


## 2. What Is ASEAN's Digital Integration?



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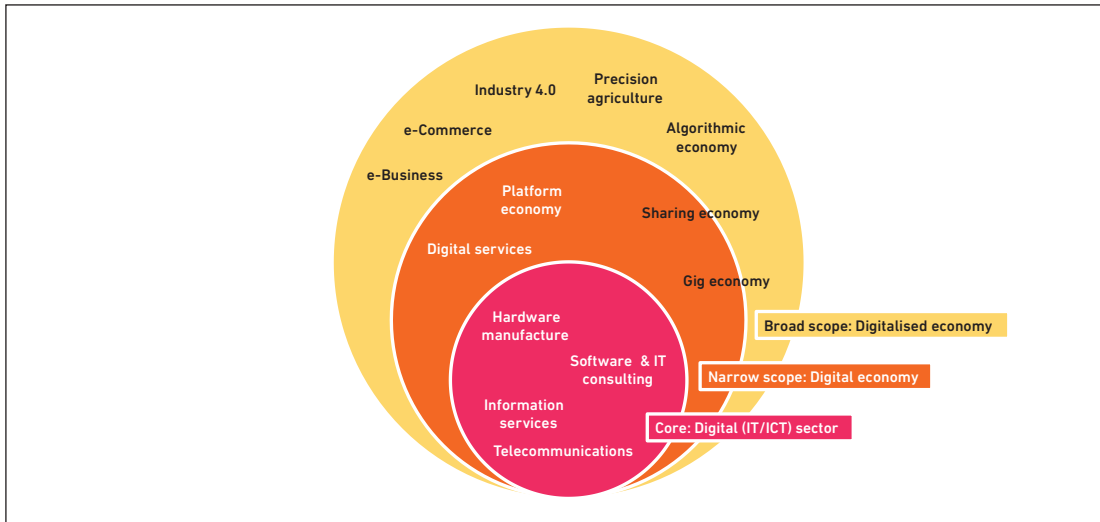
## 2. What Is ASEAN's Digital Integration?

### 2.1. What Is the Digital Economy?

Definitions of the digital economy vary. Lane (1999) defined the digital economy as the convergence of computer and communication technologies on the internet and the resulting information and technology flows that stimulate major changes in all e-commerce and organisations. Narmanov (2021) stated that there are two aspects of the digital economy – one in which new technologies make traditional business processes more efficient, and the other in which the digital economy itself transforms the whole system through technological innovation. Basaev (2019) regarded the digital economy as a distinct economic activity founded on novel data processing techniques and as a component connecting to the social economy. The G20 Digital Economy Task Force (2016) delineated the digital economy as economic activities, including the use of digitised information and knowledge as a vital factor of production, modern information networks as a significant sphere of activity, and ICT to enhance productivity and optimise economic structures.

The concept proposed by Bukht and Heeks (2017) gained prominence around 2020 when the digital economy garnered increased attention (e.g. ADB, 2021; OECD, 2020; UNCTAD, 2017). They categorised it into three components: the digital sector, classified as ICT; the digital economy in a narrower sense, encompassing digital services and the platform economy; and the digitalised economy in a broader sense, representing the real economic activity enabled by digital technology use (see Figure 2.1). Industry 4.0 and e-commerce are part of the digitalised economy, whereas the sharing economy and gig economy intersect with both the digitalised and digital economies. They warned that adopting a broad definition would make the digital economy synonymous with a mere 'economy' because of the increasing use of digital technologies in existing industries. They, therefore, separated the digitalised economy from the digital economy; the digital economy was limited to sectors with strong digital characteristics. However, as of 2023, it is now widely recognised that economic activities classified under this digitalised economy are also part of the digital economy.

