Chapter 4

Digital Economy in Lao People's Democratic Republic

Phet Sengpunya

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Chapter 4
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Phet Sengpunya

1. Introduction: Development of the Digital Economy in Lao People's Democratic Republic

Digital transformation holds the promise of economic growth for many countries and regions worldwide. Recognising this potential, Lao People's Democratic Republic (Lao PDR) has made the development of the digital economy a key priority in its 5-year national development agenda (Lao NA, 2021).

The digital economy encompasses all economic activities enabled by digital technologies, spanning industries such as e-commerce, digital media, fintech, and software as a service. According to Lao PDR's policy paper, the digital economy is defined as a new form of economy that leverages digital technologies to drive productivity and efficiency in both the public and private sectors, adding value to production, trade, and services and ultimately improving living standards (MTC, 2021).

As a landlocked country, Lao PDR views the emerging digital economy as a unique opportunity to integrate with regional and international economies, providing its people and businesses with access to larger foreign markets.

In 2019, the digital economy contributed 3% of gross domestic product (GDP), a figure comparable to the financial and insurance sectors, which contributed 4.4% and 3.0%, respectively (World Bank, 2022). The digital sector generated approximately LAK107.83 billion in revenue, marking a 6.6% increase from 2018. The information and communication technology (ICT) sector generated approximately LAK3,571 billion in revenue, a 7% increase from 2018. The digital economy's contribution to GDP is projected to rise to 10% by 2040 (World Bank, 2022).

Businesses are increasingly recognising the opportunities presented by digital transformation, adapting and creating new business models to develop ICT products. Digital start-ups are emerging and thriving (World Bank, 2022), with many domestic businesses developing ICT products that reach customers through mobile phones and the Internet. These include online lottery platforms, job search services, online financial services, transport booking, air ticket and accommodation booking apps, virtual tourism information, online education, and trading on social media platforms (MTC, 2021).

The government has been actively developing and adopting digital technology in its governance and public services. Over the past decade, the government has introduced several e-governance and public e-service programmes, including online tax, water, and electricity payments; electronic visa (e-Visa); online passport application; and intellectual property online application (IP e-Filing) (Mukherji et al., 2022). To support these initiatives, the country has continued to expand its telecommunications and high-speed internet infrastructure. In 2019, Lao PDR completed the installation of 90,258 kilometres of fibre optic cable, providing internet coverage to every district and province. Additionally, 7,882 cellular base stations were installed, covering 95% of the country's villages (Mukherjiet al., 2022). With these infrastructures in place, 3G and 4G networks now cover 82% of all districts and provinces and 55% of villages (Mukherji, P., Chatterjee, R., Sen, A., Kapoor, H., and Sambhar, A. 2022). In 2020, the country conducted a 5G network trial in select areas of its capital, Vientiane (Lao New Agency, 2020), and on 10 January 2024, during Lao Digital Week, it unveiled its first 5G internet service, operated by Lao Telecom (Laotian Times, 2024).

Despite these advancements, Lao PDR's digital economy lags behind other countries in the region. As of August 2022, the country ranked 9th out of 10 Association of Southeast Asian Nations (ASEAN) Member States in terms of digital access, quality, and affordability (World Bank, 2022). Lao PDR has the region's most expensive yet slow internet (Laotian Times, 2022). According to the ASEAN Digital Integration Index Report 2021, the country also scored low across various digital economy sectors (ASEAN Secretariat, 2021).

Table 4.1. ASEAN Digital Integration Index Scores

Country	Digital Trade and Logistics	Data Protection and Cybersecurity	Digital Payments and Identities	Digital Skills and Talent	Innovation and Entrepreneurship	Institutional and Infrastructural Readiness
Singapore	82.64	89.70	86.60	63.79	71.08	90.36
Thailand	83.34	87.91	69.73	43.76	56.09	62.61
Viet Nam	78.50	63.05	58.33	38.38	44.55	60.72
Malaysia	67.35	91.27	79.20	57.85	59.22	82.18
Indonesia	49.67	78.43	59.73	45.64	48.81	62.44
Philippines	60.61	72.49	31.89	53.13	46.93	58.89
Brunei	54.97	67.46	87.56	53.31	42.99	71.42
Cambodia	33.91	24.76	41.20	36.56	38.19	50.97
Lao PDR	23.22	32.58	44.53	43.89	36.91	38.27
Myanmar	18.51	20.41	32.93	19.58	44.65	44.60

Lao PDR = Lao People's Democratic Republic.

Source: ASEAN Secretariat (2021).

Several factors hinder the growth of Lao PDR's digital economy, including low levels of internet penetration, limited access to venture capital, poor digital infrastructure, and more. However, data from Data Reportal indicates that internet usage in Lao PDR is increasing rapidly. In 2023, the number of internet users rose from 2.70 million in 2019 (DataReportal, 2019) to 4.70 million (DataReportal, 2023). This surge suggests significant potential for the growth of the country's digital economy.

2. Potentials for the Development of the Digital Economy in the Lao People's Democratic Republic

Lao PDR possesses considerable potential for developing its digital economy. Strategically located in the heart of the region, the country has access to large and emerging markets for digital goods and services, with the potential to become the region's logistic hub. This strategic advantage supports Lao PDR's ambition to transform from a 'landlocked' to a 'land-linked' country (ITC, 2021). The official launch of the Laos–China Railway operation on 2 December 2021 exemplifies this transformation, enhancing logistics and connectivity within the country and linking Lao PDR with ASEAN and China. This development is an important step towards Lao PDR's goal of becoming a regional logistics distribution centre, which will also help accelerate the growth of its digital economy and contribute to national economic development (Vientiane Times, 2022).

