

ERIA Discussion Paper Series**No. 487****ASEAN Digital Community 2045****Lili Yan ING****Secretary General of the International Economic Association (IEA) and
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November 2023

Abstract: *Over the last decade, the Association of Southeast Asian Nations (ASEAN) has undergone significant development in digitalisation. The rapid digital transformation in ASEAN, however, has brought forth risks and challenges encompassing data security, cybersecurity, competition, and the digital divide. To effectively address these challenges and leverage the potential of the digital realm, ASEAN developed nine frameworks during 2016–2023. Yet, the focus is primarily on digital trade. We suggest that ASEAN embrace digital transformation by establishing the ASEAN Digital Community (ADC) 2045. This vision could provide guidance to Member States, enabling them to overcome regional challenges and unlock their digital potential. It is crucial for ASEAN to nurture digital development across the three key pillars: political-security, economic, and socio-cultural dimensions. The three pillars should be built on four fundamental elements: data governance, value-added enhancement, improved digital connectivity, and digital inclusivity. Through the establishment of ADC 2045, ASEAN could position itself as a significant player in the global digital economy while ensuring that digital transformation aligns with its sustainable and inclusive development agenda.*

Keywords: Digital, East Asia, ASEAN, Trade, Investment

* The authors thank Enggartiaso Lukita, Iman Pambagyo, Sidharto Suryodipuro, Edhi Pambudhi, Kasan Muhri, Megawati, Dina Kurniasari, Netty Muharni, Maria Monica Wihardja, Julia Tijaja, Fukunari Kimura, Lurong Chen, and officials of ASEAN Member States and the ASEAN Secretariat for sharing their insights on the development agenda of digital transformation in ASEAN. Ridho Meyrandoyo and Catherin Safitri provided excellent assistance. Correspondence: ivana.markus@eria.org

1. Introduction

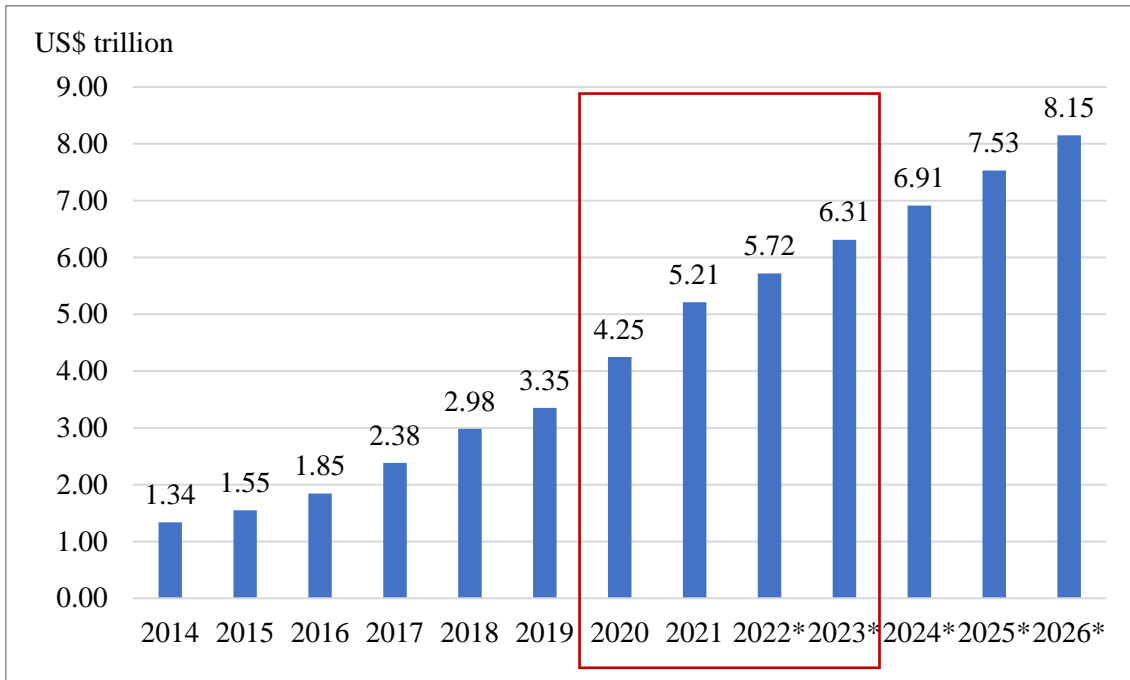
Digital transformation has changed not only the way we work but also the way we live. It has shifted the focus of goods and services trade, emphasising not only what is produced and traded, but also how it is traded, customised, and delivered (Ing, Grossman, and Christian, 2022). The services sector has experienced a significant rise in digitalisation, especially during the pandemic when limited socio-economic activities and mobility were prevalent. Trade in digitally deliverable services demonstrated relative resilience during this period. In Asia, the value of digitally deliverable services trade increased from \$120.8 billion in 2005 to \$483.5 billion in 2019 (ADB, 2022).

Global digital trade is estimated to reach \$6.3 trillion in 2023 and is projected to surpass \$10 trillion by 2030 (Figure 1). The Association of Southeast Asian Nations (ASEAN)¹ is projected to contribute \$360 billion to global digital trade by 2025 and is expected to grow to \$1 trillion or about 10% of global digital trade by 2030 (Statista, 2022b). ASEAN has an immense opportunity to grow its digital landscape further and develop its central role in the era of digital transformation.

One of the key factors behind ASEAN expanding digital trade is its young digital-savvy population. In 2022, internet users in ASEAN reached 460 million, up from 360 million in 2019 (Figure 2) – an increase of 100 million users in just 3 years of digital transformation (Google, Temasek, and Bain and Company, 2022). E-commerce (75%) and related sectors such as food delivery (71%), online transportation (64%), and online groceries (64%) dominated the digital adoption trends amongst ASEAN's internet users. In 2020, about 24% of firms received orders online, while more than 40% placed orders online (UNCTAD, 2022).

