UNIVERSITAS GADJAH MADA
RESEARCH CENTER FOR REGIONAL PLANNING AND DEVELOPMENT

FINAL REPORT

ASEAN Framework on:

LOGISTICS FOR DIGITAL ECONOMY SUPPLY CHAIN FOR RURAL AREA

KOMINFO

Project Profile

Project Title:
ASEAN Framework on Logistic for Digital Economy Supply Chain for Rural Area

Project Description:
The ASEAN Digital Integration Index (ADII) reveals a significant digital divide within ASEAN, particularly between urban and rural areas, highlighting the region's lag in digital trade and logistics compared to partner countries. To bridge this gap and enhance rural areas' contribution to the digital economy, there's a call for a framework to develop digital logistics infrastructure across ASEAN, focusing on inclusive support for all geographic areas and levels of society, especially in rural regions.

Executing Agency:
Centre of International Affairs – Secretariat General, Ministry of Communication and Information Technology, Republic of Indonesia Gedung A, Lantai 4 – Ministry of Communication and Information Technology

EA's address:
Jl. Medan Merdeka Barat, no. 9. Jakarta 10110
Telp: +62-21-384 8104, Fax: +62-21-350 0959

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Project Implementation Unit:
Research Center for Regional Planning and Development, Universitas Gadjah Mada, Yogyakarta

PIU Address:
Jalan Kemuning Sekip M-2, Kampus UGM, Yogyakarta, Indonesia 5528
Phone: +62274566361.
Fax: +62274562800.
Email: psppr@ugm.ac.id

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Chapter 1 Introduction

1.1 Background

Digital divides in ASEAN member Member states States (AMSs) vary across states with the developed Singapore, Malaysia and Brunei have internet accessibility rates of more than 80 percent, while Indonesia and Thailand have less than 60 percent along with impoverished Myanmar and Vietnam. This creates different economic impact among the AMSs economy, where the bulk of e-commerce is carried out through internet infrastructure. Lack of infrastructure in rural areas creates impediment to enhancing the local economy as rural SMEs have difficulties expanding their scale of production and reaching out to broader market. Moreover, the 2021 ASEAN Digital Integration Index (ADII) only scores 55.27 on digital trade & logistics; this is the lowest among the five pillars of ADII. The pertinent issue is the lack of support of digital technologies on trade/customs processes in many AMSs.

Expanding the reach of rural small & medium enterprises (SMEs) and businesses to broader supply (of inputs) and market would accelerate rural economic growth, create jobs and extend the value added of goods produced and sold outside the rural areas. While rural SMEs innovation and the capacity to rapidly adapt to consumer demand are of importance in generating rural competitiveness, nevertheless access to broader market (both financial markets and consumers) should be prioritized. Hence, the necessity to develop a framework for digital supply chain for rural areas that can be applied to each AMS and overall ASEAN region.

1.2 Rationale/Purpose

Translating analogue supply chain to intelligent supply chain requires coordinated efforts and policy harmonization between AMSs. While the intent of this project is to escalate rural areas' competitiveness and alleviate barriers of data flows to enhance intelligent supply chain (first-mile, middle-mile and last-mile delivery), several barriers are remain to be seen. Digital divide still exists between urban and rural areas and between AMSs, as degree of internet penetration varies in each AMS; at the same time, rural economy reliance on local customs and culture plus lack of necessary information beyond the confine of rural areas impedes rural competitiveness which produces and widens rural-urban economic gap. As nine AMSs have rural areas with each complexity and challenges, enhancing the regional supply chain and expanding digital trade would facilitate regional economic growth and development. This facilitates efforts to achieve Master Plan on Connectivity 2025 (MPAC2025)' strategic area on Seamless Logistics through key

initiative: A3.2. strengthening ASEAN competitiveness through enhanced trade routes and logistics.

Expanding the industrial chain of rural commodities would create job opportunities and added value to rural SMEs. However, this alone would not generate significant impact on rural enterprises' performance unless broader market can be reached both within state and cross border. By enhancing rural SMEs and economic transformation through ICT facilitation will lead to higher economic and development outcomes and reduction of wealth and income gaps regionally and locally. To do so, regulatory framework development and harmonization should be put into place, allowing better and speedy transition from analogue to intelligent supply chain and the integration of AMSs into regional digital trade and economy. As such, this project supports ASEAN Economic Blue Print 2025 (AECBP2025) especially C2. iii) innovation: support ICT innovations and entrepreneurship as well as new technological developments such as smart city and big data analytics.

1.3 Objectives

(i) Identification of existing laws and regulations on logistics that could be deployed to accelerate the implementation of digital economy supply chain in rural areas.

(ii) Analysis of opportunities and challenges in the acceleration of digital economy supply chain for rural areas, including views and perceptions from logistics operators and SMEs .

(iii) Harmonization of regulations on logistics to support digital economy supply chain in rural areas.

1.4 Output

ASEAN Framework on logistics for digital economy supply chain for rural areas which consists of the proposed agreement on harmonization of regulations on the following aspects (logistics, supply chain, SMEs, and digital economy), specific commitments from each AMSs and non-binding arrangements to enhance the application of digital economy supply chain for rural areas.

1.5 Outcome

immediate outcome: Relevant sectoral bodies (ASEAN Digital Senior Officials Meeting (ADGSOM) from digital sector, ASEAN Senior Transport Official Meeting (STOM) from transportation sector, ASEAN Coordinating Committee on Micro, Small and Medium Enterprises (ACCMSME) from sector MSME to consider, endorse, and adopt the recommendations.

medium term outcome: Each AMS implement the adopted the recommendations as regulations to accelerate the integration of rural SMEs into global supply chain facilitated by digital economy.

Chapter 2 Desk Study on Last-mile Delivery and Rural Logistics

This chapter outlines methods to identify what appropriate approaches for developing policy framework for the digital economy supply chain for rural area. It starts by identifying what digital economy and supply chain are and the intersection between the two which which leads to the implementation of last-mile delivery. Debates and discussions from theoretical and empirical research are used as a framework to define digital economy and its effect on supply chain operations including last-mile delivery. Statistical data and reports are employed to support the argument of where the current trend on digital economy supply chain is, including implementation challenges in rural area.

One major issue in rural last-mile distribution is its capillary, where there are long distances between delivery points and they are often difficult to access due to unreliable infrastructure that can cause delays. Cultural and institutional arrangement also play important roles in allowing rural economy to grow, as it affects local community acceptance or resistance in utilising new technology or application for their daily activities (including business activities). Against this background, it is important to map out what is needed to be done for accelerating rural economy. This section provides description of what digital economy supply chain is and how this trend evolve over time and reshape our thinking in running business and expand market size. It then delves into latest trend on last-mile delivery and hurdles in facilitating rural SMEs growth through market expansion, a prerequisite in fostering rural economy. Such impediments are then analyzed within the context of rural development and how this can be solved through advancing rural logistics and seamlessly embedding rural SMEs into digital economy supply chain. All of these will be utilized as a conceptual precursor for the policy framework for the digital economy supply chain for rural area.

2.1 Digital Economy and Supply Chain

Technological advancement has paved way for the growth of new lines of economic activities which heralds higher added value and economic benefits to businesses and consumers. Digital economy emerges as the new approach that could increase economic value of goods sold (and services provided) by enterprises. Latest estimates show that in 2023 digitally transformed enterprises account for US$53.3 trillion, more than half of the overall nominal GDP and sharp

increase from latest account in 2018 where it accounted for only US$13.5 trillion. The digital economy makes up more than 15% of the global GDP and has grown 2.5 times faster between 2013 and 2023 than the GDP of the physical world. It is forecast that the digital economy will grow tremendously and contribute not only 30% to the global GDP but also create 30 million jobs by 2030.

Businesses have expressed concern over whether technology could facilitate better interaction between firms or between producers, intermediate players and consumers. Time constraints and businesses lack of ability to identify market for their products are often cited as the major impediment for small and medium enterprises (SMEs) for growth. While progress on ICT development and rate of adoption by enterprises grows faster, changes in behaviour and business model are still required to fully capitalize on the potentials of ICT infrastructure and digital economy. Developed economies enjoy higher economic growth benefits by a factor of almost 25 percent, although they tend to lag behind emerging economies in job creation by a similar margin. This illustrates the potential of digital economy to leveling playing field in the globalized economy.

The ASEAN Digital Master Plan (ADMP) 2025 has outlined steps for enhancing the regional supply chain by focusing on the aspects such as strengthening data governance and security and adoption of digital services to increase regional competitiveness and economic growth. To achieve these goals, several desired outcomes and enabling actions were developed and translated into annual projects carried out by institution responsible for carrying out ICT development in each AMS. These projects are directed to alleviate digital divide not only between AMSs but also within each AMS as rural-urban divide continues to persist although it has lessened over the years.

One of its desired outcome of the ADMP 2025 focuses on the utilisation of digital services to connect business and to facilitate cross-border trade. With current GDP of approximately US$3.7 trillion and over 670 million people in population size, It is estimated that ASEAN as an economic bloc by 2030 will have combined GDP reaches trillions of dollars and become world's fourth-largest economy. As such, to fully capture this potential, it is important to mobilise efforts to strengthen each AMS capacity to participate in the digital economy, bolster enterprises involvement through infrastructure development & incentive policy and safeguard consumers' privacy via data governance and security.

Under the DO6, the ADMP 2025 also outlines a number of enabling actions (EAs) to help realize connecting business and facilitate cross-border trade through utilisation of digital

services of which one of these EAs is promotion of e-commerce trade in ASEAN, enhance last-mile fulfilment cooperation, and improve competitiveness in the digital economy. Under this EA, supply chain previously connects producer and consumer through mechanization of transport followed by automation of handling system now is expected to adopt system of logistics management where every information is compiled and shared to reduce time and cost associated with freight mobility. This logistics 3.0 approach is expected to bring significant improvement and changes in enterprises behaviour. This transformation allows enterprises and consumers to fully adapt to logistics 4.0, where everything is automated and networked, allowing prompt responses from players (both enterprises and freight companies) and consumers.

Despite current practices of logistics and supply chain in several AMSs still employ mechanization of transport and gradually embrace automation of handling system, some practices initiated by private sector show that the trend has tilted toward system of logistics management. This paradigm shift allows increased ease of freight mobility and penetration of broader market by enterprises, although for those in rural areas this is constrained by lack of capacity (of enterprises) to capitalize digital economy supply chain and engage with current technology. The ASEAN Smart Logistics Network (ASLN) as a platform to promote logistics interconnectivity and integration within the regional bloc is built to improving connectivity and promoting the use of smart and sustainable logistics infrastructure. This initiative is the result of the ASEAN Connectivity Master Plan (ACMP) 2025 which calls for policy promoting integration between ASEAN members.