The government is highly committed to advancing the digital economy and has implemented numerous policies and initiatives to promote the development of digital infrastructure, digital literacy, and e-commerce. The government recognises the opportunities that digitalisation presents for national development (see MTC [2021]). Lao PDR has established basic telecommunication and internet infrastructures across the country and has adopted most of the relevant laws and regulations to support the digital economy. Various initiatives have been introduced to drive digital transformation and the development of the digital economy, including the creation of favourable policy and regulatory environments, the development of human resources, and investment in telecommunications and internet infrastructure (MTC, 2021).

The private sector is embracing digitalisation to transform businesses and services. For instance, companies and vendors are increasingly adopting e-payment systems, restaurants are partnering with delivery service providers to feature on the apps, and taxi services are collaborating with online ride-hailing service platforms. In recent years, digital start-ups have emerged, contributing to innovations and growth within the digital economy. These start-ups are developing a range of innovative solutions in areas such as e-commerce, financial services, online ride-hailing services, and food delivery (World Bank, 2022).

Lao PDR has one of the youngest and fastest-growing populations in the ASEAN region, with nearly 60% under the age of 25 (UNFPA, 2023). This large young population presents substantial potential for the development of the digital economy as they are more likely to adopt digitalisation and new technologies. The middle class is driving increasing demand for new digital products and services (Chun, 2010).

The development of the digital economy could bring several positive benefits, including the following:

- **Improved government services**. Digitalisation will enable the government to enhance public service delivery. The government could use digital technologies to offer more online services at both central and local government levels, making it easier for citizens to access government services.
- **Increased economic growth and job creation.** The digital economy has the potential to drive economic growth and create new jobs. For example, the growth of e-commerce could offer new opportunities for businesses of all sizes to access new markets and sell their products and services online. The digital economy could create new jobs in fields such as digital marketing, software development, and web design.
- **Enhanced financial inclusion.** The adoption of new digital technologies could improve financial inclusion across the country. Mobile banking and e-wallet services, for instance, could provide financial services to people even in remote areas.
- **Improved access to education and healthcare.** Digitalisation could help people access better education and healthcare, regardless of location. For example, students in rural areas could use online learning platforms to receive high-quality education, and patients could consult with doctors remotely via e-health services. However, this would require the expansion of good-quality internet infrastructure throughout the country.
- **Increased productivity and efficiency.** Digitalisation could help businesses in the country boost their productivity and efficiency. For example, companies could use software systems such as enterprise resource planning to automate business processes and gain better visibility into their operations.

The digital economy could benefit from several emerging trends, such as the growth of the Internet of Things (IoT), artificial intelligence (AI), and blockchain. By embracing the digital economy, Lao PDR could transform into a more prosperous and modern nation, positioning itself as a leader in the regional digital sector and attracting foreign investment and talent.

3. Key Challenges in the Digital Economy of the Lao People's Democratic Republic

The digital economy in Lao PDR is still in its early stages. Like many countries, Lao PDR faces opportunities and challenges in this sector. The following are key challenges hindering the growth of the digital economy:

Unfavourable regulatory framework. Despite the adoption of numerous laws and regulations over the past decade to support digital economy development, the legal framework remains fragmented and incomplete. There is also a lack of effective implementation and enforcement mechanisms (World Bank, 2018). Obtaining licenses for investment in the ICT sector is particularly difficult and time-consuming, which creates uncertainty and risk for businesses and investors. This has led to low confidence and trust amongst investors, further discouraging investment in the country's digital economy.

Limited digital infrastructure and connectivity. The digital infrastructure is underdeveloped, with unreliable and slow internet access, especially in remote areas (World Bank, 2018). The country's mountainous terrain poses significant challenges to expanding the infrastructure network to rural areas, slowing the development of the digital businesses and services. Although basic telecommunication and internet infrastructure exist, internet penetration remains low, and broadband infrastructure is limited to major cities. The internet is slow and expensive. Internet users are required to pay a monthly cybersecurity maintenance fee to the government (MTC, 2024), which can further deter individuals and businesses from accessing and utilising digital technologies, thereby hindering the growth of the digital economy.

Shortage of skilled labour. Lao PDR faces a shortage of skilled labour in the digital sector (Mukherji et al., 2022). Although the government has been encouraging the development of human resources, and the number of ICT workers is increasing each year, their quality remains limited. This shortage of digitally skilled workers is a significant challenge for businesses seeking to develop and implement digital solutions, creating uncertainty and difficulty in finding talent.

Low digital literacy. A large portion of the population, particularly the elderly and those in remote areas, lacks the basic digital knowledge and skills required to participate in the digital economy (UNICEF, 2023). The country has some of the poorest education indicators in the region (UNICEF, 2018). In 2017, approximately 70% of 5-year-olds in remote areas and from poor families did not have access to early childhood education (UNICEF, 2017). Many children in these areas do not speak the official Lao language used for the instruction. The quality of primary education is another concern, with only 81.9% of children who enrol in primary education completing their studies. The learning outcomes of the students are low, leaving them without essential knowledge and skills (UNICEF, 2017). This can significantly handicap the ability of a substantial portion of the population to adopt and participate in the digital economy, thereby limiting their ability to benefit from its opportunities.

Cybersecurity risks. Despite having laws and regulations in place to regulate cybersecurity and ensure data protection, Lao PDR lacks advanced digital technologies to prevent cyber threats (ITC, 2020). As a result, the country is vulnerable to cybersecurity attacks, such as data breaches, malware infections, and phishing. This vulnerability creates uncertainty and potential harm for businesses and individuals participating in the digital economy.

