

## ASEAN's Limitation of Regional Digital Integration: How Digital Sovereignty Overlaps Regional Organization Effectiveness

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### ABSTRACT

*The rapid development of digital transformation has profoundly shaped economic and political interactions globally as the “new oil of the 21st century,” with Southeast Asia facing unique challenges in balancing national digital sovereignty and regional digital integration. This study critically examines ASEAN’s effectiveness in fostering regional digital integration amidst diverse data governance policies and digital sovereignty concerns across its member states. Through a qualitative literature review and focused case studies of Indonesia, Singapore, Vietnam, and the European Union, it reveals how diverse national interests, fragmented regulations, and infrastructural disparities obstruct ASEAN’s digital integration ambitions. While ASEAN presents frameworks such as the ASEAN Digital Economy Framework and the ASEAN Digital Masterplan 2025, implementation remains limited due to underlying sovereignty issues and ASEAN’s mandate of non-interference. Comparisons with the European Union’s centralized digital sovereignty and regulatory harmonization highlight ASEAN’s institutional and political constraints. The study contributes to the discourse on new regionalism by addressing the underexplored intersection of digital sovereignty and regionalism in Southeast Asia, offering insights into the complex dynamics shaping ASEAN Digital Regionalism and its prospects.*

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**Keywords:** Regional Data Integration; Digital Sovereignty; ASEAN

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## INTRODUCTION

Digital transformation is the fundamental foundation of political and economic development in the 21st century (Nosova et al., 2021). According to The Economist, the development of data and digital transformation is “the new oil” and one of the most valuable potential assets, comparable to oil, whose valuation will drastically increase in the future. This premise is also demonstrated by how the control and dynamics of data that can move freely across national borders have become crucial issues for states seeking to protect the political and economic interests embedded within digital data held by states or other actors. In Southeast Asia, digital transformation is a recurring issue due to its urgency and potential to enhance the economic and political landscape of the region’s countries (Rhee et al., 2022).

Furthermore, this is exemplified by the proposal of the ASEAN Digital Masterplan 2025, which aims to strengthen cooperation among ASEAN member states in the digital sector to develop the gig economy, e-commerce, and other forms of digital collaboration (Chen, 2019; Yang, 2022). Alongside such development, the notion of digital sovereignty has increasingly attracted discussion among states and regional organizations. Consequently, the debate between national digital sovereignty and regional data integration has intensified, particularly in Southeast Asia, where member states maintain distinct policies and regulatory approaches toward their digital data (Park & Choi, 2024; Yun, 2025).

Digital sovereignty refers to the authority and control exercised by actors—such as states, organizations, enterprises, and individuals—over digital infrastructure, as well as their decision-making rights concerning digital data, under the jurisdiction of each respective actor (Musoni et al., 2023; Pohle & Thiel, 2020). In the context of social studies and international

relations, the combination of “sovereignty” and “digital” terminology leads to the politicization of digital assets within political frameworks (Pohle & Thiel, 2020). Meanwhile, the concept of digital sovereignty may overlap and contest the idea of regional digital integration, as not all states within a region agree to integrate their data regionally (Glasze et al., 2023; Stavridou, 2024). Regional digital integration can be defined as a form of “new regionalism” that strategically unites member states of a region through digital technologies and economies to enhance regional trade, competitiveness, and resilience (Stefanova, 2018; Wang, 2020).

The trend of studies and implementations of digital integration has recently expanded. Hager (2025) found that 84% of companies view data sovereignty as a central strategy, with 70% of respondents acknowledging its growing relevance. This view is also reflected in the EU’s creation of the Digital Economy and Society Index (DESI), which measures progress in socio-economic digital integration across the EU (European Commission, 2022). From 2014 to 2023, the DESI score rose from 46% to 54.5%, signaling an improvement in digital integration (European Commission, 2022).