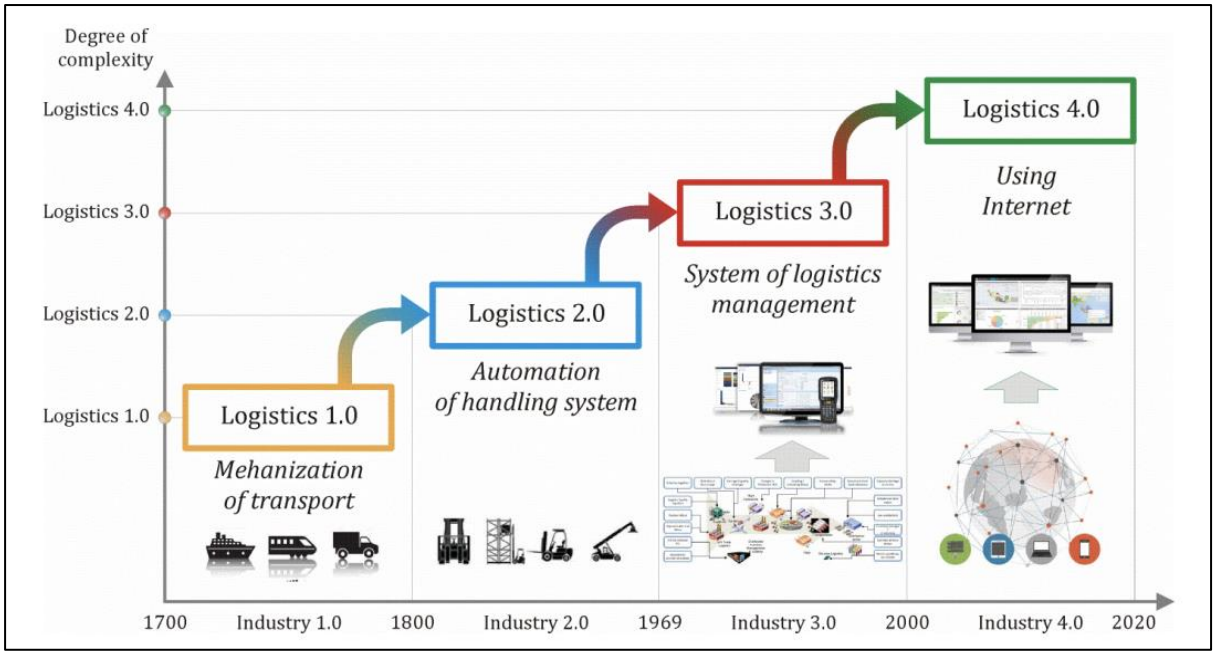

Figure 1 Transition of Logistics Over Time
Source: Wang, 2016

As seen from figure 1, logistics 4.0 as the goal of digital economy supply chain focuses on connecting multiple supply chains. This new paradigm will deploy internet networks to facilitate communication between and among various subsystems of activities and data exchange in real time effectively and efficiently. Such an approach will be carried out to deliver 'smart services' and "smart products". While it seems promising, nevertheless there are barriers to fully implementing advanced supply chain approach in rural areas despite policy support from government.

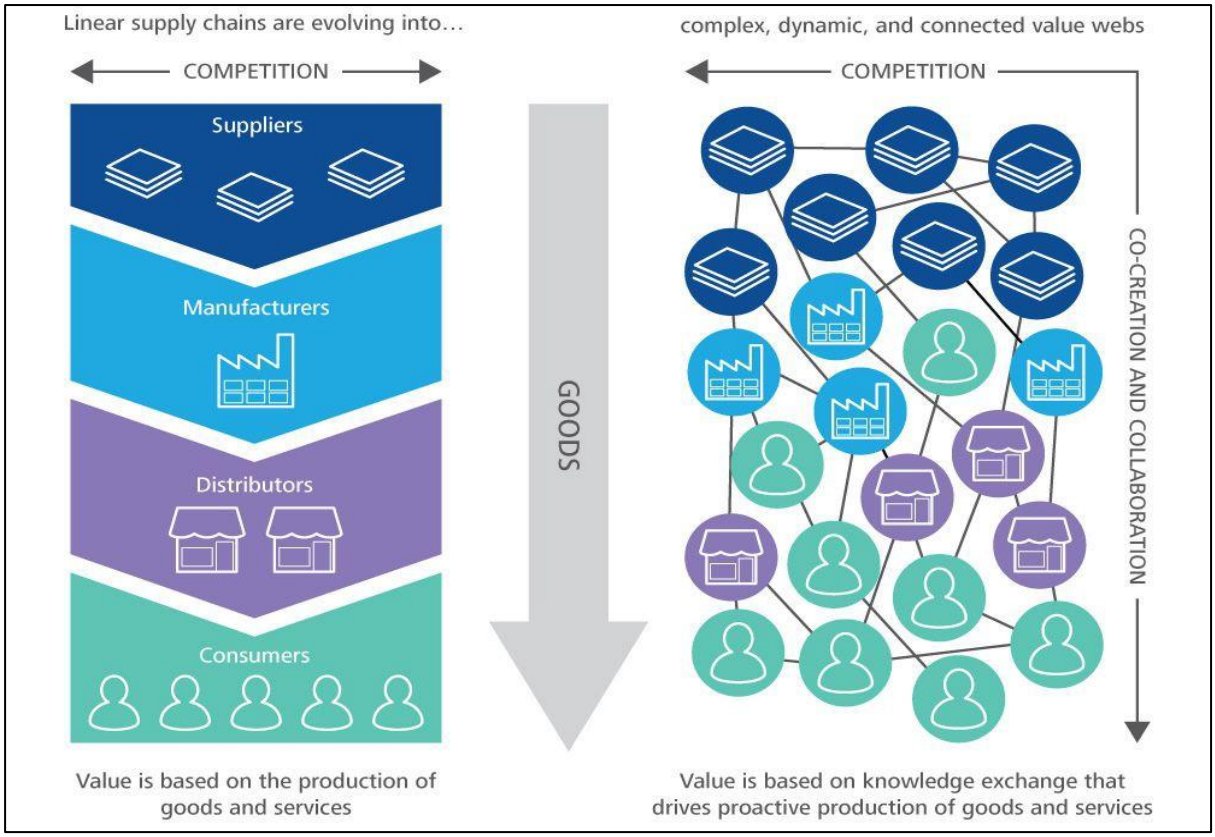

Figure 2 Evolution of Supply Chain Into Value Webs
Source: Deloitte analysis.

As previously stated, since ASEAN regional is forecast to be the world's fourth-largest economy, it is important to adapt to the new trend and technology. Current practices of linear supply chain focusing on the creation of value based on the production of goods and services will be replaced with complex, dynamic and connected value webs where value is produced through knowledge exchange that drives proactive production of goods and services.

2.2 Last-mile Delivery: Trends and challenges

Key features of digital economy is the implementation of last-mile delivery which cut the distance between seller(s)/producer(s) and (potential) buyer(s). The reduced distance between seller(s) and buyer(s) is facilitated through the utilisation of ICT which enables goods delivered in timely manner and both seller and buyer could keep track of their goods in real time. This facilitates increased trust between seller and buyer leading to potentially increased volume sales over time (Amoah et.al. 2023; Beckmann et.al. 2023; Peters, 2023). this increased sales volume also facilitates seller to continuously upgrade their system allowing better services and faster time delivery of goods and/or services to consumers.

Facilitated by increased speed of internet connection, e-commerce enables buyer(s) to directly purchase goods and services from seller(s). along with the growth of parcel express

industry, e-commerce has shortened the intervals along the supply chain. Although there are some challenges in expanding internet connection in rural areas, nevertheless internet has reached almost every village allowing significant reduction in supply intermediation and increased opportunities of villages to keep more of the sales proceeds as income.

Last-mile delivery provides significant financial and economic benefits for urban dwellers and businesses located in urban areas; however, challenges are still present for the rural businesses to optimally deploy ICT to reap the full benefits of last-mile delivery (Mrazek et.al. 2020; Miao 2021; Jing et.al. 2023). one of the problems in implementing last-mile delivery in rural area is the long distance between two points leading to significant increase of transport cost. Geographical characteristics also affects the operation of last-mile delivery, as it requires specialized vehicle to transport goods from one place to another. Although both seller and buyer could keep track of where their goods are, nevertheless the diversity of geographical constraints becomes the impediment that could not be easily solved.

e-commerce supply-chain management makes extensive use of enterprise-resource-planning systems, integrating nearly all aspects of management to standardize the firm's basic information and business processes. Although it shows promises, some issues remain to be seen, especially as AMS such as Indonesia, Malaysia, Philippines are archipelagic state which makes cost of transporting goods within region is higher compared to other AMS which exhibit continental setting such as Brunei Darussalam, Cambodia, Laos, Myanmar, Thailand, and Vietnam.

However, to fully realize the potentials of last-mile delivery some obstacles need to be addressed. Logistics costs, road construction and infrastructure planning, and lack of technology integration are seen as the primary culprit for the region in lagging in tapping the full potential of last-mile delivery. Logistics costs in Vietnam were equivalent to 20.9 percent of GDP in 2016, surpassed than those of China, Thailand and Japan. This was the result from unorganized operations due to lack of technology. Further, several AMSs still use traditional route planning that inclides redundant procedures. The business model employ unnecessarily high amounts of resources that induce more costs for companies. Drivers in certain ASEAN regions are still struggling to deliver goods and services to pre-determined locations promptly and accurately. They often rely on their familiarity with the local area and refuse to utilize the help of technology and tend to take longer routes.

2.3 Rural Development and Issues of Growth

Despite the fact that the number of Southeast Asia population lives in urban areas continues to increase, roughly 60 percent of the population still live in rural areas. With agriculture as the predominant sector, it is challenging for rural population to stimulate the local economy due to a number of factors (Beckmann et.al. 2023; Pfister & Lehrmann 2023; Quinton et.al. 2023). Although other developed countries such as Japan, South Korea and to some extent China exhibit traits of predominant agriculture in their rural areas, the size of their rural economy eclipses rural ASEAN. Japan, for example, has developed advanced logistics system to facilitate and transport goods between rural and urban areas and vice-versa due to their ability to build interconnecting infrastructure from one region to another (Miao 2023; Quinton et.al. 2023). The extent of urban growth in rural China has facilitated remarkable rural development and accelerated rural SMEs capacity to expand to broader market (Miao 2023; Peters 2023; Pfister & Lehrmann 2023). With the exception of Japan as an archipelagic country, developed countries have mature logistics system due to their geographical setting allowing freights' ease of movement and as such this leads to lower cost that benefit seller and buyer.

Although rural areas in ASEAN show some improvement, nevertheless some issues remain in place. Economic growth stagnates, especially after COVID19-pandemic which impedes not only trade and services in urban areas, but agriculture and home-industry in rural areas as well. This disruption allows deeper penetration of ICT in rural areas, which in some cases accelerates cultural transformation. Rural community, especially those live adjacent to urban areas or major cities, are no longer dependent on analog instruments in doing their business and gradually shifting to digital apps (Peters 2023).

Despite numerous efforts by central government to accelerate economic growth and integrate rural areas into wider economy, nevertheless there are shortcomings that are difficult to address. Low population growth due to high outmigration rate continues to impede the ability of rural SMEs to expand their businesses as demand remains modest. Although the ICT could facilitate rural SMEs to identify potential market for their products, lack of adaptable infrastructure continues to impede this solution. Downstreaming policy also remains to be seen, as some rural communities are remains resistant in adopting new technology and/or equipment that could be deployed to increase their economies of scale. Some suggestions to overcome this issue involve utilizing community delivery points and specialized vehicle. Community delivery points are a viable solution where distance between settlement in a given region is moderate enough that these can be reached by small motorised vehicle or specialized vehicle.

Rural community purchasing power is also seen as a challenging issue in accelerating economic growth. Lack of linkage among rural areas or between rural and urban areas impede

flows of goods leaving rural SMEs unable to tap into larger market. Efforts to downstream rural agricultural products are constrained by lack of skills, especially skills of rural youth, required to diversify the products and increase their added value. Increased utilisation of ICT should be tailored with behavioral and cultural changes of especially rural youth to overcome these problems. Government can promote ICT infrastructure development in rural areas and at the same time modify educational curricula to help rural youth acquire necessary skills.