Consumer protection and data privacy concerns. Although Lao PDR has enacted the Law on Electronic Data Protection and Law on Consumer Protection, the commitment to enforcing these laws is lacking. Most consumers lack confidence and trust in online shopping and services, and there is no effective consumer redress mechanism for online activities (Chun, 2010). This lack of protection and trust is a significant barrier to greater consumer participation in the digital economy.

External shocks. The digital economy is vulnerable to external uncertainties, such as global economic downturns and geopolitical tension between superpower nations. For example, the country could be excluded from digital economy initiatives led by the United States or the European Union and diverge from their standards and regulatory frameworks due to its heavy dependence on China for economic development and political alignment.

The government is aware of these challenges and has initiated various measures, such as investing in digital infrastructure, developing digital literacy programmes, and strengthening cybersecurity. However, more effort is needed to establish a favourable environment for the digital economy to thrive.

4. Socio-Cultural and Political-Security Impact from the Development of the Digital Economy

The development of the digital economy has profound effects across various sectors, including socio-cultural and political-security aspects in Lao PDR, similar to its impact in many other countries.

4.1. Impact on Socio-Cultural Aspects

The digital economy can significantly influence culture and society. It has the potential to promote education and innovation by providing students and teachers with enhanced access to online resources, enabling them to acquire new skills and knowledge. This can lead to improvements in the quality of education and overall human resource development in the country (Runde et al., 2022). Digital technologies can empower entrepreneurs to start new businesses, fostering economic growth and innovation.

However, the digital economy may also exacerbate societal disparities. Individuals without access to digital technologies or basic digital literacy, particularly those in remote areas, may find themselves at a disadvantage in the job market or in accessing other digital opportunities. For instance, during the coronavirus disease (COVID-19) school closures, only 29% of financially better-off households were able to engage their school-aged children in online learning activities in 2021, up from 25% in 2020. The rate of online learning engagement was significantly higher in urban areas compared with rural areas (World Bank, 2021). The widespread dissemination of foreign cultural content online may contribute to the erosion of traditional culture.

4.2. Impact on Political-Security Aspects

The digital economy presents new opportunities and challenges in the political-security realm. On the one hand, it can enhance the efficiency and transparency of government operations. Digital technologies can facilitate better engagement between the government and citizens, streamline complex regulatory processes, improve the delivery of public services, and simplify the collection of citizen feedback (Rundeet al., 2022).

On the other hand, the digital economy may become a platform for dissidents to spread misinformation and propaganda, potentially mobilising opposition against the government. As businesses and government services increasingly move online, they become more attractive targets for hackers. This shift can also make Lao PDR more vulnerable to cyberattacks, which could disrupt essential services, lead to the theft of important data, and undermine economic confidence.

Overall, the development of the digital economy is likely to have a mixed impact on the socio-cultural and political-security landscape. The government will need to implement measures to mitigate the associated risks whilst maximising the benefits of the digital economy.

5. Review of Policies, Regulations, and Responsible Authorities

5.1. Digital Policy

Lao PDR has been gradually progressing in its digital transformation since participating in the e-ASEAN framework in 2000, which marked the country's initial interest in digitalisation. Over the years, a series of policies have been adopted to drive the development of the digital economy, including the National Socio-Economic Development Plans (NSEDP), the 20-Year National Digital Economic Development Vision 2021–2040 (Digital Vision), the 10-Year National Digital Economic Development Strategy 2021–2030 (Digital Strategy), and the 5-Year National Digital Economic Development Plan 2021–2025 (Digital Plan) (Lao NA, 2021). The Digital Vision outlines broad targets for the digital economy over the next 20 years. The Digital Strategy provides a decade-long roadmap for achieving these targets, whilst the Digital Plan details specific work plans for each of the 5 years to implement the strategies.

The 9th NSEDP, the country's most recent policy, seeks to promote a new-normal lifestyle and digital economy development. It seeks to establish electronic markets, modernise payment and revenue collection systems through mobile banking to move towards a cashless society and promote warehouse and dry port services. It focuses on innovation, technology, scientific research, and knowledge as drivers of socio-economic development. Under the 9th NSEDP, Lao PDR plans to launch a series of ICT and digital initiatives, such as a free public wi-fi project, an online ICT licensing system, a digital camp project, and the development of a digital index (MPI, 2021).

In 2023, the president appointed a committee to be responsible for the country's digital transformation. The committee is tasked with setting plans, strategies, policies, work plans, and mechanisms for digitalisation at central and local government levels. It will be involved in reforming and developing digital government, the digital economy, and digital society whilst facilitating the country's overall digitalisation. In addition, the committee will monitor the implementation of the Digital Vision, Digital Strategy, and Digital Plan (Vientiane Times, 2023).

Notwithstanding these policies, the development of the digital economy in Lao PDR lags behind that of its neighbouring countries. Progress on implementing the strategies and work plans under the Digital Vision, Digital Strategy, and Digital Plan has been slow, hampered by factors such as economic risk and uncertainty, high inflation, and the depreciation of the kip.

5.2. Legislation

Lao PDR has established laws and regulations (MOJ, 2024) to govern and promote ICT, electronic payments, electronic transactions, electronic commerce, electronic data protection, and the fundamental protection of online consumers. These laws and regulations provide a solid foundation for the development of the digital economy.

However, to keep pace with the evolving economy domestically and globally, these laws and regulations must be regularly reviewed and updated. Regardless of how comprehensive the laws and regulations are, their effectiveness depends on the government's commitment to rigorous implementation.

