020	2021
0. Food and live animals	8,70	9,05	10,91	10,91	-5,67	-0,33	26,81
1. Drinks and tobacco	0,50	0,48	0,54	0,54	-13,14	-7,30	12,46
2. Raw material, not for eating	5,27	5,29	5,16	5,16	-8,91	-19,44	54,69
3. Biofuels, polishing materials, and related materials	16,73	13,71	11,15	11,15	-25,66	-32,79	82,77
4. Fats, animal, and vegetable oils	0,09	0,13	0,14	0,14	25,66	-11,98	56,62
5. Chemicals materials	14,14	14,10	15,18	15,18	-9,52	-10,99	51,80

Group of Commodities	Share				Growth		
	2018	2019	2020	2021	2019	2020	2021
6. Factory-made product by materials	16,41	17,51	16,08	16,08	-3,14	-24,10	43,51
7. Machinery and transport equipment	31,73	32,63	33,02	33,02	-6,69	-16,35	21,94
8. Various factory-made products	5,28	6,08	6,49	6,49	4,41	-11,71	12,57
9. Items not specified	1,13	1,03	1,34	1,34	-16,95	7,45	40,99
Total	100,00	100,00	100,00	100,00	-9,24	-17,34	38,58

Source: Central Bureau of Statistics (processed)

The Indonesian Ministry of Trade (2021) has reported the structure of Indonesia's exports during the national economic recovery, January–June 2021, depicted in Figure 13.3. During this period, the industrial sector dominated the export structure, reaching 78.80%, while the agricultural sector faced the lowest export contribution, only 1.90%. Meanwhile, the oil and gas sector was the most significant export growth, at 48.04% in the same period; on the contrary, the lowest export growth was the agricultural sector at 14.05%.

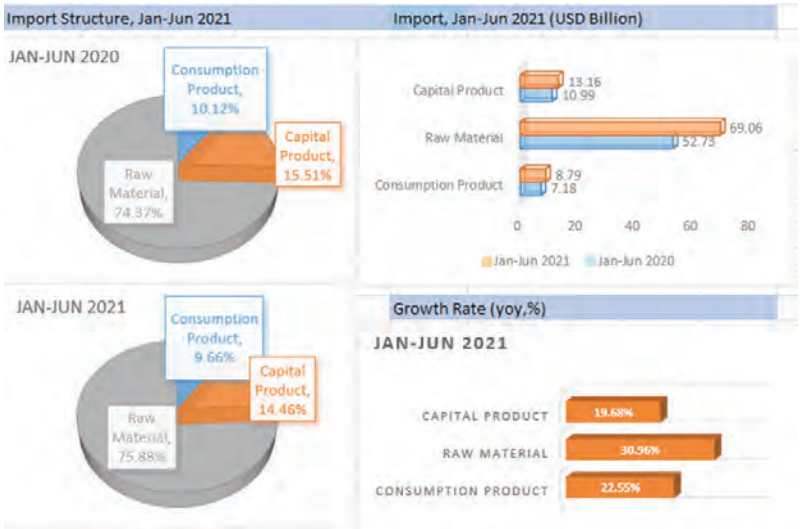


Source: Ministry of Trade (2021)

Figure 13.3 Indonesia' Export Structure during January–June 2021

Furthermore, the Indonesian Ministry of Trade (2021) publishes the structure of Indonesia's imports from January to June 2021, as shown in Figure 13.4. According to Figure 13.4, the import structure is dominated by raw/auxiliary materials at around 75.88% (January–June 2021) or higher than the same period in the previous year, which

was 74.37%. Besides, the raw/auxiliary material commodity has the highest growth rate of 30.96%. In contrast, the lowest contribution was consumer products at 9.66% (January–June 2021) or lower than the previous year's, 10.12%. However, the consumption products commodities have a relatively high import growth rate at 22.55%.



Source: Ministry of Trade (2021)

Figure 13.4 Indonesia’ Import Structure during January–June 2021

To sum up, this chapter noted that COVID-19 had negatively impacted the performance of Indonesia’s international trade, such as the slowdown of export and import levels. As a result, Indonesia’s international trade faces a risk of a deficit trade balance. It means that the export level is less than the import level. In other words, export experienced more pressure than imports. Surprisingly, during the 2021 economic recovery process, Indonesia’s international trade expresses a certain level of surplus trade balance. In particular, some commodities, such as biofuels, and polishing materials, contributed significantly to the export structure during 2018–2020. Conversely, at

the same time, some commodities significantly affect import structure, consisting of machinery and transportation equipment.

C. Indonesia's International Trade Policies

Indonesia's international trade is the bare minimum indicator of how Indonesia intervenes in international markets, as determined by supply and demand in a free market. High tariff rates, voluntary export limitations, production subsidies, trade restrictions, and a variety of non-tariff restrictions, such as standards and conformity assessment processes, are some of those policies. International trade has three different types: unilateral, bilateral, and multilateral.

In early 2020, the government has conducted four trade policies covering export deregulation, import deregulation, import acceleration for reputable importers, suppressing logistic costs, and enhancing efficiency in logistic distribution using Indonesia National Single Window and National Logistics Ecosystem (Antara, 2020). The policy will stimulate the level of export and import following Table 13.1 and 13.2. Moreover, The Ministry of Trade has formulated eight strategic actions to accelerate the level of export: emphasizing specific product and trade partners, deregulating trade policies to stimulate export, stimulating Indonesia National Single Window and National Logistics Ecosystem, and facilitating new exporters, especially small and medium enterprises, stimulating e-commerce, stimulating trade financing under national interest account program, accelerating global market information and promotion, and enhancing product competitiveness under Indonesia Design Development Center (Uly, 2020).

International Trade Administration (2021) recorded that Indonesia, as a member of the Association of Southeast Asian Nations (ASEAN) Free Trade Area, has also expanded its preferential trade agreement with China, India, Japan, Hongkong, Korea, Australia, and New Zealand. Recently, Indonesia and Korea have agreed on a Comprehensive Economic Partnership Agreement. Moreover, Indonesia is now negotiating new free trade agreements (FTAs) with the European

Union (EU), India, Tunisia, and Turkey, as well as updating existing contracts with Japan and Pakistan.

In particular, the Ministry of Trade (2021) has discussed several international trade policies following the dynamics of the COVID-19 pandemic, including (a) virtual trade, (b) increased collaboration between industries, (c) localization of supply and local products, (d) agility (breakthroughs to survive), (e) market diversification, (f) supply chain (using external systems), (g) supply chain risk mitigation, (h) elastic logistics, (i) exporting rebound, and (j) transparent messaging and sustainability.

Indonesia has held a virtual Trade Expo Indonesia – Digital Edition (TEI-DE) 2021 from October 21 to November 4, 2021. The Ministry of Foreign Affairs (2021) stated that TEI-DE is an international Business to Business (B2B) tradeshow to increase export product growth and export market expansion. “Reviving Global Trade” as the theme aims to promote the quality of Indonesian products to the global market through an online exhibition platform, develop business networks, attract investment, and present showcases of Indonesian premium and best products. Along with the exhibition, Trade Expo Indonesia Digital Edition features several parallel activities such as an exhibition, a trade forum, business matching, a business forum, and counseling.

Regarding market diversification, Indonesia has a market-based economy in which the state has a significant role in the economy. President Joko Widodo focused his first term on improving infrastructure, diversifying the economy, and lowering barriers to doing business in Indonesia to propel the country’s economy beyond middle-income status. Enforcing a trade diversification policy refers to diversifying the economy by which a company, government, or other economic entity provides various products or services rather than specializing in just one.

In the supply chain area, the World Trade Organization (2020) reported that despite current global challenges, Indonesia’s macroeconomic policies and solid foundations, such as efforts to mitigate the

adverse effects of the COVID-19 pandemic, including on global supply chains and the free movement of essential goods, have continued to ensure solid growth in the economy. As a result, domestic demand drove economic growth, providing economic resilience, low inflation, and unemployment levels and allowing Indonesia to achieve upper-middle-income status for the first time in 2020.

Furthermore, transparency is essential for maximizing a consumer market that is more concerned with sustainability than ever before, which includes disseminating information and data about the impact of products, services, and businesses. Indeed, the authors argue that transparency is crucial to successful corporate governance. Every organization and country engaging in trade must thoroughly understand the market conditions to enhance trust relationships with any business's key partners and monitor corporate efforts to achieve long-term economic, social, and environmental development. This objective can be accomplished in two ways: governments must notify the World Trade Organization (WTO) and other members regarding particular actions, policies, or laws through frequent notifications, and the WTO performs regular trade policy evaluations on individual countries.

Apart from all trade policies mentioned above following the COVID-19 pandemic, Indonesia also applies other international trade policies. These policies cover both tariff and non-tariff policies. Regarding tariffs policy, International Trade Administration (2021) published that in 2019, Indonesia's average Most Favourable Nations (MFN) applicable tariff rate was 8.7% for agricultural and 8.0% for non-agricultural items. With an average WTO-bound tariff rate of 37.1%, Indonesia has bound 96.3% of its tariff lines in the World Trade Organization (WTO). Furthermore, electronics, milling machines, chemicals, cosmetics, medications, wine and spirits, iron wire and wire nails, and various agricultural items have raised tariff rates in Indonesia. However, most non-agricultural tariffs in Indonesia are capped at 35.5%.