Aligning efforts to increase rural income with digital economy could alleviate problems of linking rural potentials to urban and/or wider market. ICT infrastructure development could be expedited through direct investment with creative financing scheme (such as public-private partnerships/PPPs) or promotion of incentives for competitive tendering. Moreover, government could develop a sound policy framework that reflects the need for a wider diffusion of digital networks. Another mechanism is support for bottom-up models in rural areas to finance and deploy high-speed networks where municipal networks or high-speed networks fully or partially facilitated or financed by local governments, provided that local government's fiscal capacity is sufficient to cover all expenditure related to this enterprise.

While all these seem promising, nevertheless local institutional capacity, including rural government and local community, should also be strengthened to ensure that efforts to accelerate rural economic growth will have lasting impacts. These can be realized through introducing new technologies and application to improve rural enterprises' performance, enacting policy and regulations to increase local government in rural areas to adopt ICT in their businesses and developing digital platform to facilitate social inclusion between and among rural community members.

2.4 Rural Logistics

Key issues and challenges in stimulating rural economy is its inability to market the economic outputs outside its boundaries. Unlike urban areas which experience higher population growth due to a mix of natural growth and high in-migration rate, rural population only experiences modest growth due to natural growth but this is moderated by high out-migration rate. This low population growth rate, combined with low purchasing power, attributed to lack of demand from rural areas which in turn hampered rural SMEs ability to grow and expand their business.

To facilitate rural SMEs growth and their business expansion, rural logistics become a key theme in rural development. Through this approach, rural SMEs could reach out their potential buyer(s) and expand the size of the market, provided that they are able to tap into their economies of scale. However, this assumption was weighed down by several factors, notably lack of

infrastructure support to enhance mobility and connectivity in rural areas. Requirement for specialized vehicles also affected on ease of freight mobility within and between rural areas.

At the conceptual level, embedding ICT on rural logistics strengthens rural SMEs performance and capacity to reach out to the wider market. It also enables business owners to analyze and capitalize on growing market. however, utilisation of ICT on business activities requires changes in business model including acceptance to continuously change and improve the enterprises' performance and not tied to traditional model of running businesses. Business owner should be open-minded with the way ICT works and able to reorient their business model to fully capture the economic potentials of the digital economy.

While logistics performance in urban areas continues to show improvement over the years, rural logistics still face hurdles such as lacks of infrastructure to support mobility of goods, CEP coverage area of services are limited and skills of existing human resources incapable of facilitating smooth transition from analog to digital performance. Rural ASEAN are predominantly hilly and often difficult to reach by land transport and its built-up areas are scattered making cost for transporting and delivering goods higher than similar operation carried out in urban areas. As such, accelerating rural competitiveness requires coordinated efforts across sector to ensure that all prerequisite for rural economic development are met.

Table 1 Selected AMS ranking in World's Performance Logistic Index, 2023

Country	Year	LPI Rank	Logistics competence Rank	Tracking & tracing Rank	Timeliness Rank
Indonesia	2023	61	65	65	59
Malaysia	2023	26	28	29	30
Philippines	2023	43	46	49	21
Singapore	2023	1	1	1	1
Thailand	2023	34	38	34	46
Vietnam	2023	43	53	41	59

Source: World Bank Logistics Performance Index, 2023

Table 1 illustrates the divergent level of each AMS logistics performance (including rural logistics). As seen, selected AMS with predominantly rural area (such as Indonesia and Malaysia) have lower logistics performance compared to Singapore with higher urban characteristics. Of these six AMS, Indonesia has the lowest rank as selected indicators such as logistics competence, tracking and tracing and timeliness are the lowest among the other five selected AMS. This is partially due to geographical constraints and human resources and institutional capacity to fully reach the potentials of digital economy including digital supply chain.

Several suggestions have been made with regard to steps to optimize logistics performance. Some of these were directed towards public sector role in enhancing government support and strengthen rural infrastructure. A number of activities such as build comprehensive, multifunctional rural logistics facilities, accelerate the construction of county-level rural logistics hubs and nodes and improve rural logistics end nodes at the village level have been proposed to be enacted by public sector. At the same time, the same proposal also calls for more pro-active private sector role in strengthening rural logistics through informatization of rural logistics systems and facilitate cultivation of strong rural logistics enterprises.

Key prevailing points are whether rural community members are capable in embracing new culture which requires gradual to rapid cultural transformation allowing individuals and/or households to fully capitalize the benefits of ICT. This entails collective action of rural community members to address their shortcomings of skills and talents and mobilize social capital to build infrastructure required to facilitate cultural changes and transformation. In line with this suggestion, government should take an active role in building digital community in rural area through facilitation of grant and technical assistance.

As such, the underlying assumption to accelerate economic growth in rural area through facilitation of ICT infrastructure would be better data governance (including governing data security or cybersecurity), adoption of new technologies in rural SMEs businesses (including rural logistics) and cultural transformation. These three recommendations are then brought forward and be developed as a baseline for the policy framework for digital economy supply chain for rural area that can be implemented in ASEAN region.

Chapter 3 Regional Policy Formulation for the Digital Economy Supply Chain for Rural Areas

3.1 ASEAN Member States Commitment for Rural MSMEs Empowerment in Digital Economy Supply Chain in Rural Areas: Policy Analysis

In this chapter, the focal point shifts toward a examination of the regulatory frameworks governing the Digital Economy Supply Chain, especially in rural areas, within each of the ASEAN member states. Acknowledging the multifaceted nature of regulatory landscapes, economic structures, and technological adoption prevalent across the region, analyzing existing policies aims to unveil the nuances of current policies shaping the Logistics for Digital Economy Supply Chain in rural settings. The insights provided by ASEAN Member States' reports during the regional workshop are valuable for understanding the policy implications of these member states

on logistics for the digital economy in rural ASEAN. This approach aligns with the collaborative spirit of ASEAN, contributing to the formulation of an effective regional framework.

3.1.1 Brunei Darussalam

In Brunei, digitalization efforts are driven by the Digital Economy Master Plan 2025, launched in June 2020. The plan envisions transforming into a smart nation through comprehensive digital transformation, with four strategic thrusts: Industry digitalization, Government digitalization, a thriving ICT industry, and manpower and talent development. Supporting this vision are five strategic enablers, including a Smart nation platform and a cybersecurity framework. Three flagship projects – the National Information Hub (NIH) Project, the Digital Identity Project, and the Digital Payment Hub Project – lead the charge. The nation has achieved 95% internet penetration, introduced policies for an interoperable market infrastructure, and launched programs supporting MSMEs' digitalization, including the Brunei Innovation Lab.

With 97.2% of enterprises falling into MSMEs category, the government, through Darussalam Enterprise (DARe), is actively fostering a conducive environment for MSME growth. Financial reforms, such as the introduction of the Secured Transactions Order (STO) and the establishment of the Credit Bureau, play a crucial role in supporting the vibrancy of the MSME sector. In alignment with the government's commitment to MSMEs in the digital economy, the eKadaiBrunei initiative was launched in April 2020. Functioning as an online directory, it serves to connect businesses with eCommerce platforms, logistics services, and the innovative 1 Village 1 Product (1K1P) scheme. This initiative empowers MSMEs to enhance their digital presence and expand their market reach through carefully curated connections.

The success of Brunei's digital initiatives is evident in the thriving e-commerce landscape, with 72% engagement among the population. The Ministry of Transport and Infocommunications, in collaboration with the Authority for Infocommunications Technology Industry (AITI), actively promotes the digital economy under the National Digital Strategy 2016–2020. Noteworthy developments in the financial sector, including the ongoing 'Digital Payment Hub for Brunei Darussalam' project, contribute significantly to economic diversification.

However, challenges persist in the digitalization journey. Factors such as limited depth in the private sector, the absence of specific data protection legislation, and challenges in project progress hinder the overall ecosystem development. Despite these hurdles, the government continues to demonstrate its commitment through unwavering support. The 2023 budget allocations and ongoing initiatives emphasize the government's dedication to overcoming challenges and realizing the full potential of digitalization in Brunei.

3.1.2 Cambodia

Cambodia's commitment to fostering a robust digital economy and society is rooted in a visionary approach outlined in its policy frameworks. The overarching vision seeks to promote effective network infrastructure connectivity and accessible services in post, telecommunications, and ICT sectors, contributing significantly to socioeconomic development and poverty reduction. To understand Cambodia's digital transformation journey, it is crucial to recognize the multifaceted challenges it faces. These challenges include the high cost of deploying digital infrastructures, a shortage of skilled labor, low population density, and limited awareness. Additionally, challenges such as low levels of IT skills, lack of digital literacy, and financial constraints pose significant barriers to progress.

In terms of legal frameworks, Cambodia has laid out comprehensive legislation and policies, including the Cambodia ICT Masterplan, Digital Economy and Society Policy Framework 2021-2035, Digital Government Policy 2022-2035, and various policies on ICT sector development, smart city roadmaps, and more. Digital Economy and Society Policy Framework 2021-2035 is one of the most notable policy that consists of comprehensive framework spans 15 years, with distinct phases focused on building foundations, fostering digital adoption, and achieving comprehensive digital transformation. The pillars of this framework include enhancing infrastructure, ensuring digital reliability and confidence, fortifying legal frameworks, and bolstering cybersecurity management. Within this context, Cambodia has also introduced the Digital Government Policy 2022-2035, aiming to establish a smart government ecosystem leveraging digital infrastructure and technology. Key aspects encompass the development of digital government infrastructure, creation of digital governance and public services, digital capacity building, and fostering cooperation between public and private sectors.

In the context of digital development for Small and Medium-sized Enterprises (SMEs), Cambodia has made significant strides. The country has achieved substantial mobile internet service penetration, predominantly on 4G, with rural mobile internet access at 17.5%. Fixed internet service is also growing rapidly, with a significant annual growth rate. The FinTech infrastructure and digital payment systems have witnessed remarkable progress, with 69 financial institutions providing internet banking and a surge in E-wallet accounts.

Notably, logistics and final destination/last-mile delivery form integral pillars of Cambodia's digital development. The government aims to transform the transport system into a high-quality, resilient, and sustainable infrastructure, enhance regional integration, boost industrial competitiveness, and improve air transport efficiency. Initiatives include formulating

masterplans, establishing national logistics complexes, and developing data-driven traffic management systems.

3.1.3 Indonesia

Indonesia is deeply committed to advancing logistics, digitalization, and empowering rural MSMEs, underpinned by a robust regulatory framework and strategic initiatives. While specific legislation dedicated to logistics is lacking, regulations like the Postal Act 38/2009, Omnibus Law 11/2020, and Government Regulation 46/2021 collectively oversee this sector. The Postal Act introduces a contemporary licensing system, prioritizing universal postal services to ensure rural connectivity. Integrated logistics services are governed through bilateral agreements, aligning with Indonesia's vision of locally integrated and globally connected logistics for national competitiveness and social welfare.

Recognizing the pivotal role of ICT and digital infrastructure in the national logistic system, the Sislognas initiative emphasizes locally integrated and globally connected systems. The ongoing program focuses on collaboration, streamlined processes, facilitated payments, and efficient port systems to update the national logistics landscape. Digital infrastructure programs encompass an extensive network, including optical fiber, satellites, and last-mile connectivity in rural areas. Despite commendable internet penetration at 78.19% (2022), challenges persist in digital payments (57.41% in 2021) and SME financial inclusion (22.4%). Addressing these challenges necessitates the implementation of digital literacy and financial inclusion programs.