In the context of Southeast Asia, the evolution of the digital sovereignty concept has the potential to trigger policy fragmentation at the national level, ultimately weakening ASEAN member states’ efforts to build an integrated regional database (Chang, 2025; Sermcheep, 2024). Indonesia, Singapore, and Vietnam serve as examples of ASEAN member states that adopt different policy models yet share the same objective—to prioritize protection of their digital sovereignty. Although ASEAN has introduced the ASEAN Digital Masterplan to promote economic and political cooperation among its member states, implementation remains limited. Thus far, the plan is confined to policy formulation and proposals without significant national-level application (Liu & Zhou, 2021).

Therefore, this paper aims to demonstrate that ASEAN countries are unable to achieve regional digital integration despite the global rise of digital integration and new regionalism (Menon & Fink, 2019; Mishra & Valencia, 2023). The study employs the concepts of digital sovereignty and regional digital integration. The novelty gap this paper addresses lies in the paucity of research on digital cooperation among Southeast Asian countries within the ASEAN framework. The central question is: why will Southeast Asian countries never attain regional digital governance? This question is explored through three case studies—Indonesia, Singapore, and Vietnam—to assess their interactions with ASEAN’s digital cooperation mechanisms and to compare these with the European Union’s experience.

## **METHOD**

This research used the method of qualitative literature study. This approach is particularly suited to examining digital governance dynamics, where quantitative data is often limited and policies evolve rapidly. The study systematically reviewed academic literature, policy documents, and institutional reports published between 2010 and 2025, with a primary focus on ASEAN digital integration frameworks and comparative materials from the European Union. Key sources included official ASEAN agreements, national legislation from Indonesia, Singapore, and Vietnam, EU digital governance assessments, and peer-reviewed academic literature, all selected based on their relevance, credibility, and temporal currency.

The analysis employed thematic coding and pattern identification, beginning with initial coding of recurring themes related to digital sovereignty and regulatory fragmentation. This process involved both deductive coding based on theoretical frameworks and inductive coding emerging from the empirical materials. The coded data was then organized into higher-level analytical categories, including national sovereignty strategies, regulatory incompatibilities, and institutional limitations. A systematic comparative framework was subsequently applied to examine the parallels and divergences between ASEAN and EU digital integration

trajectories, using process tracing to understand the causal pathways linking institutional design to integration effectiveness.

The case studies of Indonesia, Singapore, and Vietnam were strategically selected to represent the spectrum of digital sovereignty approaches within ASEAN, capturing resource nationalism, technological leadership, and developmental challenges respectively. While this methodological approach provides comprehensive insights, the study acknowledges certain limitations, including potential gaps in capturing confidential negotiations and the risk of overlooking recent policy developments due to the rapidly evolving nature of digital governance. These limitations were mitigated through rigorous source triangulation and a focus on widely available official documents, ensuring the validity and reliability of the research findings despite these constraints.

## **RESULT AND DISCUSSION**

### ***ASEAN's Lack of Effectiveness for Regional Digital Cooperation***

ASEAN lacks the effectiveness and mandate for implementing regional digital cooperation in Southeast Asia. ASEAN has an ambitious plan for Southeast Asia countries to implement a single digital market, which can be seen from tools such as ASEAN Digital Index (ADIX), Economic agreements such as the ASEAN Digital Economy Framework, and adding even further in the digital aspect from ASEAN Digital Masterplan 2025 (ICT Help, 2022). Unfortunately, ASEAN itself as an organization struggles with implementing digital integration due to these four aspects. (1) Digital disparities between all Southeast Asia states (Hendratmoko, 2023), (2) Economic-political differences and disparities (Hendratmoko, 2023), (3) High level of difference in digital regulatory framework (Ing et al, 2023), (4) Challenges in digital payment and digital infrastructures (Lee, 2024).

