

A Review of the Indonesian Regulatory Policy on MSMEs and Cooperatives for Boosting Economic Potential towards the Industrial Revolution 4.0

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Abstract

The Indonesian government emphasizes the economic potentials of Indonesian micro, small, and medium enterprises (MSMEs) and cooperatives in the Industrial Revolution 4.0 by adopting regulations, policies, and programs that are MSME friendly. This study aims to review the optimization of MSMEs' digital capability by examining the regulations, the policies, and the programs. It examines the regulatory framework that facilitates the digital MSMEs ecosystem work. Employing a cross-disciplinary approach within law and economics, this legal study adopts a descriptive design, using data from primary and secondary sources on the digitalization of MSMEs in Indonesia. The digital economy necessitates specific managing the adoption of Information Communication and Technology (ICT) across all businesses in Indonesia, including large enterprises, small enterprises, and micro businesses. This study argues that these government measures had a low impact on Indonesian MSMEs. This study concludes that sustainability government support in creating an inclusive digital economy of MSMEs is indispensable. The spirit of *gotong royong*, Indonesia's culture of community cooperation, should be leveraged to empower MSMEs. The absence of a centralized institution to coordinate policies and programs on the digitalization of MSMEs undermines the effectiveness of the national digital strategies for MSMEs. Indonesia's plan to become the tenth-largest economy in the world by 2030 may remain unattainable without addressing the gap.

Keywords: industrial revolution, MSMEs, regulatory policy.

A. Introduction

The digital marketplace in Indonesia, characterized by the rapid growth of platforms such as Tokopedia, Shopee, Lazada, Blibli, and Bukalapak, has fostered a new digital ecosystem. Increasing the number of micro, small, and medium enterprises (MSMEs)

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adopting online operations is a critical foundation for optimizing the digitized economic potential of Indonesia's MSMEs. The government's next agenda for MSMEs focuses on leveraging technology and promoting digital transformation, especially after being among the hardest hit by the pandemic. Despite 64 million MSMEs in Indonesia, only 32 percent—approximately 21 million—currently utilize digital technology in their operations.

In 2019, MSMEs accounted for 99 percent of all businesses in Indonesia, totaling 65,471,134 enterprises.¹ These MSMEs contributed 61 percent of Indonesia's GDP. In 2023, the government aimed to establish a unified database for MSMEs through the PL-KUMKM 2023 initiative. Furthermore, data showed that MSMEs play a significant role in the national economy by employing approximately 117 million workers, representing 97 percent of the national workforce.²

Indonesia is a vast digital market, with approximately 20 percent of its population belonging to the middle class, a key segment driving the rapid growth of the digital economy.³ Young people also play a crucial role in this expansion, making it a significant factor in the country's economic development. While in 2021, the value of Indonesia's digital economy was only US\$70 billion, it is expected to be valued at US\$125 billion by 2025, and it is estimated to be able to grow exponentially with value of US\$330 billion by 2030.⁴ This makes Indonesia a substantial digital market for all types of businesses—large, medium, small, and micro—providing opportunities to sell a wide range of products and services.

While the MSMEs need to adapt to the digital market to survive and fully engage in the digital economy, the government must support their digital transformation by introducing MSMEs-friendly regulations and policies. This study argues that the government has an essential role in providing sustainable support for MSMEs going digital by providing inter-related legal instruments to create an ecosystem for an inclusive digital economy. This study employed a cross-disciplinary perspective, utilizing a descriptive research design that drew secondary data from journal articles and research reports on similar themes relevant to this study. The findings

¹ Kemenkop UKM (Ministry of Cooperation and SME), 2020., "Tabel.1 Perkembangan data Usaha Mikro, Kecil dan Menengah (UMKM) dan Usaha Besar (UB) Tahun 2018 – 2019", accessed June 11, 2023, https://www.kemenkopukm.go.id/uploads/laporan/1650868533_SANDINGAN_DATA_UMKM_20182019%20=.pdf.

² A. Capri, *Micro and Small Businesses in Indonesia's Digital Economy*, (Asia Pacific Foundation of Canada, 2019), 27.

³ Wahyu Candra Dewi and Tusta Citta Ihtisan Tri Prasidya, "Digital Economy to Boost Economy Recovery Post-Pandemic: Indonesia's Strategic Position as New Economic Power in Southeast Asia," *Global South Review* 4, no.2 (2022): 82. <https://doi.org/10.22146/globalsouth.83331>.

⁴ Coordinating Ministry for Economic Affairs Republic of Indonesia, *Press Release*, "Digital Economy Acceleration in e-Commerce and Online Travel," 1 April 2022.

emphasize the importance of a well-functioning MSME ecosystem in accelerating MSMEs' digitalization. MSMEs contribute 61 percent to Indonesia's GDP, compared to the 38.9 percent of large enterprises; however, in 2022, their contribution to the digital economy was only 5.7 percent of GDP.⁵

Key laws and regulations relevant to MSMEs include Law No. 20 of 2008 on Micro, Small, and Medium Enterprises; Law No. 11 of 2021 on Job Creation; Government Regulation No. 7 of 2021 on Facilities, Protection, and Empowerment for Cooperatives and MSMEs; and regulatory policies such as Ministry of Trade Regulation No. 50 of 2020 on Business Licensing Provisions, Advertising Guidance, and Supervision of Business Actors in Electronic Trade Systems. These regulatory frameworks reflect the government's role in steering and regulating the digital ecosystem to support an inclusive digital economy for MSMEs.

Studies indicated that increasing MSMEs' digital involvement could boost Indonesia's economic growth by 2 percent, enabling the country to achieve upper-middle-income status by 2025.⁶ The potential economic value of digital MSMEs should not be ignored; otherwise, they will become a burden to the government. The government has to support and control tightly this economic potential of MSMEs to go online based on good governance of the ICT and legal certainty.⁷

The adoption of ICT is a foundational element for enabling MSMEs and cooperatives to seize economic opportunities, gain financial freedom, and achieve independence. In 2018, Indonesia announced its goal of becoming one of the ten biggest economic powers by 2030 by launching Making Indonesia 4.0 as part of the 2018 Indonesian Industrial Summit program.⁸ This initiative identifies five priority sectors—the food and beverage, textile and apparel, automotive, chemical, and electronics—where MSMEs are expected to play a pivotal role in driving industrial growth.