Digital transformation, covering infrastructure development, talent acquisition, data integration, regulations, and financing, is a top priority. Indonesia aspires to cultivate nine million talents within 15 years, fostering business incubation and digital talent recruitment.Challenges in rural logistics are being tackled through government subsidies for sea transport and interim solutions like Cash on Delivery. Indonesia's dedication to a digital economy is evident in its endeavors to enhance connectivity, promote inclusivity, and stimulate economic growth.

3.1.4 Lao DPR

The Lao People's Democratic Republic (LAO PDR) has been actively fostering digitalization and advancing its digital economy, with notable emphasis on logistics, rural MSMEs empowerment, and the development of a digital economy supply chain in rural areas. In terms of legislative readiness, LAO PDR has laid a solid foundation for digital economy development. Key legislations encompass various aspects such as enterprises, competition, SMEs promotion, electronic commerce, telecommunications, logistics, and ICT infrastructure. These legal

frameworks form the basis for supporting ICT-related activities, electronic transactions, and the protection of digital resources.

The ICT infrastructure in LAO PDR has seen substantial growth, with 90,258 kilometers of fiber optic cables covering all cities and provinces. While urban areas boast well-established high-speed internet infrastructure, there is acknowledgment of the need to bridge the rural-urban gap. Efforts to expand high-speed internet in rural areas are imperative to ensure inclusive digital development.

In the realm of e-commerce, LAO PDR has made strides with a network of 157 post offices connected globally. Collaboration with China on a high-speed railway project is viewed as a significant opportunity to link markets within LAO, ASEAN, and China. Social media, particularly Facebook, is widely utilized by small and medium-sized enterprises for cost-effective advertising.

LAO PDR's National Digital Economy Development Plan (2021-2025) outlines comprehensive strategies across various domains. The plan aims to enhance digital technology infrastructure, implement e-government initiatives, develop digital payment systems, promote digital HR development, and focus on MSME and services promotion. Notably, Plan 7 underlines the promotion of MSMEs in digital commerce, encouraging the use of digital technology for efficiency, innovation, and international expansion. Furthermore, Plan 10 places significant emphasis on digital economy logistics development. This includes policies to control logistics and postal services prices, integration with e-commerce systems, support for rural e-commerce, and utilizing logistics and postal networks for the distribution of agricultural products.

In conclusion, LAO PDR's policy framework reflects a strong commitment to digitalization, particularly in fostering a conducive environment for MSMEs, ensuring inclusive digital access, and building a robust digital economy supply chain, especially in rural areas. Ongoing efforts and strategic plans position LAO PDR to harness the benefits of digital transformation for sustained economic growth and development.

3.1.5 Malaysia

Malaysia's strategic plan, JENDELA (Jalinan Digital Negara), highlights the nation's commitment to enhancing digital connectivity and quality of service across the country. By the end of 2025, JENDELA aims to fiberize nine million premises with gigabit speed, achieve 100% internet coverage in populated areas, and provide 100 Mbps mobile broadband speed, focusing on optimizing existing resources in Phase 1 (2020-2022) and rapidly deploying 5G network services in Phase 2 (2023-2025).

In the realm of industry growth, Malaysia anticipates significant developments, with e-commerce projected to grow at a compound annual growth rate (CAGR) of 24% in the next five years. However, challenges such as declining quality of service (QOS) with increased delivery times during lockdown and a surge in complaints about poor service, late deliveries, and damaged parcels have been noted. Additionally, the courier industry faces stagnating revenue growth and slim profit margins due to escalating price pressure.

To address these challenges, Malaysia envisions world-class courier services through the 4Rs - Reliability, Reach, Relevance, and Resilience. The National Postal & Courier Industry Lab (NPCIL) was instrumental in formulating a 5-year strategic roadmap, focusing on quality of service commitments, industry-led digitalization projects, courier coverage mapping, and strengthening regulatory frameworks.

The NPCIL's aspirations align with national goals, aiming for first-class quality of service for the public, improved integration of last-mile delivery, and a seamless customer experience. Nine key initiatives were developed to achieve industry sustainability and enhance quality of service and coverage. These include the Parcel Point Network, asset sharing, incentivizing industry sustainability, implementing a base price for parcels, QoS standards disclosure, licensing framework review, courier infrastructure network mapping, and a national address system.

Branded as PAKEJ (Pelan Accelerator Kurier Negara), NPCIL emphasizes the importance of delivering first-class quality service with a focus on improved access, coverage, and service quality. The strategic pillars encompass industry sustainability and growth, QoS and coverage-backed growth, and branding initiatives like PAKEJ to ensure accountability, transparency, and a seamless customer experience through digitalization and innovation. This comprehensive approach positions Malaysia to navigate the evolving landscape of logistics, digitalization, and rural MSMEs empowerment within its broader digital economy strategy.

3.1.6 Myanmar

Myanmar has undergone significant reforms in its telecoms sector, initiated in 2013 to liberalize the industry. Previously, mobile SIM cards were prohibitively expensive at over $350 in 2012, but with the liberalization, costs have drastically reduced to just over $8, providing consumers with a choice among four operators.

The existing legal framework in Myanmar includes major mobile operators such as MPT, ATOM, Ooredoo, and MyTel, with a total of 263 licenses and extensive telecom infrastructure comprising 26,778 towers, 68,832.15 km of fiber, and international connections through submarine cables (SE-ME-WE3, SE-ME-WE5, and AAE1) and cross-border points. The current

telecom landscape boasts a mobile density of 109.35%, internet penetration at 100.61%, and approximately 98% coverage of the population.

The Ministry of Transport and Communications (MoTC) in Myanmar has established a Universal Service Fund (USF) and implemented the Universal Service Strategy (2019-2023) to address challenges and extend telecommunication services to rural and underserved areas. The strategy focuses on infrastructure deployment, broadband connectivity, and ICT training, with the goal of covering 99% of the population with mobile signals and providing broadband internet to 95% within five years.

The USF's three program streams include infrastructure roll-out for voice and broadband services, ICT capacity building for the digital future, and special projects encompassing ICT content development, improved accessibility for persons with disabilities, and small pilot projects. The aim is to enhance digital literacy, bridge the digital divide, and promote economic and social development.

The Digital Economy Development Committee (DEDC), established in 2017, plays a crucial role in enabling digital economy and multi-sectoral digital transformation in Myanmar. With a focus on fostering MSMEs' digital adoption through tax incentives and facilitating the use of digital tools, DEDC operates through five sub-committees. The Digital Economy Infrastructure and Cybersecurity Development Sub-committee and the Digital Transformation for MSMEs and Priority Sectors Sub-committee work towards creating a conducive environment for digital development.

Despite progress, Myanmar faces challenges such as infrastructure limitations, connectivity issues in remote areas, lack of a unified policy framework, the need for a comprehensive implementation plan, and concerns about institutional capability and the quality of human resources. Addressing these challenges is crucial for Myanmar's sustained development in logistics, digitalization, rural MSMEs empowerment, and the digital economy supply chain, aligning with its broader policy goals.

3.1.7 Philippines

The Philippine Development Plan (PDP) 2023-2028 prioritizes digital transformation, emphasizing improved connectivity and innovation. President Marcos, in the State of the Nation Address, urged government agencies to digitize essential public services. This includes initiatives like establishing common tower infrastructures, digitalizing business registration processes, integrating online government services, and implementing the national broadband plan and Cloud First Policy.

The government actively encourages micro, small, and medium enterprises (MSMEs) to adopt digitalization and innovation, recognizing them as emerging customers in the enterprise application segment, constituting 99.58% of businesses. However, many MSMEs lack necessary digital tools for efficient expansion.

In terms of market opportunities, the Digital Transformation Strategy aims to enhance digital infrastructure, connectivity, and ease of doing business. Planned projects include software development for revenue management systems, tax collection, and a unified online platform for business processing. Initiatives like the National A.I. Roadmap fuel demand for ICT products and services, emphasizing commitment to empowering MSMEs and fostering a thriving digital economy.

The Department of Information and Communications Technology (DICT) leads the charge for digital transformation emphasizing universal connectivity. Strategic programs, including BroadBand ng Masa and the Luzon Bypass Infrastructure Project (LBIP), target bridging the digital gap, especially in areas with limited internet access.

The recent introduction of the Broadband ng Masa Program (BBMP) exemplifies commitment to digital inclusion, addressing internet connectivity challenges, particularly in remote areas. Simultaneously, the LBIP, a 240-kilometer fiber line, enhances connectivity by linking government-owned cable landing stations, including a Landing Party Agreement with Facebook.

The government actively advocates for an act institutionalizing the transition to E-Governance. Programs like TECH4ED and DigitalJOBPHM establish nationwide centers for ICT-enabled services, digital literacy, and competency development, with a focus on underserved communities. These initiatives collectively underscore commitment to digital transformation, particularly in empowering MSMEs and rural areas, fostering a digitally inclusive Philippines.

3.1.8 Singapore

Singapore has showcased its dedication to digitalization through the initiation of the Smart Nation initiative in 2014. This commitment is grounded in the acknowledgment of challenges arising from rapid urbanization and the potential economic advantages linked to digitization and extensive data usage. The Smart Nation initiative, embedded within Singapore's broader digital trajectory, signifies a pledge to employ advanced digital technologies and ICT across various facets of urban existence.

The commitment is exemplified by the Smart Nation Initiative, structured around three core pillars: Digital Economy, Digital Government, and Digital Society. These pillars encompass six

domains: Transport, Urban living, Startups and businesses, Health, Digital government services, and Strategic National Projects. This organized approach highlights a commitment to addressing diverse societal aspects through digital means. Facilitating this initiative are various catalysts, including test-bedding, research collaborations, a culture of experimentation, and the development of computational capabilities. These catalysts ease the implementation of digital initiatives and foster innovation across different sectors.

Singapore's dedication to digitalization is further emphasized by the establishment of the Smart Nation Programme Office (SNPO) within the Prime Minister's Office. Led by Minister-in-Charge Dr. Vivian Balakrishnan, SNPO plays a pivotal role in coordinating and propelling Smart Nation initiatives. The commitment is also observable in the Digital Government Blueprint, launched in June 2018, outlining the government's aspirations for the digital transformation of the public sector. The focus is on restructuring business processes, redesigning technology infrastructure, and transforming services to citizens and businesses.

Educational initiatives play a crucial role in Singapore's commitment to digitalization, with programs at different levels encouraging skill development among young children, secondary school students, and working professionals. Initiatives like SkillsFuture and the Smart Nation Fellowship further contribute to skill enhancement and collaboration with seasoned data scientists and engineers. Furthermore, Singapore's commitment to digitalization involves partnerships with non-state entities, including businesses, citizens, and NGOs. This collaborative approach underscores a dedication to involving various stakeholders in the digital transformation journey.

3.1.9 Thailand

Thailand has strategically positioned itself as a regional logistics hub, leveraging its efficiency and modern infrastructure. Recognizing the significance of logistics in economic growth, the government has implemented initiatives to enhance competitiveness, linking the country with neighboring nations and facilitating international trade. The logistics landscape is integral to the digital economy, especially in rural areas where SMEs face unique challenges but contribute significantly to the economy.