¹ The 10 ASEAN Member States (AMS) are Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic (Lao PDR), Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam.

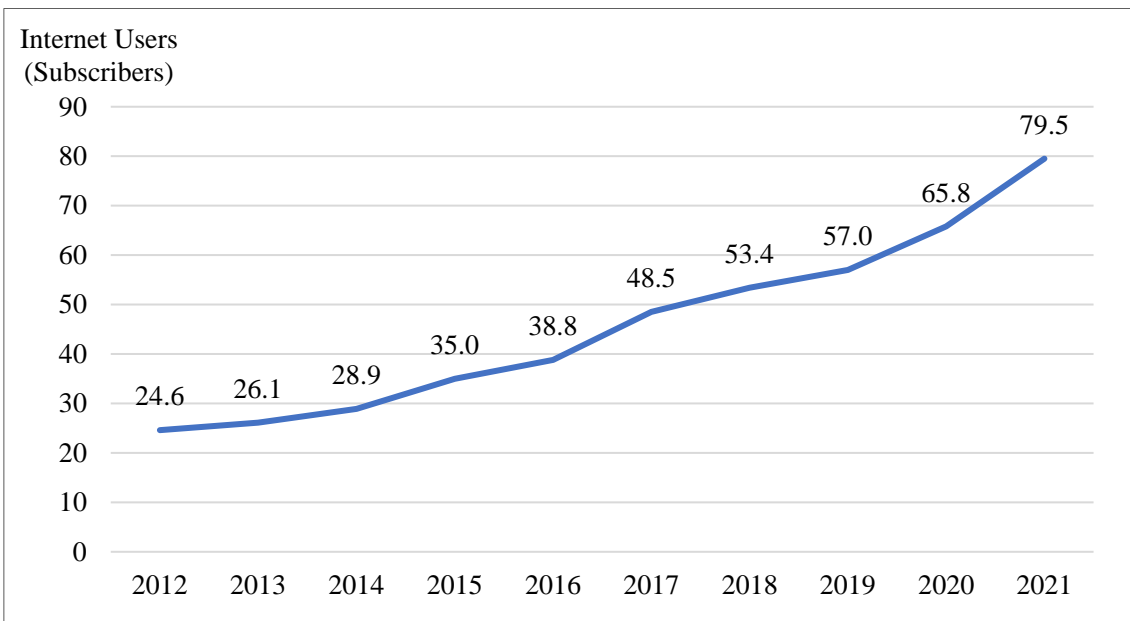
Figure 1: Global Retail E-Commerce Sales, 2014–2026*



* = estimation.

Source: Statista (2022), Retail E-Commerce Sales Worldwide from 2014 to 2026. <https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/> (accessed 26 May 2023).

Figure 2: Access to Internet Services in ASEAN, 2012–2021



ASEAN = Association of Southeast Asian Nations.

Notes:

1. Number of internet users are per 100 persons.
2. The ASEAN figures for 2020–2021 are estimated, as data for some ASEAN Member States are not available. For 2021, the figure is based on the latest available data, and data for Brunei Darussalam and Myanmar are calculated based on the number of subscriptions to internet provider companies. Consequently, there is a possibility of one person being counted multiple times if they subscribed to more than one provider.

Source: ASEAN (2022), *ASEAN Statistical Yearbook 2022*. Jakarta: ASEAN Secretariat.

The other key success factor in ASEAN digital trade lies in the growth and effectiveness of digital payments. ASEAN stands out as the world's fastest-growing mobile wallet market, driven by a significant increase in internet subscribers within the region. The rise of cross-border trade over the past decade has played a significant role in the increased utilisation of digital payments. Traditionally, cross-border trade has been associated with long processing times and high costs. Digital payments offer a solution to these challenges by providing users with convenience and efficiency. In ASEAN, the total transaction value of digital payments is projected to reach \$226.6 billion in 2023, with the largest market being digital commerce, estimated to have total transactions of \$193.8 billion (Statista, 2023).

Realising its enormous potential, as well as coping with challenges in digitalisation, ASEAN aims to manage the development of digitalisation in ASEAN, not only on the economic front but also in terms of security and politics as well as socio-cultural issues. However, as in other developing countries, ASEAN faces key challenges in pursuing it.

2. Key Challenges in ASEAN's Digital Transformation

The rapid digital transformation in ASEAN has come with risks and challenges.

2.1. Data, Cybersecurity, and Competition

Private individual and institutional information and data are exposed to service providers, including the pervasive exchange of data, which has fuelled concerns about the use and misuse of data. The swift accumulation of digital data and the establishment of a global information infrastructure within the digital economy give rise to apprehensions regarding the privacy of data and the safeguarding of personal information (Kolbanev, Palkin, and Tatarnikova, 2020). The widespread proliferation of personal computers and the accessibility of international networks have caused a surge in security risks and breaches, underscoring the necessity for robust cybersecurity measures (Oppitz and Tomsu, 2018).

The expansion of rapid digitalisation and the use of data comes with increased threats – against data, against systems, and against people. At the same time, technological advancement enables firms to produce and operate in large economies of scale that build market concentration. Such market concentration reduces competition and can be a barrier to micro, small, and medium-sized enterprises (MSMEs) and start-ups enjoying a level playing field, as big tech players tend to use integration as a strategy to

dominate markets and capture more revenue, at the cost of MSMEs and consumers. The convergence of competition law with the safeguarding of privacy in the realm of big data and social media presents a significant hurdle for competition authorities worldwide (Nielsen et al., 2018).