5.3. Responsible Agencies

Several key government agencies are responsible for the development of the digital economy:

Ministry of Technology and Communications (MTC). The MTC is the lead agency responsible for national technologies, the internet, telecommunications, innovation, cybersecurity, and postal services (PMO, 2021). It regulates and develops the telecommunications sector, promotes ICT usage across all economic sectors, and oversees the development of digital infrastructure. The MTC is tasked with developing and implementing policies and regulations related to the digital economy and promoting investment in the digital sector (World Bank, 2022).

Ministry of Industry and Commerce. The ministry is primarily responsible for e-commerce and online consumer protection. It develops and implements policies and regulations governing e-commerce and online consumer protection and promotes the adoption of online trade and services amongst businesses and consumers across the country (World Bank, 2022).

Bank of Lao PDR. The bank regulates the financial sector and is responsible for developing and promoting electronic payment systems. It is developing digital currency, financial technology, and other digital financial services (World Bank, 2022).

Ministry of Education and Sport and Ministry of Labour and Social Welfare. The ministries are jointly responsible for promoting digital literacy and the development of digital skills amongst the workforce (World Bank, 2022).

Numerous development partners and international organisations, including the International Telecommunication Union, the United Nations Development Programme, the World Bank, and the Asian Development Bank, also support the development of the digital economy.

6. Policy Recommendations

To promote the development of the digital economy, Lao PDR will require robust policy and legal frameworks, progressive digital transformation of government services, and strong digital infrastructures. Below are the author's policy recommendations for the future development of the digital economy in Lao PDR:

Establish a supportive legal environment for the digital economy. The government should regularly review and update existing laws and regulations to ensure that they remain relevant and supportive of the digital economy, particularly those concerning data privacy, cybersecurity, consumer protection, and fair competition. Where necessary, laws and regulations should be introduced to enable the development of emerging digital products and services. Creating a favourable licensing environment will attract more foreign investment. Effective implementation and enforcement of these laws and regulations are crucial, including the development of comprehensive training programmes for government officials, the establishment of a dedicated hotline or website for reporting violations, the creation of clear implementation guidelines for businesses, and raising of awareness and understanding of the laws amongst businesses and consumers.

Invest in digital infrastructure. Continued investing in digital infrastructure is essential. This includes improving mobile networks, expanding broadband internet access to all parts of the country, developing digital payment systems, establishing data centres, and providing cloud computing services.

Support digital innovation. Lao PDR should fund research, provide mentorship, and support the growth of digital start-ups. Establishing start-up ecosystem and innovation hubs where local and foreign entrepreneurs can collaborate will foster innovation and drive the development of new ideas.

Support human resource development. Developing a skilled workforce is critical to supporting the digital economy. The government can facilitate this through various programmes and initiatives, such as digital training for businesses, encouraging schools and universities to integrate digital courses into their curricula, launching public awareness campaigns about the benefits of the digital economy, and promoting digital literacy nationwide.

Promote digital technology adoption. The government should incentivise businesses to adopt digital technologies by introducing tax breaks and other incentives for those investing in the digital sector. Upgrading the e-government system to offer more online services will encourage citizen engagement. Collaboration with the private sector to develop and implement digital solutions for public services should be a priority.

Build confidence and trust amongst consumers and businesses. It is important to build confidence and trust amongst consumers and businesses to encourage their participation in online activities. Lao PDR must ensure the protection of personal privacy and basic consumer rights and establish an effective redress mechanism to handle disputes arising from online transactions. This requires a strong commitment to enforcing existing laws and regulations.

Establish an agency to promote the digital economy. The government could consider establishing a dedicated agency to promote the digital economy. This agency would coordinate efforts between businesses and the government, support the growth of digital businesses, and lead initiatives to advance the digital economy.

Support e-commerce and promote digital payment. The country should support e-commerce by establishing a favourable legal environment and investing in e-commerce infrastructure. Developing a robust and safe digital payment system is equally important. The government should encourage the adoption of digital wallets and other payment methods, work with financial institutions to develop new digital financial services and products and promote the use of digital payments amongst consumers and businesses.

By implementing these policy recommendations, Lao PDR can establish a supportive environment for its digital economy, accelerating economic growth, creating jobs, enhancing quality of life, and fostering a more vibrant and inclusive digital economy that benefits everyone across the country.

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Chapter 5
Malaysia's Digital Economy: Policies and Challenges for the ASEAN Economic Community 2045

Sufian Jusoh and Muhammad Faliq Abd Razak

1. Introduction

The digital economy is one of the fastest growing and most critical sectors in Malaysia, particularly as the country strives to escape the middle-income trap and achieve high-income status. In 2021, the digital economy contributed 22.6% to Malaysia's gross domestic product (GDP), with projections indicating this will rise to 25.5% by 2025 (Economic Planning Unit, 2021), Malaysia recognises the digital economy as a key driver of economic growth, enhancing the country's competitiveness and empowering micro, small, and medium-sized enterprises to participate in higher value-added economic activities.

The paper explores the importance of the digital economy in Malaysia, with a focus on e-commerce. Malaysia has long regarded information and communication technology (ICT) and, more recently, the digital economy as integral components of its economic development plan. The launch of the Multimedia Super Corridor (MSC) and related initiatives in 1996 marked the beginning of this journey. This ambition is further reflected in subsequent policies relating to the Fourth Industrial Revolution, the digital economy, e-commerce, and the national investment policy. Malaysia's digital economy initiatives are bolstered by the country's participation in regional arrangements such as the Asia-Pacific Economic Cooperation (APEC), the Association of Southeast Asian Nations (ASEAN), the Regional Comprehensive Economic Partnership (RCEP), and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).