The Thailand Digital Economy and Society Development Plan (2018-2037) outlines a comprehensive framework to drive the economy with digital technology. Part of this plan includes the Action Plan on Thailand Logistics Development (2023-2027), emphasizing infrastructure improvement, value chain enhancement, customs clearance, and capability building for logistics service providers. Implementation strategies include digital solutions for the

supply chain, cash-on-delivery payment systems, parcel tracking, and special loan programs for rural logistics. Thailandpostmart.com and logistic systems with marketing organizations aim to provide cheaper shipping for local community enterprises, fostering digital trade in rural areas.

The goals under the Action Plan focus on reducing transport and inventory holding costs to GDP, improving customs and border management efficiency, and enhancing the competence and quality of logistics services. Initiatives such as paperless customs clearance processes, cross-border freight transport facilitation, and promoting the usage of digital technology are integral to achieving these goals. The involvement of Rural MSMEs in the digital economy is a key component of Thailand's strategy. Encouraging digital deployment, adapting to e-commerce, connecting to digital payment platforms, and focusing on sectors like agriculture, tourism, medical, and logistics are outlined. Improving competitiveness through research, innovation, and funding is emphasized to create a conducive environment for MSMEs.

However, several policy gaps exist, particularly in ICT infrastructure, standardization, and data collection in the logistics industry. In the context of Rural MSMEs, challenges include limited ICT education, finance access, and regulatory compliance burdens. Impediments to ICT adoption in logistics and rural MSMEs include high costs, resistance to change, and limited human capital. Poor infrastructure and a technology gap further hinder adoption in rural areas.

To address these challenges, recommendations include continued efforts in infrastructure improvement, standardization, and capability building for logistics providers. Bridging the technology gap through education, fostering innovation, and creating a conducive regulatory environment for MSMEs are essential for sustainable growth.

In conclusion, while Thailand has made significant strides in its logistics and digitalization policies, addressing policy gaps and impediments is crucial for a more inclusive, efficient, and digitally empowered economy, especially in rural areas.

3.1.10 Vietnam

In the Vietnamese market, MSMEs hold a dominant position, representing about 97.4% of businesses. The government's commitment to supporting the digital transformation of these entities is evident through tailored roadmaps within the national transformation plan, aimed at fortifying the overall digital economy. This strategic approach is integral to integrating MSMEs into the digital landscape effectively.

The digital economy is experiencing a swift ascent in Vietnam, particularly in the e-commerce sector, boasting an impressive 36% Compound Annual Growth Rate (CAGR) that surpasses the

Southeast Asia average. This digital surge extends to sectors like Fintech and SaaS, both witnessing robust double-digit growth, indicating a widespread digital adoption trend. Vietnam's retail economy relies heavily on Micro, Small, and Medium Enterprises (MSMEs), constituting 80% of all consumer purchases. The government's proactive stance in driving market digitization has created a landscape of opportunities for MSMEs embarking on their digital transformation journey.

With an ambitious vision, the Vietnamese government is actively working towards a digital economy that contributes 30% to the GDP by 2030. The 2021-2025 digital transformation plan is a key instrument in achieving this goal, focusing on bolstering digital adoption in banking, online transactions, and ensuring information accessibility for consumers. Specific incentives and programs have been crafted to facilitate MSMEs in their digital transition, providing essential training and consultancy services.

Vietnam stands out as one of Southeast Asia's rapidly growing e-commerce markets, boasting an impressive annual growth rate exceeding 30%. The surge in cross-border e-commerce is attracting numerous Micro, Small, and Medium Enterprises (MSMEs) in Vietnam, offering them a gateway to global markets, diversified customer bases, and enhanced import-export activities.

The government is actively promoting MSMEs' access to international markets and global business partnerships. Various policies and laws, such as the Law on Provision of Assistance for Small and Medium Enterprises (2017) and the Law on E-transactions (2005), highlights the commitment. Decree No. 80/2021/ND-CP outlines specific state support rates for enterprises adopting digital transformation solutions or engaging in sales on major e-commerce platforms, covering 50% of associated costs. Vietnam also shows support on national e-commerce development through its policy and encourage Vietnamese enterprises to participate directly in foreign distribution networks by 2030. These initiatives aim to enhance competitiveness, facilitate cross-border e-commerce, and position Vietnamese businesses in global production and distribution chains.

3.2 Cross-Cutting Themes: Initiatives and Challenges on Digitalization

Cross-cutting themes across ASEAN Member States include a strong commitment to fostering digital economies, expanding digital infrastructure, and enhancing digital literacy. These countries share a common vision of leveraging digital technologies to drive economic growth, reduce poverty, and improve the overall quality of life. Key elements include:

- **Digital Economy Development**: All the countries recognize the importance of a robust digital economy and have developed comprehensive policy frameworks to guide their digital transformation journeys. The focus includes building digital infrastructure, promoting digital adoption, and achieving comprehensive digital transformation.
- **Legal and Policy Frameworks**: AMS has established legal and policy frameworks to govern and support various aspects of digital development, including telecommunications, ICT, e-commerce, and digital governance. These frameworks provide a structured approach to drive digital initiatives.
- **Inclusive Connectivity**: There is a shared commitment to bridging the digital divide by extending connectivity to rural and underserved areas. Efforts include enhancing network infrastructure, promoting digital literacy, and ensuring accessibility to digital services for all segments of the population.
- **Logistics and Supply Chain Development**: Logistics and supply chain development feature prominently across these nations' digital strategies. The focus is on improving efficiency, connectivity, and reliability in the movement of goods and services, particularly in the context of e-commerce and rural economic development.
- **Empowering MSMEs**: Micro, Small, and Medium-sized Enterprises (MSMEs) play a vital role in the digital transformation plans of these countries. Efforts are made to empower MSMEs through digital adoption, access to digital tools, financial inclusion, and promoting their participation in the digital economy.
- **Financial Inclusion and Digital Payments**: AMS are actively working on financial inclusion initiatives, with a focus on improving digital payment systems. This includes the development of digital wallets, online banking services, and measures to enhance digital financial literacy.
- **Digital Literacy and Capacity Building**: Recognizing the importance of human capital, AMS are investing in digital literacy programs and capacity-building initiatives. This includes education and training programs to equip individuals with the necessary skills for the digital age.
- **International Collaboration**: Several AMS engage in international collaboration to strengthen their digital economies. Collaborative projects, partnerships, and agreements contribute to regional integration and global connectivity.
- **Infrastructure Development**: Across the board, there is a commitment to developing robust ICT infrastructure, including broadband networks, fiber optics, and last-mile connectivity. Infrastructure improvements are crucial for supporting digital services and ensuring connectivity in both urban and rural areas.

- **Sustainable Development**: Sustainability is a common thread, with an emphasis on building resilient and sustainable digital infrastructure. Efforts are made to balance economic development with environmental and social considerations.

While each country has its unique context and challenges, these cross-cutting themes reflect a shared vision for leveraging digital technologies to drive economic and social development across the region.

- **Infrastructure Gaps:** Limited ICT Infrastructure: Many parts of AMS, especially in rural areas, still face challenges related to limited ICT infrastructure. This hinders the effective deployment of digital technologies and creates a divide between urban and rural areas. Poor infrastructure, particularly in terms of transportation and communication, poses challenges for logistics and digitalization initiatives, especially in remote and rural areas.
- **Digital Literacy and Skills Gap:** Low Levels of IT Skills: A common challenge is the low level of IT skills and digital literacy across populations. This hampers the widespread adoption of digital technologies and limits the ability of individuals to fully participate in the digital economy.
- **Financial Inclusion Barriers:** Small and medium-sized enterprises (SMEs), especially in rural areas, face challenges in accessing funding and financial assistance to invest in ICT development and digital systems. This limits their ability to embrace digital technologies.
- **Regulatory and Compliance Burdens:** There are concerns about the regulatory environment being burdensome, particularly for SMEs. Stringent measures and compliance obligations can lead to high transaction costs and limit the operations of these enterprises.
- **Resistance to Change:** Existing systems in various sectors, including logistics and government services, are often entrenched and resistant to change. Overcoming this resistance is crucial for the successful adoption of digital technologies.
- **Infrastructure Limitations in Rural Areas**: Limited infrastructure in rural areas poses challenges for logistics and supply chain development. This includes transportation infrastructure, which is crucial for the movement of goods.
- **Inadequate Data Collection**: Current systems in the logistics industry, especially in some countries, do not collect enough data to enable efficient planning and execution of logistics operations. This leads to delays and increased costs.
- **Lack of Standardization:** There is a lack of standardization of ICT systems used in the logistics industry due to the fragmentation of stakeholders. This leads to inefficiencies and costly operations.

- **Cost Barriers**: High costs associated with adopting ICT systems and infrastructure pose a challenge, particularly for SMEs. This includes both the initial investment and ongoing operational and maintenance costs.
- **Limited Human Capital:** There is a shortage of human capital, particularly individuals with ICT skill sets. This contributes to the underdevelopment of ICT infrastructure and systems.

Addressing these cross-cutting challenges is essential for ensuring the successful implementation of digitalization initiatives, fostering inclusive economic growth, and maximizing the benefits of the digital economy across the region. Policymakers and stakeholders need to collaborate to develop targeted strategies and interventions to overcome these obstacles.

3.3 Questionnaire Findings

3.3.1 Brunei Darussalam

The ICT sector in Brunei reports a positive current status of LTE/4G and 5G network adoption, emphasizing the implementation of Single Radio Access Network (SRAN) and Dynamic Spectrum Sharing (DSS) features. These advancements enable the concurrent provision of 3G, 4G, and 5G networks, with potential improvements in cellular connectivity, particularly in rural areas. Furthermore, there are ongoing plans by UNN, the network infrastructure provider, to enhance the existing infrastructure, paving the way for future 5G deployment, including in rural regions. However, the regulatory landscape, governed by the Telecommunications (Radio-communication) Regulations, 2013, currently lacks stipulations regarding interoperability of adopted mechanisms.

Brunei's MSMEs and rural economy face challenges in fully participating in digital trade and economy, with a predominant focus on local trade due to limited resources for international export and transportation options. The government is exploring the Digital Economy Framework Agreement, potentially including rural areas, to encourage broader participation. Barriers identified include low awareness, policy considerations, and the willingness of MSMEs to engage in digital trade. The government extends support through joint funding schemes, free consultations, and a digital solution directory to assist MSMEs in adopting digital solutions.

MSMEs in Brunei encounter challenges related to unstable network connectivity, particularly towards the end of the month. Current customers and suppliers are typically within 100km, and communication relies on tools like WhatsApp and Zoom. Limited e-payment gateways and challenges in cash flow are identified, hindering the transition to e-commerce. For logistics, the company employs its team for nationwide delivery, reserving international delivery for the Post Office due to cost considerations.

Regulations for online transport operators in Brunei are continually reviewed, with a commitment to supporting MSMEs in the digital economy. Specific obstacles and impediments for online transportation operators to fully support the movement of goods remain unspecified and require further clarification. The online transportation company have served MSMEs but with limited transactions, raising concerns about the continuous demand for the service. While the business model is considered capable of supporting current and future economic activities, the operators express the need for more collaboration and awareness to make a meaningful impact at both policy and operational levels.