In the case of ASEAN, the existing regulatory policies and frameworks may not adequately address emerging digital concerns, such as data protection and cybersecurity. These policies were not specifically designed to keep up with rapid advancements in the digital landscape, which could hinder the progress of ASEAN's digital economy. Moreover, varying levels of digital maturity and diverse regulatory frameworks across ASEAN Member States (AMS) create complexities in standardising regulations within the region. ASEAN's digital economy exhibits noticeable regulatory gaps and inconsistencies, encompassing areas such as competition, data privacy, cybersecurity, patents, and copyright laws across all AMS.

The widespread sharing of private information with service providers has raised numerous concerns regarding the use and misuse of data, whereas ASEAN data protection regulations exhibit disparities in their development.

ASEAN has demonstrated an increasing commitment to developing best practices for data governance in the region. The ASEAN Framework on Digital Data Governance outlined strategic priorities for ASEAN, including facilitating cross-border data flows. However, the adoption of regional data governance still exhibits disparities amongst AMS and is in the early stages. While countries like Singapore and Thailand do not have data localisation policies, others such as Indonesia and Viet Nam still require data to be stored locally (SIIA, 2022).

Furthermore, countries like Malaysia, the Philippines, Singapore, and Thailand have made notable strides by enacting data protection laws, though these laws are dispersed across a variety of legislation and regulations, with certain nations having dedicated data protection statutes. Similar dynamics extend to the realm of cybersecurity, where certain AMS lag in implementing the regulations. Viet Nam stands out amongst these countries for its cybersecurity laws, mandating private companies operating within its borders to house data on local servers to ensure heightened security (Suvannaphakdy, 2022).

Discrepancies in data protection laws and enforcement mechanisms can raise concerns about data breaches, unauthorised access, and misuse of personal information.

Differences in data privacy laws, e-commerce regulations, intellectual property rights, and cybersecurity standards can hinder cross-border digital trade and investment.

2.2. Productivity

ASEAN is probably the region with the highest degree of different levels of development, with Singapore as the front runner in all economic, social, and human development indicators, compared with the Lao People's Democratic Republic (Lao PDR) and Myanmar. The diversity of ASEAN's level of economic development and digitalisation has resulted in diverse progress in digitalisation and technology ecosystems in the region. According to the World Economic Forum (2021), productivity improvement is one of the greatest benefits of digital enhancement in the economy. However, the diverse levels of economic development and digitalisation in ASEAN result in uneven progress in digitalisation and technology ecosystems. Different levels of the use of digital technology will further increase disparities in productivity levels amongst AMS.

Moreover, working together as a region, ASEAN's primary digitalisation focus remains on the development of digital trade, digital platforms, and e-commerce. UNESCAP and ASEAN (2021) emphasised the critical role of reducing trade costs to facilitate robust engagement in global and regional value chains, ensuring that trade continues to serve as a fundamental driver of sustainable growth. Despite notable growth in the trade, finance, and investment sectors through digitalisation, the need remains urgent to broaden the scope of digital transformation to encompass other sectors. The concentrated focus on digital trade, platforms, and e-commerce has resulted in limited progress in expanding value added beyond these domains, thereby impeding the comprehensive advancement of ASEAN's digital economy.

2.3. Connectivity

In recent years, ASEAN has made remarkable progress in bolstering its digital infrastructure to support the growth of its digital economy. A pivotal challenge in ASEAN's digital transformation lies in the deficiency of both digital and physical enablers, encompassing digital infrastructure and connectivity. The establishment of a robust digital infrastructure and seamless connectivity is imperative for advancing the digital economy within ASEAN. This encompasses cutting-edge networks, hardware, software, data centres, and widespread broadband connectivity to facilitate the seamless provision of digital services. Infrastructure Asia underscores the significance of prioritising digital connectivity, encompassing factors such as accessibility, bandwidth

requirements, affordability of data connections, and device availability, to fortify the digital infrastructure across ASEAN (Infrastructure Asia, n.d.).

Nevertheless, digitalised systems and digitally deliverable goods and services still constitute a smaller proportion in the least developed countries compared with other global regions. Merely 2% of low-income countries partake in digital trade. The capability of deploying technology emerges as a pivotal concern in digital transformation, evident in the unequal distribution of technologies due to limited capacities. An examination of the primary indicators contributing to the digital divide – internet speed, usage, and technology production – reveals a significant disparity amongst AMS. For instance, Indonesia’s internet speed is 21.95 megabits per second (Mbps), Singapore’s is 211.36 Mbps, and Myanmar lags at 18.35 Mbps (Ing and Markus, 2023). In this digital epoch, the synergy of digital and physical connectivity is the linchpin for successful digital transformation, resonating within the ASEAN region.

Digitalisation has the potential to elevate productivity and invigorate MSMEs (World Economic Forum, 2021). However, the disparate progress in digital advancement amongst and within AMS could impede the positive impacts on productivity and various economic sectors within ASEAN. For instance, the scarcity of robust digital infrastructure acts as a deterrent for AMS in adopting digital technologies across diverse value-added sectors. In addition, the Logistics Performance Index score of AMS could be significantly improved through widespread adoption of digital technologies in the region (Ha and Chuah, 2023).

2.4. Digital Divide

Digital divides across firms and individuals, across and within countries, are visible in this region. Countries, governments, firms, and individuals vary greatly in their digital readiness depending on education, skills, and infrastructure. Differences in digital uptake emerge amongst AMS with robust digital infrastructure and capabilities, and those with limited resources in these areas. Moreover, within-country digital divides manifest as gaps between rural and urban communities, with rural areas facing restricted technology access, low digital adoption, and limited internet availability. Digital skill development varies significantly across AMS, exemplified by Singapore ranking 1st and Cambodia ranking 75th on the Inclusive Internet Index (EIU, 2022), underscoring a substantial digital inclusion gap within the region. Similar disparities persist within individual

countries, particularly between urban and rural areas, where limited digital service access hampers rural communities.

