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Strategic Policies for Digital Economic Transformation: The Case of Malaysia

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Abstract

Malaysia's first attempt at digital economic transformation began in the mid-1990s and lasted for some 15 years. The Multimedia Super Corridor has some initial success but underachieved in some areas. The second phase of strategic policies took place in the period 2016-2021 with the launch of four successive policies and plans dealing with e-commerce, 4IR manufacturing and digital economy. The legal and regulatory landscape for the digital economy has also evolved. Significant challenges lie ahead given the prevailing digital divide and unevenness in ICT adoption across industries.

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Strategic Policies for Digital Economic Transformation: The Case of Malaysia

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1. Introduction

Digital technologies have evolved and transformed economic activities in both developed and developing economies. Successive technological innovations have brought digital economic transformation based on digital technologies that create new and improved products and services as well improve production and distribution processes. The other side of digital economic transformation involves changes in consumption modes and patterns. Digital economic transformation is also a key component of the fourth industrial revolution which has been characterised by the fusion of the digital, biological, and physical worlds driven by a plethora of new technologies. These technologies include artificial intelligence, cloud computing, advanced robotics, 3D printing, the Internet of Things (IoT), gene editing, advanced wireless technologies, autonomous vehicles, nanotechnology, biotechnology, materials science, energy storage and quantum computing.

From a growth and development perspective, policymakers have struggled to formulate and implement policies that could take advantage of the new and emerging economic opportunities brought about by changes in digital technologies. These policies include those aimed at promoting various types of investments - both physical and human capital - as well as supporting and complementary activities that are important for digital transformation.

This paper seeks to examine the evolution of Malaysia's strategic policies for digital economic transformation (DET). This will be undertaken by examining the goals, investment outcomes and impacts of these investment policies. Some of the research questions that guide this paper include: (i) How do we conceptualise DET policies? (ii) What is the current state of digital economy in Malaysia? (iii) What are the DET policies that have been formulated and implemented in Malaysia? And (iv) What are the impact and prospects of DET policies in Malaysia?

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The outline of the paper is as follows. Section 2 provides a review of the literature. Section 3 provides an analysis of the range of strategic policies for digital economic transformation in Malaysia. The legal and regulatory frameworks are reviewed in Section 4. Section 5 takes stock of the state of digital transformation in Malaysia. Section 6 concludes.

2. Literature Review and Conceptual Framework: Strategic Policies for Digital Economic Transformation

An analysis of strategic policies for digital economic transformation entails an understanding of what digital transformation and other related concepts mean. An assessment of these policies also requires an understanding of the literature in two areas – digital technologies (McAfee and Brynjolfsson, 2017) and industrial policies (Harrison and Rodríguez-Clare, 2010 and Oqubay et al, 2020). These issues are discussed in this section.

2.1 Definitions

The OECD (2019a, p.18) provides concise definitions of three key terms in the study of digital transformation:

- "**Digitisation** is the conversion of analogue data and processes into a machine-readable format."
- "**Digitalisation** is the use of digital technologies and data as well as interconnection that results in new or changes to existing activities."
- "**Digital transformation** refers to the economic and societal effects of digitisation and digitalisation."

From the above definition, digitisation is a fundamental and basic process that converts data and information into a digital format i.e. it creates a digital input. Digitalised data and information are used in communication and computation processes in production, distribution and consumption activities. In so far as this entails new activities, these processes involve digitalisation with their broad effects being labelled digital transformation.

It is perhaps useful to use the term "**digital economic transformation**" to narrow down the focus on the economic effects of digitisation and digitalisation. This type of transformation focuses on the digital economy. The OECD (2020, p.40) provides three tiers of measure/definition for the **Digital Economy**:

- **Core measure**: only includes economic activity from producers of ICT goods and ICT and information services;
- **Narrow measure**: includes the core sector as well as economic activity derived from firms that are reliant on digital inputs and
- **Broad measure**: includes the first two measures as well as economic activity from firms significantly enhanced by the use of inputs.

Drawing from these measures, OECD (2020, p.5) provides a definition of the digital economy that draws upon the broad measure highlighted above:

> "The **Digital Economy** incorporates all economic activity reliant on, or significantly enhanced by the use of **digital inputs**, including digital technologies, digital infrastructure, digital services and data. It refers to all producers and consumers, including government, that are utilising these digital inputs in their economic activities."

Based on these definitions and concepts, **digital economic transformation** entails allocation of economic activity involving greater use of digital inputs.

2.2 Digital Ecosystem and General Purpose Technologies

There are many types of digital inputs and many ways in which they are used in production, distribution and consumption activities. The technologies underpinning digital inputs can be foundational in nature which renders them applicable to many types of uses (**Table 1**). Often, many types of interdependent technologies are used as digital inputs. The term "**digital ecosystem**" is sometimes used to describe the set of interdependent digital technologies (OECD, 2019a).[2]

General purpose technology (GPT) is another useful concept that can be used to further understand the nature of digital input. Lipsey et al. (1998, p.43) define a GPT as "a technology that initially has much scope for improvement and eventually comes to be widely used, to have many uses, and to have many Hicksian and technological complementarities".[3] Bresnahan

[2] For example, artificial intelligence (AI) is used in advanced robotics, autonomous vehicles and big data. These applications often require supporting infrastructure such as communication networks (e.g. 5G networks), data processors and data centers.

[3] Hicksian complementarities refer to a change in the price of an input or changes in the production of an input leads to changes in the demand for other inputs. Technological complementarities refer to a technological change in one item of capital leading to changes in other capital items that are interdependent. For further explanation, see Lipsey et al (1998).

(2005, p.764) provides a more basic definition of GPTs: "a GPT is widely used, is capable of ongoing technical improvement and enables innovation in application sectors". An important feature of GPTs is the innovation complementarities or interactions between technological innovation in GPTs and innovation in application sectors which leads to sustained economic growth.

Table 1: Digital Ecosystem

Type	Examples
Technology	• Artificial Intelligence (AI) • Blockchain • Internet of Things • Quantum Computing • Global Positioning System • Nanotechnology • Biotechnology • Gene editing
Infrastructure (Hardware and Software)	• 5G networks • Data processing equipment • Data storage
Applications / Services / Data	• Cloud computing • 3D Printing • Advanced robotics • Autonomous vehicles • Digital platforms • Big data

Source: Compiled by author

To what extent is digital input a GPT? To answer this question, it is perhaps useful to unpack digital input. The current understanding of digital input has three key dimensions, namely: **information**, **computation** and **communication** – all of which are carried out in **digital format/medium**. These features of digital inputs are not new. A brief historical detour might be useful to make better sense of the nature of digital inputs.

The earliest implementation of **mechanical digital computation** can be traced back to the 17th century through the works of Blaise Pascal, Gottfried Wilhelm Leibniz and Charles Babbage.[4] **Electronic digital computers** emerged in the late 1930s to mid-1940s – first using electric relays (switching devices), then vacuum tubes. The technology for modern electronic digital computers – the semiconductor device transistor – was invented in 1949 but only supplanted

[4] See https://www.britannica.com/technology/digital-computer, accessed 10/12/21.

the vacuum tube in the late 1950s. The subsequent diffusion of electronic digital computers evolved with technological progress in the design and manufacturing of hardware (circuits, memory etc) resulting in widespread use in the 1980s and 1990s.

The early technologies for **digital communication** involving the transmission of digital messages across networks were invented in the late 1960s. A slew of inventions such as network routers and file transmission and internet protocols (FTP, TCP/IP) expanded digital communications and networks in the 1970s and 1980s. The advent of personal computers in the mid-1980s, combined with the invention of the World Wide Web (in 1990), the graphical browser (1993), search engines (1990s) and broadband infrastructure (ISDN / ADSL / fibre optic) have brought about the internet as we know it today.

Digital inputs are clearly a form of GPT. Previous works, including Harris (1998) and Jovanovic and Rousseau (2005), have classified various forms of digital inputs such as computers and the internet as GPTs. The terms "information technology" (IT) and "information and communication technology" (ICT) have also been used to describe digital inputs.[5] The above narratives suggest that the various types of digital inputs have evolved over time and the shifting combinations of different types of digital inputs have also brought about new applications. This has significant implications for policies aimed at developing the digital economy. Strategic policies to develop the digital economy may target some digital economy activities that are underpin by specific sets of digital technologies. The mapping of digital inputs (technology and infrastructure) to applications and services may help identify key areas that require policy attention and support.

2.3 Strategic Policies for Digital Economic Transformation as Industrial Policies

Strategic policies for digital economic transformation are fairly new phenomena. The framework provided by studies on industrial policy could provide some useful insights on how to analyse the set of policies aimed at digital economic transformation. The following provides a description of industrial policy and how policies for digital economic transformation might share elements of industrial policy but also how they might differ from it.

[5] Information and Communication Technologies (ICTs) refers to all communication technologies, including the internet, wireless networks, cell phones, computers, software, middleware, video-conferencing, social networking, and other media applications and services enabling users to access, retrieve, store, transmit, and manipulate information in a digital form. (FAO definition at http://aims.fao.org/information-and-communication-technologies-ict

Industrial policy can be characterised as "government efforts to alter industrial structure to promote productivity-based growth" (Pangestu, 2002). In more recent works on industrial policy, the goal of industrial policy has been expanded to include both structural transformation as well as catch-up. For example, Oqubay et al (2020, p.19) defines **industrial policy** as "a strategy that includes a range of implicit or explicit policy actions and instruments selectively focused on specific industrial sectors and new activities for the purpose of shaping structural change and promoting catch-up in line with a broader national vision and development strategy."

Pangestu (2002, p.150) classified the instruments of industrial policies in three categories, namely:

- **External market interventions** – that affect trade e.g . import tariffs, quotas, licensing, export subsidies, export promotion zones, and subsidised credit.
- **Product market interventions -** that affect competition in domestic markets.
- **Factor market interventions** – that affect cross-border flows of factor inputs (e.g. FDI and foreign labour) and domestic factor markets (capital market, financial sector and labour market).

This classification of policy interventions is relevant to the digital economy. External market interventions may include policies to attract FDI into the digital sector. Competition policy and market access regulations can be applied to new markets, e.g. ride-hailing. The government can also undertake factor market intervention in the form of policies to develop human capital for the digital economy.

An important aspect of industrial policy is the manner in which policies can affect the economy. For the digital economy, the applications of digital technologies can promote economic growth and development through the lowering of transaction costs, promotion of innovation and boosting of efficiency (World Bank, 2016). These could be the channels by which industrial policies achieve the goals of structural transformation and catch-up. These elements provide a framework for examining the strategic policies for digital economic transformation in Malaysia.

3. Strategic Policies for Digital Economic Transformation in Malaysia

Malaysia has experienced two major phases in the implementation of strategic policies for digital economic transformation. The two phases are:

- Phase 1: IT Development and Multimedia Super Corridor (1996 - 2010)
- Phase 2: Industry 4.0 and Digital Economy (2016-2021)

Broadband infrastructure is another area that supports the policies under Phase 1 and Phase 2.

3.1 Phase 1: IT Development and Multimedia Super Corridor (1996 -2010)

Malaysia began focusing on digital economic transformation in the country's five-year plan for the period 1996-2000, namely the Seventh Malaysia Plan (7MP). In the Plan (Chapter 14), information technology (IT) was identified as an important driver of economic growth that can also improve the well-being of population. It is worth noting that the term "IT" during this period referred to communication networks (telephony and internet), personal computers, computer software and electronic databases. The 7MP gave emphasis on both manufacturing and services. For manufacturing, IT was important for two reasons – IT to enhance manufacturing competitiveness and IT hardware as an important product to produce and export. The 7MP called for greater use of IT applications in the services sector to enhance the sector's productivity and competitiveness. Massive investments were also made during the 7MP period to develop the internet backbone. In addition, programmes to increase the use of computers and the internet were also implemented.

A key goal for the IT sector in the 7MP is the establishment of Malaysia as an IT and multimedia hub. A key initiative is the creation of the **Multimedia Super Corridor (MSC)** which was launched in 1996. The MSC is a 15 by 40 km area that covers three key economic clusters – Kuala Lumpur city, Kuala Lumpur International Airport (KLIA), and Putrajaya (the new administrative capital). Subsequently, "cyber cities" were established within MSC including Cyberjaya (the country's new silicon valley). **Figure 1** depicts the geographical coverage of the MSC. Significant investments were also made to enhance the communications networks at MSC.