In addition to tariffs, taxes have become one of the regulations that Indonesia has imposed on import-export activity, serving as a tariff barrier in international trade. MOF Regulation 110/2018 issued in 2018 increased “withholding tax” rates on 1,147 imported products, including consumer and luxury goods. This policy’s declared goal was to reduce Indonesia’s current account deficit by lowering imports of certain products. No luxury products are subject to the 200% rate as of March 2021, and the applied luxury tax rates typically vary from 10% to 75%. On the other hand, imported passenger vehicles with engines more than three liters or motorbikes with engines larger than 500 ccs are now subject to a 125% luxury tax. The combined effect of this luxury tax includes a 50% tariff, a 10% VAT, and the restriction of motorcycle traffic on Indonesia’s roadways.

Non-tariff trade policy, including restrictions, requirements, and procedures, is a regulation that aims to protect and support domestic industry. Tariff policy leads to higher government income; conversely, the imposition of non-tariff barriers does not result in higher government income. However, non-tariff policies, which include quantity limits, can influence both the volume and the price of imported commodities.

For the non-tariffs policy, Indonesia has several policies as follows:

1. Import licensing

Under Minister of Trade (MOT) Regulation 70/2015, all importers must obtain an import license between an importer of products for further distribution (API-U) and an importer for their production (API-P). Additionally, importers must receive a business identification number and register a business license from the online single window system. Furthermore, with the declared purpose of decreasing the number of consumer products entering Indonesia, MOT published Regulation 68/2020 in August 2020, mandating import permissions for footwear, electrical gadgets, and bicycles.

2. Import Licensing for Agricultural Products

The Minister of Agriculture (MOA) has released Regulation 2/2020, which exempts imports of horticulture goods from the necessity to present specific quality and safety certificates from countries having a food safety system recognized by MOA. This legislation also extended the validity of horticulture product import licenses for 60 days into the following calendar year. In addition, Indonesia's "Job Creation Omnibus" (Law 11/2020) was adopted on November 2, 2020, amending import license rules in the Food Law, Animal Husbandry Law, Farmer Protection and Empowerment Law, and Horticulture Law. Under the new regulations, importing horticulture, feed, meat, and dairy goods requires a general business license.

3. Import Bans and Restrictions

Indonesia restricts feed corn imports, granted only by the Bureau of Logistics, a state-owned procurement agency. However, certain corn imports for starch production are permitted. Sugar imports are strictly regulated in Indonesia, with seasonal prohibitions and yearly amount limitations based on domestic production and consumption estimates. Additionally, Indonesia forbids importing 152 live aquatic species, including Pacific oysters, per Minister of Marine Affairs and Fisheries Regulation 41/2014. The prohibition is justified by worries about the long-term viability of fisheries and the environment. Indonesia also imposes quantitative restrictions on the importation of wines and alcoholic drinks.

4. Product Testing

In its Regulation 17/2014, the BPOM establishes criteria for heavy metal testing in food, medicines, and cosmetics. The BPOM Regulation 12/2015 gives additional advice on these standards, which are met by a one-year certificate of analysis.

As per the 2019 edition of the World Economic Forum's Global Competitiveness Report, Indonesia is the 50th most competitive country out of 140 countries. Competitiveness is an economy's capacity

to compete effectively and successfully in marketplaces for globally traded products and services, allowing for a growing standard of living over time. Indonesia has a market-based economy in which the state plays an important role, such as setting prices for essential items, including oil, rice, and power. Being the 50th most competitive country means Indonesia has higher international trade productivity. It resulted in more incredible wealth, a higher standard of living, a higher sense of well-being, the ability to offer greater investment returns and potential for economic growth, as well as enhanced economic stability and endurance (Martin, 2016).

D. Export and Import Structure during COVID-19 Pandemic: A Case Study of Coffee

The Indonesian Ministry of Trade (2021) explained that during the period January–June 2021, Indonesia's export transactions increased to several destination countries such as China (21.94%), the United States (34.22%), and Japan (21.31%). In the same period, Indonesia's non-oil and gas exports to Pakistan increased significantly, reaching 68.03% for CPO and its derivatives. In addition, several export commodities also experienced a significant increase, including Metal Ore, Slag, and Ash around 160.89%, Steel, around 92.74%, various Chemical Products, around 71.85%, and Animal/Vegetable Fats and Oils, around 57.55%. Meanwhile, destination countries for export transactions experienced a decrease, such as Singapore (15.66%), due to decreasing gold bullion exports. Furthermore, this section explores Indonesia's international trade in the coffee commodity. Interestingly, Indonesia is one of the major exporters of coffee in the global market.

Coffee is a major agricultural commodity for most countries in the world. Over the past five years, the world's coffee production has increased by 21 million sacks. Over the past five years, there has been an increase in consumption of about 10 million sacks, thought to be linked to the increasing trend of drinking coffee in lieu of alcoholic or fizzy drinks. In all the world's largest coffee consumers, there has been an increase in imports of coffee beans, except in Japan. Over

the past five years, there has been a decline in the world's coffee bean stock by about 10 million sacks. Over the past five years, there has been a decrease in the prices of all types of coffee. Policies related to supply and demand require certification, including sanitary, phytosanitary, and fumigation certification; those must be shown at the port of the destination country. Policies related to price are usually associated with the quality of seeds and the existence of sustainability certificates. Indonesia's coffee bean production is about 600 thousand tons annually, contributing around 7% of global production. Exports of beans, especially green beans or roast, decreased, while exports in powder, instant coffee, and coffee drinks continued to increase, except for instant coffee in 2019, which suddenly declined. Coffee bean stocks in Indonesia have decreased in the last five years. However, coffee imports by Indonesia continue to increase, except in the form of roasted beans which decreased slightly. Over the past five years, coffee bean stocks in Indonesia have continued to decline. The price of Indonesian coffee has reduced, while the price of Indonesian Robusta is constant. The COVID-19 pandemic affects all aspects of food and agriculture, including coffee. Therefore, policies stimulating farmers and coffee growers to increase production and quality are indispensable (Abdoellah, S. & Hartatri, 2021). Thus, the authors argue that coffee will stimulate the level of Indonesia's export, primarily to support the export transaction and the local economy of the Nusa Tenggara Islands.

Data published by the Ministry of Agriculture (2020) on Indonesian coffee exports and imports from 1980–2019 showed a fluctuating pattern. However, export volume tends to be higher than import volume, so the export value of Indonesian coffee is always higher than the import value. Thus, Indonesia's coffee trade balance has always been in surplus. Coffee trade conditions that are surplus make coffee in Indonesia contribute to the country's foreign exchange. Indonesia's coffee trade balance from 1980 to 2019 increased by an average of 6.65% per year. Indonesia's largest coffee trade surplus occurred in 2015 at USD1,166.24 million, or an increase of 17.50%

against the previous year's trade balance, while the lowest coffee trade surplus occurred in 2001 at USD 183.41 million, or decreased growth of 41.78% against the coffee trade in 2000.

Furthermore, Kustiari (2017) revealed that the coffee bean supply chain is controlled by domestic roasters, with roaster branches abroad and exporters with foreign direct investment (FDI) facilities. The study also adds that eight coffee marketing channels consist of (a) farmer – collector – wholesale traders – intermediary trader – exporter – domestic roaster, (b) farmer-farmer group – intermediary trader – exporter – domestic roaster, (c) farmers – farmer groups – domestic roasters, (d) farmers – farmer groups – domestic roasters (with a partnership pattern), (e) farmers – traders – collectors – ground coffee processors, (f) farmers – ground coffee processors, (g) farmers – wholesalers – ground coffee processors, and (h) farmers – wholesalers – exporters. The pattern of trade that delivers beneficial impacts for farmers is a marketing pattern from farmers directly to ground coffee producers. This marketing pattern is the most profitable for farmers because even though farmers have to pay for transportation, the contribution reaches IDR3,250/kg, the largest compared to other trading systems. More serious attention needs to be directed to the context of revitalizing coffee farming, trade liberalization, and globalization. It is crucial to develop production and post-harvest technology, such as applying appropriate technology and harvesting red picks to produce high-quality, wet-processed coffee beans. It will stimulate a relatively high price in the coffee bean market.

Specifically, this section will elaborate on a case study of export transactions in Robusta coffee in Lombok, West Nusa Tenggara. Patoni (2019) revealed the study results using the Policy Analysis Matrix. Despite a decrease in competitiveness, it is well known that Robusta coffee farming with dry and wet processing still has major competitiveness among other coffee types and remains efficient. This competitiveness is indicated by the value of private profits (D) in four policy scenarios. Scenario 1: Current policy conditions. Current policy has been somewhat liberal because there are only two

forms of intervention, which are not too great against Robusta coffee output HS code 0901111000, which is a 5% import tariff and 10% tax value increase. Scenario 2: eliminate import tariff of robusta coffee output HS code 0901111000 by 5%. Scenario 3: elimination of value-added tax and fixed import tariffs. Scenario 4: With the continued liberalization, it is allegedly no more tariffs imported against Robusta coffee output HS code 0901111000, eliminating tax value increase. These scenarios were consecutively amounting to Rp34,913,834/ha, Rp29,958,408/ha, Rp25,002,983/ha, and Rp20,047,558/ha. It is also indicated by the Private Cost Ratio (PCR) values of 0.62 (scenario 1), 0.66 (scenario 2), 0.70 (scenario 3), and 0.74 (scenario 4). However, the result is still efficient, indicated by social benefits (H) and Private Cost Ratio (PCR); it is constant in a row of Rp41,543,439 and PCR 0.58. The gradual reduction in rates and value-added taxes decreased the competitiveness of Robusta coffee farming businesses with wet processing. This reduction is indicated by private profits (D) value in four policy scenarios, consecutively amounting to Rp76,489,936/ha, Rp71,534,510/ha, Rp66,579,086/ha, and Rp61,623,661/ha. This is also shown by the private cost ratio (PCR) values of 0.44 (scenario 1), 0.46 (scenario 2), 0.47 (scenario 3), and 0.49 (scenario 4). Again, the output is still efficient, indicated by social benefits (H) and Private Cost Ratio (PCR); it is constant in a row of IDR39,026,228 and PCR 0.60.