To maximize MSMEs' contributions, a digital MSMEs ecosystem is required. The ecosystem consists of all digital market stakeholders, such as financial institutions, MSMEs business associations, central and local government institutions dealing with

⁵ Suhargo, E.S., Farida, Y.N. and Hidayat, T., "Pengaruh Digitalisasi UMKM dan Penggunaan Sistem Informasi Akuntansi Terhadap Kinerja UMKM pada Masa Pandemi Covid- 19," *Jurnal Riset Akuntansi Soedirman* 1, No 2. (2022): 132 – 42. <https://doi.org/10.32424/1.jras.2022.1.2.8071>.

⁶ Deloitte, "UKM Pemicu Kemajuan Indonesia" (MSMEs boost the Development of Indonesia), accessed October 26, 2023. <https://www2.deloitte.com/content/dam/Deloitte/id/Documents/finance/id-fas-sme-powering-indonesia-success-report-bahasa-noexp.pdf>.

⁷ Awaludin Marwan, Diana Odier-Contreras Garduno, Fiammetta Bonfigli, "Detection of Digital Law Issues and Implication for Good Governance Policy in Indonesia", *Bestuur* 10 No. 1., (August 2022): 22 – 32. <https://doi.org/10.20961/bestuur.v10i1.59143>.

⁸ Kementerian Perindustrian (Ministry of Industry Indonesia), "Making Indonesia 4.0 Bikin Industri Nasional Berdaya Saing Global di Era Digital," accessed November 1, 2023, <https://kemenperin.go.id/artikel/19046/Making-Indonesia-4.0-Bikin-Industri-Nasional-Berdaya-Saing-Global-di-Era-Digital>.

MSMEs, and digital providers that interact with each other and are controlled by the government, by which the government can accelerate MSMEs' digital transformation, paving the way for their full participation in Indonesia's digital economy.

B. Characteristics Of Micro, Small and Medium Enterprises (MSMEs) And Cooperatives

1. Definition of MSMEs

MSMEs in Indonesia have many roles, including providing jobs, reducing poverty, triggering economic growth, ensuring equitable development, and ensuring sustainable development. The total number of MSMEs in Indonesia is 99.99 percent (64.4 million units) of the total number of firms in Indonesia, whereas large enterprises only make up 0.01 percent (5.637 units).⁹ Of the total number of enterprises, micro-enterprises have 109,8 million employees (or 89.04%). The combination of micro, small, and medium enterprises can absorb almost 97 percent of the national labor force. In contrast, large enterprises only employ 3 percent of the total labor force or 3.80 million employees.

There are internationally accepted definitions of MSMEs. Gibson and van der Vaart suggest a less imperfect formula: *"An SME is a format enterprise with annual turnover, in the U.S. dollar terms, of between 10 and 1000 times the mean per capita gross national income, at purchasing power parity, of the country in which it operates"*. The definition by Gibson and Vaart is attractive because annual turnover is a good tool for assessing the contribution of MSMEs to GDP.

According to the World Bank, SMEs are companies with a maximum number of employees of 300 people and revenues or maximum turnover and assets of 15 million (US\$). Meanwhile, the Multilateral Investment Fund, Inter-American Development Bank, African Development Bank, and UNDP define SMEs only from the maximum number of people, i.e., 100, 50 and 200 people, respectively.¹⁰

Government Regulation number 7 of 2021 on Facilities, Protection, and Empowerment for Cooperatives and MSMEs provided that micro-enterprises are firms with a capital of no more than 1 billion rupiah (US\$69,900) and annual sales of no more than 2 billion rupiah (US\$139,800). Small enterprises are businesses with a capital of more than 1 billion rupiah (US\$69,900) and annual sales of more than 2

⁹ Kemenko Ukm (Ministry Cooperative and Small Medium Entreprises Indonesia), "Tabel 1 Perkembangan Data Usaha UMKM dan Usaha Besar (UB) Tahun 2018-2019", accessed June 1, 2023, https://www.kemenkopukm.go.id/uploads/laporan/1617162002_SANDINGAN_DATA_UMKM_20182019.pdf.

¹⁰ Michael K. Addo, "Business and Human Rights and the Challenges for Small and Medium-Sized Enterprises," in *Small and Medium-Sized Enterprises in International Economic Law*, ed. Thilo Rensmann (Oxford: Oxford University Press, 2017), 319.

billion rupiah (US\$139,800). Meanwhile, medium enterprises are firms with a capital of more than 5 billion rupiahs (US\$349,551) and annual sales of more than 15 billion rupiahs (US\$1.04 million) but less than 50 billion rupiahs (US\$3.5 million) (see Table 1).

Table 1. Categorization of MSMEs in Indonesia

| Enterprise category | Category | |
|---------------------|------------------------|------------------------|
| | Turnover (IDR) | Annual sales (IDR) |
| Micro | No more than 1 billion | No more than 2 billion |
| Small | More than 1 billion | No more than 2 billion |
| Medium | More than 5 billion | More than 15 billion |

Source: GR No.7 of 2021

As shown in Table 1, the categorization for MSMEs considers financial characteristics, and while undoubtedly well-intentioned, the maximum amounts are significantly high. These categories are an amended version of the categorization of MSMEs in that the previous one had a far less amount than the new one.

2. Fundamental Characteristics of MSMEs

MSMEs have a significant role and potential strategic position within the national economic structure, balancing growth and social equity. MSMEs in Indonesia are the agents of economic development, equity distribution, and poverty alleviation. However, Budi et al. found that MSMEs have some barriers to developing their economic competence, including low skills in human resources, slow technology, and marketing (internal) and external barriers.¹¹ Nevertheless, they contributed to 57.8 percent of GDP, the highest among the other Asian countries.¹²

Regarding the involvement of MSMEs in the digital economy, in 2019, Statistics Indonesia found that of nearly 64 million MSMEs in Indonesia, only 3.79 million utilized digital technology in their business. This number skyrocketed to 21,8 million in 2022 due to the COVID-19 Pandemic.¹³ Anjar Priyono et al. argued that SMEs coped with environmental change during the COVID-19 pandemic by transforming business models supported by digital technologies.¹⁴ They use the leading