**Figure 2.1 The Digital Economy by Bukht and Heeks**

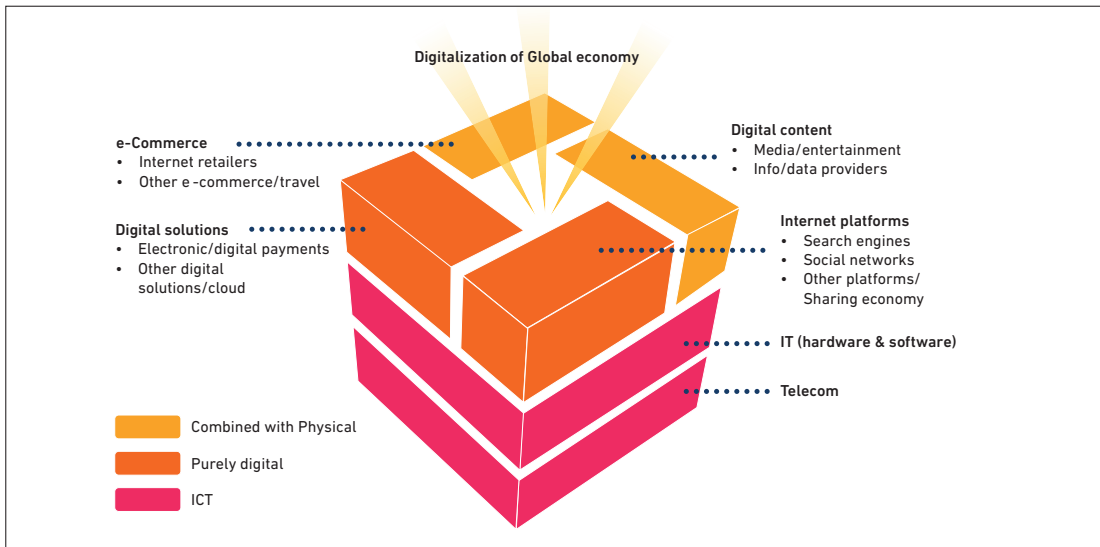


ICT = information and communication technology, IT = information technology.

Source: Bukht and Heeks (2017).

UNCTAD (2017) similarly presented the architecture of the digital economy in relation to multinational enterprises (MNEs) (Figure 2.2). MNEs are categorised into two types: ICT MNEs, comprising telecommunications and information technology; and digital MNEs. It further categorised digital MNEs into pure digital players (i.e. internet platforms and digital solution providers), which operate in an entirely digital environment; and mixed players (i.e. e-commerce and digital content), which are more digital in character. It then allowed for the gradual integration of industries that do not currently utilise digital means into the digital economy.

**Figure 2.2 Architecture of the Digital Economy**



ICT = information and communication technology, IT = information technology.

Source: Authors, modified from UNCTAD (2017).

Knickrehm et al. (2016) defined the digital economy as the part of gross economic output that derives from several broad 'digital' inputs, including digital technology, digital equipment (i.e. hardware, software, and telecommunications equipment), and intermediate digital goods and services used in production. OECD (2020) defined the digital economy as all economic activities that depend on or are significantly enhanced by the use of digital inputs, including digital technologies, digital infrastructure, digital services, and digital data.

Similar concepts to the digital economy exist as well. Industry 4.0, often referred to as the Fourth Industrial Revolution, lacks a universally accepted definition. However, it encompasses technologies such as AI, robotics, IoT sensors, cloud computing, augmented reality, blockchain, and 3D printing. These technologies are integrated into various sectors, including industry, transport, healthcare, and communications, to enhance efficiency and connectivity (Lee et al., 2018; Osinde et al., 2019; Piccarozzi et al., 2018). The *Consolidated Strategy on the Fourth Industrial Revolution for ASEAN* defined it as the 'convergence of the physical and digital worlds' (ASEAN, 2021d). Two contrasting views exist regarding the scope of Industry 4.0 in comparison to the digital economy: (i) Industry 4.0 is broader than the digital economy as it influences governance, education, healthcare, and lifestyles; or (ii) it is narrower than the digital economy as it excludes pure digital technologies and ICT.

Digital transformation refers to the process of using digital technologies to fundamentally change organisational structures, how businesses operate, how they deliver value to customers, and how they interact with stakeholders. Definitions of digital transformation vary by context and are often associated with terms such as digitisation, automation, and digital maturity (Lima et al., 2022; Polyakova, 2021; Tsaples and Papathanasiou, 2022). Digital transformation is thus a process used in the digital economy and Industry 4.0.