The digital disparities can be seen between ASEAN member states, which are limited by a lack of access to digital infrastructure and skills due to the underdeveloped rural communities. ASEAN countries host approximately 480 million internet users, 28% of its population still lacks internet access, and this creates a lack of digital connection and inclusion for ASEAN member states (Ing et al, 2023). Only few countries in ASEAN member states that have high level of digital literacy and access, this can be exemplified by Singapore and Malaysia which population have access towards fast internet speed and advanced technology, meanwhile more states in ASEAN such as Cambodia, Laos, Myanmar did not have the digital infrastructure to implement digital integration in their own respective states (Ing et al, 2023). This status quo of digital divide hampers Southeast Asia countries' ability to implement digital strategies and widen economic-political cooperation through digital infrastructure in ASEAN. This hinders the realization of integration itself.

Secondly, ASEAN struggles with a harmonized regulatory framework. This occurs due to the high level of difference in digital policies. These differences create fragmentation in the digital cooperation by hindering any cross-border digital trades and infrastructure building. All ASEAN member states have their own diverse legal approaches to data protection, cybersecurity, and e-commerce payments. These principles cannot be breached or interfered with by ASEAN due to its own organizational principle of prioritizing non-interference and national sovereignty (Isono & Prilliadi, 2023). Furthermore, according to the regional digital sovereignty concept, this fragmentation will create complexities for digital businesses to operate regionally and lead to decreasing investors' confidence outside of the ASEAN region. This also means ASEAN's proposal of the ASEAN Digital Economy Framework, which aims to create digital cooperation progress, has been hindered by lots of different national interests and regulations.

Thirdly, there are economic and political differences that are also disparate. Using the concept of digital sovereignty, this can give answers to the different regulations, and there are

even some countries that have strict regimes that slow down regulation and, at the same time, slow down the progress of digital integration in Southeast Asia. Member states of ASEAN sit differently in economic development; there are wealthy states, developing states, and even underdeveloped states. The wealthy states may have the resources to develop digital infrastructures, but the developing and underdeveloped states may not prioritize digital development due to their urgency to fulfill the necessities of their state (Zulianto, 2024). These gaps reduce ASEAN's ability as a whole to adopt regionalized digital integration. Politically, some states have uneven policy enforcement and a lack of institutional capacities. This creates inconsistencies in implementing laws and regulations for digital integration and ruins the trust of other parties that want to collaborate on the digital aspects of a nation (Kuru, 2023; Sermcheep, 2024).

Lastly, ASEAN states face challenges in digital infrastructure development. This includes digital payment systems, cybersecurity, digital literacy, and others that create artificial barriers to digital cooperation. Digital payment ecosystem, for example, is very disparate a lot in ASEAN. This can be proven with the data from the Indonesia Investment Authority (2025) that in Indonesia, there are only 20% of its population that can receive digital access; meanwhile, Singapore has a 100% integrated digital ecosystem which can be accessed by all of its population. Adding that to the concerns of cybersecurity threats. Not all ASEAN countries have the capabilities to handle cybersecurity issues. This can be proven with an increasing rate of cybercrime of 82% in Southeast Asia (Positive Technologies, 2025). Therefore, this literature will give examples from Indonesia, Singapore, and Vietnam, and then compare them with how the EU implements Digital Integration to see why ASEAN cannot implement digital integration.

#### ***Case Study from Indonesia***

ASEAN's failure to achieve regional digital integration can be exemplified by Indonesia's focus on digital sovereignty rather than regional digital integration. Taking a look at Indonesia's regulations and digital applications, the country focuses on harnessing its 212 million internet users to reach its goal of attaining \$ 360 billion by 2030. To complete that objective, Indonesia adopted an assertive digital sovereignty stance for its nation. The approach exemplifies digital resource nationalism, which means that policies regarding digital sovereignty must focus on protecting national data sources that are controlled by the state and cannot be exploited outside of the state. Digital resource nationalism is defined by Mihelj & Jimenez (2021) as a techno-political ideology and policies that are crafted for the consideration of technology platforms as strategic national resources controlled only by the state and domestic corporations. The perspective of digital resource nationalism is implemented by Indonesia to battle against "digital colonialism", a new motive of colonialism that emerges from a global technological powerhouse that wants to control the digital infrastructure of smaller nations (Kwet, 2019). These motives of "digital nationalism" are shown by Indonesia's implementation of Regulation 71/2019, which obligates digital services to register and store certain data domestically and have strict enforcement mechanisms for it (Meltzer, 2019).