Trade liberalization policy led to a decrease in private acceptance of Robusta coffee farming with dry processing. This decrease is indicated by a negative transfer output (OT) value in four consecutive policy scenarios of Rp6,629,605, negative Rp11,585,031, negative Rp16,540,456, negative Rp21,495,881, and disprotective as indicated by nominal protection coefficient on output (NPCO) consecutively of 0.93 (scenario 1), 0.88 (scenario 2), 0.83 (scenario 3), and 0.78 (scenario 4). Trade liberalization policy led to a decrease in private acceptance of Robusta coffee farming with wet processing, which is indicated by the value of transfer output (OT), which decreased in four policy scenarios in a row of Rp37,463,709 (scenario 1), Rp32,508,282 (scenario 2), Rp27,552,858 (scenario 3), and Rp22,597,433 (scenario

4). Moreover, it is protective, as indicated by the nominal value of Protection Coefficient on Output (NPCO) consecutively of 1.38 (scenario 1), 1.33 (scenario 2), 1.28 (scenario 3), and 1.23 (scenario 4).

Based on the results of the analysis and conclusions obtained to ensure the sustainability of coffee commodities, some suggestions of policy implications can be formulated: (1) The central government is expected not to lower import tariffs by 5% and not remove a 10% VAT on HS 0901111000 code coffee to be effective in protecting coffee farmers with dry processing, and investigating cartel indications at the farmer level; (2) The government needs to provide supporting facilities and infrastructure such as subsidies/assistance of wet processing equipment to farmers before full trade liberalization in the ASEAN region, and improvement of road infrastructure to forest areas in accordance with forest management principles; (3) Local governments need to accelerate organic certification of Robusta coffee produced by farmers on Lombok Island and provide selling on wet processing, as at least farmers use wet processing; (4) Coffee farmers should do wet processing because it provides higher private benefits compared to dry processing; (5) It needs further studies to prove indications of cartels at the level of farmers who use dry processing, and price monopolies by farmers who use wet processing.

E. Indonesia's Trade Policy Strategy

Indonesia's international trade has begun to show its contribution to the national economic recovery process after being depressed during the initial period of the COVID-19 pandemic. Consequently, the government can emphasize several strategic policies to encourage more progressive trade performance, especially export transactions, such as a roadmap of the global supply chain (GSC) and globally competitive industries, a roadmap of import substitution industrialization (ISI) for local resource-based SMEs, reform of the bureaucracy in the international trade sector, and the availability of adequate infrastructure with reasonable and competitive logistics costs.

F. Roadmap of Global Supply Chain

The global supply chain (GSC) is one of the outward-looking strategies for the government to facilitate export-oriented and globally competitive national industries. National industries will be able to take benefit from mastering the international trade chain and global market share. The first step is determining a roadmap of priority industries and commodities that meet the GSC strategy. The roadmap can be proposed by the Ministry of Trade and the Ministry of Industry. In the second stage, the government can facilitate the implementation of the GSC strategy, both the easy international trade bureaucracy, fiscal incentives, and trade diplomacy in the global market. At this stage, the Ministry of Industry, Ministry of Trade, and Ministry of Finance play a significant role.

One issue in GSC's empirical study is a product label following Zhou et al. (2019). They argued that the product label "Made in China" negatively impacts the European Union (EU) economy. Consequently, these countries should negotiate the trade agreement toward free trade agreement (FTA) in the long run. The GSC of China, EU, United States (US), and India was also found by Fan and Liu (2020). They revealed that China faced a low level of manufacturing relocation; the EU, US, and India have become the world's major production relocation; and the US and the EU have benefited from the extractive industry. In particular, China conducts a massive, ambitious, and long-term project of international trade well-known as the Belt and Road Initiative (BRI) (Lee & Shen, 2020). BRI will produce a potential GSC for China and some partners (developed or developing countries) in the global market. Moreover, Chu et al. (2020) noted that GSC's advantages include enhancing competitive advantages, increasing manufacturing flexibility, and reducing costs through a broader selection of suppliers. The literature delivers insights for Indonesia's policymakers to design a strategic international business policy to employ GSC for selected industries to compete with other countries in the global market.

G. Roadmap of Import Substituting Industrialization

Import substituting industrialization (ISI) is an inward-looking strategy for the government to facilitate small and medium enterprises (SMEs) to take advantage of all the potential of local resources and provide products for the domestic market. ISI is also intended to reduce the level of dependence of the national economy on global markets. The more robust, more efficient, and more productive SMEs become the pillars of the national economy and are expected to withstand various shocks to the global economy. SMEs under the ISI strategy are the enterprises directly able to compete in the national market. The government can produce a roadmap for SMEs under the ISI strategy in the first stage. This stage requires synergy between the Ministry of Cooperatives & SMEs, the Ministry of Industry, and the Ministry of Trade. The next stage is the policy of the ISI, which emphasizes the business cluster scheme using several fiscal and non-fiscal incentives. At this stage, several ministries can synergize, including the Ministry of Cooperatives & SMEs, the Ministry of Industry, the Ministry of Trade, and the Ministry of Finance.

Long years ago, import-substituting industrialization (ISI) was estimated by Felix (1989) for Latin America and selected Asia countries. The study reported that some Asia and Latin American countries try to benefit from ISI for craft industries. Furthermore, Mazumdar (1991) revealed that India emphasizes the ISI policy to protect SMEs from the competition of large industries, both domestic and foreign. Interestingly, Waterbury (1999) reported that ISI became an effective economic strategy after World War II and emphasized the protection strategy of domestic industry. The implementation of ISI was also followed by the contribution of the financial system to offer a credit scheme under a competitive interest rate (Brando, 2016). In some developing countries (such as BRIS: Brazil, Russia, India, China, and South Africa) during 1960–2016, ISI contributes significantly to the domestic economy (e.g., to catalyze the industrialization process) and produces more convergent in the short-run (Adewale, 2017). The current literature reported that in the 1950s, ISI was the best trade

strategy to enhance domestic industrialization and economic growth in developing countries (Irwin, 2021). Thus, Indonesia's policymakers should pay more attention to designing and adopting ISI for SMEs.

H. Bureaucratic Reform in International Trade Sector

Indonesia's international trade can be stimulated by the quality of government institutions such as the bureaucracy and law enforcement. For example, in 2013, Indonesia and European Union signed a Voluntary Partnership Agreement on controlling and suppressing illegal logging. Therefore, bureaucratic reform for efficient and transparent one-stop service is the strategic program that urgently needs to be implemented. The program can be synergized by several ministries: the Ministry of Industry, Ministry of Trade, Ministry of Finance, and Ministry of Cooperatives & SMEs.

Previous empirical studies have demonstrated bureaucratic reform will stimulate a higher level of international trade. For example, Mandal and Marjit (2013) argued that corruption under bureaucratic reform may not be correlated with trade liberalization because each country can determine the bureaucratic reform following the condition of the domestic economy and institutional aspects. Moreover, the labor intensity and exportable commodities lead to a significant issue in the corruption condition (bureaucratic reform). The significant contribution of institutions to the bureaucratic reform of dry ports in Brazil has also been expressed by Ng et al. (2013). The current literature emphasizes bureaucratic integration's substantial and positive impact on the local economy (including trade activity) (He et al., 2019). Indeed, the bureaucratic reform can stimulate international trade in Indonesia toward a higher level of global competitive condition.

I. Infrastructure and Logistic Cost

International trade activities can also run smoothly and efficiently if supported by the availability of infrastructure as a tool for inter-

regional and inter-island connectivity in Indonesia. This argument is supported by Indonesia's policies and strategic actions to enhance the level of export and import during the COVID-19 pandemic (Antara, 2020; Uly, 2020). Simply put, the logistics cost can be managed at a reasonable rate under the availability of infrastructure. Furthermore, the quality and equitable infrastructure in the country can trigger a more reasonable and competitive level of logistics costs. Thus, the Ministry of Public Works and Public Housing (PUPR), Ministry of Finance, Ministry of National Development Planning Agency (PPN/Bappenas), and Business Associations can synergize to accelerate infrastructure and reduce logistics costs.

Francois and Manchin (2013) argued that international trade could be determined by well-developed transport and communications infrastructure. Thus, developing countries should pay more attention to the availability and development of infrastructure. The findings have been supported by a large number of countries, which consists of 189 countries (Shepherd, 2017). At local government levels, the significant contribution of infrastructure to international trade has also occurred in 27 Brazilian states and 30 of Brazil's trading partners during 2009–2012 (Bottasso et al., 2018). Furthermore, the current literature links infrastructure, trade openness, and economic growth in Eastern and Southern African countries (Jiya et al., 2020). To sum up, literatures deliver insight that can be referred to by policymakers in many countries, including Indonesia, to determine the suitable infrastructure and logistic cost to perform properly in international trade. Indeed, Indonesia's policymakers can stimulate the quantity and quality of infrastructure to stimulate Indonesia's trade in the global market.