¹¹ M. K. S. Budhi, et al., "Strategies and Policies for Developing SMEs Based on Creative Economy", *Management Science Letters* 10, (2020): 2307. <https://doi.org/10.5267/j.msl.2020.3.005>.
¹² R.F. Wilantara and Susilawati, *Strategi dan Kebijakan Pengembangan UKM Upaya Peningkatan Daya Saing UKM Nasional di Era MEA*. (Bandung: Refika Aditama, 2016), 12.
¹³ Muhamad Ibrahim, "Sebanyak 21,8 Juta UMKM sudah go digital, Ini Buktinya", *Infobanknews*, March 7, 2023, <https://infobanknews.com/sebanyak-218-juta-UMKM-sudah-go-digital-ini-buktinya>.
¹⁴ Anjar Priyono, Abdul Moin and Vera Nur Aini Oktaviani Putri, "Identifying Digital Transformation Paths in the Business Model of SMEs during the COVID-19 Pandemic," *Journal of Open Innovation: Technology, Market, and Complexity* 6, no. 104 (2020): 19. <https://doi.org/10.3390/joitmc6040104>.

marketplace platforms in Indonesia, such as Blibli.com, TokoPedia, Lazada, MatahariMall.com, Shopee, Blanja.com, and Bukalapak. This number remains low, meaning that only a few MSMEs in Indonesia have adopted ICT in their business. MSMEs in Indonesia still require digital skills and competence in ICT. This is not surprising because small businesses tend to avoid ICT, which is considered too complex.¹⁵ This low adoption of ICT by MSMEs in Indonesia can have further consequences, such as relatively lower productivity of these not-adopting-technology enterprises than those adopting technology.

The primary concern is that the lack of ICT utilization may result in the diminution or catastrophic loss of MSMEs. Our prognosis is that ICT adoption has at least an indirect effect on the resilience of the national economy, given that MSMEs are the economic backbone. With all their structured problems, MSMEs can have strategies based on SWOT analysis, which may lead to sustainable competitiveness.¹⁶ Considering the size of enterprises, SMEs may merit a differential treatment when competing with large firms.¹⁷ In this case, Indonesian SMEs are exempt from the competition law No.5/1999 provision.¹⁸

Under the traditional model, MSMEs tap into global value chains (GVCs) and can access export markets regionally and internationally.¹⁹ MSMEs can participate as intermediate exporters of goods to buyers in other countries or as domestic suppliers to multinational corporations (MNCs).²⁰ Notwithstanding, the MSMEs' contribution is eventually incorporated into a finished product and marketed in regional and global markets. MSMEs are affected by trade barriers and volatility surrounding export-related costs. In this regard, MSMEs must have adequate competency and high competitiveness which in this respect, ICT can constitute a

¹⁵ Rani Apriani, et al., "Obstacles Advancing MSMEs in Indonesia's Coastal Area to Support Economic Growth in the Digital Era," *Proceedings of The International Conference on Business, Accounting, Banking, and Economics (ICBABB Atlantis Press, 2022)*, 349–57, https://doi.org/10.2991/978-94-6463-154-8_30.

¹⁶ Bambang Jatmiko, et.al., "Strategies for MSMEs to Achieve Sustainable Competitive Advantage: The SWOT Analysis Method," *Journal of Asian Finance, Economics and Business* 8, no. 3 (2021): 505 – 15, <https://doi.org/10.13106/jafeb.2021.vol8.no3.0505>.

¹⁷ Michael T. Schaper and Cassey Lee, "Introduction: Making the Invisible SME More Visible in Competition Policy and Law," in *Competition Law, Regulation and SMEs in The Asia-Pacific. Understanding the Small Business Perspective*, ed. Michael T. Schaper and Cassey Lee (Cambridge: Cambridge University Press, 2017), 15.

¹⁸ Tulus T.H. Tambunan, "Competition Law and SMEs in Indonesia", in *Competition Law, Regulation and SMEs in The Asia-Pacific. Understanding the Small Business Perspective*, ed. Michael T. Schaper and Cassey Lee (Cambridge: Cambridge University Press, 2017), 277.

¹⁹ Titik Anas, "Indonesian Small and Medium Enterprise Participation in ASEAN Economic Integration", in *SMEs and Economic Integration in Southeast Asia*, ed. Cassey Lee, Dionisius Ardiyanto Narjoko and Sothea Oum (Cambridge University Press, 2019), 34 – 96.

²⁰ Arancha Gonzalez, "Leveraging Trade Facilitation Reforms for Increased SME Competitiveness," in *Small and Medium-Sized Enterprises in International Economic Law*, ed. Thilo Rensmann (Oxford: Oxford University Press, 2017), 112 – 124.

shortcut to coping with the problems mentioned above with the digital transformation of business models that can facilitate SMEs in the creative industries.²¹ SMEs must be aware that ICT has a public dimension, and interoperability standards usually arise as their effects on trade and competition are burdensome for SMEs.²²

As a large and geographically dispersed country, SME development programs in Indonesia tend to be implanted by the local government, with central authority acting as coordinator. However, Indonesia has some government bodies with overlapping responsibilities, without clear roles and responsibilities for different actors, creating inefficiency.²³ Indonesia should assign a body with the ultimate mandate for SME development to lead the exercise. This assignment could be followed by clearly delineating responsibility by policy area. In this context, Fifi Junita et al. argued that SMEs in Indonesia could act as international actors in trade by using an integrative policy approach of competitiveness and connectivity to resolve inefficiency issues and strengthen internationalization strategies for SMEs.²⁴ This proposal, however, still needs some factors to support realization.

For institutional framework assessment, it is argued that Indonesia should have an authority body at the national level to handle the MSMEs' highly complex issues involving several ministries seriously. In Malaysia, the National SME Development Council (NSDC) handling MSMEs, chaired by the Prime Minister of Malaysia, plays a strategic coordination role and responsibilities in implementing ministers' and agencies' programs, policies, and action plans. Moreover, it oversees engagement with private sectors, advocating for the development of Bumiputera SMEs across all areas of the economy.²⁵

In this regard, Indonesia, to some extent, ought to learn from Malaysia. Concerning the digitalization of MSMEs in Malaysia, an agency called SME Corporation Malaysia (SME Corp. Malaysia) has a program to encourage the digital transformation of SMEs in rural areas. Started in July 2022, it provides the SME community with guidance, technical support, and financial assistance to establish

²¹ Feng Li, "The Digital Transformation of Business Models in the Creative Industries: A Holistic Framework and Emerging Trends," *Technovation* (April – May 2020): 92-93, <https://doi.org/10.1016/j.technovation.2017.12.004>.