Digital divides, marked by inequalities in access to and utilisation of digital technologies, are a considerable impediment to narrowing the disparities between regions, nations, and socio-economic strata (Lazovic and Durickovic, 2014). The capacity to deploy technology plays a vital role in digital transformation, evident in the unequal distribution of technologies due to limited capabilities. Technological advancements have led to increased market concentration and reduced competition, and have posed challenges for MSMEs and start-ups striving for competitiveness.

Moreover, at the core, digital divides are about human capital. The coronavirus disease (COVID-19) pandemic and technological disruptions have pushed marginalised workers in some AMS towards informal sector activities due to limited digital skills, while a significant portion of professionals have transitioned to remote work as employers digitise processes (Intaratat, 2022). The concept of the ‘digital divide’ has evolved to spotlight the skills gap between individuals with digital proficiency and those without. Possessing digital skills yields benefits like employment opportunities, income, and social outcomes, while their absence hampers prospects (OECD, 2016). The contrast between rising demand for advanced digital skills and the existing proficiency levels within the ASEAN workforce becomes increasingly apparent.

3. ASEAN Framework on Digitalisation (2016–2023)

This section presents our preliminary review of the existing ASEAN digital frameworks and work plans established from 2016 to 2023.²

3.1. ASEAN Framework on Personal Data Protection (2016)

In 2016, to promote the responsible use and protection of personal data within the region, AMS agreed to form the ASEAN Framework on Personal Data Protection. The framework was established in response to the increasing importance of personal data in the digital economy and the need for a common set of principles and standards for data protection. The framework aims to establish a harmonised approach to personal data protection across AMS, promoting consistency and interoperability in data processing practices. It is intended to provide individuals with greater control over their personal data

² The existing ASEAN initiatives, masterplan, frameworks, work plans, and action plans are ASEAN (2016; 2018; 2019; 2020a; 2020b; 2021a; 2021b; 2021c; 2021d; 2023).

and foster trust in the digital economy. Key principles of the ASEAN Framework on Personal Data Protection include the consent, notification and purpose, accuracy of personal data, security safeguards, access and correction, transfers to another country or territory, retention, and accountability.

One thing we note is that the ASEAN Framework on Personal Data Protection is a non-binding document, and its implementation is voluntary for AMS. However, it serves as a reference for AMS in developing or revising their national laws and regulations on personal data protection. A number of AMS, such as Singapore and Malaysia, have already enacted legislation based on the framework. While the framework provides a general structure for personal data protection, data protection laws and regulations vary amongst AMS. This can lead to inconsistencies and challenges when it comes to harmonising data protection practices across the region. The framework also aims to facilitate cross-border data transfers, but ensuring adequate protection for data transferred outside ASEAN may pose challenges. The lack of harmonised international data protection standards can make it difficult to ensure consistent protection of personal data in cross-border transactions.

3.2. ASEAN Digital Data Governance Framework (2018)

In 2018, the ASEAN Telecommunications and Information Technology Ministers Meeting endorsed the ASEAN Digital Data Governance Framework. The framework comprises four strategic priorities based on several principles. The first strategic priority focuses on the data life cycle and ecosystem, emphasising principles of data integrity, data use and access control, and data security. The second strategic priority centres on cross-border data flows, which consists of principles to ensure free data movement while upholding trust through ensuring requirements on cross-border data flows. The third strategic priority is digitalisation and emerging technologies, building principles on capacity development and upskilling for universities, organisations, and MSMEs. The fourth priority addresses legal, regulatory, and policy aspects, which consist of principles on harmonised personal data protection regulations, accountability in policy implementation, and the promotion of best practices in data governance across AMS.

In terms of framework implementation, AMS must provide regular biannual progress updates on their progress in implementing the framework within their respective working group levels. This approach can be utilised to oversee the advancements of each AMS concerning the framework. Subsequently, the framework's implementation plan

centres on the establishment of the annual ASEAN Data Protection Forum, where AMS present their updates during the forum sessions. Since the framework is non-binding, it does not establish any legal rights or responsibilities for AMS, either domestically or internationally. The non-binding nature of the framework makes it hard to monitor its enforcement and implementation in ASEAN. In addition, commitment levels have differed since the framework lacks the legal obligations required, affecting the overall implementation across the ASEAN region.

3.3. ASEAN Digital Integration Framework Action Plan, 2019–2025 (2019)

To close the digital divide and promote a more inclusive digital environment in the ASEAN region, digital integration has started to be considered a crucial aspect. Therefore, in 2019, ASEAN shaped the ASEAN Digital Integration Framework Action Plan, 2019–2025 (DIFAP) as a strategic framework to make it easier for AMS to integrate digital technologies and projects. The framework presents a thorough strategy for maximising the advantages of digital transformation, encouraging regional collaboration, and fostering economic progress in the digital era.

The DIFAP identifies the following key priority areas for digital integration: (i) facilitating seamless trade; (ii) protection of data while supporting digital trade and innovation; (iii) enabling seamless digital payments, which are crucial for promoting cross-border digital trade; (iv) broadening the digital talent base by partnering with the private sector on digital skills roadmaps and prioritised sectors in carrying out the upskill programmes; (v) helping emerging digital MSMEs' ease of doing business and navigating the business ecosystem to succeed; and (vi) establishing a designated ASEAN body to coordinate actions for the various areas of this digital integration framework, which includes effective prioritisation, as well as supervising and regulating the timelines and objectives.