J. Conclusion

This chapter elaborates on Indonesia's trade transactions before and during the COVID-19 pandemic and formulates some policy recommendations. Specifically, this chapter demonstrates Indonesia's coffee commodity produced by farmers (producers) in Eastern Indonesia

Region. In general, data published by BPS show that Indonesia's trade slowed down during the COVID-19 pandemic. It indicates that the level of imports is higher than the level of export. By the end of 2021, the export level of processing industry products, agriculture, and mining increased (compared to the same period in 2020) by 35.42%, 4.03%, and 94.28%, respectively.

Conversely, at the same time, there was a significant increase in imports for non-oil and gas consisting of machinery/electrical equipment and parts by 25.61%. In comparison, a significant decrease occurred in cereals, about 26.78%. The government of Indonesia has anticipated the negative impacts of the COVID-19 pandemic on trade using four policies: export deregulation, import deregulation, import acceleration for reputable importers, suppress logistic costs, and enhancing efficiency in logistic distribution using Indonesia National Single Window and National Logistics Ecosystem (Antara, 2020). Specifically, Indonesia's coffee bean production is about 600 thousand tons annually and contributes around 7% of global production. However, in recent years, coffee bean production has been decreasing. Therefore, the government of Indonesia should pay more attention to increasing coffee bean production. It will increase the production and contribution of Indonesia's coffee to the global market.

This chapter formulates some trade policies to enhance trade performance in the global market. Firstly, Indonesia should employ a global supply chain strategy for big (multi-national) enterprises to increase domestic products' market share and competitiveness worldwide. Secondly, Indonesia can utilize import substitution and industrialization for small and medium enterprises (SMEs). It is expected that SMEs can achieve quality consumption levels in the domestic market. Thirdly, bureaucratic reform provides excellent service that can encourage an efficient international trade transaction. Finally, Indonesia should pay more attention to enhancing inter-island connectivity using infrastructure and a low level of logistic cost.

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Chapter 14

From Bench to Policy: Strengthening Research Translation for a Better Health System in Indonesia

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A. Introduction

The COVID-19 pandemic has impacted health systems worldwide, including in Indonesia. These pandemic waves continue to fluctuate in Indonesia, increasing the health burden and disrupting the health system, resulting in an inevitable increase in health inequity and sustainability. Improving the quality of health services in every health sector throughout Indonesia is becoming increasingly difficult because this pandemic has exacerbated the disruption even in essential health services. As stated in the second round of the WHO “pulse survey”, around 90% of countries reported disruptions to essential health services (WHO, 2021). At the same time, basic health services are the main modal to a robust health system in a country. There are several major causes of instability of the health system, such as

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the shortage of health workers; supply chain problems for medical devices, vaccines, and medicines; obsolete and unequally distributed healthcare facilities; and public distrust of policies made in health services (WHO, 2021; Yunus & Andarini, 2020). Addressing those problems through effective evidence-based policies is vital to restoring and strengthening the health system in Indonesia during and post-pandemic.

Currently, Indonesia mainly focuses on health system solutions and public health activities, which emphasizes six primary responses: preventing local transmission, providing adequate infrastructure and health workforce, delivering effective healthcare services, financing healthcare services, good governing, and measuring other aspects (Mahendradhata et al., 2021). A robust, high-quality research translation is demanded to perform those responses. The first response, preventing local transmission, needs effective communication about the health policy. Credible sources of information are necessary to convey messages and data required to be known by the public. Establishing the COVID-19 task force and delivering live data on COVID through the government's official website has reduced the confusion of data spread in the community (Mahendradhata et al., 2021). The government has also collaborated with the digital industry to increase information coverage to the public and suppress circulating hoaxes (Mahendradhata et al., 2021). However, the communication delivery should be integrated with robust evidence, which the public should readily accept. Evidence-based policies delivered effectively through health research translation can make the public ultimately comply with the government policies implemented to prevent the spread of COVID-19. This effective health research translation is also vital for implementing the other five responses in strengthening the health system during the COVID-19 pandemic. It suggests an urgent need for Indonesia to strengthen its health research translation to improve health outcomes.

Research translation is a complex, interrelated process involving all stakeholders (e.g., government, policymakers, researchers, indus-

tries, and community) that facilitates the transformation of research findings to be implemented to enhance people’s lives (Translational Research Institute, 2022). Health depends on four primary sectors as a backbone: basic science, clinical practice and effective care, disease surveillance, and policymaking (Figure 14.1). In this pandemic, Indonesia’s health research translation backbone has adapted to deal with COVID-19, revealing weak spots in each sector. While some may have been slightly improved, such as health surveillance (Mahendradhata et al., 2021), many others will remain challenges in the post-pandemic recovery. Therefore, in this chapter, we will discuss 1) the current gaps in the challenges of the research translation backbone in Indonesia; 2) how they impact the reliability of the health system in dealing with the pandemic, and 3) how to strengthen each sector to form a better health system with the ultimate goals to aid post-pandemic recovery and mitigate future public health threats (Figure 14.1).



Figure 14.1 Health Research Translation and Health System Resilience

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B. Challenges in Indonesia's Research Translation

To date, challenges in health research translation have never been more complicated. The unpredictable nature of the pandemic demands immediate and adaptive responses from our health system, placing an extra burden on each sector in the health research translation process. Reflecting on the current situation, we identified four main difficulties that pose challenges to health research translation in Indonesia. These difficulties include limited resources, research output orientation, poor data management, and communication gaps between stakeholders.

1. Limited Human Resources

Researchers are the main component in producing good quantity and quality research. However, the number of researchers in Indonesia is still lacking. According to the UNESCO Institute of Statistics (2022), there are only 216 full-time researchers per million inhabitants in Indonesia. Although the number of registered researchers in Indonesia is slightly increasing yearly, it is still less than in other ASEAN countries. Researchers, as a functional group, can provide solutions and improve human beings as well as prosperity in the future (Bartram & Dowling, 2013). However, they face challenges in conducting scientific activities and providing evidence-based decision-making. As in other developing countries, researchers in Indonesia are also facing unique challenges.

First, there is a lack of hard skill training and non-technical skills, such as obtaining research funding, citation knowledge, or networking (Kurniawan, 2017), especially for aspiring researchers. Second, collaboration with international institutions is still rare in Indonesia compared to other developing countries (Kurniawan, 2017). This can occur due to the limitation in the number of visiting researchers to Indonesia, as well as challenges in work culture and the language barrier between collaborators (Seidler et al., 2021). Third, there is a lack of a focused research environment. UNESCO Institute of Statistics (2022) reported that more than three-quarters of the total researchers in Indonesia come from the higher education sector. As

lecturers in higher education institutions, they have the Tri Dharma responsibility—to contribute to teaching, research, and community service—which puts a triple burden on their job (Suradijono et al., 2017). Many are expected to spend more time in teaching or administrative duties, reducing valuable time spent on research, thus affecting their research outputs quality and quantity. In some cases, this may induce dissatisfaction and feeling unsupported, leading to researchers' migration into more research-supporting countries. These suggest that re-schematization to create a better research environment is strongly needed to support researchers in their activities.

2. Limited Research Funding and Infrastructures

Budget allocation is a major factor in research funding. In a country, it is reflected by the ratio of gross domestic expenditure on research and development (GERD) to gross domestic product (GDP). According to the most recent data, in 2018, Indonesia, with only 0.2% GERD in GDP, was still far behind developed countries such as Japan at 3.3%, China at 2.1%, Singapore at 2.0%, and Malaysia at 1% (UNESCO Institute of Statistics, 2022). This data indicated that for three years, from 2016 to 2018, Indonesia's GERD to GDP ratio appeared to be stagnant, without notable improvement. Therefore, it is suggested that an increase in research budget allocation is essential to enhance research output.

Limited funding creates challenges among researchers in many ways. Research equipment procurement might be the foremost challenge among researchers. In many research areas in Indonesia, especially in the STEM and medical fields, advanced laboratory equipment is often required to create high-impact, pioneering basic science studies (Suradijono et al., 2017). Without state-of-the-art equipment, Indonesia will perpetually lag in drug development and nanotechnology. Individual-based grants common in Indonesia seem to focus too much on the lecturers' selection rather than project-based, cluster, or multi-discipline grants that may stimulate collaboration and practical interest (Kurniawan, 2017).

Furthermore, researchers in Indonesia also face complicated financial reporting and disbursement of funds that add extra responsibility to them, on top of unrealistic expectations of time and results. Research funds also often emphasize budget absorption targets rather than the impact or soundness of science (Kurniawan, 2017). This indirectly leads to research in Indonesia being skewed towards “low-budget”, “low-effort”, or simple population or clinical research-which, while also impactful, may not be enough to open new frontiers. Another indirect impact is that researchers are immediately expected to “return” the investment by producing research directly applicable to the public, regardless of the quality of the research.

