



Review Article

The Development of the Digital Economy in Vietnam

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Abstract: By 2020, the global economy is in decline in every sector except for the digital economy. The core of the digital economy is the digital sector (IT/ICT). However, the scope of the digital economy is even broader than that, encompassing a set of emerging digital business models such as digital services, the platform economy, the sharing economy, and more. Recently, the digital economy has had a high growth rate and is widely applied to other economic fields, especially in the period of COVID-19. This article aims to analyze the current situation of Vietnam's digital economy development through five key pillars: i) digital infrastructure; ii) digital platforms; iii) digital financial services; iv) digital entrepreneurship, and v) digital skills. *Based on these assessments*, the paper gives some recommendations for Vietnam in developing a digital economy.

Keywords: Digital economy, digital infrastructure, digital financial services, digital platforms, digital entrepreneurship and digital skills.

1. Overview of a Digital Economy

There is no widely accepted definition of the digital economy, but the most common, though narrow, understanding is the share of GDP occupied by the Information & Communication Technologies (ICT) sector [1]. The digital economy refers to a broad range of economic activities that include using digitised information and knowledge as the critical factor of production. It comprises modern information networks as a virtual activity space and the effective use of ICT as an essential driver of

productivity growth and economic structural optimisation [2]. The digital economy is the entirety of sectors that operate using Internet Protocol (IP) - enabled communications systems - such as mobile networks, e-payment systems and public service networks [3].

According to Rumana Bukht & Richard Heeks in 2017, there is a three-scope model of the digital economy (see Figure 1). The core of the digital economy is the digital (IT/ICT) sector, including hardware manufacture, information services, software and IT consulting and telecommunications. This digital sector comprises fundamental innovations (semiconductors, processors), core technologies (computers, telecommunication devices) and

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enabling infrastructures (Internet and telecom networks).

However, the scope of the digital economy is argued to stretch beyond this, encompassing a set of emerging digital business models such as digital services, the platform economy, the sharing economy, and etc. This area produces vital products or services that rely on core digital technologies, including digital platforms, mobile applications and payment services.

Besides, while applying digital technologies in existing businesses (i.e. e-Business, e-Commerce, Industry 4.0, Precision agriculture, Algorithmic economy), we can see these as within the scope of the broader “digitalised economy”. This includes digitally-enabled sectors in which new activities or business models have emerged and are being transformed as a result of digital technologies [4].

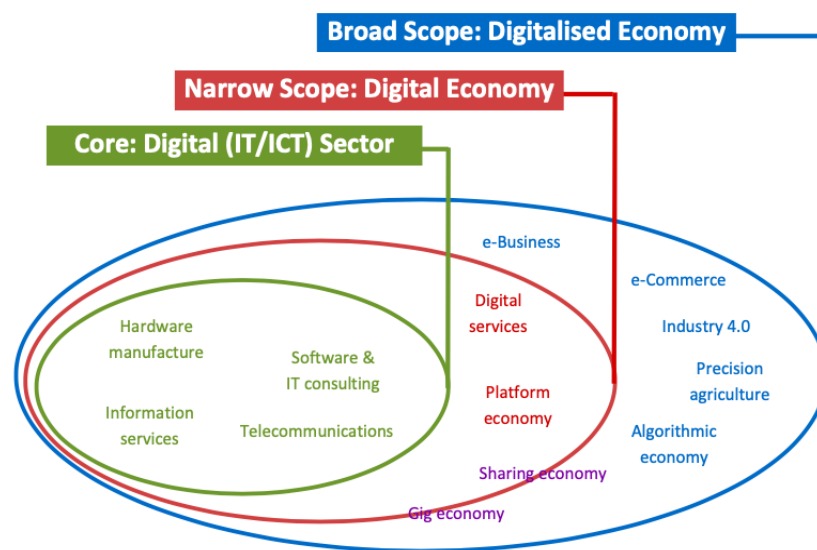


Figure 3: Scoping the digital economy

Figure 1. Scoping the digital economy.

Source: Bukht et al. (2017) [4].

According to the World Bank, there are five key pillars for a vibrant, safe and inclusive digital economy in a country: i) digital infrastructure; ii) digital platforms; iii) digital financial services; iv) digital entrepreneurship and v) digital skills [5]. The first pillar concerns the building of the core sector of the digital economy. The second and third pillars contribute to the narrow-scale construction of the digital economy, and the last two pillars will make a significant contribution to the development of the digital economy in a broad-scale. Also, each pillar can contribute to inclusive growth and poverty reduction in countries.