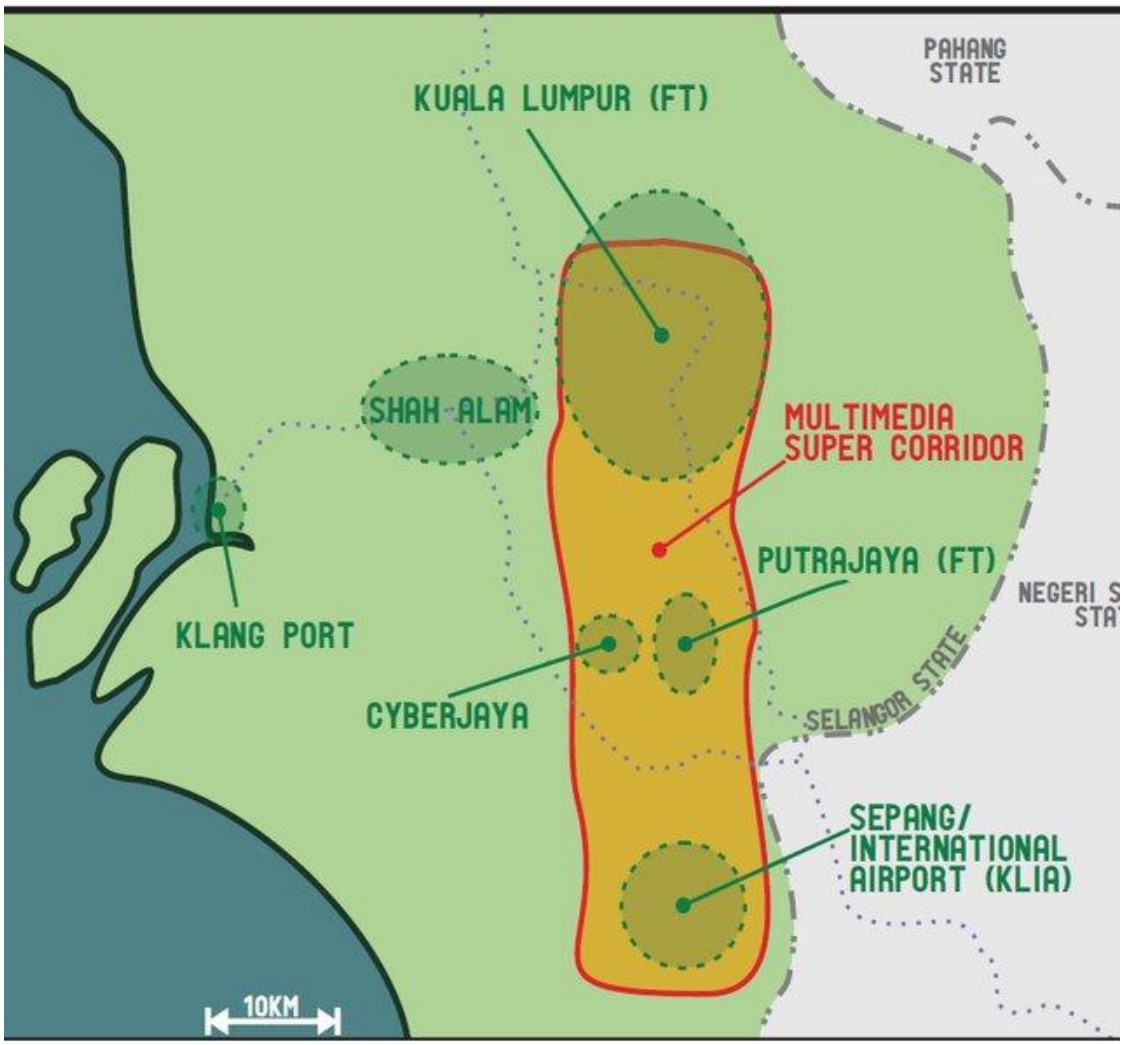
The government's policies and incentives to develop MSC included the following provided under MSC- status:

- Bill of Guarantees - which included the freedom of ownership, unrestricted employment of foreign, knowledge workers, and freedom of sourcing capital globally

- Financial incentives such as income tax exemption for up to 10 years or a 100 per cent investment tax allowance for five years.
- Eligibility to tender for key MSC infrastructure contracts.
- Establishment of the Multimedia University (MMU) to provide skilled IT graduates for the industry.

By 2000, more than 480 firms from a diverse range of businesses were given MSC-status (**Figure 2**). The Multimedia Development Corporation (MDEC) was established in 1995 to implement the MSC. It was later renamed Malaysia Digital Economy Corporation in 2015.

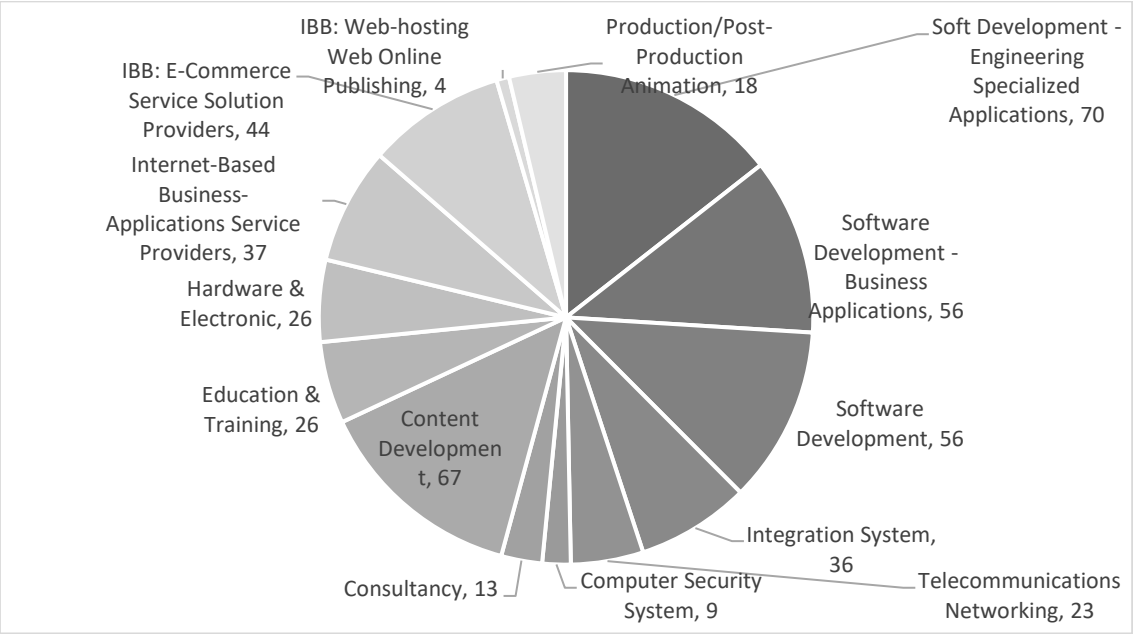
Figure 1: Multimedia Super Corridor



Source: Bowman et al (2008)

Figure 2: Approved MSC-Status Companies by Sector

(as of 31 December 2000)



Source: 8MP, p.371

A decade after its launch, there were indicators that MSC did not fully meet some of its original goals:

> "While the MSC exceeded its first phase target of 500 MSC-status companies, for the period 1996-2003, however with regard to content development and the extent of cutting edge products and services, these have yet to reach expected levels. Notwithstanding this, with the rising demand for offshore shared services and outsourcing (SSO) activities worldwide, increased marketing and promotional efforts were undertaken to enhance the competitiveness of the MSC as a global SSO destination. By the end of 2005, more than 50 SSO companies were established, providing 12,000 high-skill jobs." (9MP, p.136)

The above statement also suggested that by the mid-2000s, the MSC – Cyberjaya, in particular – had evolved in a different direction in terms of attracting more SSO activities. After the 8th Malaysia Plan (2001-2005) and 9th Malaysia Plan (2006-2010), the MSC was no longer a significant emphasis in subsequent five-year plans. In the 10th Malaysia Plan 2011-2015 (10MP), only a brief paragraph mentioned the MSC:

> "MSC Malaysia will identify and support the development of niche areas in software and e-solutions, creative multimedia, shared services and outsourcing as well as e-business. FDI strategy will be to attract MNCs to anchor these selected focus areas, with clusters of knowledge-based SMEs around the MNCs. A tiered benefits scheme will be established whereby financial and non-financial benefits will be provided based on the company's needs, size, stage of maturity and criteria such as the ability to catalyse the development of SMEs in priority sectors and induce high spillover effects."

In the period from 2011 to 2015, there was a minimal emphasis on MSC. This period was covered by the 10th Malaysia Plan 2011-2015 (10MP). Neither ICT nor the digital economy in a holistic sense received much emphasis in the 10MP and 11MP. Some continuing efforts were made during these periods to improve broadband infrastructure. It is also important to note that the issue of inequality emerged as an important issue in both plans. This concern would also spill over to the impact of digital transformation on inequality.

Even though MSC has not received much policy emphasis, it is a vibrant business community today especially for global business services (GBS). It has been reported that there are 579 GBS companies within MSC Malaysia of which 57 percent are foreign direct investments (FDIs).[6] Their contributions to MSC Malaysia are substantial in terms of investments (50 percent), exports (66 percent) and employment (61 percent).[7]

3.2 Phase 2: Industry 4.0 and Digital Economy (2015-2021)

After a period of relative neglect during the 2011-2015 period, policy interest in the digital economy began to re-emerge beginning in 2015. From this year onwards, a number of policies and plans were announced that emphasised the development of the digital economy. These include: (i) National Internet of Things Strategic Roadmap (2015); (ii) National eCommerce Strategic Roadmap (2016); (iii) National Policy on Industry 4.0 (2018); (iv) National Fourth Industrial Revolution Policy (2021), (v) Malaysia Digital Economy Blueprint (2021). Each of these policies and plans is discussed next.

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[6] Source: https://www.malaymail.com/news/money/2021/09/06/mdec-major-global-tech-firms-say-malaysia-remains-an-attractive-digital-inv/2003365, Accessed 23/3/2022.

[7] Source: https://www.malaymail.com/news/money/2021/09/06/mdec-major-global-tech-firms-say-malaysia-remains-an-attractive-digital-inv/2003365, Accessed 23/3/2022.

i. National Internet of Things Strategic Roadmap (2015)

An early strategy that relates to the IR4 and digital economy is the National Internet of Things (IoT) Strategic Roadmap (NIoTSR). It was launched in 2015 by the Ministry of Science, Technology and Innovation (MOSTI). The designated implementation secretariat is Mimos Bhd, the national R&D research centre. The vision of the Roadmap is to make Malaysia the premier regional IoT development hub. Its goals include: (i) the creation of a conducive IoT industry ecosystem, (ii) strengthening technopreneur capabilities in the applications and services layer, (iii) making Malaysia the regional development hub for IoT. Several pilot projects were used to kick-start its implementation. They include projects in agriculture and aquaculture, healthcare and waste management.

ii. National eCommerce Strategic Roadmap (2016)

The National eCommerce Strategic Roadmap (NeSR) was launched in 2016. The goal of the NeSR is to provide guidance to various ministries, department and agencies on specific priorities and actions to be taken to promote the growth of e-commerce. The program areas are summarised in **Table 2**. Each program area is assigned an implementing agency. Specific targets are assigned for each program area.

iii. National Policy on Industry 4.0 (2018)

The National Policy on Industry 4.0 (Industry4WRD) was launched in 2018 with the goal of harnessing the technologies associated with the fourth industrial revolution (4IR) to enhance the competitiveness of the manufacturing sector. The framework for Industry4WRD is depicted in **Figure 3**. These technologies include: AI, big data analytics, augmented reality, additive manufacturing, cybersecurity, simulation, system integration, IoT, advanced materials, autonomous robots and cloud computing. A significant proportion of these technologies are digital inputs. The specific action/program areas are grouped into five areas, namely: funding, infrastructure, regulations, skills & talent and technology – each of these is anchored with one ministry.