To promote the digital integration progress within ASEAN, the six prioritised domains are transformed into a strategic roadmap known as the DIFAP. This plan delineates specific ASEAN bodies that are accountable for the implementation of the outlined initiatives. The coordinating sectoral body for the framework is the ASEAN Coordinating Committee on Electronic Commerce or its successor body.

The DIFAP integrates the correlated goals and strategies from the ASEAN Economic Community (AEC) Blueprint 2025. Notably, this encompasses the ASEAN ICT Masterplan 2020, the ASEAN Work Programme on Electronic Commerce 2017–

2025, the Master Plan on ASEAN Connectivity 2025, and pertinent strategic action plans. Furthermore, the document summarises initiatives, outputs, timelines, implementing bodies, and implementation.

However, it is important to note that some initiatives within the DIFAP have not yet been implemented and there are no updated versions of the original DIFAP document available to track progress, outcomes, or further implementation efforts. Finally, the implementation of the DIFAP may confront hurdles due to differences in country agendas, legislative complications, infrastructure limits, skills shortfalls, and data privacy issues. ASEAN consists of countries at diverse socio-economic stages, so the differences in development stages of AMS create obstacles to applying and implementing a one-size-fits-all framework within the region, without accounting for a country's specific conditions and needs.

3.4. Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce (2021)

In 2021, ASEAN agreed on the Work Plan on the Implementation of ASEAN Agreement on Electronic Commerce, which builds on the ASEAN region's ongoing efforts in supporting better regional e-commerce growth. The work plan is a living document that can be adjusted and altered as necessary. By facilitating cross-border e-commerce transactions, creating an enabling environment of trust and confidence, and strengthening cooperation within the ASEAN region, this work plan envisions increasing the overall size of its digital economy by 2025 to represent a leading digital community that is competitive, inclusive, and forward-looking.

The work plan is divided into three high level workstreams, which serve as priority areas that contribute to achieving the work plan's vision: (i) the cross-border focus tackles plans, initiatives, and leading e-commerce sector policies on a national level to increase cross-border coherence in ASEAN; (ii) the business focus tackles concerns that directly impact e-commerce business; and (iii) the consumer focus tackles concerns that directly impact e-commerce consumers.

To ensure that the work plan's vision is achieved, it is important to note that external parties, better known as 'workstream enablers', play a key role. These workstream enablers comprise collaboration on national e-commerce development, domestic capacity-building initiatives, donor partner support and financing, digital infrastructure connectivity, and data collection. The workstream objectives and activities include

horizontal activities such as the Laws Reporting Scheme and associated activities, annual business surveys, the ASEAN Consumer Empowerment Index, stakeholder engagement activities, and pilot projects.

The annex of the work plan contains each desired outcome along with the associated metrics, including the key performance indicators, the target timeline, and the lead implementation body. From our assessment, the absence of an online update regarding the progress of the work plan is one of the notable drawbacks. While the annex provides a comprehensive breakdown of the desired outcomes, associated indicators, activity details, implementation timelines, and responsible bodies, the lack of accessible information about the up-to-date status of the work plan overall is a limitation. Progress may have been made in specific areas and in lead implementation bodies. However, tracking this progress effectively is challenging without easily accessible real-time information on the overall status of the work plan.

3.5. ASEAN Comprehensive Recovery Framework (2020)

Adopted at the 37th ASEAN Summit in November 2020, the ASEAN Comprehensive Recovery Framework (ACRF) serves as the consolidated exit strategy for the region from the COVID-19 crisis. It focuses on five broad strategies that prioritise health, humans, the economy, and digitalisation. One of its broad strategies focuses on accelerating inclusive digital transformation within the ASEAN region. Promoting e-commerce and the digital economy is one of the priorities, along with other initiatives on e-government and e-services, digital connectivity, the use of information and communication technology (ICT) in education, and digital transformation of MSMEs. This framework also addresses the need for investment in digital infrastructure that focuses on data governance, cybersecurity, the legal framework, and institutional capacity.

Of the five broad strategies presented in the framework, broad strategy 4 on digitalisation aims to achieve several objectives. These include launching the ASEAN Access web portal, enhancing the implementation of the Go Digital ASEAN initiative to support the digital transformation of MSMEs in the region, adopting the Consolidated Strategy on the Fourth Industrial Revolution, launching the ASEAN Digital Integration Index Report, implementing the ASEAN Agreement on Electronic Commerce Work Plan, promoting good governance through digital innovation and the digitalisation of public

services, advancing financial inclusion, and strengthening data governance and cybersecurity within the region.

The annex of the ACRF details the key priorities and initiatives. Nonetheless, no single, readily available, and easily traceable document permits monitoring of the progress of the ACRF's implementation. This absence results in a lack of transparency and accountability of the implementation of the plan. Moreover, the framework faces obstacles such as uneven implementation because AMS have different priorities and resources, lack of enforceability (the framework is non-binding), funding restrictions, coordination problems, the potential exclusion of marginalised groups, ambiguous environmental strategies, and difficulties in tracking progress. In addition, the environment around the pandemic and recovery has changed since the ACRF was enacted in September 2020. As the COVID-19 pandemic scenario develops, the framework might not fully consider newly discovered problems or shifting dynamics.