Indonesia had also implemented the "Personal Data Protection Law" (UU PDP), which obligates public data must reside domestically and forces foreign tech companies to open a local data center in Indonesia (Hicks, 2021). And it also aligns with Indonesia's goal of "Indonesia 4.0," which focuses on reaching 50 billion dollars from digital GDP revenue without being influenced by any motives of digital colonialism (Adiningsih, 2019). Thus, this mechanism functions to defend states against digital economic exploitation, such as the ways to battle against US-based firms that captured 75% of Southeast Asia's digital advertisement market.

The real actions that Indonesia took can be exemplified by the development of QRIS (Quick Response Indonesia Standard) for payment systems. This motive shows its

effectiveness by QRIS successfully processes 6.24 billion transactions annually worth 8 trillion rupiah (Sriantika & Abidin, 2024). The implementation of QRIS consecutively helped micro-entrepreneurs and local SMEs; however, the standards of QRIS are nationally specific and tailored for Indonesia's currency to flow. As of now in Southeast Asia, QRIS are open access and limited to use only in Malaysia, Singapore, and Thailand.

QRIS initiatives bolstered Indonesia's domestic digital sovereignty and its economic resilience by letting the currency of Rupiah flow from the QRIS payment system across nations in Southeast Asia. However, it makes ASEAN's digital recommendation seem redundant and unapplicable due to the technical and regulatory friction that QRIS creates. This can be explained by the friction created by QRIS in a form, making a regional technical and regulatory fragmentation, and at the same time, simultaneously prioritizing the national interest of Indonesia rather than regional digital integration in the payment system. This results in overlapping the ASEAN Digital Masterplan 2025 itself.

A form of geopolitical digital balancing between major powers, China and the United States of America, also influences Indonesia's digital sovereignty plan. To avoid over-reliance on one of those superpowers, In regards with the digital sovereignty concept, Indonesia implements its policies in the form of digital protectionism through data localization rules that can only be controlled by Indonesia. Thus, these "protectionism" motives create another friction with ASEAN's goals of digital cooperation and blocking any chances of digital integration within ASEAN. Not only Indonesia, there is other countries like Singapore that propose digital sovereignty in another form of policy formulation.

#### ***Case Study from Singapore***

Singapore has a different approach from Indonesia, which emphasizes a form of technological sovereignty. This means Singapore prioritizes global technological standards and advanced digital development, also proposing that its own country become the global digital hub (Edler et al., 2023). This movement is the foundation of Singapore's digital economy, which contributes 84.5 billion US dollars (International Trade Administration, 2024). Furthermore, Singapore's policy for tech advancement is called the "Smart Nation" initiative, with a big emphasis on AI governance and cybersecurity implementation. However, this hinders ASEAN digital integration. This dilemma can be explained with the term "Singapore Paradox," which suggests that an advancement from Singapore makes this country also difficult to harmonize with less developed Southeast Asia states, which have not yet achieved a high level of technological advancement. This creates a situation where a lot of Southeast Asia states, if compared with Singapore to be a "two-tiered digital region"

Singapore's regulatory approach gives examples from two aspects: AI Governance and data protection. Singapore developed the AI Verify, which is the world's first AI governance network. Secondly, Singapore also made the Model AI Governance Framework for Generative AI to help the governance of Singapore (International Trade Administration, 2024). These domestic frameworks create regulatory incompatibility with other Southeast Asian states because of the lacking aspects from technological advancement and institutional resources. Thus, it creates a diversion that forces MNCs across Southeast Asia to respect and look upon Singapore's types of technological strategies that cannot be regionally scaled, which creates more digital fragments and limits digital unification.