Table 2: National eCommerce Strategic Roadmap (2016)

Goals	
1. **To future-proof existing businesses**. Bring the roughly 80 percent of small- and medium size enterprises (SMEs) into the world of eCommerce and make sure they have the capabilities to keep pace with an online market poised to grow much faster than offline sales.	2. **To expand market access**. Expand beyond its own 16 million digital customers to compete for the more than 87 million digital customers in the ASEAN region and ultimately the 1 billion digital customers worldwide.
Thrust Areas	
• Accelerate seller adoption of eCommerce • Increase adoption of eProcurement by businesses • Lift non-tariff barriers (e-Fulfillment, cross-border, e-Payment, consumer protection) • Realign existing economic incentives • Make strategic investments in select eCommerce player(s) • Promote national brand to boost cross-border eCommerce	
Program Areas	
• **Promote and market eCommerce to SMEs** to ensure that businesses are aware of the benefits of eCommerce. (Program Lead: SME Corporation Malaysia) • **Improve SME eCommerce training and talent development** by establishing multi-platform, multi-tool training opportunities to cover the life cycles of SMEs, from entry to maturity (Program Lead: SME Corporation Malaysia) • **Create a one-stop eBusiness portal for SMEs to obtain information about eCommerce**, such as eCommerce readiness surveys, e-business apps, training opportunities, community FAQs, and financial incentives, among others. (Program Lead: SME Corporation Malaysia) • **Require government agencies to use eProcurement to buy goods and services** as a way to clarify applicability of eCommerce to statutory bodies, Ministry of Finance companies and JKR. (Program Lead: Ministry of Finance) • **Encourage government-linked companies' use of eProcurement** by, for example, defining threshold spending through e-procurement and using self-assessments to accelerate adoption. (Program Lead: Ministry of Finance) • **Transform Malaysia's last-mile delivery network with best-in-class capabilities**, including information transparency, updated standards that include eCommerce, realigned courier policies, and relevant service-level agreements. (Program Lead: Malaysian Communications and Multimedia Commission) • **Protect consumers' rights with advocacy programs**, making sure that all consumers are aware of their rights and redress channels. (Program Lead: Ministry of Domestic Trade, Co-operatives and Consumerism) • **Turn Malaysia into a regional e-Fulfillment hub** by providing resources such as special Commerce zones, bonded warehouses, and special provisions on trans-shipment tax policies to name a few. (Program Lead: Malaysian Investment Development Authority) • **Reduce border clearance lead time for inbound and outbound parcels**, beginning with the timely rollout of uCustoms, our Malaysia's National Single Window. (Program Lead: Ministry of International Trade and Industry) • **Increase awareness of e-Payment innovations, benefits, and security** to include nationwide consistent messaging to raise awareness of the benefits and security of e-Payments. (Program Lead: Bank Negara Malaysia) • **Promote Malaysian brands in international marketplaces** by developing go-to-market strategies for various countries, platforms, and products to boost exports. (Program Lead: Malaysia External Trade Development Corporation)	

Source: National eCommerce Strategic Roadmap

Figure 3: Framework for the National Policy on Industry 4.0

Vision: Malaysia's vision for the manufacturing sector in the next 10 years	• Strategic partner for smart manufacturing & related services in Asia Pacific • Primary destination for high-tech industry • Total solutions provider for advanced technology
National Goals: Specific goals to guide and measure the progress of transformation	• Labour Productivity Growth • Manufacturing Contribution to Economy • Innovation Capacity • High-skilled Jobs
Shift Factors: A set of shift factors that need to be optimised in a balanced manner	• People • Process • Technology
Enablers: Specific enablers that determine the strategies, policies and action plans	• Funding – Funding & Outcome based Incentives • Infrastructure – Enabling Ecosystem & Efficient Digital Infrastructure • Regulations – Regulatory Framework & Industry Adoption • Skills & Talent – Upskilling Existing & Producing Future Talents • Technology - Access to Smart Technologies

Source: National Policy on Industry 4.0

iv. National Fourth Industrial Revolution Policy (2021)

The National Fourth Industrial Revolution Policy (4IRP) provide a broad framework for the various policies that support the fourth industrial revolution. It expands the policy framework by going beyond the manufacturing focus covered by the Industry4WRD by including additional social considerations. This can be seen from the framework for 4IRP (**Figure 4**). Although ministries are appointed as secretariats, no specific targets are stated.

Figure 4: Framework for the National Fourth Industrial Revolution Policy (2021)

<table>
<tr><td colspan="3">VISION:
BALANCED, RESPONSIBLE AND SUSTAINABLE GROWTH</td></tr>
<tr><td colspan="3">MISSIONS</td></tr>
<tr><td>Improve quality of life by leveraging technological advancement</td><td>Enhance local capabilities to embrace 4IR across sectors</td><td>Harness technologies to enhance the preservation of ecological integrity</td></tr>
<tr><td colspan="3">OBJECTIVES
• Seize growth opportunities arising from the 4IR
• Create a conducive ecosystem to cope with the 4IR
• Build trust in an inclusive digital society</td></tr>
<tr><td colspan="3">POLICY THRUSTS
• Equip the rakyat with 4 IR Knowledge and skill sets
• Forge a connected nation through digital infrastructure development
• Future-proof regulations to be agile with technological changes
• Accelerate 4IR technology innovation and adoption</td></tr>
<tr><td colspan="3">BUSINESS</td></tr>
<tr><td colspan="3">SOCIETY</td></tr>
<tr><td colspan="3">GOVERNMENT</td></tr>
<tr><td colspan="3">KEY SECTORS
• Wholesale and retail trade
• Transportation and logistics
• Utilities
• Professional, scientific and technical services
• Tourism
• Education
• Agriculture
• Healthcare
• Manufacturing
• Finance and Insurance</td></tr>
<tr><td colspan="3">FOUNDATIONAL TECHNOLOGIES
• Artificial intelligence
• Internet of things Blockchain
• Advanced materials and technologies
• Cloud computing and big data analytics</td></tr>
</table>

Source: National Fourth Industrial Revolution Policy

v. Malaysia Digital Economy Blueprint (2021)

The Malaysia Digital Economy Blueprint (MyDIGITAL) was launched in 2021 to provide more comprehensive and detailed guidelines and targets for the development of the digital economy (**Figure 5**). The policy objectives of the Blueprint are:

- Encourage industry players to become creators, users and adopters of innovative business models under the digital economy.
- Harness human capital that can thrive in the digital economy.

- Nurture an integrated ecosystem that allows society to adopt the digital economy

The six thrusts of the Blueprint are:

- Drive digital transformation in the public sector.
- Boost economic competitiveness through digitalisation.
- Build enabling digital infrastructure.
- Build agile and competent digital talent.
- Create an inclusive digital society.
- Build a trusted, secure and ethical digital environment.

It is more comprehensive in the sense that it covers both the public and private sectors. There are specific targets in MyDIGITAL. The implementation of the MyDIGITAL is organised in three phases over a period of 10 years, namely:

- Phase 1: 2021-2022
- Phase 2: 2023-2025
- Phase 3: 2026-2030

The Blueprint represents the most detailed plan thus far for the digital economy. It remains to be seen how many targets will be met at the end of each phase. The main challenge will be the targets set for the private sector.

How is 4IRP linked to MyDIGITAL? MyDIGITAL focuses on broad policies for the digital economy that, though not specific to any industry such as manufacturing, are important, nevertheless. These include issues related to digital skills, public service, regulations and infrastructure. Implementation of MyDIGITAL in some areas is linked directly to 4IRP. One example is the development of digital industry clusters (Strategy 4 3 under Thrust 2) which requires mapping of such clusters to sectors (including manufacturing) identified in the 4IRP.

It is also worth noting that the MyDIGITAL framework includes some emphasis on the digital divide i.e. Thrust 5 on creating an inclusive digital society. The digital divide identified in the MyDIGITAL relates to income and age groups, and gender. The policies in these areas include improvements in digital literacy in rural areas, the creation of a database on the digital divide and the promotion of electronic payment systems.

Figure 5: Framework of Digital Economy Blueprint (2021)

VISION					
To be a regional leader in the digital economy and achieve inclusive, responsible and sustainable socioeconomic development					
OBJECTIVES					
Encourage industry players to become creators, users and adopters of innovative business models under the digital economy		Harness human capital that is able to thrive in the digital economy		Nurture an integrated ecosystem that allows society to adopt digital economy	
6 THRUSTS					
1	2	3	4	5	6
Drive digital transformation in the public sector	Boost economic competitiveness through digitalisation	Build enabling digital infrastructure	Build agile and competent digital talent	Create an inclusive digital society	Build trusted, secure and ethical digital environment
22 STRATEGIES					
S1: Managing change for effective digital transition	S1: Facilitating digital adoption, access and effective use of digital technology across all firm sizes & digital maturity level	S1: Utilising regulatory measures to expand infrastructure coverage	S1: Integrating digital skills into education at primary and secondary level	S1: Increasing inclusivity of all Malaysians in digital activities	S1: Strengthening safety and ethics in digital activities and transactions
S2: Leveraging digital technology to improve workflow efficiency and productivity	S2: Accelerating industry development by enhancing local participation	S2: Leveraging digitalisation to address legacy challenges	S2: Shifting focus of vocational and tertiary education from job-specific skills to competencies and adaptability	S2: Empowering special target groups in the society to participate in the digital economy through entrepreneurship	S2: Enhancing institutions commitment to personal data protection and privacy
S3: Enhancing digital skill sets of civil servants	S3: Streamlining regulatory requirements to respond to digital economy and encourage innovative business models	S3: Enhancing digital technology infrastructure capabilities	S3: Reskilling current workforce with the digital skills needed to stay relevant		S3: Improving cross-border data transfer
S4: Utilising data to improve government services	S4: Developing digital industry cluster and driving entrepreneurial activity		S4: Ensuring that gig workers are protected and equipped with the right skills		S4: Increasing cyber security uptake among businesses
S5: Increasing scope and quality of online services for better user experience					
48 NATIONAL INITIATIVES					
28 SECTORAL INITIATIVES					

Source: Digital Economy Blueprint

3.3 Implementation of Digital Economic Transformation: Recent Developments

The Malaysian government has formulated a number of strategies and plans for digital economic transformation. Implementation of these strategies is being coordinated by the National Council of Digital Economy and Fourth Industrial Revolution (MED4IR), a committee chaired by the Prime Minister. The Council is supported by six clusters, namely: (i) economy (ii) digital and data infrastructure (iii) talent pool (iv) delivery service of the public sector (v) inclusive digital society; and (vi) digital environment. A number of government agencies are involved in supporting the implementation of the plans.

Digital Investment Office

The **Digital Investment Office (DIO)** was set up in April 2021 as a single-window platform to facilitate digital investments in Malaysia.[8] The platform is supported by two agencies:

- Malaysian Investment Development Authority (MIDA) – An agency under the Ministry of International Trade and Industry tasked with the job of overseeing and driving investments into the manufacturing and services sectors in Malaysia.
- Malaysia Digital Economy Corporation (MDEC) - An agency under the Ministry of Communications and Multimedia Malaysia with the responsibility of accelerating digital transformation to coordinate and facilitate digital investments (foreign and local).

In terms of implementation, the DIO's target is to attract digital investments of RM70 billion by 2025.[9] DIO is reported to have facilitated RM13.1 billion of digital investments (including data centre projects) in Malaysia between April 2021 and September 2021.[10]

Digital Investments Future5 (DIF5) Strategy

In line with MyDIGITAL, the MDEC launched a five-year plan called **Digital Investments Future5 (DIF5) Strategy** in July 2021 to attract investments and advance Malaysia's digital economy. The DIF5 strategy targets for 2025 are:

- RM50 billion investments in the digital economy

[8] These investments are also consistent with the targeted investments under the National Investment Aspiration (NIA) which was launched in April 2021.
[9] The incentives offered by DIO are available at: https://www.heartofdigitalasean.my/key-incentives
[10] Source: https://www.theedgemarkets.com/article/miti-digital-investment-office-initiative-facilitated-rm13b-investments-date, Accessed 23/3/2022.

- Focus on five key industry sectors, five focus technologies, five emerging technologies and digital global business services
- Attract 50 Fortune500 tech companies to land and expand in Malaysia
- Establishment of 5 Unicorns
- Creation of 50,000 high-value jobs in the MSC

The five industry sectors targeted include agriculture (AgTech), healthcare (HealthTech), Islamic finance (Islamic Digital Economy), finance (FinTech), environment (CleanTech) and education (EduTech).[11] The five focus technologies are cloud computing, data centre, artificial intelligence, cybersecurity and digital content tools. Another five emerging technologies have also been identified as drivers of key sectors. These are blockchain, drone technology, edge computing, extended reality and advanced robotics.