## 2.2. Why Is the Digital Economy Important?

The digital economy has become a strategic asset for creating value for both the private sector and society as a whole (UNCTAD, 2017). The digital economy itself has higher economic growth than other sectors and drives national economic growth. In 2016, the digital economy was worth \$11.5 trillion worldwide, equivalent to 15.5% of global gross domestic product (GDP), growing 2.5 times faster than global GDP in the last 15 years, and almost doubling since 2000 (Huawei and Oxford Economics, 2017). Jovanović, Dlačić, and Okanović (2018) noted that countries with higher levels of digitalisation have higher levels of competitiveness, innovation, and entrepreneurial activity. GDPs are also higher in more digitalised countries. Moretti (2012) extended this discussion to cities, citing that one job in the tech industry generates five new jobs in the local service industry, and that a higher proportion of the tech industry also results in higher wages in other industries in the region.

Moreover, the digital economy contributes to economic development through the digital transformation of existing industries. As discussed previously, the adoption of digital technologies is gaining momentum to include all industries. Within Industry 4.0, technologies such as AI, IoT, and big data analytics will be integrated into existing industries to create new business models and to promote innovation across industries (ASEAN, 2021d). The digital economy in a broader sense will enhance the integration process through ASEAN community pillars. According to ASEAN (2021d), amongst the three focus areas, the strategies of technological governance and cybersecurity contribute to the ASEAN Political-Security Community, those of digital economy contribute to the ASEAN Economic Community (AEC), and those of digital transformation of society contribute to the ASEAN Socio-Cultural Community.

Digital technology also overcomes distance. Baldwin (2011) noted that around 1990 should be referred to as the second unbundling, when the use of ICT enabled the separation of production processes and international division of labour. He asserted that this was the next important turning point after the division of consumption and supply (i.e. the first unbundling) with the development of railways and steamships in 19th century. With the development of communications technologies, a third unbundling is underway in which the reduction of face-to-face costs enables the unbundling of tasks and the international division of labour on an individual basis (Baldwin, 2016; Kimura, 2018).

Further, the digital economy provides opportunities and increases inclusiveness for people with disabilities. Unlike printed documents, digitised documents have the technology to provide information to people with visual impairments. There is a growing number of digital technologies for overcoming disabilities, such as ICT solutions that enable people with mild to moderate dementia to handle simple electronic devices, tools to assist children with intellectual limitations in their learning, job-matching services that connect people with disabilities with businesses, and cafés where people who cannot move their limbs can remotely operate robots to serve customers (Cashmore and Crosta, 2022; Lauriks et al., 2007; Maebara et al., 2022).

The digital economy provides opportunities for MSMEs and individuals looking to start businesses. Social networking, as well as e-commerce, connect small suppliers and consumers. It is no longer difficult to buy goods from small sellers abroad, as platforms shoulder the formalities including customs clearance, quarantine, and inspection. On-demand food delivery apps are giving smaller sellers, such as food stalls, the opportunity to gain more customers. For example, GoFood, Indonesia's largest online food delivery company, comprises vendors that are restaurants, bistros, shop stalls, carts and/or other physical forms (Gojek, 2023). E-payments are now used by many MSMEs and people without bank accounts.

The digital economy increases the potential for leapfrogging in developing countries as well. As developing countries have immature economic systems and institutions, services using digital technologies may be more easily introduced without the need for coordination with existing regulations or resistance from economic actors with vested interests (ERIA, 2022). Despite the high network externalities of digital services, it has also been observed that domestic and regional companies can gain a larger share of the domestic market than global players by adapting services that have already been successful in developed countries. This is particularly true in sectors that require links to the real economy, such as online shopping markets, for example Tokopedia and Shopee.

Finally, the digital economy contributes to sustainability and economic resilience. The use of ICT has consistently reduced carbon emissions in various industries (Haini, 2021). AI-based inspection systems reduce false positives and over-detection of defects that tend to occur in visual inspections, reducing the environmental impact as well as the cost of materials in an organisation. In fact, innovations from technologies such as drones, internet of things, IoT, big data, and cloud computing have reduced deforestation, air pollution, water pollution, categorisations as endangered species, e-waste, and carbon footprints (ASEAN, 2021d).