In Asia, Singapore ranks first in digital infrastructure development, if measured with the Asian Digital Transformation Index. This index has also shown that Singapore attracted 46% of global tech companies that decided to make a regional HQ in Asia. These technological advancements create a "hub-and-spoke model" where Singapore benefits more from foreign direct investment across Southeast Asia; meanwhile, other countries are still struggling to even connect digitally with other Southeast Asia states (Sinpeng, 2020). This also shows that even though Singapore agrees with ASEAN's DEFA (Digital Economy Framework Agreement),

Singapore also implements its own Personal Data Protection Act (PDPA) that focuses more on its own domestic data protection interest (International Trade Administration, 2024). This eventually creates a digital regulatory paradox where Singapore “spearheads” regional digital cooperation in ASEAN, but at the same time, Singapore has constraints on it from the PDPA’s requirement that Singapore has.

Singapore’s constraint, according to the concept of regional digital integration, came from its own geopolitical positioning between the United States and Chinese digital corporations. Ties and digital hubs from Western giant technological companies (Azure, Google, AWS) and at the same time aligning with Alibaba & Tencent from the Chinese end (Wang et al., 2019). This eventually creates the condition called “strategic ambiguity”, where Singapore attempts to benefit from all digital corporations without pledging a loyalty alliance with only one powerhouse or organization, which includes ASEAN. This approach subconsciously forces Singapore to adjust its own standards and regulations that are fragmented with ASEAN’s digital goal as a whole.

Singapore’s approach, according to Cai (2025), represents a form of “digital exceptionalism” that focuses on inhibiting regional cohesions. Therefore, unlike Indonesia and Vietnam, Singapore’s pursuit of digital sovereignty came through high-level digital infrastructure development and regulatory excellence rather than digital protectionism. This also exemplifies that even a non-protectionist view of digital sovereignty measures can disrupt the progress of regional digital data integration by creating standards that are incompatible with the state’s neighbors’ technological level. This situation also suggests that Singapore needs to compromise its technological development to implement digital integration. However, that move is not possible due to Singapore’s interest in becoming a global digital and economic hub. Singapore’s rapid development of technology is one of the ASEAN member states that focuses more on digital sovereignty than on regional digital integration. There are also states with protectionist policies towards the digital aspect of the state, exemplified by Vietnam.

### ***Case Study from Vietnam***

For Vietnam, the states have an ambitious journey towards digital transformation that demonstrates complexities and limitations that can hinder regional data integration in ASEAN. Vietnam started its vision of digital advancement, “Vietnam’s National Digital Transformation Program.” This program is launched with a vision that, by 2030, a rapid modernization of the country’s digital economy and services must be implemented through large-scale digital infrastructure building and policy reforms (Nguyen & Nguyen, 2024). This program aims for improvement in four aspects: (1) information technology, (2) economic digitalization, (3) digital governance, and (4) data management. There are targets for fulfilling this program, such as the goal of digitalizing 80% of government services and expanding 5G nationwide in 2025. These are aimed at Vietnam to catalyze digital transformation and drive economic growth digitally (Nguyen, 2024). But this progress makes Vietnam experience broader challenges across ASEAN in terms of regional digital cooperation.

Vietnam faces one persistent challenge, the digital divide between urban to rural areas. Even though Vietnam in 2025 had reached internet penetration of over 70%, there are still disparities in access to digital literacy tools and high-speed internet among rural and ethnic populations (Nguyen & Nguyen, 2024). These areas suffer from poor digital infrastructure and limited digital skills that hinder inclusive participation in the digital economy integration nationally. It causes an uneven development and therefore creates difficulties for national policies in making policies in line with digital integration, and at the same time shows how ASEAN and Southeast Asia countries cannot reach a single integrated digital market (Isono, 2023).