Malaysia Digital

Malaysia Digital is another agency involved in promoting digital economic transformation in Malaysia is Malaysia Digital. An agency under MIDA, Malaysia Digital is a successor to the MSC Malaysia. Unlike MSC Malaysia, which focuses on investments in Multimedia Super Corridor, Digital Malaysia will provide non-location based incentives to target investments in the digital economy. The projects that are currently being implemented include:

- DE Rantau programme – aimed at establishing the country as the preferred "Digital Nomad Hub". The programme will increase digital adoption and help promote digital professional mobility and tourism across the country.
- Malaysia Digital Trade programme - which aims to increase interoperability and bring about greater harmonisation of standards and regulatory approaches to facilitate digital trade within and across borders.

National Fiberisation and Connectivity Plan

An important initiative to improve the digital infrastructure in Malaysia is the National Fiberisation and Connectivity Plan (NFCP) 2019-2023. The NFCP is a successor to the National Broadband Initiative (NBI) which was implemented from 2010 until 2018. The NFCP aims to improve broadband access and quality in Malaysia. One target is the provision of an

[11] Source: https://opengovasia.com/mdec-announces-new-digital-strategy-for-malaysia/, Accessed 23/3/2022.

average speed of 30 Mbps in 98% of populated areas and gigabit availability in selected industrial areas by 2020 and all state capitals by 2023.[12] The project is estimated to cost RM21.6 billion and is implemented as a PPP project involving funding from Universal Service Provision and the private sector.

Regional Comprehensive Economic Partnership (RCEP)

Malaysia became the 12th signatory country to implement RCEP in March 2022. By doing so, it has signed on to a number of commitments that will support the digital economic transformation of the country. These include supporting the use of paperless trading to facilitate trade, strengthening online consumer protection and data protection, improving its regulatory framework for e-commerce, as well as strengthening its cyber security capabilities. Though many of these issues are already identified in the 4IRP and MyDIGITAL, their inclusion in RCEP will help accelerate their implementation and possible harmonisation with other countries.

4. Regulatory Regimes to Support Digital Economic Transformation

An important component of digital economic transformation is the regulatory regime for the digital economy. There is a plethora of regulations on the digital economy. These regulations have multiple goals. We review some of these key laws and regulations next.

(i) Communications and Multimedia (Sectoral Regulation)

Malaysia adopted a convergent model to regulate both the communications and multimedia industries (the latter includes the broadcasting industry). The Communications and Multimedia Act 1998 (CMA1998) provides the legal framework for regulating these industries. It covers both technical regulation and economic regulation. The latter includes the crucial task of spectrum allocations to service providers (e.g. 5G licenses) which determines the market structure and competition in the industry. Universal service provision (USP) is another key area of regulation.

(ii) Finance (Sectoral Regulation)

There are no specific laws on FinTech activities in Malaysia. Such activities are regulated by the central bank, Bank Negara Malaysia, under existing laws such as the

[12] Excerpted from: https://www.mcmc.gov.my/skmmgovmy/media/General/pdf/MEDIA-STATEMENT-ON-NFCP.pdf

Financial Services Act 2013, Islamic Financial Services Act 2013, and Money Services Business Act 2011. BNM introduced the Financial Technology Regulatory Sandbox in 2016 to allow a more flexible regulatory environment for the FinTech industry.[13] The licensing framework for digital banks was unveiled in 2020 with five licenses to be approved in 2022. The Securities Commission (SC) regulates the capital markets through the Capital Markets and Services Act 2009 (CMSA). The SC issued guidelines on digital assets (digital currencies and digital tokens) in 2020. This paved the way for the registration of "Recognized Market Operators" (RMOs) that are allowed to establish and operate digital asset exchanges in the country.[14]

(iii) Data Protection

The Personal Data Protection Act (PDPA) was enacted in 2010 and came into force on 15 November 2013. The goal of the Act is to protect the personal data of individuals with respect to commercial transactions. The Act provides guiding principles for the processing of personal data collected in commercial transactions. Subsequent regulations were also issued in 2015 pertaining to the standards to be used for security, retention and data integrity. The Act is enforced by the Department of Personal Data Protection (JPDP) which is an agency under the Ministry of Communications and Multimedia.

(iv) Competition

The Competition Act 2010 provide the regulatory framework for supporting market competition in Malaysia. The Act contains prohibitions against cartels, price fixing and abuse of dominance. The Act is enforced by Malaysia Competition Commission (MyCC). There are competition-related provisions in sectoral laws and regulations, notably in aviation, energy, petroleum and, communications and multimedia. Anti-competitive acts in the digital economy are covered in existing laws.

(v) Cyber Security

National cyber security issues in Malaysia are under the purview of CyberSecurity Malaysia (CSM). Established in 2005, it is an organisation established under the aegis of the Ministry of Communications and Multimedia. It is a successor to the National ICT Security and Emergency Response Centre (NISER) which was established in 2001

[13] For more details, see: https://www.bnm.gov.my/sandbox

[14] The list of operators are listed at: https://www.sc.com.my/regulation/guidelines/recognizedmarkets/list-of-registered-digital-asset-exchanges

as a Department in MIMOS Berhad. The goal of CSM is to reduce the vulnerability of digital systems in the country. CSM achieves this by providing cyber security services, capacity building and research.[15]

There is no official systematic assessment of the state of regulations for the digital economy. One related indicator is the ICT Regulatory Tracker compiled by the International Telecommunications Union (ITU). The ICT Regulatory Tracker is constructed using 50 indicators from four dimensions, namely: (i) regulatory authority (ii) regulatory mandates (iii) regulatory regime and (iv) competition framework.[16]

A comparison of the value of indices across these four dimensions suggests that the regulatory structure for the ICT sector in Malaysia has improved much in terms of the regulatory regime and to a lesser extent competition framework. It is however, still relatively weak in the areas of regulatory authority and regulatory mandate. This is because the regulatory agencies are not fully independent of the government (ministry) and some mandates are still issued by the government.

Figure 6: ICT Regulatory Tracker 2007-2020, Malaysia

Source: ITU

[15] For more details, see: https://www.cybersecurity.my/en/index.html
[16] For more details, see: https://app.gen5.digital/tracker/metrics

5. State of Digital Economic Transformation in Malaysia

Given that digital inputs are varied and complex, an assessment of the current state of Malaysia's digital economic transformation entails a multidimensional analysis. This section examines some indicators that provide a snapshot of the current state of digital economic transformation. A modified and extended version of the indicators used by the World Bank's (2018) Digital Adoption Index (DAI) can be used for his purpose. Following the DAI's approach, digital adoption is classified into three major categories: people, government and business (see **Table 3**).

Table 3: Measures of the State of the Digital Economy

Sub-Index	Purpose	Indicator
People	Measures the extent and quality of individuals' connection to the digital world	• Access to computer • Mobile-cellular subscriptions • Mobile broadband • Internet use • Fixed broadband • ICT Skills • Utilisation of internet
Business	Measures the quality of digital infrastructure needed for e-commerce and other business functions	• Internet bandwidth • Business websites • Secure servers
Government	Measures the adoption of core administrative systems to automate and streamline government activities and digital identification systems and online public services that allow the government to better serve the public	• Core administrative systems • Digital identification • Online public services

Source: Adapted from World Bank's Digital Adoption Index

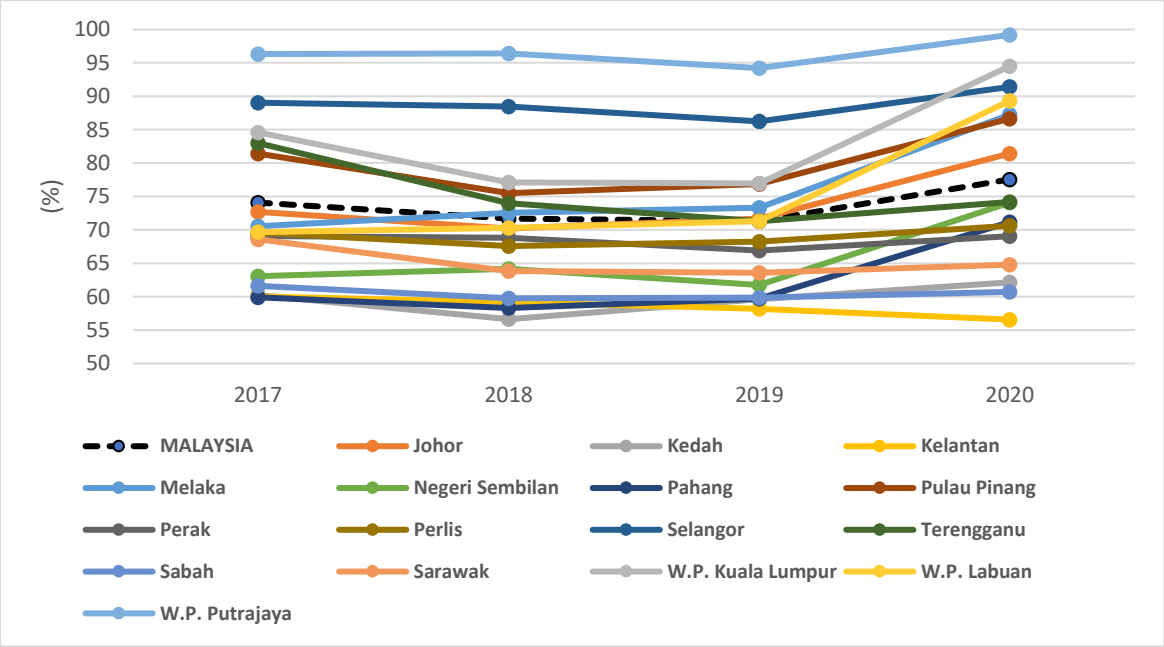
5.1 People

(a) Access to Computers

On average, close to 78% of households in Malaysia have access to computers (**Figure 7**). This appears to be a fairly impressive figure. However, there are significant variations across states and between rural and urban areas within each state (**Table 4**). Computer penetration is relatively low in less developed states such as Sarawak (65%), Kedah (62%), Sabah (61%) and Kelantan (57%). This is low compared to the more developed states such as Kuala Lumpur

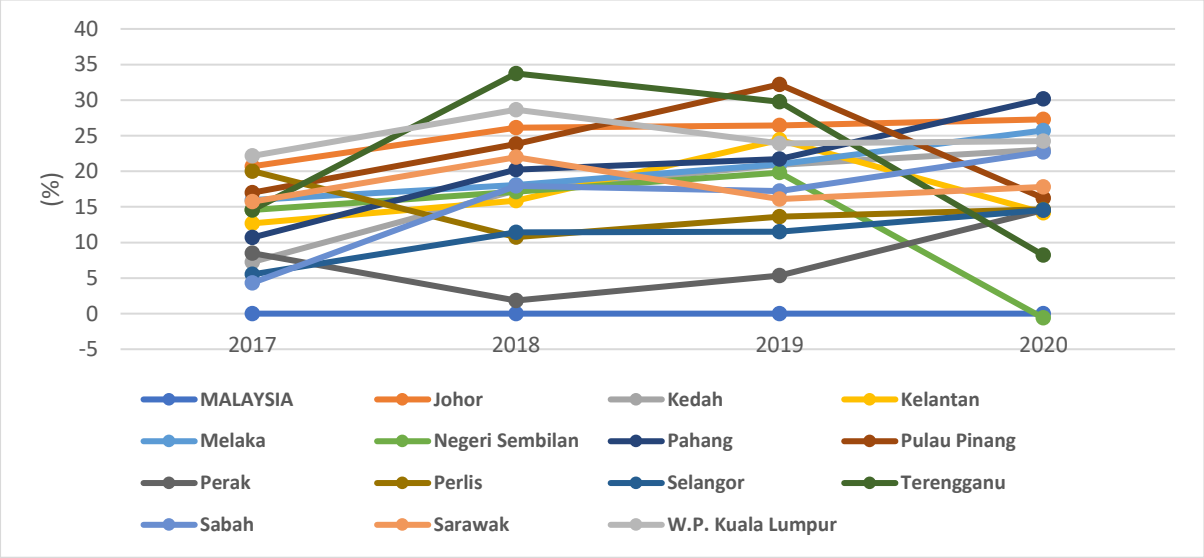
(94%) and Selangor (91%). Within each state, the urban-rural gap in access to computers has increased in nine out of thirteen states (**Figure 8**). This indicates that the digital divide between urban and rural areas has widened in recent years.