While new sources of funds are emerging, research funding in Indonesia is still provided mainly by the government, which is still low spent, just 0.25% of its GDP on research and development (CCPHI, 2019). This presents another untapped funding source for the construction of laboratories or the purchase of advanced equipment. Funding sources in universities have begun shifting from internal (e.g., DIKTI) and external (e.g., LPDP and Ministry of Research and Technology) governmental funding to collaborative funding (e.g., research center, laboratories, national, and international collaboration) (Kurniawan, 2017). Foundations, scientific associations, non-governmental organizations (NGOs), and particularly foreign organizations are also increasingly playing important roles. In addition, the contribution of private business is becoming more important and gaining more recognition in the broader range of developing countries. Many new funding sources go directly to individuals and research groups rather than institutions (Gaillard, 2008). Indonesia implemented funding collaboration schemes namely RAPID (Riset Andalan Perguruan Tinggi dan Industry). With government funds of 300–500 million per year, industrial partners must contribute cash funds of at least 10%, and higher education institutions are required to contribute a minimum of 15% of the nominal value of the contract (CCPHI, 2019).

Encouraging multi-cooperation and bud re-allocation for certain research missions could contribute to building better funding and infrastructure. Thus, taking advantage of opportunities by cooperating with third parties (government or industry) must be encouraged. Increasing the public and private sector engagement in health research through national and global collaboration could improve the capacity, accessibility, affordability, and quality of research. Besides that, networks owned by lecturers/researchers have the potential to bring in funding for research.

a. Orientation of Research Outputs

A high-quality, evidence-based health research output is vital in formulating and implementing policies and decision-making in various aspects, including the health system. Unfortunately, much research has a low orientation in research outputs due to limited reporting time and funding (Suradijono et al., 2018). For example, grant funds are often disbursed in April and must be reported in December due to the closing period. This limits the time to conduct quality research. The funding is also insufficient to support high-quality research, which consequently causes researchers to sacrifice the quality of the design and research methods they used, thus making it less possible for their research to be accepted by reputable international journals (Suradijono et al., 2018).

A study of the strength of higher education institutions based on three priority areas of national energy, food, medicine, and health in 2015–2019 based on RPJMN showed that only 904 higher education institutions in Indonesia conducted research by producing 14,188 research results (Dimyati et al., 2022). In fact, according to data on several universities in Indonesia in 2019 (Attamimi et al., 2019), there were 4,621 higher education institutions. This means that the number of universities actively conducting research in those three national priority areas (including medicine and health) was only around 20% (Attamimi et al., 2019; Dimyati et al., 2022). This illustrates that the research output quantity in Indonesia is still low, although it may have been increasing compared to previous years.

Indonesia still faces challenges in optimizing research output and is limited to promoting and disseminating results. The quality of research is still low despite some efforts that have been conducted to encourage, increase, and facilitate research within universities (CCPHI, 2019). One of the challenges in the research institutes in Indonesia is the unsustainability of research and development roadmaps year by year. The lack of a research-oriented roadmap to solving the national problems caused the research to be reactive to momentary requests. This makes the quality of research results less agile to mitigate evolving situations (Mathur et al., 2021).

The research by the research organization and higher education providers should be aligned with the national and global agenda. BRIN has established the national research priority through National Research Funding Priority (Pendanaan Prioritas Riset Nasional or PPRN) to address gaps or weaknesses in the research field, formulate advocacy strategies and disseminate research results for policy change, and formulate interventions in the change process. This funding includes nine research focuses, including health (BRIN, 2022). Improving the quality of research relevant to the national and global health agenda can create a proper solution to the current problem (Ibrahim, 2020).

In times of a pandemic, with increasing interest and need for translational research, the gap between the suitability of problems at the population level in the Medium-Term National Development Plan (RPJMN) and health research plans needs to be addressed strategically (Wensing & Grol, 2019). Therefore, the quantity and quality of research need to be increased by developing a research roadmap to respond to global health challenges. Reconstruction of research management is required considering the limited number of researchers and funding (Hidayat & Darmawati, 2019). An appreciation mechanism needs to be created to appreciate researchers who publish international articles to encourage and stimulate others to increase the quantity and quality of research.

3. Poor Data Management and Health Research System

Health data and disease surveillance in integrated databases are crucial in monitoring, driving decisions, and directing actions in a pandemic. They are essential for decision-makers and practitioners to formulate and employ timely and relevant policies to prevent, control, and minimize the outbreak (El-Jardali et al., 2020). If reporting and surveillance data in the database are not properly managed, an ongoing activity to support health research will cease. As a result, data reporting and monitoring failures will make it increasingly difficult for policymakers to translate research findings into evidence-based policy.

Indonesia's data reporting, surveillance, and database management are still far from ideal. For example, The Ministry of Health suggests that the national COVID-19 surveillance data result is still unreliable regardless of a standardized reporting form (Kemenkes, 2020b). Furthermore, the presentation of the COVID-19 daily report through the TC-19 All Record Online Application (Kemenkes, 2020a) and the COVID-19 Online Daily Reporting System (*Sistem Online Pelaporan Harian COVID 19/SILAPHAR COVID-19*) (Kemenkes, 2020c) also has not yet met the reporting target (Kemenkes, 2020b).

The lack of trained personnel is one major obstacle in obtaining reliable surveillance data. A study in a rural health center implementing a COVID-19 surveillance system showed that the limited number of surveillance personnel with a high workload and the ability of surveillance officers to vary the presentation of data were the biggest challenges in conducting data surveillance (Sidjabat & Arthameivia, 2021). Altogether, these suggest improvements in data reporting systems, both at the central and grassroots levels, are needed to produce reliable data. The existence of adequate personnel and appropriate training for the relevant officers may solve this problem.

In addition, the problem of unintegrated databases is also a significant challenge in health research data management. Currently, researchers primarily obtain data for health research from the department of Research and Development of the Ministry of Health (Kemenkes, 2021). However, this data is limited, as it does not provide

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information from other ministries and institutions. The data is from the Ministry of Health, such as half a decade of basic health research data (Kemenkes, 2021). Data from other ministries and agencies is also needed to support health research, for example, data from the social service agency and data from the central statistical agency.

The existence of health data that is faster, more precise, easily accessible, and reliable in an integrated database for researchers will significantly facilitate researchers in encouraging health research. Moreover, it will increase the health system's resilience in the long term. Therefore, providing and enhancing a reliable national reporting, surveillance, and public health database system might be a substantial resource in health research and translation for supporting government decision-making.

4. Communication Gaps

Communication gaps between researchers and stakeholders might impact health research translation (Towfighi et al., 2020). During this pandemic, it is evident that there is a gap between health and medical researchers/practitioners with decision-makers. For example, in the early of the pandemic, the government underestimated the pandemic warning from WHO and researchers (Noor, 2020). When researchers suggested restrictions to prevent the spread of the COVID-19 outbreak, the Indonesian government did not immediately close its international travel, even approving a budget to increase the number of tourists (Noor, 2020). The policy caused controversy and caused the COVID-19 outbreak to occur widely in Indonesia.

The difficulty of using scientific-based hard evidence to establish policies has been around for a long time. It has become increasingly apparent during the pandemic, which requires effective evidence-based policies. Researchers and decision-makers have different work cultures, in which the acquisition of data and research production is not treated as "useful" by decision-makers due to their indirect impact. Waiting for hard evidence before determining the proper implementation is also often perceived as slow or bothersome by policymakers.

The higher standards prescribed by effectiveness studies are often a recipe for inaction. It is often thought that doing something is better than waiting for the evidence and doing nothing. Other factors include negative perceptions of available research evidence, which could not be attributed to the fault of the decision-makers alone. Perceived scientific uncertainty, an undue focus on randomized controlled trials (Ritter, 2009), poor local applicability, and lack of complexity in studies that focus more on the social determinants of health and the multiple components of a health system further distances the use of hard evidence from the policymaking process. The incompatibility of problems at the population level and strategic approaches based on health research results have also deepened this gap (Wensing & Grol, 2019). Furthermore, policymakers are often not supported through training, requirements, or the government expectations to acquire skills to understand and use research evidence (Ritter, 2009). This causes difficulty in implementing research evidence-based policies.

In addition, the lack of dedicated integrated health and medical research organization further widens the gap between the researchers and policymakers. The existence of a health research organization such as NIH in the US (NIH, 2021) and MRC in the UK (MRC, 2021) is an integrated organization for health research that can bridge the gap. Although BRIN as an integrated research organization might be a good start, the absence of specific health integrated research organizations in Indonesia is one of the main challenges in encouraging health research translation into evidence-based decision-making. This lack of sustainable collaboration infrastructure also increases barriers between stakeholders in translating clinical research results to address problems at the population level (Towfighi et al., 2020). This absence of a solid relationship between the researcher and policymaker eventually makes the policies confusing to the public as it not supported by solid evidence. If these challenges are not adequately addressed during the period of pandemic recovery, it will be increasingly difficult to recover the health system from disruption.

5. Impact on Evidence-Based Decision Making and Health System Resilience

The aforementioned challenges have heavily impacted evidence-based decision-making in the years leading up to the pandemic, which has led to a less resilient and agile Indonesian health system. This became even more glaringly obvious during the COVID-19 pandemic, where the lack of high-quality data and research outputs, as well as a low number of interventional research and surveillance studies (Macintyre, 2003; Orton et al., 2011), hamper the systematic collection of evidence that form the basis of policy. An example is the lack of data on regional preparedness during the COVID-19 pandemic, perhaps owing to the fragile research infrastructure and the short timeline; however, the Ministry of Health has published data on the distribution of bed capacity and hospitals in Indonesia during the COVID-19 pandemic, which still faced stark inequalities in rural areas (Kemenkes, 2022). While still preliminary, data like these can inform future health decisions, followed by monitoring studies to evaluate effectiveness.