3.3.2 Cambodia

In Cambodia, LTE/4G networks have achieved significant adoption, covering 90% of the population, and rural penetration rates have reached 10%. However, 5G networks are in early development, with limited coverage from a few operators. Transitioning to these advanced networks in rural areas faces challenges, including high infrastructure costs, a lack of skilled labor, low population density, and limited awareness. The Royal Government of Cambodia aims to deploy 5G networks in all provinces by 2025, collaborating with operators to provide subsidies and training. Regulations, including the Telecommunications Law, Cambodia ICT Masterplan, Digital Economy and Society Policy Framework, Digital Government Policy, and Draft Policy on ICT Sector Development, ensure interoperability with existing networks.

Existing regulations for online transport in Cambodia pose challenges for smooth transportation of goods from rural areas. The requirement for online transport companies to have a physical presence in all provinces creates a significant barrier, hindering operations in rural areas. On an ASEAN level, there is a lack of unified regulation for online transport, demanding actions such as regulatory harmonization, infrastructure investment, SME support, incentives, cross-border data sharing, and standard development to facilitate smooth transportation.

MSMEs and the rural economy in Cambodia show potential for full participation in digital trade and economy. While they already engage in digital platforms, challenges such as access to digital infrastructure, digital skills, and finance remain. Policies to introduce and support digital trade include financial assistance, capacity building, ICT infrastructure investment, barrier removal, and support for digital business development. Barriers to MSMEs' participation include policy barriers, political support barriers, institutional capability barriers, and the quality of human resources barriers. The Ministry of Post and Telecommunications initiates programs like Community Tech Centers in rural areas, providing access to computers, the internet, and digital technology capacity building.

Acknowledging challenges in facilitating digital trade and economy in rural areas from the local government's perspective, it is expected that Cambodia, guided by the Cambodia Digital Economy and Social Policy Framework (2021-2035), will facilitate and enhance the capacity of online transport operators to support MSMEs' activities and the rural economy. The lack of digital infrastructure poses a significant obstacle for online transportation operators. Despite budget and fiscal constraints, the National Strategic Plan (2019-2023) and anticipated support from the central/federal government or NGOs are seen as crucial in addressing these challenges. Policies that encourage the engagement of MSMEs in rural areas in global trade can be identified within Cambodia's Digital Government Policy (2022-2035) and Digital Economy and Social Policy Framework (2021-2035).

3.3.3 Indonesia

In the realm of ICT sectors, the current status of LTE/4G networks in rural areas in Indonesia is still under development. Regulators are working actively to expand coverage, but challenges such as limited infrastructure, investment barriers, licensing constraints, and regulatory costs pose significant obstacles. Initiatives to improve network access face difficulties due to the demand conditions in sparsely populated rural areas, coupled with issues like road infrastructure and lack of electricity.

Regarding the deployment of 5G networks, the responsibility falls on operators, especially in designated villages or blank spot areas. This initiative is a key focus of the Telecommunications Directorate, reflecting the government's commitment to addressing 4G blank spot villages. Efforts include starting deployments in the capital of regencies and extending to surrounding areas. Collaborative initiatives, supported by regulations like the Omnibus Law, aim to streamline operator entry into rural areas for the broader benefit of improving network access.

Regulations in the ICT sector support redundancy and collaboration among cellular operators, allowing options beyond cellular networks. Provisions in laws such as the Omnibus Law endorse open-access networks and collaboration between active and passive network providers. Various regulations, including PM Kominfo No. 7/2021 and SKKL PM 5/2021, outline conditions for foreign and domestic cooperation, fostering collaboration and spectrum sharing. Initiatives like the Satria satellite project aim to provide independent internet access in rural areas.

In the MSMEs sector, the assessment suggests that MSMEs have the capacity to participate fully in the digital economy. Government projects, such as factory sharing, encourage collaborations between MSMEs in rural areas. Initiatives for improving digital literacy and

fostering synergies for digitalization influence MSMEs' motivations to enter the digital economy. Challenges arise in digital traffic as MSMEs aspire to join marketplaces or e-commerce platforms.

The government has strategic initiatives, including "Bangga Buatan Indonesia" (BBI) and the #BerubahDigital campaign, to integrate MSMEs with the digital economy. These programs aim to facilitate a seamless transition for MSMEs into the digital landscape, fostering increased demand for locally manufactured products and enhancing digital literacy. The government recognizes the need for improved data collection mechanisms to better understand MSMEs' digital integration status.

Barriers hindering the participation of rural MSMEs in digital trade and the broader digital economy include challenges in data collection, digital literacy, and institutional support. Effective regulatory frameworks for data acquisition and improvements in digital literacy are identified as crucial for enabling the involvement of rural MSMEs in digital trade.

The Deputy for MSMEs under the Ministry of Cooperatives and SMEs actively provides guidance and training for MSMEs to integrate with existing e-commerce platforms. This support is part of the Garda Transformasi Formal Usaha Mikro (Transfumi) program, aiming to transform informal micro and small businesses into formal entities. Assistance includes support for digital payment integration, reflecting the commitment to facilitate rural actors and MSMEs in joining the digital economy.

3.3.4 Malaysia

Malaysia's commitment to achieving nationwide internet coverage by 2025 is evident in the significant progress made through the JENDELA program. By the end of 2022, 4G coverage reached 96.92% in populated areas, with a targeted rollout aiming for 50% coverage within Q2 2024. To expedite 5G deployment, Digital Nasional Berhad (DNB) was established in 2021, and as of April 30, 2023, 5G coverage has reached 59.5%, with a goal of achieving 80% coverage by the end of 2023.

In terms of regulatory mechanisms, Malaysia relies on Technical Specifications/codes guided by ITU and 3GPP documents for network interoperability, addressing technical requirements for both fixed and wireless communications equipment.

Efforts to bridge digital disparities persist through initiatives like JENDELA, eUsahawan, and Digital Agriculture, aiming to overcome challenges hindering the full participation of rural communities in e-commerce. The Malaysia Digital Economy Blueprint (MyDigital) outlines strategic thrusts to boost economic competitiveness, encouraging MSMEs' participation in the

digital economy. Programs such as eUsahawan, Digital Agriculture, and Malaysia Digital further support MSMEs in adopting digital technologies. Aligned with MyDigital, the National Entrepreneurship Policy (NEP) 2030 provides a strategic framework for MSMEs to participate in the digital economy, with ongoing efforts, including programs, tax incentives, and grants like eRezeki, e-Usahawan, and GLOW, aimed at uplifting rural entrepreneurs through digital upskilling and business opportunities.

Regulations for online transport operators are evolving, with guidelines from the Land Public Transport Commission (SPAD) not legally binding. Self-regulation mechanisms are in place, and collaboration between the government and the industry is ongoing. Challenges faced by online transportation operators, including supply and demand dynamics and obstacles related to road networks into rural areas, emphasize the need for addressing these challenges for effective goods movement.

The Malaysian government supports MSMEs through training programs, grants, and various initiatives like Pusat Ekonomi Digital (PEDi) and Pelan Accelerator Kurier (PAKEJ). Additional support comes from initiatives such as eRezeki, e-Usahawan, GLOW, and DE Dagang. MSMEs communicate with customers and suppliers primarily through telephone/mobile networks or email, utilizing various digital tools such as ePOS, digital marketing and sales, procurement, CRM, and ERP to facilitate transactions.

To support the supply chain for MSMEs, a variety of logistics services are available in Malaysia, with MSMEs using different operators and varying shipping durations depending on the location, with a minimum of 2 working days. MSMEs participation in digital economy remains challenging according to the local governments due to inadequate digital infrastructure, literacy, competency, quality of services, last-mile delivery, skills development, and technology adoption to facilitate digital trade and economy in rural areas.

Budget constraints are not reported as impediments, as the federal government has secured funding to promote digital trade. Support from telecommunication companies and government initiatives like JENDELA, Saya Digital, and others contribute to the deployment of digital trade and economy in rural areas. Jalinan Digital Negara (JENDELA) serves as a guideline to facilitate and accelerate digital trade and economy in Malaysia, covering rural areas. Economic zones, free trade agreements, and initiatives like Local eCommerce Services (PeDAS) support MSMEs in engaging with international markets.

3.3.5 Singapore

Singapore leads the region in ICT policies for its medium and long-term economic growth. Given its robust economic output and global position, there was no necessity for new economic development strategies, especially in last-mile delivery. Singapore's current developmental outcome and high internet and mobile usage indicate no cultural transformation needs. Instead, we propose a continued focus on data governance and logistics.

Smart Nation Singapore, the Government Developer Portal, and the Economic Development Board already highlights Singapore's strategies in achieving a smart nation and advancing technology, reinforcing its advantage in ICT and economic development. It is recognized that Singapore's present development outcome does not require cultural transformation. Given the ongoing growth and expansion of technology, including ICT and logistics + supply chain, it is recommended that Singapore will focus on pillar of data governance and logistics.

3.3.6 Thailand

MSMEs and the rural economy in Thailand demonstrate the capacity to actively engage in digital trade and economy. The previous COVID-19 crisis has propelled the rural sector towards increased digitization. Notably, Thailand boasts a broadband network covering 99.87% of villages, reflecting substantial progress. However, a significant challenge lies in the digital skills gap, with 48.12% reporting proficiency and 40.23% expressing the need for further training.

The Thailand Digital Economy and Society Development Plan (2018 - 2037) outlines policies aimed at fostering digital trade and economy for MSMEs in rural areas. Initiatives focus on promoting MSMEs as digital entrepreneurs, encouraging digital technology adoption, and integrating digital services into online commerce.

The Office of the National Digital Economy and Society Commission (ONDE) plays a crucial role in supporting MSMEs and rural actors in their digital journey. ONDE facilitates digital skill development through community centers and offers financial assistance through the digital economy and society development fund. The utilization of digital technology among rural MSMEs in Thailand remains suboptimal, limiting the potential benefits from digital trade. While the country's ICT infrastructure is robust, challenges such as the high initial cost of digital equipment, a lack of relevant digital skills, and a perception of digital technology as non-essential hinder widespread adoption.

The Thai government is actively promoting digital technology adoption in rural areas. Measures include the digital Transformation Fund and the mini–Transformation Voucher, aimed at resolving various community issues and supporting business internationalization. However,

the shortage of digital manpower poses a significant challenge to the digital economy's development.

To address these challenges, the Thai government, through ONDE, provides fiscal and technical assistance. Initiatives like the digital Transformation Fund and the mini–Transformation Voucher support the application of digital technology and innovation at the grassroots level, benefiting businesses and communities across the country.

3.3.7 Vietnam

In Vietnam, LTE/4G adoption is widespread at an impressive rate of 98.8% nationwide. However, the transition to LTE/4.5G or 5G networks in rural areas faces challenges due to lower network traffic demand. The Universal Service Program, supported by the Universal Service Fund, actively promotes broadband network deployment in rural areas over five-year periods. The regulatory framework ensures smooth interoperability within the country's networks, establishing a foundation for sustainable digital connectivity.

Regarding online transport regulations in Vietnam, the movement of goods from rural areas is facilitated through platforms like Grab, Gojek, and others. However, extending these services between ASEAN Member States (AMSs) encounters challenges related to immigration, customs, tax, and food safety. Addressing these cross-border intricacies remains crucial for the continued evolution of regional digital trade.

MSMEs in Vietnam show the capacity to engage in digital trade yet face obstacles such as a deficit in digital skills, incongruity between digital and transport infrastructure, and a need for a mindset shift. National policies acknowledge and provide solutions, including targeted strategies and subsidies for MSMEs in rural areas. Existing regulations have limited impact on online transport operators' capacity to support MSMEs and rural economies, given complex cross-sectoral issues in technology and transportation. Addressing these challenges requires a holistic and collaborative regulatory approach.