However, for Malaysia to emerge as a leading regional and global player in the digital economy, it must address a main weakness: the country is a technology adopter rather than a technology frontrunner. Additional areas for improvement include developing more talent, increasing research and development (R&D) efforts, attracting greater investment, and identifying niche areas where Malaysia can assume a leadership role.

2. The Importance of the Digital Economy

The digital economy is a key driver in Malaysia's pursuit of high-income nation status. The Malaysian Digital Economy Corporation (MDEC) predicts that by 2025, the digital economy will contribute approximately 25.5% to the GDP (MDEC, 2023). MDEC reported a significant growth in digital economy investments, with US$6 billion invested in the first half of 2023, compared with 2022.

The advancement of the digital economy in Malaysia involves the adoption of various digital technologies, particularly those related to the Fourth Industrial Revolution. This includes the integration of digital technologies, automation, and data analytics, leading to innovations such as smart manufacturing, the use of artificial intelligence (AI), and industrial Internet of Things (IoT) (OECD, 2023).

The World Bank emphasises that as Malaysia progresses towards becoming a high-income nation, it is essential to establish the digital economy as a key growth engine within a knowledge-based, innovation-led economy (World Bank, 2018) According to the World Bank, digital technologies can drive Malaysia's economic growth through three main channels: promoting the inclusion of underserved markets, increasing competitiveness, and fostering innovation by enabling new forms of businesses and entrepreneurships to emerge (World Bank, 2018).

3. Early Initiative: Multimedia Super Corridor

Malaysia's adoption of digital and information technology started with the launch of the MSC in 1996, modelled after Silicon Valley. This initiative formed part of the Seventh Malaysia Plan 1996–2000 (7MP), covering Kuala Lumpur and Putrajaya (Economic Planning Unit, 1996). The 7MP identified information technology as an important driver of economic growth, covering various hardware and services (Economic Planning Unit, 1996).

Businesses established and operating within the MSC were granted MSC status, enabling them to enjoy several benefits under the Bill of Guarantees.[1] These benefits included freedom of ownership, unrestricted employment of foreign knowledge workers, global access to capital, and tax holiday incentives.

However, as stated in the Ninth Malaysia Plan (9MP) 2006–2010, the MSC did not fully meet its original goals in content development, talent growth, and the creation of cutting-edge products and services (Economic Planning Unit, 2006). Consequently, the 9MP initiated MSC Phase II, expanding the reach of MSC Multimedia Applications into several other regions. Under the 10th Malaysia Plan (10MP) (Economic Planning Unit, 2011), Malaysia shifted its focus to niche areas in software and e-solutions, creative multimedia, shared services and outsourcing, and e-business (Economic Planning Unit, 2011).

[1] The Bill of Guarantees is replaced with the My Digital Status.

4. Strengths and Weaknesses of Malaysia's Digital Economy

In 2020, Malaysia was ranked as the second most digitally advanced country in ASEAN by Huawei's Global Connectivity Index (Hua Wei, 2022). Malaysia also ranked 31st overall and 2nd in ASEAN, just behind Singapore (4th overall), in the IMD World Digital Competitiveness Ranking 2022 (IMD, 2022). In this ranking, Malaysia was 25th in the knowledge indicator, 29th in technology, and 31st in future readiness. Malaysia ranked 32nd in the United Nations Trade and Development (UNCTAD) Frontier Technologies Readiness Index 2022 (with a score of 0.76), again behind Singapore, which held the 3rd overall position (with a score of 0.96).

Table 5.1. Malaysia's Strengths and Weaknesses in the Digital Economy

Three Malaysia's Strengths	Three Malaysia's weaknesses
• Training and Education • Technological Framework • Industry	• Talent and skills • Digital User and adopter and not a frontrunner • Digital divide

Source: IMD World Digital Competitiveness Ranking 2022; UNCTAD Frontier Technologies Readiness Index 2022; National Investment Policy 2022; 12th Malaysia Plan 2021-25.

Based on the IMD's ranking, Malaysia's main strengths in the digital economy lie in training and education (10th out of 64) and its technological framework (16th out of 64). The UNCTAD Frontier Technologies Index highlights Malaysia's strengths in industry and finance, as well as access to capital (IMD, 2022). Conversely, Malaysia's main weaknesses are in talents and skills, scientific concentration, business agility, and its regulatory framework.

The UNCTAD Technology and Innovation Report 2023 classifies Malaysia as a digital technology user rather than as an emerging frontrunner or producer of digital technology (UNCTAD, 2023). This classification aligns with the finding of the World Bank's Digital Adoption Index in 2016, which classified Malaysia as an 'adopter' country. This classification puts Malaysia behind frontrunner countries such as Singapore, the United States, Estonia, the Republic of Korea, and Japan in terms of digital progress (World Bank, 2016).

A digital divide persists in Malaysia. It is evident between states, urban and rural areas (Economic Planning Unit, 2021), younger and older generations in adapting to the internet and digital economy, and across income groups (Soh, et al., 2020). A study by Devisakti, Muftahu, and Hu (2023) highlights a digital divide in higher education, particularly amongst students from different income levels. According to this study, this divide leads to varying levels of technological readiness and limited technological skills.