The “gulf” between policymakers and researchers also prevents the use of research findings in informing decision-making processes. Even with the existence of Indonesian research institutes, barriers to access and incompatible timeframes, especially for rapidly evolving situations, further prevent the implementation of true evidence-based policies. To circumvent research problems, decision-making is decided by competing influences, such as political and strategic factors, finances and resources, personal beliefs or common sense, competition, or public pressure (Mitton, 2004). Policymakers often perceive waiting for hard evidence before determining the proper implementation as slow or bothersome. The higher standards prescribed by effectiveness studies are often thought to be a recipe for inaction. It is often thought that doing something is at least better than waiting for the evidence and doing nothing.

However, as Macintyre and Petticrew (2000) argued, “good intentions and plausible theories alone are an insufficient basis for decisions about public programs that affect the lives of others.” A wide

range of influences must be considered to develop an effective public health policy. Furthermore, each step of the policy process, which includes problem delineation, option development, and implementation, ideally requires evidence that covers effectiveness, organization, implementation, and feasibility. In this complex decision-making environment, a large volume of research findings is needed, as they are often less definitive or robust in public health applications. Additional sources, such as expert opinion, case studies, social values, or patient preferences, can provide reliable evidence (Mitton, 2004).

In the case of impromptu policies and weak research translation backbones such as these, it is also essential to monitor the long-term impact of policies to determine if the approaches are effective. Evaluation is often hampered, however, by factors such as funds, other policy priorities, or backlash against the random allocation of individuals or communities in receiving assistance programs, which is often deemed unfair or unacceptable (Macintyre, 2003). This is a major problem, as without monitoring studies, there will be no data to create predictive models for future policies.

Indonesia, among other South-East Asian and South Asian countries, has a diverse health system where studies still show a lack of demand for research and evidence to inform decision-making. Most LMICs suffer from inequalities in access, affordability, and availability of healthcare services, possibly because of the low value placed on available research, as well as inadequate recognition of the potential of health policy and system research (HPSR) to contribute to policy development (Onwujekwe et al., 2020). In some ways, however, the Indonesian government has improved its utilization of evidence-based decision-making. Several new initiatives were initiated, especially in pursuing the fulfillment of Sustainable Development Goals (SDG) s. For health, SDG 3- which aims for universal and equal health coverage—and to a lesser extent, SDG 10 on reducing inequality—is itself enabled by SDG Target 17.18, which calls for data disaggregation and monitoring. Indonesia has initiated its first comprehensive assessment of health inequality, with 50 indicators across 11 health

topics published in December 2017 (WHO, 2017). These data were further disaggregated by dimensions of inequality, such as education level, sex, or economic status. Further analysis was also performed to determine Indonesia's Public Health Development Index, which has been used for priority-setting, planning, and resource allocation across districts in the country.

On a fundamental level, these findings informed the government on the unequal public health development in the western versus the eastern part of the country, as well as cases of within-province inequality and environmental factors. The findings also revealed that many public health concerns vary greatly between provinces, and thus nationwide health programs would be less useful than ones tailored to their local region. For example, Papua has massive inequality in sanitation and public health access, but adolescent smoking is not a priority concern. Adolescent smoking is prevalent in Western Indonesia and among poor males (Hosseinpoor et al., 2018). These findings would enable policymakers to determine policy priorities, allocate resources more effectively, and understand the important indicators and determinants of health (such as connectivity and sanitation) which must involve other ministries/departments.

C. Strengthening Indonesia's Research Translation

1. Increasing Investment and Access to Funding in Health and Medical Research

Funding limitation has been a major challenge for Indonesia to build a strong HMR. As a fundamental aspect of creating a sustainable health system, a vulnerable HMR may hamper progress in generating a new understanding of diseases, improving diagnosis and treatments, delivering healthcare services, and decision-making in health policy (Jamison et al., 2006). In general, research and innovation in health are supported by three funding resources: governmental, philanthropic, and industries (Robinson, 2021). In the context of Indonesia, solutions to boost HMR may come from increasing investment from governmental resources and enhancing the involvement of and access to philanthropic and industry resources.

The governmental resources for HMR in Indonesia come from the national state budget. It is allocated to different ministries and distributed as grants to government research agencies (e.g., the National Research and Innovation Agencies or BRIN) and universities. The government grants prioritize projects aligned with the national research roadmap of the country and generally fund risk-averse and high-impact projects (Flatto, 2015). Increasing the allocated budget to HMR will allow more research projects to be funded and, thus, will improve research outcomes aligned with Indonesia's national goals in the health sector. However, since HMR in Indonesia is heavily dependent on governmental resources to fund all four research sectors, it becomes challenging to ensure that all HMR sectors receive a proper amount of funding, given the allocated funding is limited. Therefore, it is necessary to diverge the weight from other funding resources to support HMR.

Enhancing philanthropic and industry resources' involvement may help reduce the burden on governmental funding resources. Philanthropic resources or charities provide endowments to mainly non-profitable, high-risk – high-reward research projects and infrastructures (Viergever, 2013). In developed countries, philanthropy is key in driving HMR by supporting initial data collection before applying for government grants, providing seed funding for start-ups before scaling up with industries, and building research facilities in universities and institutes (Murray, 2013). Indonesia has many philanthropic funders, independent or associated with corporations, such as Filantropi Indonesia, Djarum Foundation, Yayasan Dharma Bhakti Astra, Coca-Cola Foundation, and Yayasan Unilever Indonesia (Kemenkes, 2019). However, funding allocated to HMR is still limited and scattered (Kemenkes, 2019). Philanthropic funding supports specific causes in nature. While this gives advantages to improve diversity, equity, and inclusion (DEI) in HMR (Christopherson et al., 2021), the government needs to provide a brief map of areas in the health sector that require improvement and create a system for the philanthropists to disseminate their funds. Therefore, philanthropic

resources can be distributed alongside governmental and industry resources to support areas in HMR.

Industries play a major role in funding research. Unfortunately, Indonesia's private and public funding ratio is still low (1:7), which is vice versa for the OECD countries (Kemenkeu, 2019). To address this problem, the Ministry of Education and Culture launched the Kedaireka platform to facilitate and enhance the universities-industries partnership, allowing researchers and Indonesian companies to fully explore and match their expertise and collaborate to solve real societal problems (Kemdikbud, 2021). The approach Kedaireka brought as a match-maker platform not only unveils the abundance of funding opportunities from industries at various scales but also highlights one major caveat—there is no integrated platform where researchers can access funding information from all three funding resources, and no specific program that focuses on HMR. Creating or using a platform (e.g., Research Professionals) that collects and provides information about national and international funding opportunities from different resources will ease access to the available funding. Therefore, HMR in Indonesia will not depend only on nationally available funding but also can benefit from international grants available, which ultimately will enhance investment and help strengthen HMR in Indonesia.

2. Building a Sustainable and Equitable Health Research System

Indonesia must establish a designated medical research agency and independent HMR institutes to build a sustainable and equitable health research system. As defined by Pang et al. (2003), a health research system is *“the people, institutions, and activities whose primary purpose in relation to research is to generate high-quality knowledge that can be used to promote, restore, and/or maintain the health status of populations; it should include the mechanisms adopted to encourage the utilization of research”* (Pang et al., 2003). Establishing a good research system requires an ecosystem where researchers, practitioners, funding bodies, and communities can gather and collaborate to generate new knowledge and translate discoveries into better health outcomes.

Indonesia's research agencies that cover the health sector were previously situated under the Ministry of Health and LIPI but now have just recently moved under BRIN (BRIN, 2021). While BRIN is an exemplary embodiment of establishing a research system, it is still necessary for Indonesia to have a designated agency that solely focuses on HMR. Reflecting on established medical research agencies in developed countries, such as the US National Institutes of Health (NIH) (NIH, 2021). Medical Research Council (MRC) in the UK (MRC, 2021) and National Health and Medical Research Council (NHMRC) in Australia (NHMRC, 2021), these institutes act as a benchmark and a core pillar in leading, organizing, and conducting focused research to tackle diseases and emergency public health issues in their countries. They also play a key role in bridging the communication between health and medical researchers and policymakers, providing an integrated platform for research translation and evidence transfer. Thus, having a designated medical research agency will aid Indonesia in developing strategic research planning, conducting research with a faster pace of knowledge sharing and collaborations, and delivering responses to tackle critical public health threats.

Independent medical research institutes also contribute to building a health research system supporting the nation's medical research agency. However, only six actively published, non-university research institutes in Indonesia were identified to work related to health research, including the only one specifically working in HMR under the Ministry of Health in 2019 (CSIC, 2019). Besides the lack of institutes focusing on research activities, Indonesia also needs audit institutions to monitor the influence of corporations on public health policy, research, and practice, such as the Corporate Europe Observatory in Europe and the US Right to Know in the USA. Having independent research and audit institutes across the country will allow Indonesia to 1) decentralize and perform research tailored to HMR focus, specific to the needs of the regional area alongside the national research roadmap; 2) build infrastructures; 3) create more job opportunities in the regional area; 4) provide specialized training for

research personnel; and 5) monitor research translation process and policy implementation. Altogether, this would not only strengthen the health research system but also increase economic growth and equality across nations. The existence of adequate personnel and appropriate training for the relevant officers may solve this problem.