Figure 7: Percentage of Households with Access to Computer by State, 2017 - 2020



Source: Department of Statistics

Figure 8: Urban-Rural Gap in Percentage of Households with Access to Computer by State, 2017 - 2020



Source: Department of Statistics

Table 4: Percentage of Households with Access to Computer by State and Rural-Urban Strata, 2017 – 2020

	2017	2018	2019	2020	2017	2018	2019	2020
	Urban	Urban	Urban	Urban	Rural	Rural	Rural	Rural
MALAYSIA	78.4	77.0	76.6	82.8	57.7	50.9	50.1	55.5
Johor	74.2	73.8	75.9	85.9	67.0	56.5	55.0	62.9
Kedah	63.8	60.9	66.1	65.8	51.1	45.1	41.7	51.6
Kelantan	67.9	67.9	68.1	68.5	52.0	49.9	47.1	42.7
Melaka	71.4	73.5	74.2	87.2	56.9	56.3	54.4	87.8
Negeri Sembilan	65.8	69.2	66.9	80.9	55.1	48.9	45.2	50.7
Pahang	66.7	67.5	71.9	77.1	49.7	43.7	39.7	60.9
Pulau Pinang	81.8	75.6	77.1	87.2	73.3	73.7	71.7	72.6
Perak	73.3	71.0	69.5	71.7	53.2	60.2	55.9	57.1
Perlis	71.5	71.4	71.9	75.0	66.0	60.0	60.4	60.5
Selangor	89.9	90.3	87.8	91.8	75.3	56.6	58.0	83.6
Terengganu	84.4	79.8	76.7	81.1	80.1	61.9	59.5	58.4
Sabah	67.7	68.1	65.8	67.2	52.0	46.1	49.7	49.4
Sarawak	77.6	75.2	72.9	74.0	55.4	46.5	48.9	49.7
W.P. Kuala Lumpur	84.6	77.1	77.0	94.5				
W.P. Labuan	70.4	70.5	71.7	90.0	63.5	68.8	68.4	84.0
W.P. Putrajaya	96.3	96.4	94.2	99.2				

Source: Department of Statistics

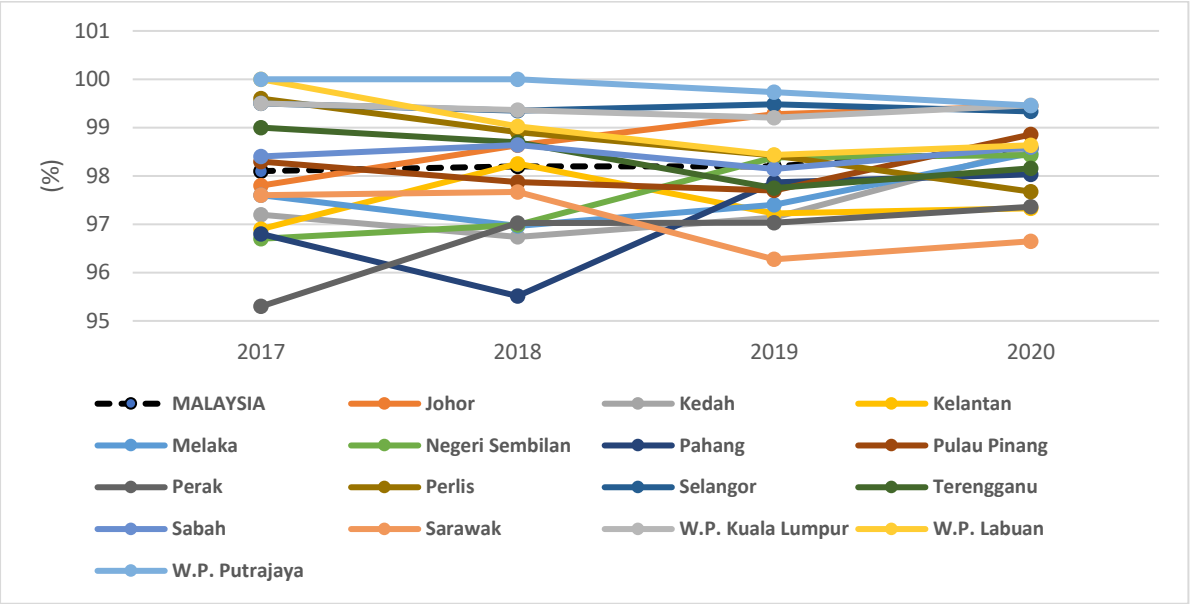
(b) Mobile Cellular Subscriptions

Households have very good access to mobile cellular services in Malaysia (**Figure 9**). On average, about 99% of households have access to mobile cellular services. The differences between states are also not very big.

(c) Access to the Internet

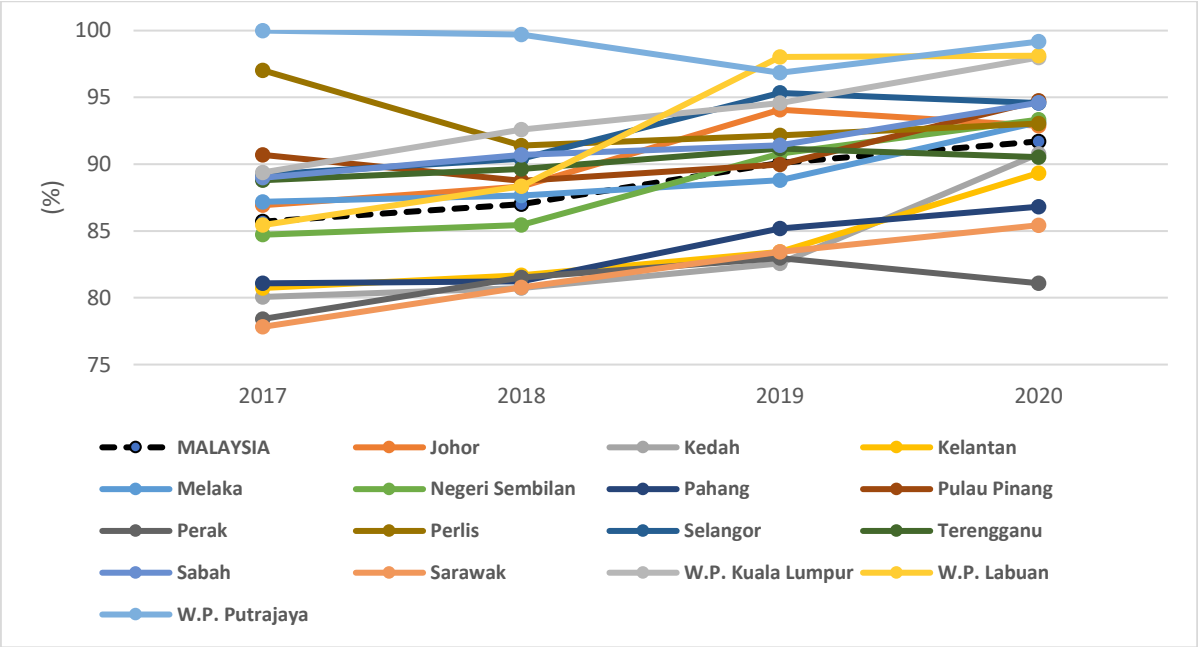
About 92% of households have access to the internet (**Figure 10**). There are some differences across states with the largest gap standing at around 18% between the most developed state (Putrajaya at 99%) and Perak (at 81%). The urban-rural gap across states is also not very large (**Table 5**). The high level of internet penetration is mostly due to the use of mobile phones to access the internet. On average, about 90% of households have access to mobile broadband (**Figure 11**). Households' access to fixed broadband is still very low – only 32% of households had access to fixed broadband in 2020 (**Figure 12**). The gap between states is very large as well.

Figure 9: Percentage of Households with Access to Mobile Phone by State, 2017 - 2020



Source: Department of Statistics

Figure 10: Percentage of Households with Internet Access by State, 2017 - 2020



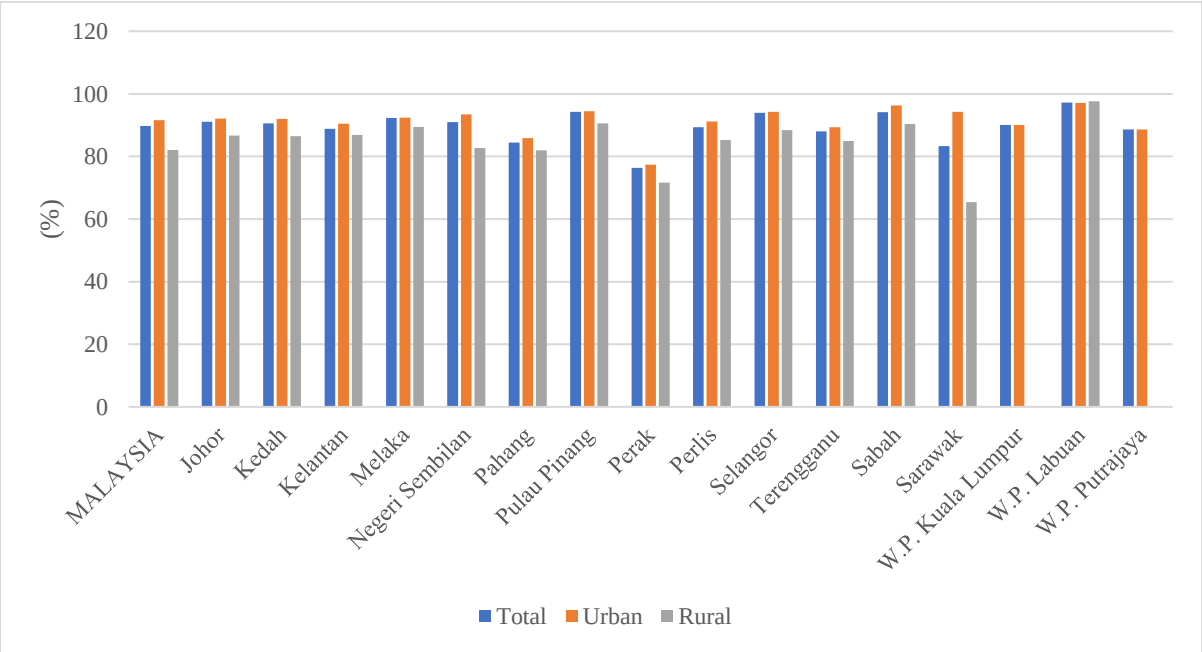
Source: Department of Statistics

Table 5: Malaysia - Percentage of Households with Access to Internet by State and Rural-Urban Strata, 2017 – 2020

	2017	2018	2019	2020	2017	2018	2019	2020
	Urban	Urban	Urban	Urban	Rural	Rural	Rural	Rural
MALAYSIA	88	89	92	94	78	79	81	84
Johor	88	90	95	94	84	83	90	89
Kedah	83	82	84	92	73	77	78	87
Kelantan	85	85	87	91	77	78	80	87
Melaka	88	88	89	93	76	80	83	92
Negeri Sembilan	87	87	93	96	78	80	85	85
Pahang	86	85	89	89	73	75	79	84
Pulau Pinang	91	89	90	95	88	88	88	92
Perak	80	82	84	83	71	79	79	74
Perlis	96	93	93	95	99	89	90	89
Selangor	89	91	96	95	86	84	88	89
Terengganu	90	92	93	91	86	85	87	89
Sabah	91	93	95	97	85	87	85	91
Sarawak	86	91	91	96	66	65	71	68
W.P. Kuala Lumpur	89	93	95	98				
W.P. Labuan	86	89	98	98	83	84	96	98
W.P. Putrajaya	100	100	97	99				