5. Malaysia's Policy Responses

In response to identified weaknesses, Malaysia has introduced several new policies, with a particular focus on e-commerce and the role of digital services in manufacturing, emphasising the development of service-oriented pathways (Baldwin and Forslid, 2020). Following the MSC initiative, Malaysia shifted its focus towards specific domains such as IoT (MOSTI, 2015), e-commerce (MDEC, 2916), and technologies related to the Fourth Industrial Revolution (Economic Planning Unit, 2019). Amongst focus technologies are AI, big data analytics, augmented reality, additive manufacturing, cybersecurity, simulation, system integration, IoT, advanced materials, autonomous robots, and cloud computing.

The most recent policy on the digital economy is the Malaysia Digital Economy Blueprint 2021 (My Digital). MyDigital is designed to enhance Malaysia's value proposition to attract digital investments and establish the country as a regional leader in the digital economy (Economic Planning Unit, 2021). MyDigital has three primary objectives: encourage industry players to become creators, users, and adopters of innovative business models; harness human capital capable of thriving in the digital economy; and nurture an integrated ecosystem that enables society to embrace the digital economy. These objectives are supported by three pillars: facilitating digitalisation in the public and private sectors, building Malaysia's digital talent pool, and promoting digital trade opportunities. The National Strategic Initiatives focuses on trade, agriculture, services, smart cities, healthcare, finance, content, tourism, and the Islamic digital economy.

Investment in the digital economy is further supported by the New Investment Policy 2022 (NIP) (MITI, 2023). Under the NIP, Malaysia seeks to accelerate the creation of high-value digital jobs supported by a local digital talent pool that is both agile and competent. To attract and facilitate investments in the digital economy, MyDigital has introduced the Digital Investment Office, a collaborative platform between the Malaysian Investment Development Authority (MIDA) and the MDEC.

From the perspective of the digital economy, the NIP focuses on the following:

a. Addressing the needs of communities with a focus on consumption.
b. Building on applications and services, emphasising digital solutions and services across various service sectors.
c. Facilitating investments in digital platforms, including digital identification, authentical and digital signing, unified and interoperable data, cloud computing, big data and AI, content management, IoT, blockchain, security and encryption, digital procurement, billing and payment, open government and industry.
d. Enhancing digital connectivity and infrastructure.

The 12th Malaysia Plan 2021–2025 (12MP), launched in 2021, encompasses three dimensions: economic empowerment, environmental sustainability, and social re-engineering (Economic Planning Unit, 2021). Within the digital economy, the 12MP addresses challenges such as insufficient digital infrastructure and services, fragmented governance, the digital divide, low levels of R&D, and the slow adoption of technologies. The 12MP aims to enhance the talents and skills required to drive the digital economy, intensify R&D, and aggressively attract investments. The 12MP identifies two game changers: enhancing digital connectivity for inclusive development and aligning R&D with commercialisation and wealth generation.

The National Industrial Master Plan 2030 (NIMP 2030), launched in September 2023 (MITI, 2023), sets out an integrated plan for Malaysia's industrial development by 2030. NIMP 2030 predicts that Malaysia's internet economy will generate an annual economic value of RM257.2 billion (US$61.3 billion) by 2030. Consequently, Malaysia will focus on facilitating digitalisation in both public and private sectors, fostering digital talent, and promoting digital trade opportunities.

6. Digital Economy and Regional Trade Agreements

Malaysia's quest to position digital economy as an important driver of its economic performance is bolstered by its international commitments, including those under RCEP, CPTPP, ASEAN, and APEC.

RCEP supports the digital economy through chapters on electronic commerce, trade in services, and investment (Kelsey, 2022). It adopts a pragmatic approach to the digital economy by implementing ICT-driven trade facilitation measures, enabling the free cross-border flow of data, and adopting less stringent data localisation requirements (Park et al., 2023). CPTPP contains provisions on e-commerce that could drive the uptake of digital economy amongst its parties, including protections for data movement and the elimination of tariffs on digital goods and services.

Regionally, Malaysia stands to benefit from the ASEAN Digital Masterplan 2025 (ASEAN, 2021), which envisions ASEAN as a leading digital community and economic bloc powered by secure and transformative digital services, technologies, and ecosystems. As a member economy of APEC (APEC, 2020), Malaysia is aligned with pillar 2 of the Putrajaya Vision 2040. Under this pillar, member economies will take steps to create an enabling environment through policies that encourage innovation and digitalisation, adopt new and emerging technologies, share best practices, and promote approaches for a digital economy (APEC, 2021).