3. Incorporating Technology into Medical Research and Health Practice

The global transition to industry 4.0 has brought technologies to medical research and health practice forefront. There are several ways Indonesia can implement technology to improve its health system by strengthening each component of the research backbone. First, by incorporating STEM into basic and clinical research to accelerate discoveries, achieving a greater translational impact in a shorter time frame using technologies. This can be achieved by building a multidisciplinary research team to solve a medical or health-related problem. Second, speeding up health data digitalization to create databases for big data analysis. This will allow the use of machine learning and artificial intelligence to assist with medical diagnosis, disease surveillance, and the forecast of future public health threats (Zeng et al., 2021). Furthermore, the availability of data collection platforms that include equity parameters, such as WHO's Health Equity Assessment Tool (HEAT), will also allow a more comprehensive data collection and can be a useful tool to democratize public health research (Januraga & Harjana, 2020). Altogether, this would provide easy access to assist policymakers in generating evidence-based health policy promptly while ensuring the decision meets the equity standard, particularly in an emergency such as a pandemic. Third, enhancing the Internet of Things to improve equality in healthcare service delivery in regional areas and reduce carbon footprints generated from the health sector. Internet use has enabled telehealth and virtual collaborations in the past two years. These technologies can greatly overcome distance and travel limitations, as these two are major obstacles in healthcare service delivery (Huot et al., 2019; Syed et al., 2013) and are also main contributors to carbon footprints in the health sector (Adshead et

al., 2021). Altogether, strategically implementing these technologies would significantly accelerate HMR; facilitate the transition into a green, smart, and connected Healthcare 4.0; and subsequently strengthen Indonesia's health system.

4. Engaging Communities to Empower Society

An active community is vital to strengthen the health system as we approach Society 5.0, a people-centric society where most services, including health, will be personalized or tailored to individual needs (Deguchi et al., 2020). To ensure a smooth transition into Society 5.0, first, the government needs to foster a culture of evidence-based policy making and implementation that provides all layers in the community are included in the decision-making process. Adopting WHO's Innov8 approach can facilitate this process by reorienting health programs and policy workflows towards equity using collected data (Koller et al., 2018). Through this approach, the design and theory of health programs are re-examined; consensus is developed on populations that are not included in the plans; and proposals are redesigned to include intersectoral action and social participation while integrating monitoring and evaluation. Second, the government should promote awareness and improve health literacy in the community so that people become educated on their fundamental rights and responsibilities for their health and others. Third, the government must improve clarity and consistency in delivering health-related information. For instance, using infographics and lay language and disseminating information through a 'one-gate' approach. Fourth, the government in collaboration with other stakeholders should create more opportunities for the communities to actively participate in medical research, public health activities, and decision-making—to grow the sense of belonging in the community and create a safe environment for people to participate in it communicate their needs and ideas actively. At foremost, by creating a system to achieve health equality and sustainability, our health and medical research will move to a community-based support system to protect vulnerable societies. Given that the people in the community are health-aware and actively participate in communicating their

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needs, these would form the basis for conducting a community-based approach in healthcare.

D. Conclusion

The global health system has been overwhelmed by the COVID-19 pandemic. It challenges every country, including Indonesia, to improve their science translation into equitable, sustainable, and effective policies. The goal of research translation that involves many relevant stakeholders is to provide more relevant and practical outputs that directly improve population and human health, which will be extremely valuable during the pandemic recovery period. However, the research translation in Indonesia still faces several challenges. The fundamental problems in Indonesia's research translation into effective policy include a lack of resources in health research, improper research output orientation, poor management of health research data, and communication gaps.

As a result of these issues, Indonesia's healthcare system remains susceptible, while the number of COVID-19 cases fluctuates. In addition, Indonesian decision-makers indicate a lack of demand for research and research evidence to support decision-making. The ultimate goal of implementing evidence-based practice is to build a more robust and agile health system ready to integrate new ways and respond to future health threats.

E. Recommendations

From the challenges and impacts of the lack of research translation during the current pandemic, we propose to the government to 1) increase investment and access to health and medical research funds; 2) create a sustainable and equitable system of health research; 3) integrate technology with medical research and health care; and 4) bring communities together to strengthen society. With these approaches, Indonesia can strengthen its research translation backbone and enhance the resilience of its healthcare system. As a result, it will

boost economic recovery and national health during the pandemic and increase readiness to tackle future global health issues.

Finally, the ultimate goal of adapting evidence-based practice is to create a more resilient and agile health system, ready to implement new approaches and adapt to emergencies. From the government down to the community level, objective and informed health policies and decisions would bypass many inhibiting factors that do not give maximum health benefits to the public (Boustani et al., 2019). This is especially important in Indonesia, where limited resources and various cultural and geographical challenges must cope with myriad public health problems. An increase in high-quality research output, especially those tailored to local communities and populations, would create a “push” towards utilizing better evidence. While currently available health research is limited and has various drawbacks to its utilization, newer policies seem to be moving in the right direction. Widespread and effective implementation of evidence-based practices must also be implemented in community settings. Finally, all aspects of the Indonesian health system, from policymakers to providers, must have an open and ready attitude towards health research and evidence and readily utilize them in clinical decision-making.

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Chapter 15

Closing Summary

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The most profitable investment any country can make is on human capital, a goal also enshrined in Indonesia's national long-term plan. When human capital increases in science, education, and management, it leads to increases in innovation, social well-being, equality, increased productivity, and improved rates of participation, all of which contribute to the country's economic growth and prosperity. Subsequently, the Overseas Indonesian Student Association Alliance (OISAA or PPI Dunia in Indonesian), the largest overseas Indonesian student organization, feels obliged to contribute to the nation's development. This insightful book from the Health, Economics, and Tourism Commissions, Directorate of Research and Policy, and PPI Dunia aims to provide suggestions and recommendations for the government and other bodies to achieve Indonesia's Golden Age in 2045.

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Sections in this book are arranged in a multidisciplinary manner, combining perspectives across the health, economics, tourism, and creative economy sectors. The topics covered aligned with the Sustainable Development Goals 1, 2, 3, 8, 9, 10, 11, 12, 16, and 17.

Section One in this book mainly discusses the digital transformation in response to the declining or even stagnant economic cycles. By identifying the challenges and opportunities faced by the health sector and economy, the contributing authors presented several recommendations, such as (1) integrating the current Digital Health Transformation Roadmap with WHO's Digital Strategy on Digital Health; (2) strengthening digital health governance at all levels, and maintaining its application as people-centered; (3) empowering local communities to build resilience in local communities through culture and digital capital development; and (4) supporting fintech to accelerate funding distribution to MSMEs through peer-to-peer lending utilization and non-cash social aid to help poor society through fintech e-wallet.

In Section Two, we learned that the COVID-19 pandemic has significantly impacted Indonesia's human capital and economic growth, key pillars that are required to build a future-ready resilient society. To address this growing challenge, the authors proposed several key policy recommendations that include 1) ensuring availability, feasibility, and equitable access to essential foods for everyone, particularly the vulnerable groups, through agricultural advancement and local biodiversity utilization; 2) improving mental health and well-being by improving mental health literacy and access to mental healthcare with a focus on productive age workers, young adults, parents, and healthcare practitioners; 3) promoting leadership collaboration between local, regional and national government agencies to create policies that are aligned, fit, and can be implemented in the society to handle COVID-19 impacts; 4) developing and nurturing technological and cultural capital, as well as community empowerment, to drive the creative economy; and 5) promoting free trade and reducing trade barriers to support Indonesia in entering the global value chain.

Altogether, these recommendations would aid Indonesia in building a future-ready resilient society.

The book concludes with Section Three covering equitable, sustainable, and green development from various perspectives. The COVID-19 pandemic has created severe hardships for Indonesia's economy due to a drop in consumption and investment compared to Asian Financial Crisis and Global Financial Crisis. Although Indonesia's international trade substantially contributed to the economic recovery in 2021, policy improvement is still needed to achieve Indonesia's 2030 growth agenda. On top of that, tax revenue as a source of government financing needs to boost up to cover the budget deficit made larger by the pandemic. As climate change has become a strategic issue worldwide, the government also needs to pay attention on how to handle this crisis. Green bond, which has gained significant growth in many countries, remains in a nascent stage in Indonesia with ample room for growth. Beyond this, Indonesia's healthcare research also requires substantial boosting to support economic recovery through greater and speedier research translation.

The authors of section three have proposed several recommendations to address these challenges, among others are 1) manage the budget (APBN) in terms of effective budget allocation and strengthen revenue; 2) implement Global Supply Chain (GSC) policies for globally competitive industries and Import Substitution Industrialization (ISI) for SMEs; 3) join and implement the two-pillars of the international tax integration plan to improve Indonesia's tax revenue; 4) implement incentives and disincentives for financial industry players to accelerate the development of green bond issuance in Indonesia and lastly, improve healthcare research translation to be more equitable, sustainable, and effective through policy changes co-designed with stakeholders in the health system including policymakers and society.

This book is the fruit of thoughts amongst the collaborations of health scholars, economists, and other scholars in their respective fields currently studying overseas. Having shared their thoughts about the current situation in these chapters, these scholars hope to

not only identify the gaps but also contribute to their solutions. To achieve “Indonesia’s Golden Age” in 2045, Indonesia needs to have sustainable development in various fields, including human capital, availability of infrastructure, quality of institutions, and government policies. Hopefully, this book can contribute to creating a healthy and sustainable society that will undoubtedly encourage the birth of a prosperous, competitive, and resilient nation.