²² Olia Kanevskaia, *The Law and Practice of Global ICT Standardization*, (Cambridge: Cambridge University Press, 2023), 57, <https://doi.org/10.1017/9781009300551.006>.

²³ Agus Pramusinto, "Weak Central Authority and Fragmented Bureaucracy: A Study of Policy Implementation in Indonesia," in *The Role of the Public Bureaucracy in Policy Implementation in Five ASEAN Countries*, ed. Jon S. T. Quah (Cambridge: Cambridge University Press, 2016), 98 – 148.

²⁴ Fifi Junita, et al., "Internationalisation of Small and Medium Enterprises in Indonesia: Towards Integrative Policy Approach of Competitiveness and Connectivity," *Yuridika* 38. no. 2, (May 2023): 340 – 45, <https://doi.org/10.20473/ydk.v38i2.42955>.

²⁵ "SME Annual Report 2017/2018: A Connected World: Digitalizing SMEs", SME Corporation, accessed July 8, 2023, <http://www.smecorp.gov.my/index.php/en/laporan-tahunan/3342-laporan-tahunan-pks-2017-18>.

microenterprises, equipping SMEs with digital technology, working with delivery, and an e-commerce platform called the Warongku platform and the Women Netpreneur initiative, focuses on empowering women to venture into business and provides the community with business workshops that give training on registering for a company and running an online business.

SME Corp Malaysia also has a program dedicated to Malay and Indigenous youths aged between 18 and 30 called Tunas Usahawan Belia Bumiputera. This program provides the participants with online training on business skills, marketing, and accounting. The SME Corp. provided financial assistance, alleviating the financial burden through grants and a web portal called MyAssist MSME for the digitalization of SMEs.

This article argues that Indonesian MSMEs and cooperative communities as digital business players for similar products, for instance, food and beverages or handicrafts, can help each other offline for their go-online products. In this regard, the power of *gotong royong* as the cultural community effort, which is purely Indonesian' traditional cooperation, can be used to strengthen the digital ecosystem of MSMEs. This will be a combination of offline and online platforms. Having said this, Indonesia can adopt similar Malaysian programs with some adjustments in some parts of the programs. In addition, regulations and policies could be used as law as a tool of social engineering, which can be a means to control and arrange an inclusive digital economy of MSMEs in Indonesia.

C. Factors Driving the Business Operational Capability of MSMEs in Indonesia

1. The ICT Utilisation in Commerce

ICT refers to a wide range of computerized information and communication technologies. Chen, Castillo, and Ligon defined ICT as "skill around computing and communications devices, software that operates them, applications that run on them, and systems that are built with them".²⁶ Moreover, ICT also offers commerce opportunities where firms can endorse or commercialize their products, not just sell products and deliver services.²⁷

In the era of e-commerce and economic globalization, acquiring ICT to support business needs, regardless of the business size, is a crucial prerequisite to exploiting the potential of ICT. The study demonstrated that ICT is a means to enable enterprises to compete on a global scale, improve efficiency, and enhance closer

²⁶ Alexander N. Chen, J. Gabriel Dominguez Castillo and Katherine Ligon, "Information and Communication Technologies (ICT): Components, Dimensions, and its Correlates," *Journal of International Technology and Information Management* 24. no. 4, (2015): 28, <https://doi.org/10.58729/1941-6679.1051>.

²⁷ Tong Zou and Ali Cheshmehzangi, "ICT Adoption and Booming E-Commerce Usage in the COVID-19 Era," *Frontiers in Psychology* 13. (June 10, 2022): 3, <https://doi.org/10.3389/fpsyg.2022.916843>.

customer and supplier relationships.²⁸ Indeed, adopting ICT has brought great opportunities in the communications between parties worldwide, reshaped business models, and connected enterprises across internal and external value chains. In this respect, MSMEs should consider ICT as the most critical means in making a step change in penetrating, growing, and gaining a competitive advantage in the global markets and have boosted the ability of firms of all sizes and origins to find a niche in global value chains (GVC) and gain access to new markets in distant lands and on a 24/7 basis. The internet provides a platform for entrepreneurs to construct new businesses and commercialize their ideas, lowering entry barriers and freeing up resources for innovative activity.

ICT allows small and large enterprises to be competitive since, especially in e-commerce, it provides specific feedback from potential and actual customers, bringing continuous opportunities to innovate and improve MSMEs' efficiencies. Without ICT in the era of Industrial Revolution 4.0, big and small companies will find it more difficult if they fail to survive and become competitive. With ICT, MSMEs will qualify for entry into much larger markets, maximizing their potential for exploiting the opportunities presented by the domestic and international markets in Industrial Revolution 4.0. While the potential opportunities for MSMEs to adopt ICT are great, the current rate of ICT adoption by MSMEs remains much lower than large enterprises. Without aggressive government support, they would appear fragile and vulnerable, subjecting Indonesia to missing an excellent opportunity to progress towards a top ten global economy.

2. Making Indonesia 4.0

Indonesia has some policies on the digital economy, including Making Indonesia 4.0, and earmarks some products for e-commerce marketing through the e-Smart IKM (e-Smart for industrial SMEs). Making Indonesia 4.0 is designed as a roadmap for implementing national strategic policies in the industry 4.0 era. To achieve its broad goals, the national strategic initiative provides for collaborative steps involving stakeholders, from government institutions and ministries, associations and industrial players, and academicians. Based on the Global Competitiveness Report 2017, Indonesian competitiveness ranked 36th of 100 countries.²⁹

²⁸ Syed Shah Alam and Mohd. Kamal Mohammad Noor, "ICT Adoption in Small and Medium Enterprises: An Empirical Evidence of Service Sectors in Malaysia," *International Journal of Business and Management* 4, no.2 (2009): 112, <https://doi.org/10.5539/ijbm.v4n2p112>.