Digital commerce companies influence technical standards but have limited direct involvement in supporting MSMEs. The prevailing business model is recognized for sustaining current and future economic activities, providing an additional channel for rural areas in the evolving digital landscape. MSMEs face challenges in optimizing current networks, especially where coverage is lacking. Despite this, digital tools like e-payment and e-sales are familiar components. Logistics couriers are instrumental in product shipping, with varying delivery times based on distance.

Local governments in Vietnam identify impediments to digital trade, emphasizing the need for robust digital and transportation infrastructure and digital skills development. NGOs play a crucial role in supporting local governments, providing experience, case studies, and best practices. Central commercial promotion centers in each province support MSMEs in rural areas, ensuring they navigate the evolving digital landscape effectively. This collaborative effort lays the foundation for a resilient and inclusive digital ecosystem benefiting all stakeholders.

3.4 Findings and Results from the Regional Workshop

The draft ASEAN Framework on Logistics for Digital Economy Supply Chain for Rural Areas encompasses various key elements and considerations, as outlined below.

3.4.1 SMEs and Digital Trade and Economy in ASEAN

In addressing the challenges encountered by each ASEAN Member State (AMS), several issues have been identified, including the high costs associated with infrastructure development, low traffic demand in rural areas, and unstable data flows both upstream and downstream. While every AMS has established policies supporting ICT development and/or MSMEs in both urban and rural areas, the prevailing conditions of lacking skills and capital hinder the full participation of MSMEs in the digital trade and economy. Therefore, there is a recognized need to harmonize policies across sectors and regions, with a focus on facilitating cross-border movement of goods, incorporating the essential roles of ICT and data flows.

3.4.2 Challenges and Opportunities

According to a report presented by Google's expert, the last two years have witnessed an increase in the usage of digital tools and technologies to support export across all ASEAN member states. However, this increase may be higher in urban areas compared to rural ones, with an average of 81.9%. This implies that 20% of SMEs have not yet been introduced to digital tools and technologies. Some SMEs predominantly use social media platforms like Facebook, Instagram, and WhatsApp for market penetration, highlighting a challenge in enhancing the role of SMEs in South East Asia. Despite these challenges, the post-2017 period has seen increased enthusiasm among merchants to participate in the e-commerce trend, presenting an opportunity to introduce digital economy and culture. This opportunity extends to both rural and urban areas, providing insights into how the digital economy can positively impact rural areas. The ASEAN Framework on Logistics for Digital Economy Supply Chain for Rural Areas is designed to consist of four pillars, along with a roadmap and implementation strategy. It is envisioned that these pillars cover aspects of Connectivity, Logistics, Economic Development, and Digital Culture as .

3.5 Discussions

Proposed ASEAN Framework need to address challenges and harness opportunities in promoting digital trade and economy, particularly in rural areas, through a comprehensive and collaborative approach involving key pillars and strategic actions. These are developed as responses to the growing demand and challenges to address economic divergence between rural and urban areas, including rural institutional capacity to accelerate economic growth and development through mobilising rural logistics to support last-mile delivery in rural areas and linking rural and urban areas.

Chapter 4 ASEAN FRAMEWORK ON LOGISTICS FOR DIGITAL ECONOMY SUPPLY CHAIN IN RURAL AREA

4.1 Introduction

ASEAN region has experienced significant economic growth, as evidenced by the increased volume of e-commerce and goods traded online. To strengthen this economic impact, efforts are made to address digital divides between ASEAN member states (AMSs) including in digital trade and logistics. The 2021 ASEAN Digital Integration Index (ADII) only scores 55.27 on digital trade and logistics, ranked fourth among the six pillars of ADII. Lack of support of digital technology on trade and logistics is identified as major impediment of regional readiness in the implementation of interoperable trade across the region. As such, the acceleration of the digital economy supply chain implementation in rural areas requires not only identification and assesment of existing laws and regulation on logistics but also necessary steps to harmonise regulations to support the application of digital economy supply chain, in particular last-mile delivery, in rural areas.

To better accelerate rural economic growth, it is critical for rural small and medium enterprises (SMEs) to accelerate their business model transformation through utilisation of digital technologies and tools available, including current supply chain practice in rural areas. Although rural SMEs innovation and the capacity to rapidly adapt to consumer demand are of importance in generating rural competitiveness, nevertheless access to broader market should be prioritised as this accelerates economic growth, jobs creation and extend the value added of goods produced and sold outside rural areas. Hence, the necessity to develop a framework for digital supply chain for rural areas that can be applied to each AMS and the ASEAN region.

This Framework outlines the strategic priorities, principles and initiatives to guide ASEAN member states in their policy and regulatory approaches towards digital economy supply chain

for enterprises in ASEAN rural areas. To facilitate and harmonise these, the Framework objectives are threefold.

a. Identification of existing laws and regulations on logistics that could be deployed to accelerate the implementation of digital economy supply chain in rural areas;
b. Analysis of opportunities and challenges in the acceleration of digital economy supply chain for rural areas, including views and perceptions from logistics operators and rural SMEs, and
c. Harmonisation of regulations on logistics to support digital economy supply chain in rural areas.

4.2 Operational Guidelines

4.2.1 Terminology

4.2.1.1. AMS [1] refers to ASEAN member states which comprises of Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam

4.2.1.2. ADGMIN refers to the ASEAN Digital Ministerial Meeting, responsible for guiding ASEAN towards a digitally-enabled economy and society in support of digital trade, economic integration and cooperation towards the ASEAN Economic Community (AEC)

4.2.1.3. ADGSOM refers to the ASEAN Digital Senior Official Meeting, responsible for assisting the ADGMIN in guiding ASEAN towards a digitally-enable economy and society towards the ASEAN Economic Community

4.2.1.4. SMEs refers to small, and medium enterprises. There is no overarching definition as the criteria of SMEs follow each AMS definition on SMEs[2]. SMEs (and micro enterprises) account for between 88.8% and 99.9% in terms of total establishment and between 51.7% and 97.2% of its share of total employment.

4.2.1.5. Supply chain is defined as a network of businesses and people involved in the production and delivery of a product and/or service. As the last two decades witness, digital computing technologies are deployed to facilitate smooth operation of supply chain operators. As such, this Framework emphasises the role of online operators in engaging businesses and people through first-mile delivery (from a business premise or warehouse to the next hub from where the goods are forwarded), middle-mile or second mile delivery (where goods are delivered from warehouse or distribution center to fulfillment facilities) and last mile delivery (transportation of goods from distribution hub to the final delivery destination (the customer)).

4.2.1.6. Digital economy supply chain in this Framework indicates the utilisation of digital computing technologies in economic and supply chain activities. The digital economy

[1] As of the Framework being finalised, Timor Leste is still designated as an observer country
[2] ASEAN Strategic Action Plan for SME Development 2016-2025

promotes (enterprise) supply chain network status through the information transmission effect and technological innovation effect.

4.2.1.7. Rural areas in ASEAN exhibit distinct characteristics where it accounts for 75% of the region's population and the economy is largely dependent on agriculture as source of income[3]. With the exception of Singapore, all AMS have its fair share of rural areas.

4.2.2 Principles of Implementation

4.2.1.1. The Framework on Logistics for Digital Economy Supply Chain for Rural Area in ASEAN serves only as a voluntary and non-binding reference. This framework is not intended to constitute or create obligatons under domestic or international law and will not give rise to any legal process or create any legally binding or enforceable obligations.

4.2.1.2. The ASEAN Digital Senior Officials' Meeting (ADGSOM) will serve as the coordinating sectoral body for this Framework. The ADGSOM, assisted and supported by the other relevant ASEAN sectoral bodies, shall ensure effective implementation of all related digital startups initiatives and periodically coordinate its efforts and report progress to the ASEAN Digital Ministers' Meeting.

4.3 Framework Development Process

The Framework is developed in two phases. The first phase follows the assumption that the framework should follow global benchmark of current trend of ICT development and rural logistics and takes into account current paradigms of economic development and cultural shift and transformation. As such, four pillars that serve as the foundation for the framework are then identified. These are pillar of data governance, pillar of logistics, pillar of economic development and pillar of digital culture.

Taking into account that the framework should enhance the regional competitiveness and accelerate rural economic growth, the framework is developed by evaluating each AMS existing policy and development strategy. The results are then constructed as a foundation to create recommendations to closing the digital gaps between rural and urban areas through last-mile delivery approaches and accelerate the adoption of digital tools and technology in rural SME businesses.

4.4 Framework for Digital Economy Supply Chain for Rural Area

The Framework identifies four pillars to guide and facilitate competitive rural ASEAN in the digital economy through digital supply network. These pillars serve as the foundation to which the Framework facilitates competitive rural ASEAN in the digital economy. These are summarised in Figure 3.