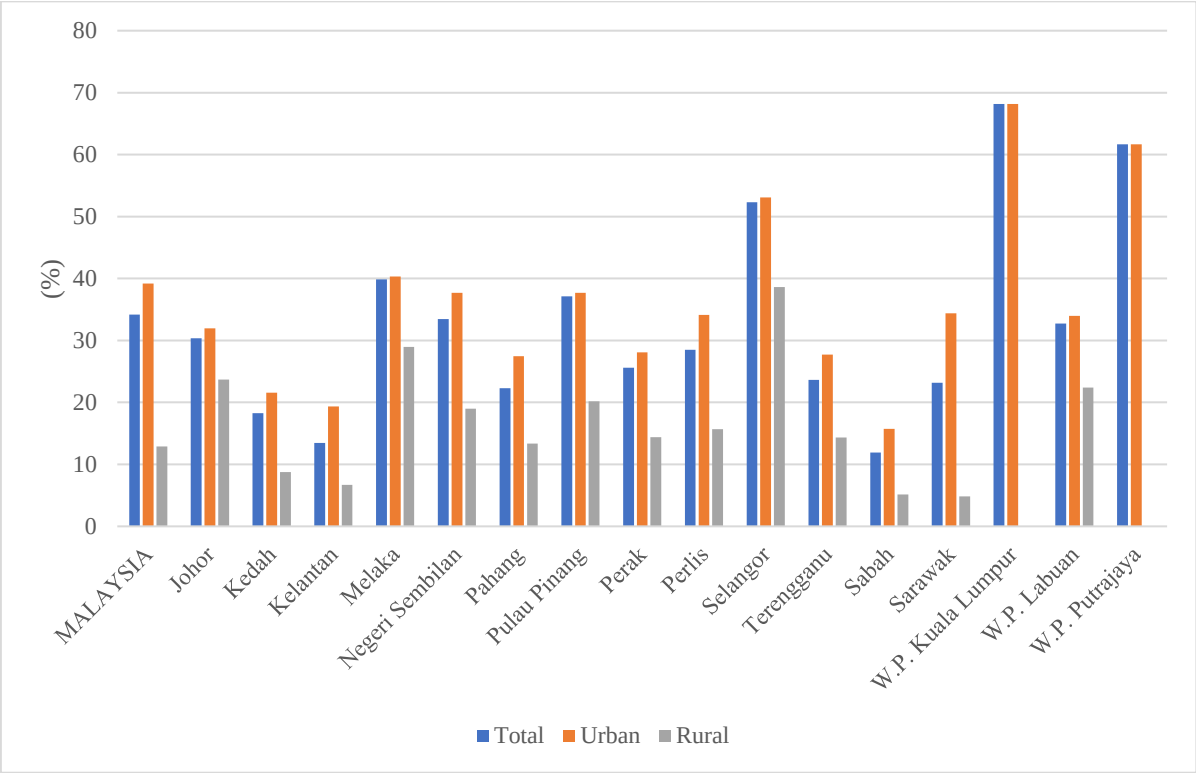
Source: Department of Statistics

Figure 11: Malaysia - Percentage of households with internet access by mobile broadband, 2020



Source: Department of Statistics

Figure 12: Malaysia - Percentage of households with internet access by fixed broadband, 2020



Source: Department of Statistics

(d) ICT Skills

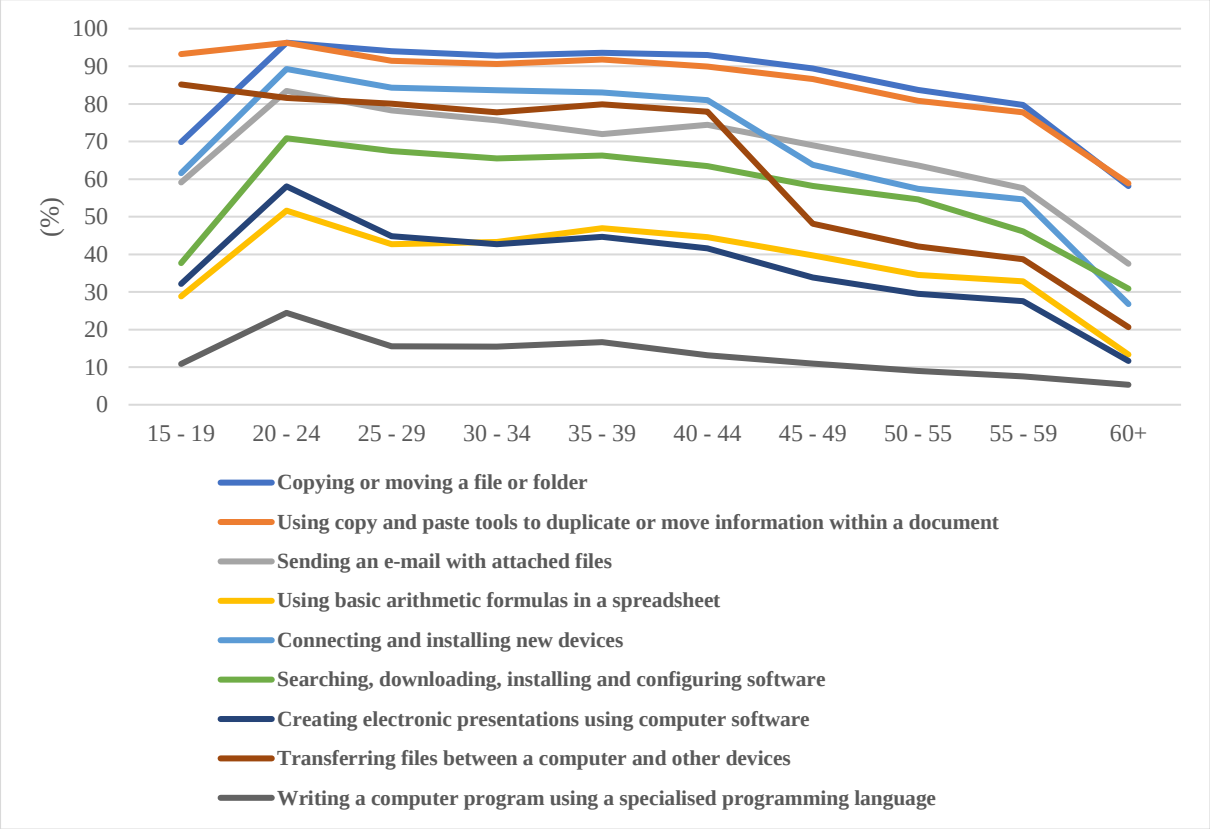
Access alone does not guarantee progress in the digital economy. ICT skills are important. The DOS collects some information on this in terms of specific types of ICT skills (**Figure 13**). A high proportion of the population (> 80%) are able to undertake basic functions such as transferring files, copying and pasting within documents, sending emails and connecting and installing new devices. However, the skills to undertake more technical functions are still relatively lacking e.g. using arithmetic formulas in spreadsheets, electronic presentations and computer programming.

(e) Utilization of Internet

The development of the digital economy also depends on how individuals use the internet. Recent data from the DOS suggests that Malaysians use the internet extensively for accessing media reports and for social communications (**Table 6**). Participation in e-commerce is in the range of 45%-55% is promising. The overall level in the use of internet banking at 62% shows

there is room for growth in this area. However, despite the extensive penetration of the internet, their use for professional purposes is still lacking as witnessed by the low percentage of usage for job applications (21%), participation in professional networks (11%) and work from home (16%). This could be related to the low penetration of fixed broadband in the country.

Figure 13: Percentage of Individuals with Specific ICT Skills by Age Group, 2020



Source: Department of Statistics

Table 6: Patterns of Internet Usage by Age group, 2020

	Total	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49	50 - 55	55 - 59	60+
Finding information about goods and services	85	81	89	89	88	89	87	88	84	83	72
Reading newspaper and magaznines	69	44	73	77	77	76	75	74	70	67	51
Applying for jobs	21	12	40	42	30	22	13	10	9	8	4
Participating in professional networks	11	3	10	14	14	15	14	11	10	9	3
Working from home	16	2	6	17	21	24	25	23	20	20	6
Participating in social networks	98	98	99	99	99	99	98	98	98	96	93
Sending email	76	69	90	86	83	83	80	76	70	64	43
Telephoning over internet	81	80	89	89	89	87	84	80	77	69	52
Upload content to internet	9	7	9	10	11	12	10	10	6	7	6
Managing personal homepage	5	4	4	6	7	8	6	7	4	5	3
Managing blog	4	2	4	5	5	6	5	4	2	4	2
Accessing online discussions	22	22	30	31	22	23	22	20	17	18	11
Performing tasks to generate income	8	5	8	12	13	13	12	5	3	3	2
Using services related to travel/accomodation	32	16	31	38	39	39	36	36	30	28	16
Selling goods/services	11	3	11	14	15	16	13	15	5	5	4
Using internet banking	62	28	68	75	73	74	70	67	60	56	38
Using software for editing text	26	14	40	32	33	33	31	29	22	8	4
Downloading software/applications	78	82	96	84	84	81	77	75	73	67	49
Ordering goods/services	54	37	64	67	66	64	58	54	46	43	26
Doing formal online course	18	33	30	17	15	18	16	15	11	10	4
Consulting websites for formal learning	40	89	57	30	31	32	33	32	32	29	28
Doing an informal online course	21	31	32	24	23	23	20	19	6	6	7
Listening to radio online	54	51	50	51	57	59	59	59	53	52	46
Watching tv online	55	58	66	66	63	54	54	51	45	44	38
Dowloading inages/movies/games	88	91	93	95	93	93	87	86	82	76	70
Using storage space on the internet	54	38	65	66	67	69	65	45	37	34	21
Seeking health information	62	43	60	66	67	68	69	68	64	62	53
Making a medical appointment	11	3	8	11	14	19	20	12	5	5	4
Getting information from government	53	19	54	60	61	63	64	61	57	52	36
Interacting with government	35	14	23	34	47	52	43	38	38	38	24
Posting opinions/voting	23	17	24	26	28	26	27	25	22	22	14
Purchasing goods/services via e-commerce	45	29	49	51	48	55	54	50	41	40	26
Selling goods/services via e-commerce	6	3	5	7	7	8	6	7	5	5	3
Owning online security tools	37	25	35	38	39	43	42	38	37	39	31

Source: Department of Statistics

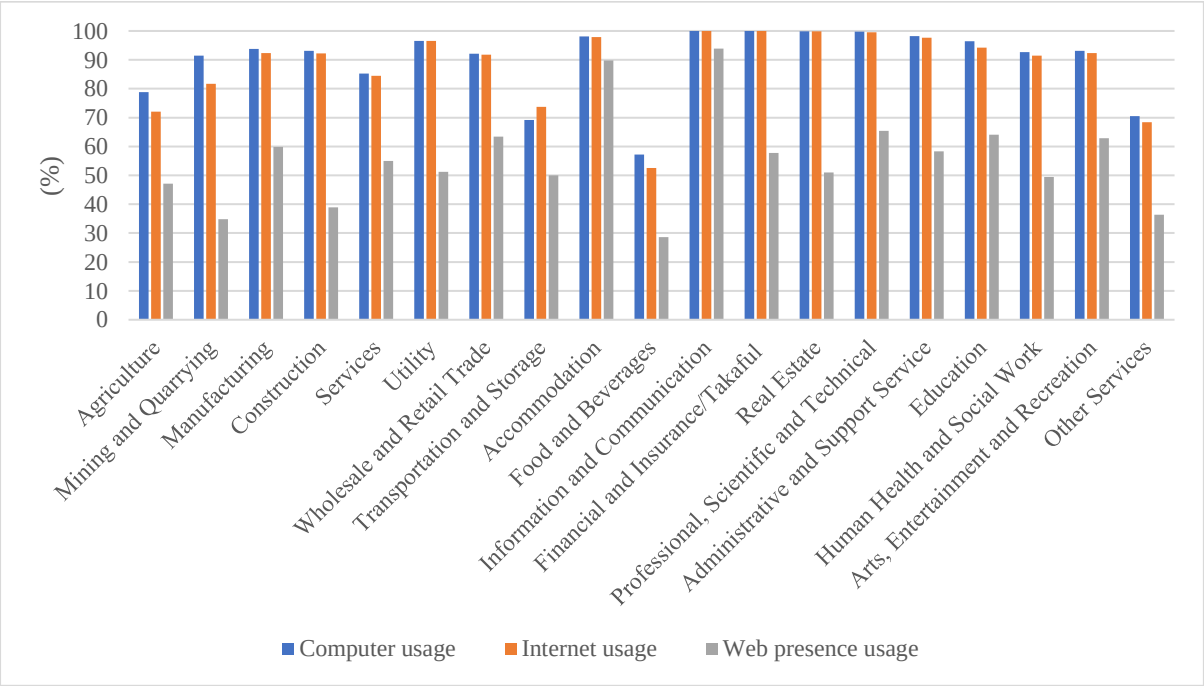
5.2 Business

(a) ICT Utilization

ICT usage varies by type and sector/industry (**Figure 14**). The percentage of firms using the computer (94%) and the internet (92%) is the highest in manufacturing. Some services industries have relatively very low usage of computers, for example, food and beverage (57%) and transportation and storage (69%). This suggests that ICT adoption is still lagging in these services industries.