Although the emergence of COVID-19 disrupted everyday life and business all over the world, it has also stimulated the use of digital technologies, transforming society. In the ASEAN region, the use of e-commerce accelerated, and digital payments have become more acceptable to both users and businesses; indeed, one-third of digital merchants said they would not have survived the pandemic without digital platforms (Google, Temasek, Bain & Company, 2021). The average share of internet users who purchased goods online increased from 53% before the pandemic in 2019 to 60% after the pandemic in a 66-country study (UNCTAD, 2022).

It has been assumed that companies able to utilise digital technologies without face-to-face contact would be able to mitigate the damage to their business development compared to those without, and data and empirical analysis are increasingly supporting this. Abidi, El Herradi, and Sakha (2023), using data from the Middle East and Central Asia, showed that companies that invested in digitalisation before the pandemic experienced a smaller decline in sales than those that had not. Cong, Yang, and Zhang (2021), using data from China, showed that digitalisation of SMEs significantly affected their resilience to damages from the COVID-19 pandemic, including mitigation of reduced demand, sustained cash flow, and ability to resume operations quickly.

The pandemic itself accelerated digital transformation in existing enterprises. The increase in digital technology adoption due to the pandemic is not limited to e-commerce. In the education sector, digitally supported teaching and learning were introduced because of the need to move from face-to-face teaching to distance learning. Social care organisations were forced to switch quickly to digital technologies during the pandemic to continue providing care, as they were unable to meet clients in person, often resulting in accelerated innovation (Reale, 2021).

## 2.3. Defining ASEAN's Digital Integration

Digital integration is used both as a technical term in the ICT field and as a term for regional integration. As a technical or business word, digital integration refers to the process of integrating digital technologies into various aspects of a business or organisation. Integrating digital technologies into new business models improves internal and external processes and increases flexibility in production (Bouncken, Kraus, Roig-Tierno, 2021; Salamova, Khatsieva, Gishlakaeva, 2021). The integration of digital technologies also contributes to the integration of business processes in the context of Industry 4.0 (Marcinkevicius and Vilkas, 2023).

Digital integration in the context of regional integration is not as clearly defined in ASEAN. The *ASEAN Digital Integration Framework* (DIF) stated that the core of regional digital integration is transforming the basis of competition in the global economy and creating a regionally integrated digital economy (ASEAN, 2018a). However, Bain & Company (2018), which was cited by the DIFAP, defined digital integration as harnessing the digital economy to promote trade and growth within the region.<sup>1</sup> In a factsheet addressing the COVID-19 impact on SMEs, digital integration was noted as 'a critical enabler for harnessing the scale of ASEAN as a region, enabling ASEAN to compete more effectively in the global economy, and enables individual AMS to accelerate their own domestic growth' (The Asia Foundation and Google.org, 2020).<sup>2</sup>

A distinctive feature of the DIFAP is that it includes infrastructure development, human resources development, and capacity building in its actions. Infrastructure development and human resources development are national measures for which AMS should be directly responsible. The factsheet above specified the channels through which digital integration contributes directly to the economic growth of each AMS – rather than only affecting transactions between AMS (The Asia Foundation and Google.org, 2020). In other words,

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<sup>1</sup> Singapore, the 2018 ASEAN Chair, commissioned Bain & Company to conduct a study to support the development of the DIF.

<sup>2</sup> This factsheet was prepared under project 'Go Digital ASEAN: Digital skills to address the economic impact of COVID-19', which was approved for implementation by the ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME).

in ASEAN, digital integration is not just about liberalising and facilitating cross-border ICT products and digital services trade and investment; instead, it includes (i) increasing interoperability amongst AMS and promoting intraregional trade and growth; and (ii) developing infrastructure within each AMS to promote digital innovation and to contribute to existing industries, livelihoods, and, ultimately, national growth. In addition, the DIFAP emphasises the development of national legal and regulatory systems, which are characteristics of ASEAN digital integration, differing significantly from typical digital trade and digital economy agreements (ASEAN, 2019b).