[3] ASEAN Master Plan on Rural Development 2022-2026

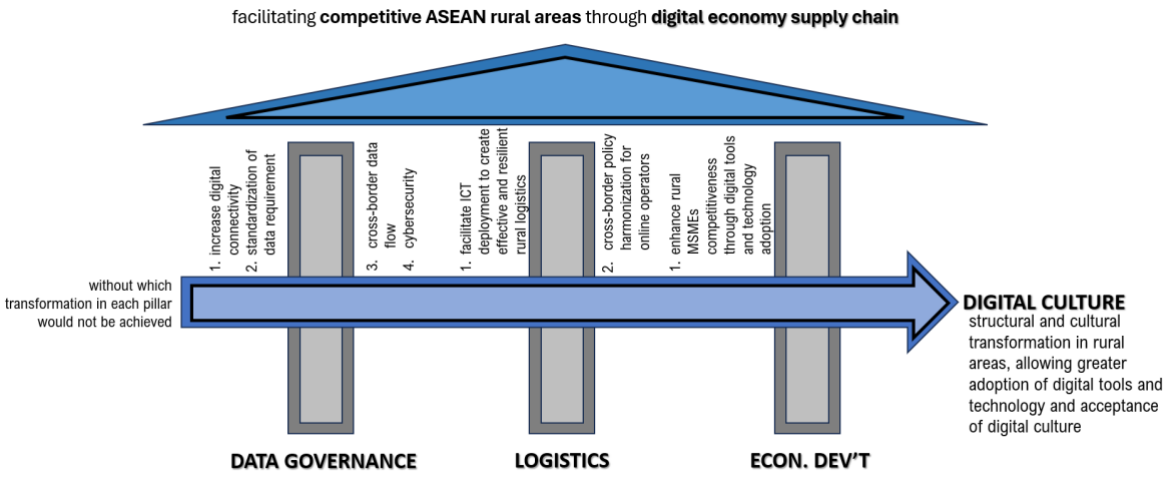

Figure 3 Pillars of the Framework

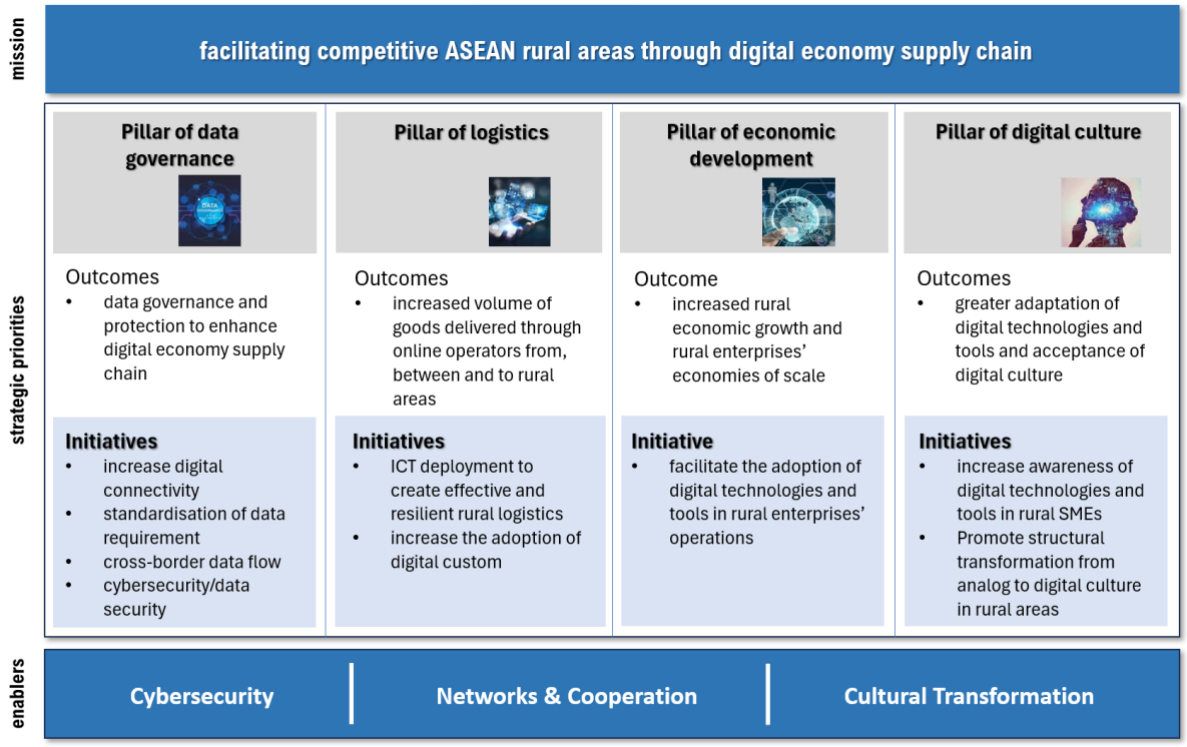

Figure 4 ASEAN Framework on Digital Economy Supply Chain For Rural Areas

The Framework identifies nine strategic actions/priorities of ICT support stemming from the four pillars to enhance rural logistics and facilitate structural and cultural transformation of rural SMEs/businesses in AMS. Each specific action/strategy is designated to AMS based on their readiness level in accelerating digital supply network adoption in rural areas.

This Framework will not apply to measures adopted by an ASEAN member state to exempt any areas, persons or sectors from the application of the Principles identified under the

Framework and matters relating to national sovereignty, national security, public safety, and all government activities deemed suitable by an ASEAN member state to be exempted.

The Mission of the Framework is to facilitating competitive rural ASEAN in the digital economy through digital supply network. As such, the Framework recognises different level of technological and cultural readiness among ASEAN Member States and set out specific strategies to accelerate the transformation from supply chain to digital supply network in rural areas and SMEs businesses.

4.4.2 Pillars on Logistics for Digital Economy Supply Chain for Rural Area

The Pillars on Logistics for Digital Economy Supply Chain for Rural Area comprises of pillar of data governance, pillar on logistics, pillar on economic development and pillar of digital culture. Each pillar recognises and promotes specific strategy to enhance the adoption of digital supply chain in rural areas.

4.4.2.1 Pillar of Data Governance

Pillar on Data Governance identify and guide strategic actions needed to govern data exchange and transfer to support, facilitate and accelerate digital tools and technologies adoption in rural SMEs businesses. This pillar focuses on expanding digital connectivity, data requirements, data protection and facilitation of cross-border data flows to support digital supply networks.

a. Increase/enhance digital connectivity: One of key issues in accelerating the transformation from analog to digital economy in rural areas (including rural SMEs) is through the expansion of digital connectivity infrastructure. This is achieved through increasing the participation of private sector (tel-co operators) and provision of government subsidies to offset initial investment.
b. Standardisation of Data Requirement: Standardised logistics data ensures that all parties have access to the same information in a timely and accurate manner, and exchange information in a consistent and efficient manner.
c. Data Security/Cybersecurity: Concern of data security or security breach is paramount in rural area where knowledge and skills on data governance are limited. As such, this pillar calls for strengthening data security on logistics and personal data. This pertains to the data protection against loss and unauthorised access, collection, use, disclosure, copying, modification and other risks.
d. Cross-Border Data Flow: Facilitating competitive rural ASEAN requires smooth flows of cross-border goods. Although these flows still follow local custom and tax policy in each

AMS, nevertheless where possible, efficient cross-border transportation and storage of goods (from the point of origin to the point of destination) should be facilitated. This calls for specific policy such as data flows with trust.

4.4.2.2 Pillar on Logistics

The Pillar on Logistics recognises the role of logistics in enhancing rural economy and facilitating rural businesses' entry on digital trade and economy, in particular through last-mile delivery. A number of priority actions are identified and outlined as follows:

a. Facilitate digital infrastructure deployment to create effective and resilient rural logistics. This priority action calls for expedite deployment of digital infrastructure in rural areas through a number of approaches and initiatives.
b. Increase the adoption of digital customs (tracking, verification, payment and risk management). One key issues of enhancing rural logistics in the digital trade is the adoption of digital customs allowing businesses to seamlessly track goods, make payment and mitigate shipping & handling risks.

4.4.2.3 Pillar on Economic Development

Pillar on Economic Development identify and guide strategic actions to enhance rural economic development. Rural SMEs lack access to market and financial services and these often impede their businesses. The deployment of ICT in rural areas facilitate better market penetration and access to financial services for rural SMEs.

Facilitate the adoption of digital tools and technology in rural SMEs operations. Integrating rural SMEs/businesses in the digital trade requires gradual adoption of digital tools and technology. This allows rural SMEs/businesses to expand market via e-marketplace.

4.4.2.4 Pillar on Digital Culture

Pillar on Digital Culture recognise and provide guidelines to transform rural community and businesses from analog culture to digital culture. This shall be achieved through the following priority actions.

a. Increase the awareness of digital tools and technology in rural SMEs/businesses: Rural SMSEs/businesses need to unlock the economic potential of digital economy and trade. This cannot be effectively tapped unless rural businesses aware of the many potentials of digital tools and technology to enhance
b. Promote structural transformation from analog to digital culture in rural areas: The adoption of digital tools and technology requires swift transformation from analog to

digital culture in rural areas. This comprises of activities such as the introduction of the digital tools and applications for rural SMEs and promotion of local online marketplace utilisation.

4.5 The implementation of the Framework

The implementation of the Framework follows to the following strategy:

a. The adoption of digital tools and technologies in rural SMEs businesses to be tailored with owners' sociodemographic characteristics (age, gender, educational attainment)
b. Facilitation of the development of local online platforms to expand rural SMEs market expansion
c. Embed digital awareness on elementary/primary to secondary/middle schools' curricula in rural areas to generate interests in digital tools and technologies
d. Assessment on data sharing and data protection on transitioning process from linear supply chain to digital supply network

Timelines and priority actions are developed in correspondence with strategies to implement the framework. Timeline and specific stakeholders are identified in each pillar and corresponding priority actions including key deliverables through stakeholders' consultation. The following are recommendations for each AMS to accelerate the adoption of digital tools and technologies in rural areas and SMEs to participate in digital economy supply chain. These are directed to enhance rural logistics ecosystems to support SMEs in the digital economy.

Table 2 **Breakdown of specific implementation strategies of the Framework for each ASEAN member state**

	pillar of data governance	pillar of logistics	pillar of economic development	pillar of digital culture
Brunei Darussalam	• enhance digital connectivity • standardisation of data requirement • data security/cybersecurity • data flows with trust	• expedite deployment of digital infrastructure in rural areas • adoption of custom digitalisation	facilitate and strengthen adoption of digital tools and technology in rural SMEs operation	• increase the awareness of digital tools and technology in rural SMEs/businesses • promote structural and cultural transformation to adopt digital culture in rural areas
Cambodia	• increase digital connectivity • standardisation of data requirement • data security/cybersecurity	• expedite deployment of digital infrastructure in rural areas	facilitate the adoption of digital tools and technology in rural SMEs operation	• increase the awareness of digital tools and technology in rural SMEs/businesses • promote structural and cultural transformation to adopt digital culture in rural areas
Indonesia	• increase and enhance digital connectivity • standardisation of data requirement • data security/cybersecurity • data flows with trust	• expedite deployment of digital infrastructure in rural areas • adoption of custom digitalisation	facilitate and strengthen the adoption of digital tools and technology in rural SMEs operation	• increase the awareness of digital tools and technology in rural SMEs/businesses • promote structural and cultural transformation

	pillar of data governance	pillar of logistics	pillar of economic development	pillar of digital culture
				to adopt digital culture in rural areas
Laos	• increase digital connectivity	• expedite deployment of digital infrastructure in rural areas	facilitate the adoption of digital tools and technology in rural SMEs operation	• increase the awareness of digital tools and technology in rural SMEs/businesses • promote structural and cultural transformation to adopt digital culture in rural areas
Malaysia	• increase and enhance digital connectivity • standardisation of data requirement • data security/cybersecurity • data flows with trust	• expedite deployment of digital infrastructure in rural areas • adoption of custom digitalisation	facilitate and strenghten adoption of digital tools and technology in rural SMEs operation	• increase the awareness of digital tools and technology in rural SMEs/businesses • promote structural and cultural transformation to adopt digital culture in rural areas
Myanmar	• increase digital connectivity • data security/cybersecurity	• expedite deployment of digital infrastructure in rural areas	facilitate the adoption of digital tools and technology in rural SMEs operation	• increase the awareness of digital tools and technology in rural SMEs/businesses • promote structural and cultural transformation

	pillar of data governance	pillar of logistics	pillar of economic development	pillar of digital culture
				to adopt digital culture in rural areas
Philippines	• increase and enhance digital connectivity • standardisation of data requirement • data security/cybersecurity	• expedite deployment of digital infrastructure • adoption of custom digitalisation	facilitate and strenghten the adoption of digital tools and technology in rural SMEs operation	• increase the awareness of digital tools and technology in rural SMEs/businesses • promote structural and cultural transformation to adopt digital culture in rural areas
Singapore	• enhance digital connectivity • data security/cybersecurity • data flows with trust	strengthen digital infrastructure to support cross-border logistics	-	-
Thailand	• increase and enhance digital connectivity • data flows with trust	• expedite deployment of digital infrastructure • adoption of custom digitalisation	facilitate and strenghten the adoption of digital tools and technology in rural SMEs operation	• increase the awareness of digital tools and technology in rural SMEs/businesses • promote structural and cultural transformation to adopt digital culture in rural areas

	pillar of data governance	pillar of logistics	pillar of economic development	pillar of digital culture
Vietnam	• increase and enhance digital connectivity • data flows with trust	• expedite deployment of digital infrastructure • adoption of custom digitalisation	facilitate the adoption of digital tools and technology in rural SMEs operation	• increase the awareness of digital tools and technology in rural SMEs/businesses • promote structural and cultural transformation to adopt digital culture in rural areas

Review and Amendment

This Framework may be reviewed periodically and amended at any time to incorporate new development or changes, by mutual agreement among all ASEAN member states.

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