²⁹ "Making Indonesia 4.0: Strategi RI masuk Revolusi Industri ke-4" (Making Indonesia 4.0: Indonesian Strategy for the Fourth of Revolution Industry), Kementerian Perindustrian RI (Indonesian Ministry of Industry), accessed July 12, 2023, <https://kemenperin.go.id/artikel/18967/Making-Indonesia-4.0:-Strategi-RI-Masuki-Revolusi-Industri-Ke-4>.

The aims of Making Indonesia 4.0 are to boost competitiveness through the efficiency of processing products, improving product quality, and reducing cost production. Indonesia intends to realize Making Indonesia in 2025. To reach these national targets, the government has formulated national priority strategies inter alia, empowering MSMEs; incentivizing the implementation of technology investment, forming innovative economic ecosystems; and building the national digital infrastructure.³⁰

The government under the Ministry of Industry has selected some companies as lighthouses or exemplar companies that other firms may learn from in implementing Industry 4.0, considering that they have already adopted Industry 4.0 by using artificial intelligence (AI) and IoT in their business practices.

D. MSMEs' Limitations and Government Policies and Programs

MSMEs have some limitations that can discourage them from embarking on a business venture that may result in less productivity. Martina Lodrant and Lucian Cernat opined that, generally, multiple factors affected the low share of SMEs in international trade, including less tradable products and potential unexploited opportunities for trade expansion in the global market.³¹ Basically, SMEs are affected by the combination of internal and external barriers. Internal barriers are related to the inherent and distinguishing characteristics of small firms. In contrast, external barriers are factors outside the firm, including geographical, cultural, or market circumstances or government policy and practice.³² It can be said that these constraints apply in much the same way to SMEs as they do to large firms, but small businesses would have been affected more than large enterprises as they do not have sufficient resources to cope with them. Government intervention is mandatory in this context, particularly in regulatory frameworks and policies comprising overarching and specific objectives.

The government has launched some programs with different ministries or institutions and different categories in support of MSMEs in Indonesia but with more focus on entrepreneurship than ICT, with only one focus on ICT adoption, namely innovation and technology upgrading. Under this category, some programs and institutions hold these programs. For example, the Ministry of Research, Technology,

³⁰ "Making Indonesia 4.0", Kementerian Perindustrian RI (Indonesian Ministry of Industry), accessed July 12, 2023, <https://www.kemenperin.go.id/download/19374>.

³¹ Martina Lodrant and Lucian Cernat, "SME Provisions in Trade Agreements and the Case of TTIP", in *Small and Medium-Sized Enterprises in International Economic Law*, ed. Thilo Rensmann (Oxford: Oxford University Press, 2017), 166.

³² Lucian Cernat, Ana Norman-Lopez and Ana Duch T-Figueras, "SMEs are More Important than You Think! Challenges and Opportunities for EU Exporting SMEs", 3 TRADE Chief Economist Note, accessed July 9, 2023, https://trade.ec.europa.eu/doclib/docs/2014/september/tradoc_152792.pdf.

and Higher Education has the Techno-Entrepreneurship Programs (in co-operation with 20 universities), and the Agency for Assessment and Application of Technology has the Centre for Development, Education and Training; the Centre for Technological Services; and the Centre for Information Management. The Ministry of Communication and Informatics delivers the UMKM Go Online Program, One Million id. Domain Program; and 1000 Digital Start-up Program. Furthermore, the Indonesia Stock Exchange (IDX) operates an IDX Incubator.

The mechanism to monitor and evaluate the implementation of the plan is very limited as the program mainly consists of reports to the Ministry of Finance on the use of the budget, and they rely on self-assessment. Burger et al. maintained that the SME development programs are implemented without a thorough assessment of the actual needs of SMEs. Therefore, there was no full assurance of the quality of management of SMEs.³³ The government positioned SMEs as a social group rather than a latent engine of an economic group that needs assistance only. Unfortunately, this seems to have been pervasive among Indonesian policymakers since independence. Therefore, the Indonesian government only pays attention to an approach that focuses on social policy over economic competitiveness objectives, which is placed as an on-board theme as income redistribution and poverty alleviation in the region.

E. The Landscape of MSMEs Policy in Indonesia

In Indonesia, at least 24 ministries and agencies are involved in the inter-ministerial synergy focused on SME development. Each ministry or agency proposes and implements its policy measures. Under the previous law, the ministry responsible for SMEs within the government is mandated to coordinate the empowerment of SMEs. The implementation of the regulation provides that this coordination is undertaken with technical ministers, non-ministerial government institutions, governors, regents, mayors, the business sector, and civil society organizations.³⁴ Considering the overlapping institutions and policies above, Indonesia needs to reform its economic structure to enhance investment in its digital economy, empower MSMEs, and help prepare its human resources to become digitally ready to implement Industry 4.0.

The initial stage of the Indonesian digital economy with technology investments has resulted in the establishing of five prominent unicorns, including Gojek,

³³ N. Burger., C. Chazali, A. Gaduh, A. Rothenberg, I. Tjandraningsih and S. Weilant, "Reforming Policies for SME in Indonesia," RAND Corporation and Tim Nasional Percepatan Penanggulangan Kemiskinan (Jakarta: Indonesia, TNP2K, 2015).

³⁴ OECD, "OECD Studies on SMEs and Entrepreneurship Policy in Indonesia 2018", accessed July 9, 2023, <https://read.oecd-ilibrary.org/employment/sme-and-entrepreneurship-policy-in-indonesia-20189789264306264-p105>.

Tokopedia, Traveloka, and Bukalapak, and OVO – a digital payment, has become a new unicorn.³⁵ The market capitalization of such companies is based on an economic system where the usage of technology is expected to rise substantially and raise the level of the national economy, especially post-COVID-19. ICT ensures micro-enterprises have access to new markets and spurs the economy's growth. Government policies on the digital economy are inseparable from the crucial issues of globalization and international trade.

MSMEs and Cooperatives can participate in trade, such as in intermediate goods or smaller quantities of physical goods and digital services. Under the current digital business context, the government must seek a fundamental understanding of the status of the adoption of digital technology by MSMEs, the standard digital tools used, and how deeply digitalization is in their business operations.