This book therefore adopts the following definition:

*ASEAN's digital integration is the use of digital and digital economy to enhance regional trade, growth, competitiveness and inclusiveness, and to achieve a stronger, more connected and resilient Community. This includes improving interoperability, developing digital infrastructure, building human resource capacity and establishing national legal and regulatory systems, with the aim of accelerating economic growth at both regional and national levels.*

In the DIF, six priority areas were set to address critical barriers and accelerate existing ASEAN platforms to achieve digital integration: (i) facilitating seamless trade, (ii) protecting data while supporting digital trade and innovation, (iii) enabling seamless digital payments, (iv) broadening the digital talent base, (v) fostering entrepreneurship, and (vi) coordinating actions (ASEAN, 2018a). These six priority areas were taken over by the DIFAP as well as the *ASEAN Digital Integration Index Report 2021* (ADII), which adopted broader concept names (Figure 2.3). The ADII 2021 is a flagship report that best represents the current state of digital integration in ASEAN at the time of writing in 2023.

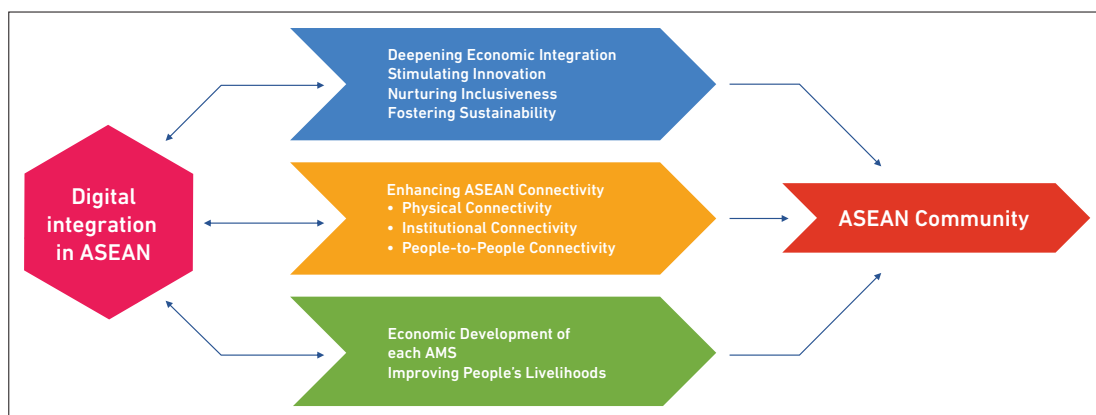
**Figure 2.3 Six Priority Areas in the ASEAN Digital Integration Index, 2021**



Source: USAID and US-ASEAN Connect (2021).

Figure 2.4 shows the pathways through which ASEAN digital integration can contribute to the ASEAN community. Throughout this book, this perspective of how digital integration can contribute to the ASEAN community is maintained – even if it is difficult to analyse it all. As indicated in ERIA (2022), digital integration contributes to deeper economic integration, innovation, inclusiveness, and sustainability of ASEAN as a whole. As the *Master Plan on ASEAN Connectivity 2025* (MPAC) shows, digital innovation contributes to these three connectivity pillars (ASEAN, 2016b). As ASEAN’s digital integration directly focusses on the legal and infrastructure development of AMS, digital integration promotes AMS initiatives and contributes to AMS economic development and livelihoods. These three-way initiatives also contribute to accelerating digital integration itself. Those pathways ultimately lead to a stronger, more competitive, and more inclusive ASEAN community.

**Figure 2.4 How Digital Integration Contributes to the ASEAN Community**



AMS = ASEAN Member State.

Source: Authors.

As the digital economy continues to expand around the world, the term ‘digital economy integration’ is also beginning to be used. For example, in its Digital and Sustainable Regional Integration Index, the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) treats digital economy integration as an element to achieve overall regional integration, alongside trade and investment, finance, and infrastructure (UNESCAP, 2020).

ASEAN used the term ‘digital economy integration’ in the title of the BSBR. However, it did not provide a precise definition, although it argued that it is necessary to take advantage of ongoing digital transformation to advance the ASEAN digital economy integration agenda (ASEAN, 2021e).

This book consistently uses the term ‘digital integration’, since the analytical framework used is the six priority areas in Figure 2.3, and the term ‘digital integration’ is used in most ASEAN documents, except for the BSBR. However, in the future, the term ‘digital economy integration’ may be used more frequently. Nevertheless, an important argument that emerges from our analysis is that ASEAN’s current digital integration already essentially covers digital economy integration.