3.6. ASEAN Digital Masterplan 2025 (2021)

The ASEAN Digital Master Plan (ADM) 2025, developed in 2021, envisions 'ASEAN as a leading and digital community and economic bloc, powered by secure and transformative digital services, technologies and ecosystem'. To accomplish the vision, key economic players – such as governments, regulators, and market players – should complement one other by working together in investing in new technologies, abolishing regulations that serve as market process barriers, fostering digital inclusion, and delivering high-speed connectivity through high-quality telecommunications infrastructure. ADM 2025 specifies three conditions to be met by governments and regulators to achieve the vision, including providing high-quality connectivity across the ASEAN region through telecommunications infrastructure, providing safe connections to fulfil the needs of end users, and performing other actions to boost digital literacy and digital skills to enhance productivity.

Demand for digital services has accelerated in ASEAN since the outbreak of the COVID-19 pandemic in 2020. However, the recessionary impacts of the COVID-19 pandemic have adversely affected users' ability to pay for these services. ADM 2025 plays a key role in speeding up the recovery from the COVID-19 pandemic. This can be achieved through governments, regulators, and key players funding the priority programmes, removing regulatory barriers, mitigating adverse pandemic impacts on the poor through digital inclusion, providing access to e-education and e-health services,

reinvigorating trade after the pandemic, increasing the use of digital services to enhance the number of users and trust in the system, strengthening investment incentives for market players and governments, and dealing with climate change.

The implementation of ADM 2025 requires measuring the indicators of each desired outcomes. Measuring the utilisation of digital services is an indicator of success in the completion of the ADM 2025 vision. This is because the uptake of digital services goes hand in hand with infrastructure and skills, thus it measures the overall effect of all elements in ADM 2025. The level of uptake in digital services in the ASEAN region can also serve as a basis for comparing ASEAN with other leading regions in digital services. Despite its laudable strategic vision, our assessment notes that a limitation of ADM 2025 lies in the rapidly changing dynamics of the digital world. Concerns arise given the 5-year duration of the masterplan, as many aspects of the digital landscape are likely to evolve during the implementation period, requiring some initiatives to be revised to remain relevant.

3.7. ASEAN Data Management Framework (2021)

The ASEAN Data Management Framework (DMF) was designed to support the data life cycle and ecosystem strategic priority. The DMF aims to assist all businesses operating in ASEAN to participate in the digital economy and practise data governance across all data types within an organisation throughout the data life cycle and to consider adequate protection for different types of data. With the DMF, organisations are better equipped to protect data and instil trust and confidence in their customers and organisations they interact with, while the data are leveraged for business innovation purposes. The DMF is designed to be customisable and adaptable to meet the specific data management requirements of businesses, allowing them to tailor it to their own data management systems. ‘Data’, as used in the DMF, refer to all data that a business creates, collects, accesses, processes, and transfers. This may include both personal and business transactional data. The DMF is intended for the use of all private sector businesses operating in ASEAN, including small and medium-sized enterprises.

The DMF aims to provide guidance for the effective management of data within AMS. However, we have identified certain shortcomings to consider in its implementation: (i) varied data management practices – AMS have different levels of maturity in terms of data management practices; (ii) limited adoption – the DMF is not legally binding and its adoption is voluntary, so not all AMS may choose to implement or

fully adhere to the framework, resulting in the fragmentation of data management practices; and (iii) resource constraints – implementing effective data management practices requires financial, technological, and human resources, and some AMS may have limited resources and capacity to invest in data management capabilities, which could hinder the successful implementation of the framework.

3.8. Bandar Seri Begawan Roadmap (2021)

In 2021, as a response to the COVID-19 pandemic, which forced the region to accelerate the adoption of digital technology, ASEAN established a digital roadmap that is referred to as the Bandar Seri Begawan Roadmap (BSBR). The BSBR is a digital transformation agenda for ASEAN to accelerate economic recovery and digital economy integration. Through the roadmap, ASEAN aims to ensure that digital transformation within the region provides equitable benefits to all AMS. The BSBR aims to serve as a tool to achieve strong commitment and coherency in the ASEAN region and prioritise action on the use of technology as one of the key economic drivers within and across AMS.

The roadmap for 2021–2025 is divided into three phases: recovery (2021–2022), acceleration (2022–2024), and transformation (2025). The recovery phase consists of five measures that aim to accelerate the region’s economic recovery and harness digital technology adoption as one of the region’s efforts in the recovery phase (resume essential travel and strengthen institutional mechanisms and capacities in the ASEAN Secretariat and relevant sectoral bodies). The acceleration phase consists of four measures that aim to include work from the DIFAP and accelerate its progress, including advancing trade facilitation and digitalisation, enabling cross-border digital payments, establishing a unified IP services platform for ASEAN, and conducting a study on the ASEAN Digital Economy. The transformation phase consists of one measure to make the region a community of opportunity for all, as it aims to establish an open, secure, interoperable, competitive, and inclusive regional digital economy in the broader AEC-building agenda.

The ASEAN Coordinating Committee on Electronic Commerce functions as the coordinating sectoral body for the BSBR, with supervision from the Senior Economic Officials Meeting (SEOM) and contributions from representatives of the respective sectoral bodies of each AMS. The SEOM will provide regular updates on the progress of the roadmaps to the AEC council. Considering the complexity and multifaceted nature of the BSBR, progress on the roadmaps should be communicated regularly to relevant

ministerial groups. The complexity of implementing the BSBR presents a challenge in coordination and cross-sectoral collaboration, as well as enforcement and compliance. Harmonising efforts amongst stakeholders and cooperation amongst various sectors could be particularly problematic due to different perspectives, priorities, and regulations within each sector.

3.9. Boracay Digital Declaration (2023)

In February 2023, at the third ASEAN Digital Ministers' Meeting, AMS adopted the Boracay Digital Declaration (BDD). The BDD is a non-binding agreement that focuses on digital transformation and the digital economy within the ASEAN region. It recognises the importance of (i) a digitally inclusive society by addressing the digital divide; (ii) a trusted, secure, and safe digital market by adopting digital data governance, including data management, cybersecurity, and artificial intelligence (AI) governance; and (iii) people-centred digital transformation. The declaration emphasises the need for regional cooperation to harness the benefits of the digital revolution and ensure inclusive and sustainable development.