7. Case Study: E-commerce in Malaysia

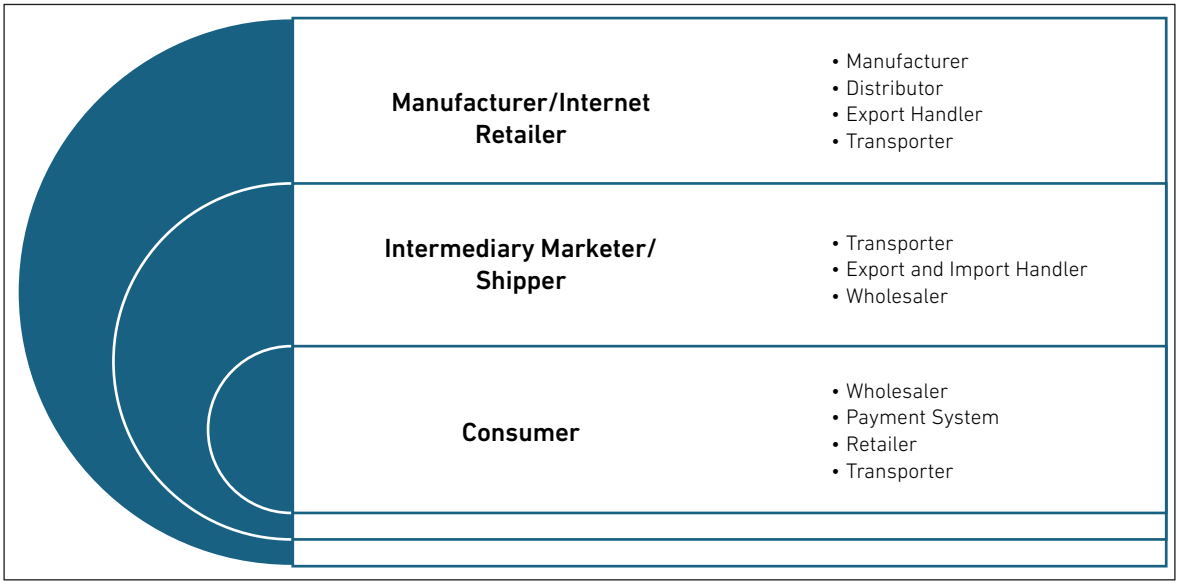
7.1. E-commerce Market in Malaysia

According to the Department of Statistics of Malaysia (DOSM) (2023), the income generated by Malaysia's e-commerce sector reached nearly RM1.1trillion in 2022 and saw a year-on-year increase of 10.4%, totalling RM291.7 billion in the first quarter of 2023 (DOSM, 2023). UNCTAD's Business-to-Consumer E-Commerce Index 2020 ranked Malaysia 30th overall, placing it in the 4th highest place amongst developing economies, behind Singapore, Hong Kong, and the Republic of Korea (UNCTAD, 2021).

The National E-Commerce Strategic Roadmaps 2016 and 2021 (NECSR) aim to future-proof existing businesses and expand market access. NECSR intends to integrate small and medium-sized enterprises (SMEs) into the world of e-commerce, equipping them with the capabilities to keep pace with an online market poised to grow much faster than offline sales. The NECSR is driven by six thrust areas: accelerating seller adoption of e-commerce, increasing e-procurement adoption by businesses, removing non-tariff barriers to e-commerce, realigning existing economic incentives, making strategic investments in select e-commerce player(s), and promoting national brand to boost cross-border e-commerce.

The modern e-commerce value chain involves various activities and players (Figure 5.1).

Figure 5.1. E-commerce Value Chain



Source: Author's modification from World Customs Organisation, Facilitating E-Commerce, https://mag.wcoomd.org/magazine/wco-news-78/facilitating-e-commerce/ (last accessed 18.8.2023).

Based on Figure 5.1, the e-commerce value chain in Malaysia consists of the following:

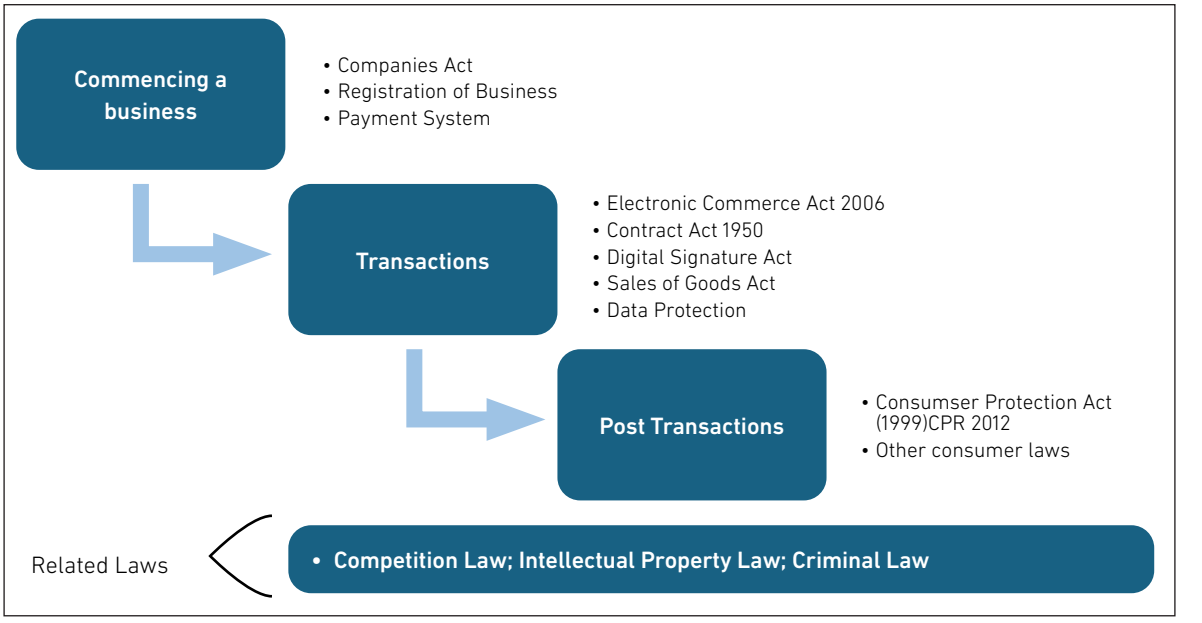
a. **First group**. Manufacturers and internet-enabled retailers (e.g. Amazon, AirAsia Digital, and, gradually, Grab). This group is supported by manufacturers, distributors (e.g. courier companies), and export handlers.
b. **Second group.** Intermediary marketers and shippers (e.g. Grab, AirAsia Digital, Lazada, and Shopee). This group is supported by transport companies, import and export handlers, and wholesalers and distributors.
c. **Third group.** Consumers who interact with either wholesalers or retailers.