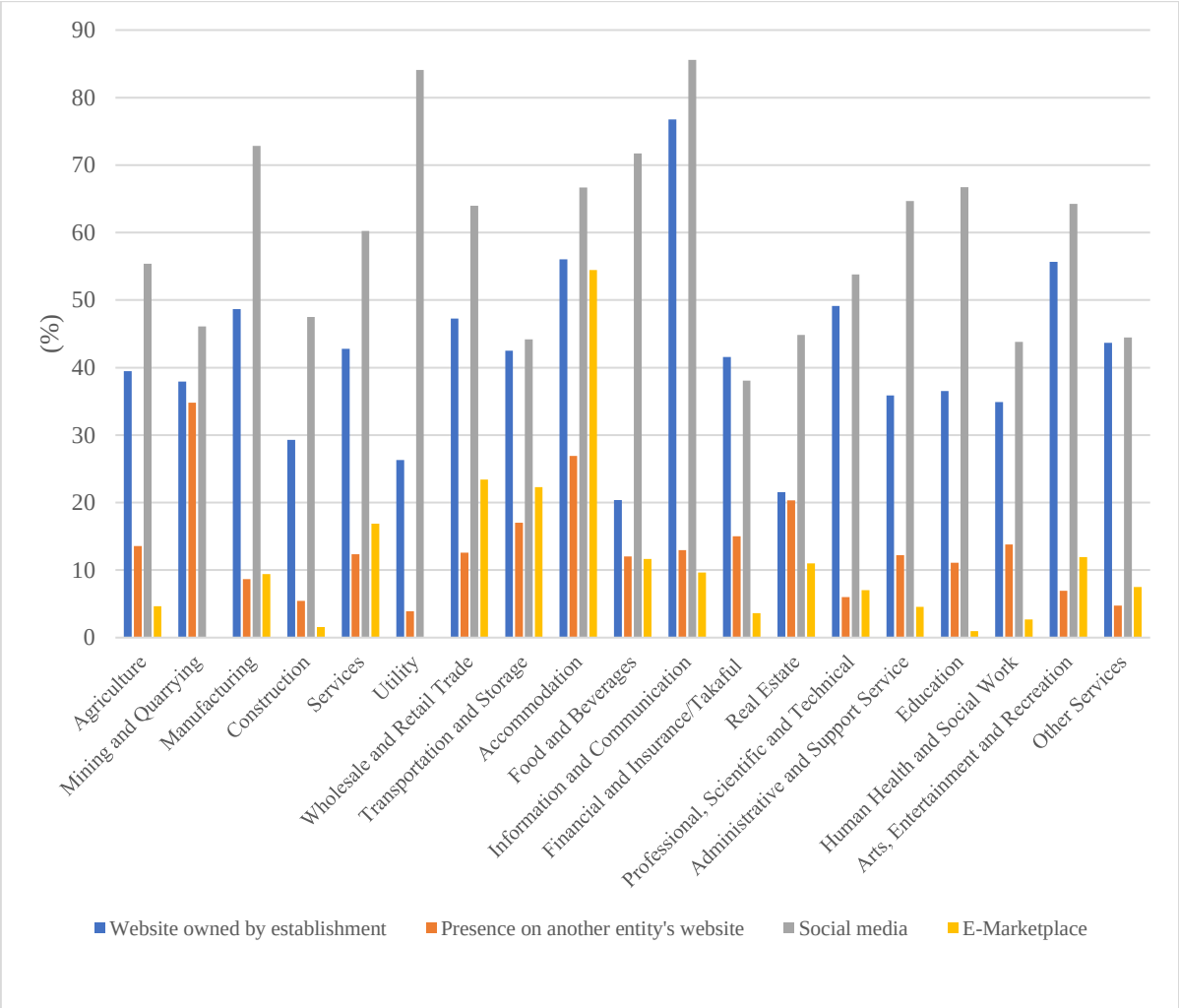
Web presence usage is relatively low in most sectors and industries with a few exceptions, notably accommodation (90%) and information and communication (94%). This suggests that e-commerce through the use of own websites is still under-developed in Malaysia. This is confirmed by a more detailed look at participation rate in the different types of web presence such as own website, others' websites, social media and e-marketplace (**Figure 15**). The most popular type of web presence amongst firms is social media. With the exception of accommodation, participation in e-marketplace is very low in almost all other sectors/industries.

Figure 14: ICT Usage by Sector/Industry, 2019



Source: Department of Statistics

Figure 15: Types of Web Presence by Sector/Industry, 2019



Source: Department of Statistics

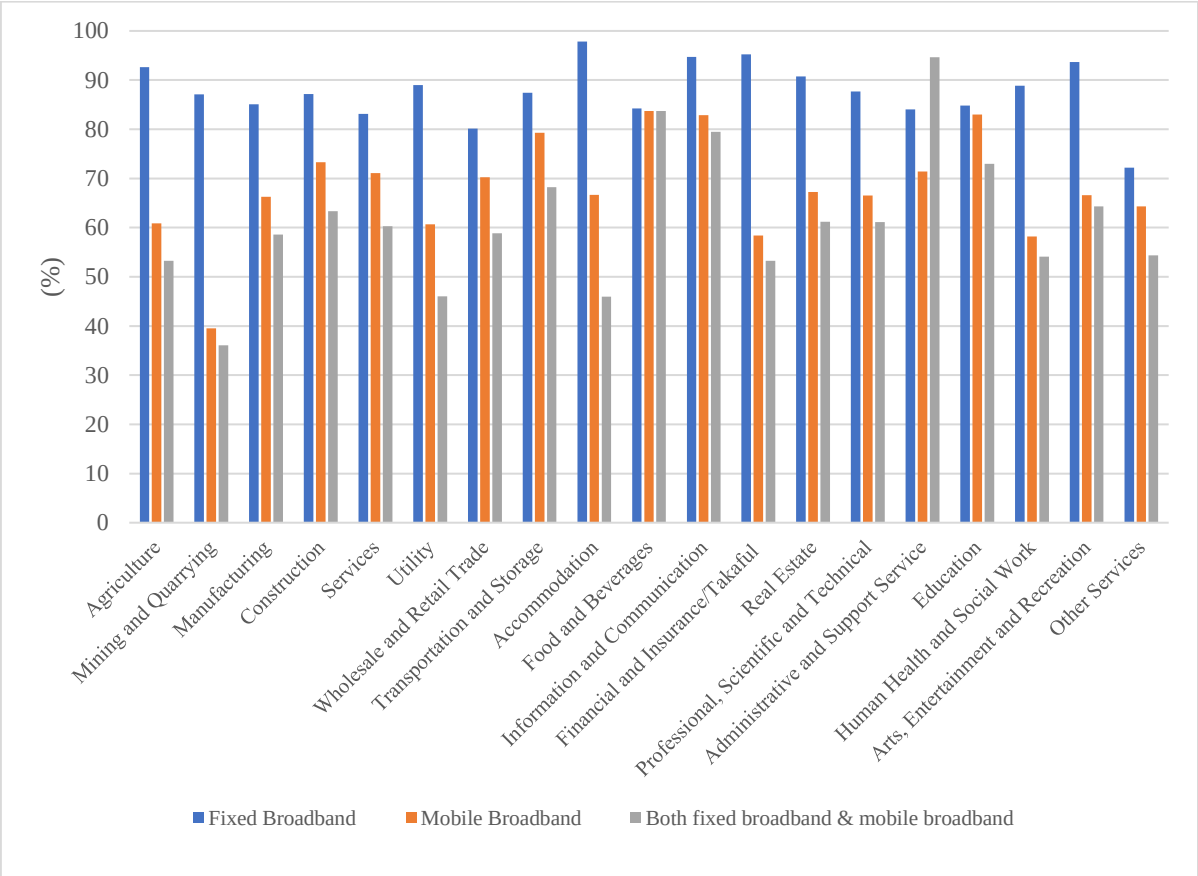
(b) Internet Access

The penetration rates for fixed broadband are fairly high across the different sectors/industries (**Figure 16**). This is considerably higher than the rates observed for households. The relatively lower penetration rates for mobile broadband suggest that fixed broadband is a substitute for mobile broadband for business purposes.

(c) Internet Usage

An analysis of internet usage by firms indicates that activities with a high percentage of adoption cover basic functions such as email, internet banking and information management (**Table 7**). The internet is not used much for online product delivery and human resource-related functions such as staff recruitment and training.

Figure 16: Types of Internet Access by Sector/Industry, 2019



Source: Department of Statistics

(d) ICT Technology Adoption

ICT technologies are related to digital inputs for production and distribution activities. The adoption rates of social media and mobile internet technologies are moderately high (**Table 8**). There is still room for the adoption of websites and cloud computing. Interestingly, there are significant lags in three areas – data analytics, management software and online collaborative platforms.

Table 7: Firms' Internet Usage by Sector/Industry, 2019

Sector / Sub-Sector	E-mail	Telephony	Posting info	Get info bt goods & serv	Get info from govt	Interact with govt	Internet banking	Access oth financial	Provide cust serv	Deliver prod online	Recruitment	Staff Training
Agriculture	96	71	63	71	61	62	77	30	17	11	10	13
Mining and Quarrying	94	55	79	57	44	42	64	41	11	11	53	18
Manufacturing	98	65	77	75	53	43	81	19	28	11	27	10
Construction	91	64	74	73	60	48	74	23	22	11	24	12
Services	95	70	75	76	57	50	81	28	38	16	27	17
Utility	98	51	68	69	62	52	64	19	31	12	19	9
Wholesale and Retail Trade	95	71	77	78	53	48	78	25	38	17	28	20
Transportation and Storage	99	79	83	75	62	59	84	31	45	5	29	20
Accommodation	99	45	76	80	70	61	79	12	45	8	32	11
Food and Beverages	90	68	68	67	53	40	75	17	30	6	21	9
Information and Communication	99	85	84	80	62	57	79	35	46	32	27	25
Financial and Insurance/Takaful	99	62	60	64	43	35	93	96	59	19	30	21
Real Estate	85	63	63	68	60	61	94	27	23	9	33	3
Professional, Scientific and Technical	97	70	83	78	67	64	80	30	44	23	28	16
Administrative and Support Service	90	70	77	83	69	62	83	34	40	17	30	14
Education	94	92	67	68	62	55	78	24	36	22	30	36
Human Health and Social Work	83	71	74	73	66	64	84	31	45	14	22	6
Arts, Entertainment and Recreation	96	60	70	84	65	60	76	29	31	19	13	12
Other Services	93	59	66	72	53	43	76	14	27	10	19	4

Source: Department of Statistics

Table 8: Firms' Adoption of ICT Technologies

Sector / Sub-Sector	Website	Social media	Mobile internet and technologies	Cloud Computing	Data analytics	Management software	Online collaborative platforms
Agriculture	52	57	55	57	9	39	14
Mining and Quarrying	19	46	25	61	3	40	35
Manufacturing	53	73	63	46	4	48	9
Construction	35	47	56	49	3	29	5
Services	49	60	65	46	7	43	12
Utility	32	84	66	44	3	26	4
Wholesale and Retail Trade	50	64	65	47	5	47	13
Transportation and Storage	56	44	76	54	25	42	17
Accommodation	43	67	52	43	4	57	27
Food and Beverages	37	73	62	23	4	20	12
Information and Communication	87	86	83	65	15	77	13
Financial and Insurance/Takaful	52	38	68	44	5	42	15
Real Estate	38	45	66	45	9	22	20
Professional, Scientific and Technical	54	54	70	61	8	50	6
Administrative and Support Service	47	65	68	57	3	36	12
Education	52	67	63	49	8	37	11
Human Health and Social Work	46	44	68	73	30	35	14
Arts, Entertainment and Recreation	59	64	53	59	11	56	7

Source: Department of Statistics

5.3 E-Commerce

The Department of Statistics in Malaysia has a broader definition of e-commerce compared to that used by the OECD (**Table 9**). It includes ICT-related services as well as manufacturing of ICT-related goods such as electrical and electronic goods.