The BDD has five key areas: (i) digital connectivity – acknowledging the importance of enhancing regional digital infrastructure and connectivity to promote seamless digital trade, investment, and collaboration; (ii) digital skills – highlighting the significance of developing digital skills and capabilities amongst ASEAN citizens to empower them to participate in the digital economy and leverage digital technologies effectively; (iii) digital innovation – recognising the role of digital innovation in driving economic growth and encouraging support for digital entrepreneurship and innovation ecosystems within the ASEAN region; (iv) digital trade facilitation – emphasising the need to create an enabling environment for digital trade, including e-commerce, by developing frameworks and regulations that facilitate cross-border digital transactions and reduce barriers to trade; and (v) cybersecurity and data protection – stressing the importance of enhancing cybersecurity measures and promoting data protection to build trust and confidence in digital transactions and technologies.

The implementation of the BDD requires coordination and collaboration amongst multiple stakeholders, including government agencies, private sector organisations, and civil society. Without effective implementation and alignment of strategies across countries, the BDD may not adequately address the existing digital divide within ASEAN, potentially leaving certain populations and regions at a disadvantage in terms of

benefiting from digital transformation. Successful implementation of the BDD relies on factors beyond technology, such as education, skills development, and socio-economic conditions. Inclusivity and addressing socio-economic disparities are crucial for ensuring that all segments of society share the benefits of digital transformation.

3.10. ASEAN Digital Economic Framework Agreement (2023)

The Digital Economic Framework Agreement (DEFA), which has been discussed since 2022, aims to establish an integrated and inclusive digital landscape within the region, with a focus primarily on e-commerce and digital trade. The DEFA was endorsed by the ASEAN Economic Community Council at their 23rd Meeting during Indonesia's ASEAN Chairmanship on 3 September 2023 in Jakarta. It will be followed by the launch of negotiations, which are targeted to be completed by the end of 2025. The ASEAN Coordinating Committee on Electronic Commerce and Digital Economy, in collaboration with pertinent ASEAN sectoral bodies and with the support of the ASEAN Secretariat, will be responsible for conducting the negotiations.

The ASEAN DEFA negotiations encompass a wide range of elements. These include digital trade to enhance cross-border trade through electronic processes, cross-border e-commerce for efficiency and fairness, digital payments and e-invoicing to foster innovation and regulation, digital ID and authentication for interoperable recognition, online safety and cybersecurity for a secure digital environment, cross-border data flows and data protection, competition policy for transparency and consumer choice, cooperation on emerging topics like AI regulation, and talent mobility and cooperation to facilitate the movement of digital talent and collaboration in talent development within the region.

3.11. Overall Review

Although ASEAN's endeavours have undeniable propelled digital advancements in the region, one of the main critical assessments of the latest framework, DEFA, as for the other ASEAN roadmaps, frameworks, work plans, and action plans, is that it is limited to economic issues. They have not yet covered the other key issues (e.g., security-political and socio-cultural issues).

The limitations of the existing frameworks on ASEAN's digital economy stem from a range of hurdles that hinder the effectiveness of their implementation. One of these is the absence of a clear enforcement mechanism given the nature of the non-binding

agreements and non-established legal obligations. The lack of a designated mechanism for real-time reporting on the progress of the frameworks' desired outcomes raises further questions regarding accountability and transparency during implementation. Stakeholders and the public have limited access to data on the progress of the frameworks' desired outcomes and objectives. In addition, the varied socio-economic landscape in ASEAN plays a key role in determining the feasibility of the digital frameworks' implementation. This includes differences in resources, digital adoption, infrastructure development, priorities, laws, and regulations amongst AMS. Furthermore, since the digital ecosystem is dynamic, digital frameworks must evolve to remain relevant in a digitalised ASEAN community.

4. ASEAN Digital Community 2045

4.1. Three Pillars of the ASEAN Digital Community 2045

In recent years, ASEAN has prioritised digitalisation and integration efforts, leading to the development of various regional frameworks and roadmaps. However, as outlined above, the existing digital frameworks seem to be sector-based, fragmented, and focus on digital trade. As the rapid pace of global digital transformation continues, ASEAN should confront the challenges in its path to digital transformation and forge a long-term vision that harnesses the potential of digital technology to enhance the well-being of AMS.

To unlock the benefits of digital transformation, ASEAN should envision the establishment of the ASEAN Digital Community 2045. The reasons are twofold. First, 2045 is the 100th anniversary of Asian independence, both politically and economically. Commemorating the 100th year of ASEAN's independence in 2045 could act as a catalyst to renew ASEAN's commitment to achieving the goals outlined in its fundamental principles.³ By doing so, ASEAN could navigate the evolving digital terrain – capitalising on the opportunities it presents while addressing the associated challenges. Second, the advancement of digital technology is at the core of the current global shift in the political and economic landscape, which will affect not only economic aspects, but also political-security and socio-cultural aspects.

³ AMS have embraced the fundamental principles articulated in the 1976 Treaty of Amity and Cooperation in Southeast Asia, including (i) mutual respect for the independence, sovereignty, equality, territorial integrity, and national identity of all nations; (ii) the right of every state to lead its national existence free from external interference, subversion, or coercion; (iii) non-interference in the internal affairs of one another; (iv) settlement of differences or disputes by peaceful manner; (v) renunciation of the threat or use of force; and (vi) effective cooperation among themselves.