1. Information Communication and Technology (ICT) and MSMEs

The internet, especially electronic commerce (e-commerce), poses various potential benefits to all businesses, including SMEs. E-commerce has been defined as “the electronic exchange of information, goods, services, and payments.”³⁶ Schneider defined e-commerce as “business activities conducted using e-data transmission via the internet and the World Wide Web.”³⁷ The benefits and impacts of e-commerce are as follows:³⁸ (1) unmatched savings in terms of transaction costs; (2) the reduction of cost in advertising and promotion; (3) speedy communication between buyer and seller; (4) helping companies shorten their traditional supply chains, minimize transport obstacles, and reduce delivery costs; and (5) removing physical limitations of time and space.

Regarding the overlapping regulations, had often happened due to the government has developed rules under the influence of shifting economic views, political changes, and reactions to market distortions. It has increased their complexities and unpredictability and added more burden on SMEs. For this reason, policymakers could ensure that SMEs are considered when they design regulations. Many OECD countries, including those in the European Union (EU), have adopted

³⁵ Menkominfo, “OVO Jadi ‘Startup Unicorn’ Kelima dari Indonesia” (Ministry Communication and Information: OVO became the fifth “Startup Unicorn” from Indonesia), *Kompas.com*, 7 October 2019, <https://tekno.kompas.com/read/2019/10/07/06500027/menkominfo-ovo-jadi-startup-unicorn-kelima-dari-indonesia>.

³⁶ Harrington L and Red. G, “Electronic commerce finally comes of age” *The McKinsey Quarterly* no.2 (1996): 68.

³⁷ G, Schneider and J. T. Perry, *Electronic Commerce*, (Cambridge, MA., Course Technology, Thomson Learning, Inc. 2000), 193.

³⁸ Henry Chan, R. Lee, E. Chang and T. Dillon, *E-commerce: Fundamentals and Application*, (West Sussex: John Wiley & Son. Ltd., 2001), 14.

this approach with the “Think Small First” principle.³⁹ The Indonesian government needs to consider all of the SMEs’ issues, their weaknesses and strengths, and the opportunities and challenges they may have in the era of Industry 4.0 by considering and putting the MSME's interests first and using Industry 4.0 as the primary trigger.

2. ICT adoption by Indonesian MSMEs

In today’s business environment, the effective use of Information Systems and Information Technology can allow large enterprises and small firms to take advantage of ICT. Developing intranets and linking into extranets will enable small firms to exploit the business benefits of ICT. In this respect, this may also enable MSMEs to forge strategic alliances with other organizations. Creative internet use will also allow MSMEs to take advantage of market opportunities.⁴⁰

The use of ICT has grown and changed with increasing rapidity. ICT is a driver and enabler of economic development in most economies, including Indonesia. Its adoption can be related to not only large corporations but also SMEs. Currently, the financial well-being of all firms worldwide depends on ICT, which is critically important in their business activities. In the same regard, SMEs stand favorably to benefit from the successful operation of ICT in the global market.

In some cases, however, MSMEs are reluctant to adopt ICT due to their limitations, including their lack of resources and the shortage of technical and business skills to adopt ICT successfully. These limitations lead to unworkable ICT adoption, reducing their competitive advantage. Also, MSMEs perceive ICT as an expensive and risky initiative.

MSMEs can adopt ICT as a strategic resource to develop and enhance their competitive advantages. ICT has become an important strategic tool essential to success in today’s market. For MSMEs, their businesses’ survival depends on using ICT in that they can develop new organizational models, penetrate and capture new markets, and enhance communication relationships with their employees, suppliers and customers. The Indonesian Bank Central Bank Indonesia has introduced the digitalization of an MSME transaction system called Quick Responses Code Indonesian Standard (QRIS). This system aims to support the digitalization of MSMEs’ financial mechanisms. By applying this application in their financial transaction, it is expected that MSMEs will be recorded, and this record can be used as a tool to give financial support to MSMEs easily. Eventually, these will boost their sales transactions and accelerate national economic resilience. QRIS is a formal financial

³⁹ OECD, “OECD Studies”, 102.

⁴⁰ S. Maguire, S.C.L. Koh, and A. Magrys, “The Adoption of e-business and knowledge management in SMEs,” *Benchmarking: An International Journal* 14, no.1 (2007): 40, <https://doi.org/10.1108/14635770710730928>.

service the government provides with strong governance and a stable institution that creates safe payments for online transactions.

The adoption of ICT offers MSMEs more extensive opportunities in their business. Modern advanced computers, which are more powerful and less expensive, have given small firms the potential to use software to make their business more competitive since digital technology enables them to create business model innovation.⁴¹ With the penetration of smartphones, which is expected to be massive in a few years, business players can manage and control their companies through their mobile phones. ICT has contributed to the growth and development of MSMEs by decreasing the per-unit cost of communication and transaction, enhancing better relations among MSMEs, their customers, and suppliers. In short, it has brought significant changes in how organizations exist, operate and interact.⁴² ICT also helps MSMEs penetrate specific customers in markets without any geographical limitation. Thus, ICT has significantly reduced the costs of operating globally, notably through digital channels for cross-border transactions such as e-commerce or e-business.

Almost all MSMEs nowadays employ a mobile phone and prefer to communicate with their customers and suppliers via such a device instead of other communication tools, such as fixed-line or postal box. The utilization of mobile phones is essential for rural SMEs' sustainability and lifelong development.⁴³ MSMEs, especially in Indonesia in this digital era, have a great awareness of ICT usage and are well-informed of the benefits of the internet, but their connections to and usage of ICT are still relatively low. Despite this, ICT adoption has positive global effects on MSMEs in general.⁴⁴ Moreover, it is revealed that the utilization of ICT has an impact, as 70 percent of the MSMEs with ICT are more developed than those without ICT.⁴⁵ Furthermore, the government has set a target that, in 2024, 30 million MSMEs will be digitized.

⁴¹ K. Schwertner, "Digital Transformation of Business," *Trakia Journal of Science* 15, Suppl.1 (2017): 388 – 93. <https://doi.org/10.15547/tjs.2017.s.01.065>.

⁴² Cantemir Mihiu, Antoniu Gabriel Pitic and Dorin Bayraktar, "Drivers of Digital Transformation and Their Impact on Organizational Management," *Studies in Business and Economics* 18, no.1 (April, 2023): 149 – 70, <https://doi.org/10.2478/sbe-2023-0009>.

⁴³ Md Taimur Ahad, "Exploring the Usage of the Mobile Phones by SMEs in the Achievement of Vision 2020 Goals," *Journal of Mobile Technologies, Knowledge, and Society* 2016. Article ID 741807 (2016): 1-18, <https://doi.org/10.5171/2016.741807>.