Table 9: Malaysia (DOS) and OECD Definition of E-Commerce

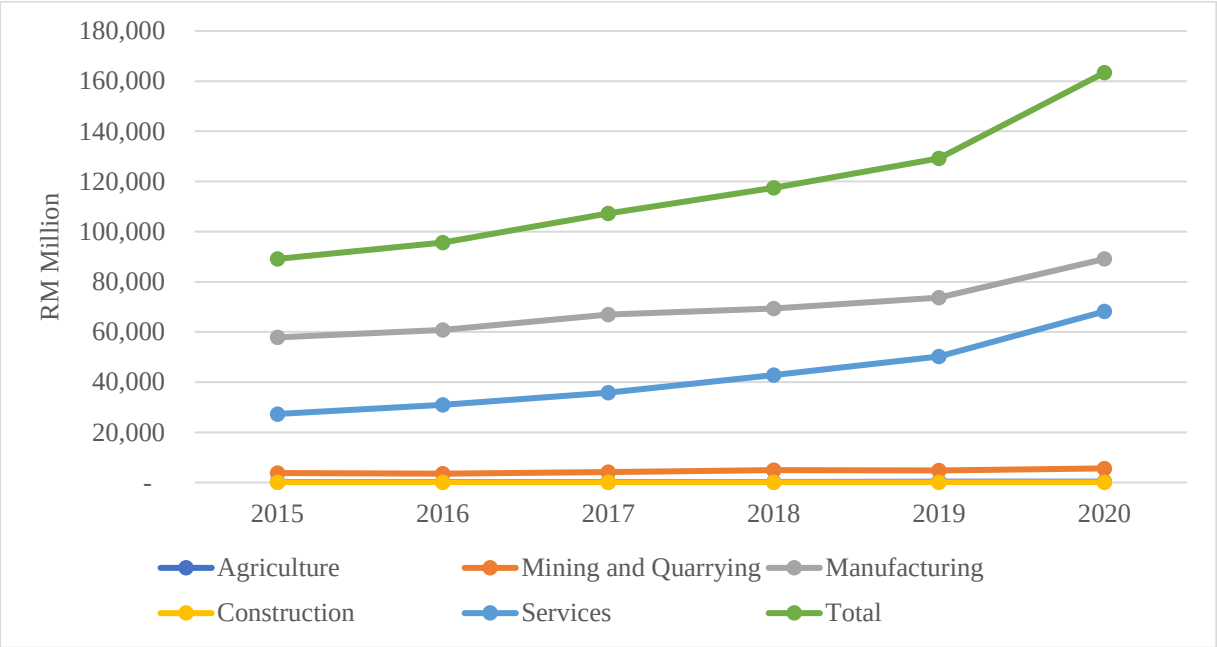
Component		OECD	Malaysia
ICT Sector	Commonalities	ICT manufacturing; software publishing; telecommunications; computer programming, consultancy, and information and related activities	
	Differences		ICT wholesale and retail trade; Content and media activities; Other ICT services such as repair of machinery, E&E and optical equipment; Installation of industrial machinery and equipment, etc.
E-Commerce	Commonalities	Wholesale and retail sectors	
	Differences	A broader measure can be derived, which includes all sectors across the economy for which data are available	The broader approach is used, comprising all sectors across the economy for which data are available

Source: Author's compilation

Based on DOS data, e-commerce in Malaysia has grown rapidly in recent years, reaching a total gross value added of RM163 billion in 2020 (**Figure 17**). Manufacturing's share of e-commerce value added is the largest, followed by services. However, services' e-commerce value added grew faster than manufacturing during the pandemic in 2020.

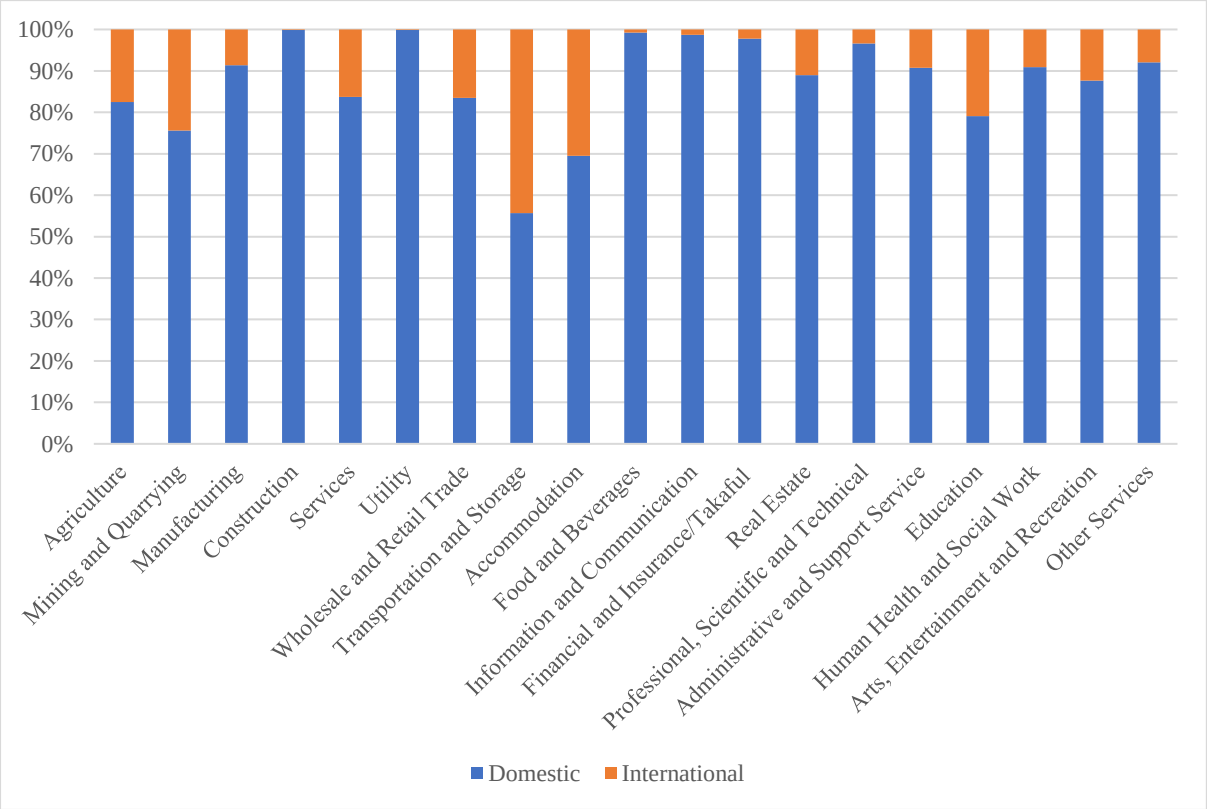
A significant proportion of e-commerce income across the various sectors/industries comes from the domestic market (**Figure 18**). Only two industries which are transport and travel related have relatively higher e-commerce income from abroad – they are transportation and storage and accommodation.

Figure 17: E-Commerce Gross Value Added by Main Sectors, 2015 - 2020



Source: Department of Statistics

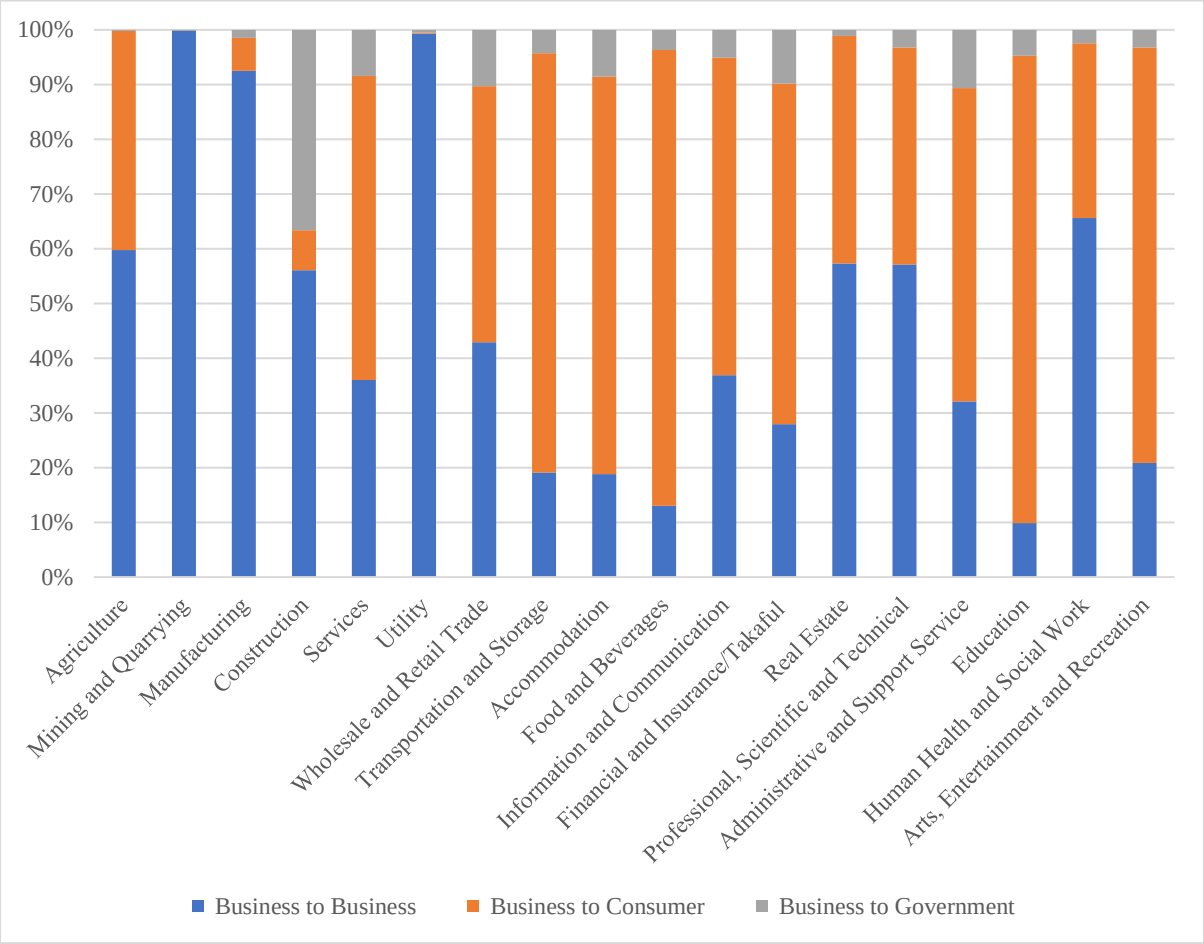
Figure 18: Sources of E-Commerce Income, 2019



Source: Department of Statistics

In terms of type of e-commerce customer, B2B is the dominant form of e-commerce income – accounting for more than 90% of the sector's e-commerce income (**Figure 19**). Construction is very dependent on e-commerce revenues from B2G businesses. B2C is more important for many services industries especially transport and storage, accommodation, food and beverages and education.

Figure 19: E-Commerce Income by Type of Customer by Sector/Industry, 2019



Source: Department of Statistics

6. Conclusion

Malaysia's strategic policies for digital economic transformation began in the mid-1990s. This first phase lasted for some 15 years. Key initiatives during this period include investments in broadband infrastructure and the Multimedia Super Corridor. The new wave of technology prompted a second phase of digital economic transformation which began around 2016. Four successive policies and plans were launched during the period from 2016-2021. These focused on e-commerce (2016), 4IR manufacturing (2018, 2021) and digital economy (2021). The strategic policies for digital economic transformation have become increasingly broader and more detailed.

Implementation of strategies and plans have focused on attracting investments in the digital sector. Recent plans have moved to non-location based incentives – a departure from the MSC Malaysia model. Laws and regulations to support digital transformation have also been implemented since the 1980s. Despite the wide range of strategies and plans formulated for digital transformation, existing data and studies on the digital economy do indicate that there are significant digital divide issues remaining. The adoption of ICT technologies is also very uneven across industries. Thus, the task of transforming the Malaysian economy to become a more digital-driven one will be very challenging in the future.

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