Considering these developments, ASEAN needs to align the ASEAN Vision 2045 with the digitalised world across all three pillars of the ASEAN Digital Community 2045.

(i) ASEAN Digital Political-Security Community

The ASEAN Digital Political-Security Community is witnessing the profound impact of digital technology on democratic politics and military advancements. The rapid evolution of technology has transformed elections, campaigning, and communication – providing new infrastructure for public engagement and expanding opportunities for participation. However, the potential challenges and implications of digitalisation in politics are yet to be fully understood and addressed. Simultaneously, military technology has seen remarkable progress, with hybrid strategies combining automation, cyber programmes, robotics, AI, and cyberwarfare. Innovations such as digital healthcare automation, hypersonic missiles, the Internet of Military Things, and immersive technologies are shaping the future of military operations. Border surveillance, security imaging, joint military training in the metaverse, and other developments highlight the growing significance of digital technology in the ASEAN Political-Security Community.

(ii) ASEAN Digital Economic Community

The AEC aims to develop ASEAN into a single market and production base – a highly competitive area with equitable economic development and full integration into the world economy. Global digital trade offers a huge opportunity for economic growth and development, as it is projected to reach \$10 trillion by 2030, with ASEAN’s digital trade expected to account for 10% (\$1 trillion) of the global digital trade market. ASEAN needs to leverage the power of digital technology to thrive on the benefits of digital transformation and ensure that no country falls behind. By envisioning the ASEAN Digital Economic Community 2045, ASEAN will ensure a prosperous future for sustainable development and inclusive growth in the AI and digital eras.

(iii) ASEAN Digital Socio-Cultural Community

Digital technology has demonstrated its transformative power in areas such as education and culture. With the goal of ensuring inclusive and equitable access to quality education, digital technology has become an essential tool in the education system, accelerated by the COVID-19 pandemic. Additionally, digital technology has facilitated skill development, cultural exchanges, and the incorporation of diverse perspectives. The ASEAN Socio-Cultural Community exists to help ASEAN citizens reach their full potential. ASEAN must embrace the advancements in digital technology to foster the

development of the ASEAN Socio-Cultural Community and prepare for the emergence of new digital cultures and values in the future.

4.2. Four Elements Across the Three Pillars of the ASEAN Digital Community 2045

The ASEAN Digital Community 2045 should encompass at least four key elements across its three pillars (political-security, economic, and socio-cultural):

(i) Data Governance

It is imperative for ASEAN to undertake regulatory transformation to address its outdated policies and regulatory frameworks. The modernisation of ASEAN policies and regulations is essential to keep pace with the rapidly evolving digital era faced by the region. While ASEAN has made progress in regulating the digital economy in recent years, significant work remains to be done to regulate the ASEAN digital ecosystem effectively. Despite the emergence of noteworthy digital frameworks in ASEAN, such as the ASEAN Digital Data Governance Framework, the BSBR, and the ASEAN Digital Integration Framework, additional efforts are required to regulate the digital landscape in a comprehensive manner. ASEAN must prioritise dedicated efforts to enhance digital governance by establishing unified and standardised regulations pertaining to competition, data privacy, cybersecurity, patents, and copyrights across all AMS.

(ii) Value Added

The optimal utilisation of digital technology should aim to enhance value added, revolutionise business models, and support development across all sectors. While significant progress has been made in digital transformation within the finance, trade, and investment domains, ASEAN now faces the challenge of extending this success to all sectors of the economy. For example, the adoption of digital technologies in the healthcare and energy sectors has the potential to reduce costs, optimise operations, and improve the quality and accessibility of services. Digital health encompasses various technologies, including mobile health apps, connected wearable devices, and telemedicine, with the digital health market projected to reach \$6.66 billion by 2023 (Statista, 2022a). ASEAN's embrace of digital transformation across diverse sectors is expected to yield significant benefits through increased value added, innovation, and economic growth in the region's digital economy.

(iii) *Digital Connectivity*

It is crucial to establish robust digital and physical infrastructure to unlock ASEAN's full economic potential. The development of strong physical and digital infrastructure is vital for ensuring connectivity. Physical infrastructure includes the construction of reliable roads, ports, railways, airports, power plants, and logistics hubs. Digital infrastructure encompasses the development of broadband access, hardware, software, data centres, and modern networks. By integrating digital payment systems and implementing modern digital technologies across governments and businesses in their production and service processes, ASEAN can facilitate seamless trade in goods and services throughout the region.

(iv) *Digital Inclusivity*

Reflecting on the accelerating pace of the digital era, it becomes evident that at its core, this digital transformation revolves around people. Amid the technological advancements and digital innovations, it is crucial to ensure that no one is left behind. The main imperative is to bridge the digital divide, increase the involvement of MSMEs, and reduce regional sectoral disparities, as digital technology holds the potential to improve productivity, promote trade, and create jobs in ASEAN. Digital inclusion is pivotal in empowering economic players such as MSMEs to access financial services, expand operations, and partake in global digital transformation. By prioritising these efforts and initiatives, ASEAN can advance towards equitable growth and foster an inclusive digital economy.

In conclusion, recognising the intricate interplay between digitalisation and its foundational three pillars, ASEAN has opportunities to leverage the potential of digital technology. This potential can be channelled to drive economic growth, elevate social well-being, and strengthen regional integration. Such an endeavour demands strategic investments and resources allocation, resilient regulatory frameworks, and collaborative efforts. The envisioned realisation of the ASEAN Digital Community 2045 aims to empower the region in mounting more adept responses to global economic disruptions and uncertainties. Moreover, this initiative stands to position ASEAN as one of the key players in the global digital economy, aiming to realise sustainable development with no one left behind.

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