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Vietnam and its regulatory complexities have slowed down its own nation's implementation of digital ambitions as well. Even though Vietnam has drafted laws and policies for emphasizing data protection, cybersecurity, and digital tech industries, there are still delays and overlaps in those policies. This can be exemplified by the proposal of the Law on Digital Technology, which aims to address AI, IoT, and data sciences. However, to ratify this policy, it requires extensive coordination with the existing regulations, which creates another dilemma in the form of a potential domestic bureaucratic fragmentation (Utomo, 2018).

Ironically, Vietnam's digital infrastructure investment remains insufficient to support Vietnam's digital economy needs. Businesses and SMEs in Vietnam face high costs in adopting new technologies, but they are still limited in digital skills for the workforce (Thanh, 2025). A survey by ERIA (2023) had also shown that about 60% of Vietnamese enterprises stated that financial and technological constraints are the barriers behind the companies' development. This is also added with infrastructure and capacity of its human resources, which reduces the country's digital competitiveness and gives setbacks for a broad nationwide digital economic growth. Even though e-commerce platforms have flourished, many portions of transactions still rely on physical currency due to limited trust in digital payment methods (Nguyen, 2024). This is also caused by the fragmentation of logistical infrastructure, which is still inefficient for Vietnam's land.

When Vietnam demonstrates notable progress in developing a digital economic framework, domestically, however, using the concept of digital sovereignty, it also demonstrates digital divides and complex regulation fragmentation from inadequate infrastructure and systemic barriers. This exemplifies that without harmonizing regulations domestically, the nation itself cannot implement digital integration. Moreover, if Vietnam wants to align that vision with a potential regional digital integration in ASEAN, there are no chances at all due to the hurdles that the nation has. From Indonesia, Singapore, and Vietnam, those three countries have different models of achieving digital sovereignty through regional digital integration. However, regional digital integration is also purposeful for regional organizations to cooperate and reach their goals more effectively. This will be exemplified and compared with how the European Union implements regional digital integration.

### ***Why Regional Digital Integration Matters and Comparisons with the EU***

Regional digital integration matters because it is vital for the region's economic growth by enhancing connectivity, fostering coordination and innovations quickly, and helping to reduce barriers to digital trade by establishing cross-border digital data flows that come from harmonizing digital regulations. This action is critical for government-owned enterprises as well as SMEs to thrive regionally. A study by Li (2024) has found that regional digital integration improves labor productivity, innovation, and digital economic size by 132%. That means integration is positively proven to improve the regional economy as a whole.

However, when we look at ASEAN and its potential for regional digital integration, only 45% of its SMEs have a consistent digital presence (World Economic Forum, 2025). ASEAN's E-Government Development Index averaged only 0.5, which indicates moderate to low development of digital governance (Adams & Paul, 2023). Adding that to the problem of ASEAN's fragmentation in terms of regulations and digital divides, it slowed the potential of truly regional digital integration. Lastly, ASEAN, with its "non-interference" principle, has also hindered the organization's effectiveness as a whole to make the vision of digital integration come true.

Compared to the European Union (EU), this organization has more advanced digital integration, which leads a better economic productivity for the region. According to Eurostat (2025), the EU has a rate of 90% in terms of internet penetration and a digital economy worth 1.2 trillion US dollars in 2025, this compared to ASEAN is six times bigger. Moreover, 70%

of SMEs across the EU have established digital presences that are supported by harmonized regulations and innovations that propose a high level of digital skills development (European Commission, 2025). If we look at the EU’s E-Government Development Index, it stands in the number of 0.85, which is 0.35 higher than ASEAN’s 0.5 rate (Adams & Paul, 2023). These aspects (internet penetration, SMEs implementation of digital technology, and digital economy) comparisons between ASEAN and the EU can be explained with the chart below:

**Chart 1. ASEAN – EU Digital Metrics Comparison**

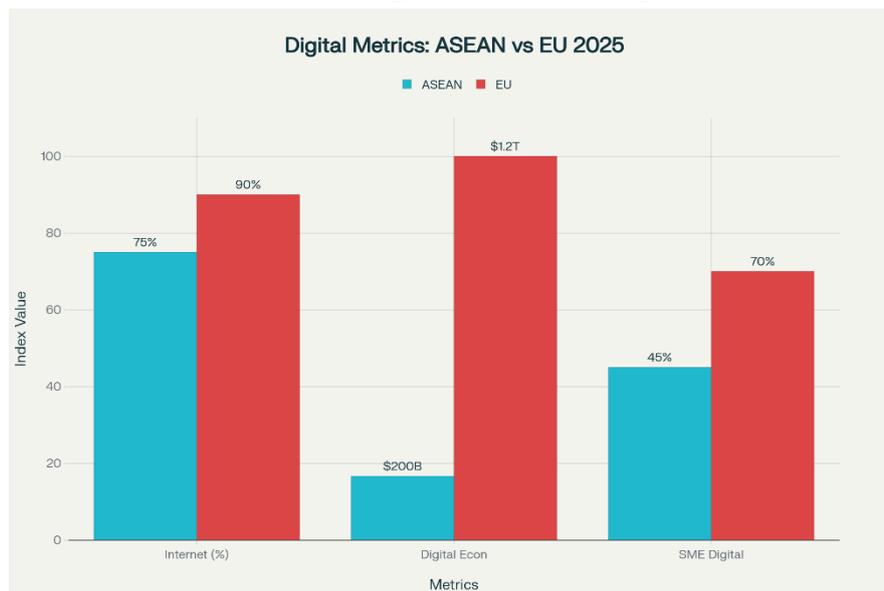


Figure 1. Internet Penetration, Digital Economy, SMEs Digital Integration Rate  
Source: Eurostat (2025) and World Economic Forum (2025)

Moreover, European Union states have shown consistency every year in terms of digital integration domestically and regionally. This can be proven with the DESI (Digital Economy and Society Index) matrix, which measures how every aspect of society in Europe implements digital tools for economic and social purposes that improve annually.

**Table 1. EU-Average Annual DESI Score**

Year	Score.
2014	46.0
2015	50.0
2016	52.0
2017	52.2
2018	52.6
2019	55.0
2020	54.0
2021	52.3
2022	54.5

Improvement of DESI and Digital Integration in the EU  
Source: European Commission, 2022

These two charts illustrate the significant regional digital integration gap between ASEAN and the EU. This also explains why integration matters for advancing regional competitiveness and inclusion. ASEAN shows promise with a growing digital economy and improving connectivity, but challenges, mainly the principle of ASEAN itself, which only

fosters dialogues for cooperation, but with a non-interference policy, also affect other aspects, such as digital adoption, regulatory fragmentation, and infrastructure disparities still exist. The EU's progress exemplifies how a regional organization with an assertive mandate can bring harmonized policies, strategic investments, and robust digital governance, foster stronger regional digital cooperation, and create more inclusive digital markets and foreign direct investments.

## CONCLUSION

The findings confirm that regional digital integration within ASEAN remains unattainable due to the diverse priorities and capacities of its member states, particularly Indonesia, Singapore, and Vietnam, which emphasize digital sovereignty, maintain fragmented regulations, and face unequal digital infrastructure development. These national-level divergences hinder cohesive regional cooperation and contrast sharply with the European Union's more harmonized and enforceable digital frameworks, enabled by its supranational authority—unlike ASEAN's principle of non-interference. Future research should explore potential mechanisms or institutional reforms that could reconcile national digital sovereignty with regional integration goals, including comparative analyses of adaptive governance models suitable for ASEAN's unique political and structural limitations.

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