Finally, everyone involved in all chapters hopes this book can be helpful and handy for the Indonesian government, academia, industry, media, and civilians to identify pathways for a stronger recovery. Let us work together to ensure our joint aspirations of a prosperous, sustainable, and resilient Indonesian society are realized.



List of Abbreviations

Abbreviation	Description
ACE2	Angiotensin-Converting Enzyme 2
ADB	Asian Development Bank
ADS	Automated Digital Service
AFC	Asian Financial Crisis
AFTECH	Asosiasi Fintech Indonesia
AI	Artificial Intelligence
APBN	Anggaran Pendapatan dan Belanja Negara
ARDS	Acute Respiratory Distress Syndrome
ARIMA	Autoregressive Integrated Moving Average
ASEAN	Association of Southeast Asian Nations
ATM	Automatic Teller Machine
AUD	Australia Dollar

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Abbreviation	Description
B2B	Business to Business
Bappenas	Badan Perencanaan Pembangunan Nasional
BEPS	Base Erosion and Profit Shifting
BI	Bank of Indonesia
BPS	Central Bureau of Statistics
BRIN	Badan Riset dan Inovasi Nasional (National Research and Innovation Agency)
CAR	Capital Adequacy Ratio
CbCR	Country-by-Country Report
CBI	Climate Awareness Bond
CCTV	Closed-Circuit Television
CD3+	Cluster of Differentiation 3
CD4+	Cluster of Differentiation 4
CD8+	Cluster of Differentiation 8
CDC	Centers for Disease Control
CECC	Central Epidemic Command Centers
CFB	Consumer Facing Businesses
CIT	Corporate Income Tax
COCOA	COVID-19 Contact-Confirming Application
COP-26	The 2021 United Nations Climate Change Conference
COVID-19	Coronavirus Disease 2019
CTG	Cardiotocography
DEI	Diversity, Equity, and Inclusion
DHI	Digital Health Intervention

Abbreviation	Description
DIKTI	Direktorat Pendidikan Tinggi (Directorate of Higher Education)
DST	Digital Service Tax
DTA	Double Tax Agreement
E-Money	Electronic Money
E-Wallet	Electronic Wallet
EATRs	Effective Average Tax Rates
ECF	Equity Crowd Funding
eLearning	Electronic Learning
EMTRs	Effective Marginal Tax Rate
ETR	Effective Tax Rate
EUR	Euro
FAO	Food and Agriculture Organization
FDA	Food and Drug Administration
FDI	Foreign Direct Investment
Fintech	Financial Technology
FSA	Financial Services Authority
FSB	Financial Stability Board
FSIN	Food Security Information Network
FTA	Free Trade Agreement
G20	Group of 20
G7	Group of Seven
GBP	Green Bonds Principle
GFC	Global Financial Crisis
GDP	Gross Domestic Product

Abbreviation	Description
GERD	Gross Expenditure on Research and Development
GERMAS	Gerakan Masyarakat Hidup Sehat
GloBE	Global anti-Base Erosion Rules
GPS	Global Positioning System
GSC	Global Supply Chain
GSH	Growth Stimulating Hormones
GVC	Global Value Chain
HB	Hepatitis B
EHR	Electronic Health Record
HKMA	Hong Kong Monetary Authority
HMR	Health and Medical Research
HPSR	Health Policy and System Research
ICMA	International Capital Market Association
ICT	Information, Communication, and Technology
ICU	Intensive Care Unit
IDR	Indonesia Rupiah
IFN	Interferon
IgA	Imunoglobulin A
IgG	Imunoglobulin G
IgM	Imunoglobulin M
IIR	Income Inclusion Rule
IKBI	Indonesia Sustainable Finance Initiative / Inisiatif Keuangan Berkelanjutan Indonesia
IL 6	Interleukin 6
IoT	Internet of Things
IMF	International Monetary Fund

Abbreviation	Description
IP	Intangible Property
IPO	Initial Public Offering
ISI	Import Substitution Industrialization
JKN	National Health Insurance Scheme/Jaminan Kesehatan Nasional
KBLI	Indonesia Standard Industrial Classification/ Klasifikasi Baku Lapangan Usaha Indonesia
Kemendagri	Kementerian Perdagangan Republik Indonesia
Kemenkes	Kementerian Kesehatan (Ministry of Health)
Kemensos	Kementerian Sosial Republik Indonesia
Korea CDA	Korean Disease Control and Prevention Agency
LDR	Loan-to-Deposit Ratio
LMIC	Low- and Middle-Income Countries
LPDP	Lembaga Pengelola Dana Pendidikan (Indonesia Endowment Fund for Education)
MAS	Monetary Authority of Singapore
MBS	Medicare Benefits Schedule
mHealth	Mobile Health
MNCs	Multinational Companies
MNE	Multinational Enterprises
MRC	Medical Research Council
MSME	Micro, Small, and Medium Enterprises
NAR	New All Record
NCDs	Non-Communicable Disease
NDC	Nationally Determined Contribution

Abbreviation	Description
NGOs	Non-Governmental Organizations
NHI	National Health Insurance
NHIS	National Health Insurance System
NHMRC	National Health and Medical Research Council
NIH	National Institute of Health
NPL	Non-Performing Loans
NT\$	New Taiwan Dollar
OECD	Organization for Economic Co-operation and Development
OJK	Otoritas Jasa Keuangan
OLS	Ordinary Least Square
ONP	Oral Nutrition Product
P2P	Peer to Peer
PE	Permanent Establishment
PEN	Pemulihan Ekonomi Nasional
PKH	Program Keluarga Harapan
PPE	Personal Protective Equipment
Posyandu	Pos Pelayanan Terpadu
Puskesmas	Pusat Kesehatan Masyarakat
Q	Quarterly
Q2	Second-Quarter
QR Code	Quick Response Code
QRIS	Quick Response Code Indonesian Standard
RAN-PG	Rencana Aksi Nasional Pangan dan Gizi
Riskesdas	Riset Kesehatan Dasar

Abbreviation	Description
RPJMN	Rencana Pembangunan Jangka Menengah Nasional (The Medium-Term National Development Plan)
RTPCR	Reverse Transcription Polymerase Chain Reaction
RWCS	Rice–Wheat Cropping System
SARS	Severe Acute Respiratory Syndrome
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
SCF	Securities Crowd Funding
SDGs	Sustainable Development Goals
SEARO	South-East Asia Regional Office
S I L A P H A R COVID-19	Sistem Online Pelaporan Harian COVID-19 (COVID-19 Online Daily Reporting System)
SMEs	Small and Medium Enterprises
SOR	Switch-Over Rule
STEM	Science, Technology, Engineering, Math
Stranas	Strategi Nasional
STTR	Subject to Tax Rule
TEI-DE	Trade Expo Indonesia – Digital Edition
THI	Indonesian Green Taxonomy/Taksonomi Hijau Indonesia
TiVa	Trade in Value Added
TMPRSS2	Transmembrane Protease Serine 2
TNF	Tumor Necrosis Factor
TNP2K	Tim Nasional Percepatan Penanggulangan Kemiskinan
TTV	Torque Tenovirus

Abbreviation	Description
U.S.	United States
UHC	Universal Health Coverage
UK	The United Kingdom
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UPE	Ultimate Parent Entity
USD	U.S. Dollar
UTPR	Undertaxed Payment Rule
VPN	Virtual Private Network
WHO	World Health Organization
WIOD	World Input-Output Database
WPI	Whey Protein Isolate
WTO	World Trade Organization



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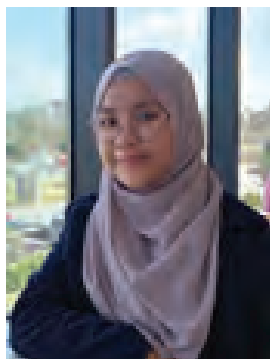
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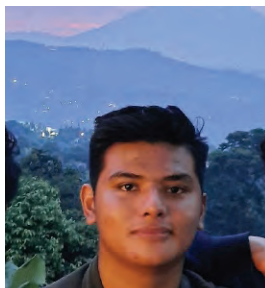
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INDONESIA

POST-PANDEMIC OUTLOOK:

Rethinking Health and Economics
Post-COVID-19

COVID-19 has disrupted all aspects of human life. To mitigate the impact of the pandemic, several efforts have been taken, including by Indonesian scholars abroad. This book entitled *Indonesia Post-Pandemic Outlook: Rethinking Health and Economics Post-COVID-19* explores opportunities and innovations to push forward to recover from COVID-19, both in health and economics.

Comprising 15 chapters, this book is split into three main themes. *The first part*, Digital Transformation, focuses on how digital transformation has provided new ways of working in health, Small Medium Enterprises (SMEs), financing, and the tourism industry, especially in this post-pandemic era. *Second*, Building Future Ready Resilient Societies, raises the critical question of how the Indonesian society can be more resilient and future-ready to face a future that changes more rapidly than before, through the lens of food systems, mental health, culture, collaborative leadership, communities, and global supply chains. *The last part*, Equitable, Sustainable, and Green Development, presents ideas on what it takes to build a more equitable, sustainable, and greener future without sacrificing prosperity.

We hope that this book can be a valuable reference for stakeholders, policymakers, as well as society to recover from the pandemic crisis and find better solutions to benefit future generations.



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