⁴⁴ Sujit Kumar Basak, Marguerite Wotto and Paul Bélanger, "Global Positive Effects of ICT Usage and Adoption in SMEs: A Literature Review Prior to the Covid-19 Crisis," *Jurnal Varidika* 34, no.2 (2022): 95-115, <https://doi.org/10.23917/varidika.v34i2.20861>.

⁴⁵ Farooq Rehabna, et al., "The Utilization of Information and Communication Technology (ICT) in the MSME's of the JK, with its Impacts," International Conference on Computer Science, Engineering and Applications, ICCSEA 2020, (March 2020), <https://doi.org/10.1109/ICCSEA49143.2020.9132953>.

To boost the ICT competence of the MSMEs, the government is recommended to sponsor some programs such as periodic training in workshops and specific programs promoting the benefits and the use of ICT resources in business growth strategies. Such programs could be organized by the national board for SMEs (small-scale industries) or universities. Another program could be outsourcing ICT delivery systems to ICT consultants to avoid or mitigate the funding problem relating to setting up ICT systems, which usually require vast initial capital outlay. The primary policy recommendation arising out of the analysis is that, for broad dissemination, ease of use, and convenience, the applications for SMEs need to be developed for mobile phones.

3. MSMEs in Indonesia's digital infrastructure

A study by McKinsey in 2021 suggested that Indonesia should adopt digital technology as soon as possible, as digitalization will add to Indonesia's economy which automation would create 23 million more jobs. This is a big opportunity for the Indonesian workforce, including MSMEs, to benefit from the digital economy. It behooves the Indonesian government to encourage MSMEs to take advantage of ICT opportunities to maximize all their potential capability in realizing the benefits of the digital economy.

To realize and maximize the potential benefits of the digital economy, the Ministry of Industry has encouraged the establishment of startups or young companies to develop industrial small, and medium enterprises or *Industri Kecil Menengah* (IKM) in Indonesia. IKM is an MSME in the industrial sector. A report by *Masyarakat Industri Kreatif Teknologi Informasi dan Komunikasi Indonesia* (MIKTI) or the Community of Industrial Creative ICT on Mapping and Database Startup Indonesia 2018 shared that the total number of startups in 2018 had reached 992.⁴⁶ Due to the COVID-19 pandemic, the number of startups in Indonesia has risen significantly, accounting for 2,390 in 2022, ranked second in Asia.

Foreign sources, such as Catcha Group and Startup Ranking, state that currently, there are over 2,100 active startups in Indonesia, which is preceded only by the United States, India, the United Kingdom, and Canada.⁴⁷ The vision is to position Indonesia as the digital hub of Asia, with the government explicitly stating Indonesia intends to become one of the countries in Asia hosting the largest digital industrial power and inspiring a new generation of investments, lifting the economic wealth of

⁴⁶ "Mapping & Database Startup Indonesia 2018," Bekraf.go.id, MIKTI (Indonesia Digital Creative Industry Society), accessed June 10, 2023, https://www.kemenparekraf.go.id/asset_admin/assets/uploads/media/pdf/media_1589838814_Mapping_Database_Startup_Indonesia_2018.pdf.

⁴⁷ "How did Indonesian Startups fare in 2020?," Tech Collective.com, accessed June 10, 2023, <https://techcollectivesea.com/2020/12/11/how-did-indonesian-startups-fair-in-2020/>.

the entire nation. Thus, Indonesia has a huge market with great potential for entrepreneurs, and it is home to a growing number of startups.

The Indonesian vision as the digital energy of Asia is not entirely implausible since Indonesia has more than two thousand start-ups where some can create digital applications for office tasks such as managerial, production, and marketing. The existence of a start-up Small Medium Industry/SMI is very important. SMIs are industry-based SMEs most of which are MSMEs, which are crucial for Indonesia to accelerate the digital transformation of IKM. Therefore, adopting ICT by these potential Indonesian SMIs start-ups would have positioned them as an “enabler” that works all at once in all of Indonesia, covering all MSMEs. The government should provide an economic ecosystem driven by a multiplayer of skilled human resources to support all MSMEs. This provision would tackle the complex issues of MSMEs that need an innovative techno-economic policy, namely an innovation combined with automation that leads to improvement.

In fostering the potential digital capability of SMIs’ enterprises, the government issued economic policies on e-commerce and Industry 4.0. It launched several programs, such as *Badan Ekonomi Kreatif* or BEKRAF (Creative Economy Agency) for pre-start-up, 1000 Digital Start-ups, BEKRAF Developer Day, UMKM Go online, and financing start-ups. Many programs organized by various ministries cover various categories, including entrepreneurship development and start-up support, business management skills, and market development support and access.⁴⁸

The Ministry of Cooperatives and SMEs also has programs that support MSMEs in adopting ICT. For instance, the program “8 million MSMEs Go Online” was a collaborative project between the Ministry of Cooperatives and SMEs and the Ministry of Communication and Informatics with a number of e-commerce business players.⁴⁹ Eight million MSMEs in Indonesia needed to be digitally literate, that the project was established in response to the vision of President Joko Widodo to realize Indonesia as the Digital Energy of Asia. The major difference between the current program and the previous one is that the government has come to the SMEs in the markets by involving many stakeholders, such as the district and municipal governments, ministries (Ministry of Communication and Informatics and Ministry of Finance), Association of Management of the market, banks, and some marketplaces such as Tokopedia, Bukalapak, Shopee, Blibli, Lazada, Blanja.com, Go-

⁴⁸ “SME and Entrepreneurship policy in Indonesia”, OECD Library 2014, accessed on July 12, 2023, https://read.oecd-ilibrary.org/employment/sme-and-entrepreneurship-policy-in-indonesia_2018_9789264306264-en#page104.

⁴⁹ “8 Juta UMKM ditargetkan ‘Go Online’ pada 2019” (8 million MSMEs are targeted to be ‘Go Online’ in 2019), Kominfo (Indonesian Ministry of Communication and Informatics), accessed July 9, 2023, https://kominfo.go.id/content/detail/11512/8-juta-umkm-ditargetkan-go-online-pada-2019/0/sorotan_media.