Separate studies by the World Bank (2018) and Tham and Kam (2023) reveal that business-to-business (B2B) transactions dominate Malaysia's e-commerce sector, particularly in manufacturing, and are primarily driven by big businesses. A major issue in the Malaysian e-commerce market, especially in the business-to-consumer (B2C) segment, is the emergence of Superapp operators. These operators seek market dominance by acting as internet enablers and market intermediaries whilst offering distribution, handling, or payment gateway services (Gao and Jusoh, 2023).

7.2. Malaysia's E-commerce Regulations

According to Jaller, Gaillard, and Molinuevo (2020), e-commerce regulations provide the legal tools necessary for remote contracts, clarify the rights and obligations of the multiple actors involved in digital transactions, and establish a framework that promotes consumer trust in digital markets. Malaysia's legal framework for e-commerce is based on the laws designed and approved during the early stages of e-government and the MSC initiatives in the late 1990s and early 2000s (Figure 5.2).

Figure 5.2. Situating the Law in the E-commerce Value-Chain



Source: Authors' analysis based on the Malaysian e-commerce related legal framework.

The legal framework mainly addresses B2C markets, whilst B2B transactions and other activities, such as those of the intermediaries and last-mile service providers, are governed by general laws. This framework does not address issues like buyer fraud, where the customer receives goods but fails to make payment (Gao and Jusoh, 2023). . To address these concerns, MyDigital seeks to streamline regulatory requirements to better support the digital economy and encourage sustainable business models (Economic Planning Unit, 2021).

MyDigital aims to address innovations, enhance consumer protections, establish fairer contractual and commercial arrangements between SMEs and e-commerce platform providers, and ensure seamless connectivity and delivery of e-commerce products and services (Economic Planning Unit, 2021). One initiative is to nurture a dynamic intellectual property (IP) system for the digital economy to encourage innovations. This involves reviewing and updating laws, implementing a digital IP enforcement strategy, and raising awareness about digital and online branding protection using a Malaysian domain (.MY).

The second initiative is to adopt an agile regulatory approach to meet the needs of digital economy businesses. This includes identifying priority regulations for review and updating, developing a code of conduct for regulators to encourage industry involvement in the regulatory design for the digital economy, expanding regulatory sandboxes, and addressing social security for those involved in the gig economy (Economic Planning Unit, 2021). The third initiative is to align pro-competition measures with digital economy policies to promote fair competition and create a level playing field in the digital economy. This involves reviewing existing policies and competition laws to support responsible digital economy growth (Economic Planning Unit, 2021).

7.3. Infrastructure and Facilities

To support e-commerce and digital trade, Malaysia has established the Digital Free Trade Zone (DFTZ). The objectives of the DTFZ include facilitating seamless cross-border trade via virtual and physical facilities, increasing SME goods exports to US$38 billion, creating over 60,000 jobs, and supporting US$65 billion worth of goods moving through DFTZ by 2025. Other objectives include positioning Malaysia as Asia's leading transhipment hub by 2025, enabling global marketplaces to source from Malaysian manufacturers and sellers, establishing Malaysia as the regional fulfilment hub for global brands to reach ASEAN buyers, and creating an ecosystem to drive innovation in e-commerce and the internet economy (Tham, 2018).

The main components of the DTFZ are the eFulfilment Hub, the Satellite Services Hub, and the eServices Platform (Tham, 2018). The eFulfilment Hub assists SMEs and other businesses in exporting their goods efficiently, with the support of leading fulfilment service providers. The Satellite Services Hub connects SMEs with leading players, offering services such as financing, last mile fulfilment, insurance, and other essential services for cross-border trade. Through the eServices Platform, businesses can efficiently manage cargo clearance and other processes required for cross-border trade.

Alibaba, a Chinese company, hosts its regional eFulfillment hub at KLIA Air Cargo Terminal 1 (KACT1), developed by POS Aviation, serving Alibaba Lazada e-commerce operations. As of March 2019, the government, through MIDA, had approved eight e-fulfilment projects, with more in the pipeline (Jusoh, 2021). In the second phase, a logistics centre spanning over a 60-acre plot at KLIA is operational to support the DFTZ.

8. Conclusions and Policy Proposals

Malaysia has demonstrated a clear intent to be a main player in the digital economy, as evidenced by the various measures taken to build on its strengths and address its weaknesses. However, to fully unlock the economic benefits of digital economy, Malaysia must aspire to be a frontrunner, not just an adopter, of digital-related economic activities and technologies. As the Chair of ASEAN in 2025, Malaysia will need to guide ASEAN digital economy towards achieving its ambitions by 2045.

Malaysia must immediately address several pertinent issues. First, the shortage of talent in new digital technologies needs to be tackled. Addressing this talent gap will alleviate concerns amongst businesses and investors and will, in turn, help the country contribute more effectively to the growth of the digital economy and its associated technologies. ASEAN could encourage the free movement of digital talent amongst its Member States, particularly through the recognition of digital-related qualifications.

Second, Malaysia must address the digital divide within its digital economy. This includes building more digital physical infrastructure, especially in rural and underdeveloped regions. ASEAN must adopt a strategic plan to reduce the digital divide within the region, which involves addressing ASEAN Connectivity and relevant digital economy plans under the ASEAN Economic Community.

Third, Malaysia and ASEAN Member States must address the legal frameworks relating to the digital economy. A holistic review of laws concerning digital activities is needed, aligning this reform with Malaysia's obligations under the CPTPP and the RCEP agreements, which are also applicable to all ASEAN Member States. Finally, Malaysia and ASEAN could explore new areas within the digital economy. For example, Malaysia could investigate the servicification of manufacturing or manufacturing-related services through digital technology as a potential driver of the digital economy.

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