Food as well as e-payment businesses players such as OVO, Go-pay, LinkAja, Dana, T-money and Visionet.⁵⁰

To support the digitalization of MSMEs in Indonesia, the government should form and implement policies correlated to infrastructure. First, the government must improve the broadband coverage of rural areas since MSMEs are very commonly found in such areas. Internet access is critically important for the Indonesian digital economy, considering that internet access is still quite expensive and slow. Thus, government support for providing and maintaining the internet should be a high priority.

In October 2019, Indonesia launched the Palapa Ring, a broadband infrastructure aiming to boost internet connectivity evenly throughout Indonesia, including the rural areas, reduce internet connection costs, and support Indonesia's digital economy.⁵¹ This will provide a fast internet connection for 514 districts or cities all over Indonesia.

For Indonesia, village development is a significantly important element and a crucial trigger in boosting Indonesian economic growth.⁵² In this context, the potential digital economy of Indonesia's MSMEs can be maximized, and thus, Indonesia's independence in the era Industry 4.0 can be realized.⁵³ In other words, the government must pay special attention to this issue in correlation with the digital economy in the era of Industry 4.0. Hence, by implementing Industry 4.0, MSMEs must constantly innovate to remain competitive.⁵⁴

The government should provide concrete support to MSMEs across the region so that they can benefit from digital opportunities. While the government, through the ministries, has already supported MSMEs, the problem is that the programs

⁵⁰ "Kemenkop UKM: 3,39 juta UMKM sudah Go Online" (Ministry of Co-operative and SME: 3.39 million SME have been Go Online), Ministry of Co-operatives and SME, accessed July 10, 2023, https://www.kominfo.go.id/content/detail/11526/kemenkop-ukm-379-juta-umkm-sudah-go-online/0/sorotan_media.

⁵¹ Kemenperin on twitter (@kemenperin), "Sudah selesai 100% dan memasuki masa operasional, apa saja manfaat Palapa Ring? #PalapaRingSatukanNegeri", July 11, 2023, https://twitter.com/Kemenperin_RI/status/1183767508685217793/photo/1?ref_src=twsrc%5Etfw%7Ctwcamp%5Eembeddedtimeline%7Ctwtterm%5Eprofile%3AKemenperin_RI&ref_url=https%3A%2F%2Fkemenperin.go.id%2Fartikel%2F18967%2FMaking-Indonesia-4.0%3A-Strategi-RI-Masuki-Revolusi-Industri-Ke-4.

⁵² La Ode Machdani Afala and Restu Karlina Rahayu, "What Makes Village Economic Development Successful? Evidence in Two Villages, Malang Regency Indonesia," *Journal of Governance* 8, no. 2 (2023): 177 – 96, <http://dx.doi.org/10.31506/jog.v8i2.18893>.

⁵³ Gita Sari Dewi, Zainal Abidin Sahabuddin and Susilo Adi Purwantoro, "Digital Transformation of Micro, Small and Medium Enterprises (MSMEs) in Realizing Indonesia's Economic Independence in the Era of Industry 4.0," *International Journal of Social Science (IJSS)*. 2, no. 5 (Feb 2023): 2093 – 106, <https://doi.org/10.53625/ijss.v2i5.4817>.

⁵⁴ Fei Yu and Tim Schweisfurth, "Industry 4.0. technology implementation in SMEs – A Survey in the Danish – German border region," *International Journal of Innovation Studies*. 4, no. 3, (Sep 2020): 76 – 84, <https://doi.org/10.1016/j.ijis.2020.05.001>.

often overlap and are of limited outreach. Furthermore, the government should provide broader access to investment. Digitalized MSMEs need a mixture of domestic and foreign investment. Barriers to investment access will discourage and reduce the potential of digitized MSMEs to improve services. The government can also inspire the public by having a wider electronic service in the form of e-government because this online service is much more effective and efficient.

F. Conclusion

The massive digital transformation brings challenges and needs the involvement of and support from all stakeholders, including government, corporations, and start-ups, to collectively build a digital ecosystem that benefits everyone. The adoption of ICT by MSMEs requires coordinated and often substantial efforts from the government due to the nature of MSMEs and their weaknesses. Although only a few MSMEs have participated in the digital economy so far, they are the backbone of Indonesia's continuous and sustainable economic development. The Indonesian government must address MSMEs' issues holistically, considering their strengths, weaknesses, opportunities, and challenges in the era of Industry 4.0 while prioritizing their interests.

The government has established an MSMEs policy that cannot be borne solely by the government. However, the government for this MSMEs policy needs to go together with private-sector development to help MSMEs overcome their barriers. Despite the existing regulations and policies, a sustainability support is still needed for the digitalization of MSMEs, particularly from stakeholders of the digital ecosystem in Indonesia including Indonesia's unicorns. This support can be done systematically and consistently. In this regard, besides the need for a sole institution that is charged with the MSMEs issues, Indonesia must learn best practices from Ali Baba China. The government can provide an economic policy concerning MSMEs going online by involving the Indonesian unicorns, which have a similar reputation and economic level as Ali Baba. This will be part of their social responsibilities in the form of socio-technical adaptation.

Moreover, as digital business players for similar products, MSMEs and Cooperatives can form and establish a community by which they can help each other offline for their' go online products. In this regard, the power of *gotong royong* as the cultural community effort, which is purely Indonesian' traditional cooperation can be used to strengthen the digital ecosystem of MSMEs. This will be a combination of offline and online platforms.

With its large population of young people (a demographic bonus), Indonesia stands to benefit significantly from laying a strong foundation for its digital economy.

The millennial generation's extensive use of the internet in their daily lives presents an opportunity to power and accelerate the national economy. Achieving this requires an adequate legal framework and robust collaboration among all stakeholders, including private companies, community associations, start-ups, other digital economy players, and the government at all levels—central, regional, and local. The government is not a direct player in the digital economy but acts as a regulator and facilitator, responsible for creating a sustainable ecosystem that supports an inclusive digital economy for MSMEs.

The digital economy is critical for Indonesia, especially for businesses like MSMEs, as it enables them to compete nationally and internationally. It can simultaneously support Indonesia's intention to connect to the global transformation. Indeed, digital technologies could transform the economic capability of MSMEs as they can reap the benefits of it. Poor trade policies and regulations could risk undermining these benefits.

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