Currently, the digital economy is at a high rate of development, innovates rapidly and is widely applied to other economic fields, especially in the COVID-19 period. The digital economy is an increasingly important driver of global economic growth and plays an essential role in every aspect of the economy .

Notably in 2020, with the pandemic appearance and spread, the global economy faces many difficulties. The global economy has a slowdown in every sector except for the digital economy. The digital economy is an essential contributor to inclusive economic growth and crisis management.

The next section will provide the overall picture of Vietnam's digital economy by focusing on its pillars, including digital infrastructure, digital platforms, digital financial services, digital entrepreneurship and digital skills. In this section, the paper also analyses Vietnam's digital economy in the COVID-19 time. Based on these analyses, the article provides some recommendations for Vietnam's digital economy in the future.

2. Vietnam's Digital Economy Development

This section assesses five critical pillars for a vibrant, safe and inclusive digital economy: i) digital infrastructure; ii) digital platforms; iii) digital financial services; iv) digital entrepreneurship; and v) digital skills in Vietnam. The improvement of these five pillars

will reflect the development of the digital economy in Vietnam in recent years.

2.1. The Digital Infrastructure

The digital infrastructure in Vietnam has seen strong growth in terms of quantity and quality. Lately, Vietnam has almost full broadband network coverage. 3G and 4G networks covered over 95 per cent of the population in 2019, an increase of 18 per cent compared to 2016 and 5G networks are set to follow in 2020. Mobile broadband connection penetration also experienced strong growth from 2016 with 39 per cent through 2019 and with use by 76 per cent of the total population. The overall mobile connectivity index has also increased by more than 9 scores between 2016 and 2020 (Table 1).

Table 1. Vietnam's digital infrastructure development from 2012 to 2020

Digital Infrastructure indices	2012	2016	2017	2018	2019	2020
3G coverage ¹ (per cent of the population)		77	90	91	95	
Mobile Broadband connections penetration rate ¹ (per cent of the population)		39	47	61	76	
Mobile connectivity index ¹ (overall country index score out of a maximum possible score of 100)		55.8	59.2	63.8	64.6	64.98
Internet users (million)	30.59	47.3	50.05	64	64	68.17
Internet penetration rate (per cent of the total population)	34	50	53	67	66	70
The average speed of fixed Internet connection (MBPS)			6.27	24.77	27.18	43.26
Mobile subscriptions (million)	127.3	143	124.7	146.5	143.3	145.8
Mobile subscriptions rate (per cent of the total population)	139	152	131	153	148	150
Smartphone penetration rate (per cent of the adult population)	16	55	72	72	72	93
Social media penetration rate (per cent of the total population)	9	37	48	57	0.64	67

Source: Digital 2012, 2016, 2017, 2018, 2019, 2020: Vietnam (published in January of the year) [6-11]

¹MCI Data 2020 [12].

The country has seen rapid development in the internet and mobile communications technologies. The internet penetration rate in 2020 has more than doubled compared to 2012, reaching 70 per cent of the total population with 68.17 million users. The mobile subscription rate has always remained at a high level,

accounting for about 150 per cent of the total population. By 2020, the number of mobile subscribers reached 145.8 million people. Smartphone penetration has seen strong growth between 2012 and 2020. It is currently at 93 per cent of the adult population in 2020 - one of the highest rates in Southeast Asia. The social

media penetration rate was at 67 per cent in Jan 2020 with 65.00 million social media users (see Table 1).

The developed digital infrastructure has contributed to increasing the number of digital consumers in Vietnam, especially during the COVID-19 epidemic. COVID-19 led to an acceleration of digital consumption as users tried new digital services for the first time. In Vietnam, 41 per cent of all digital service consumers were new (higher than the SEA average), with 94 per cent of these new consumers intending to continue their behaviour post-pandemic. More than 1 in every three digital service consumers started using the service due to COVID-19. Majority of new consumers are from metro areas (74 per cent) [13].

The Internet sector provided access to essential goods, healthcare, education, entertainment, and helped businesses “keep the lights on”. The Vietnamese people were spending 3.1 hours online (for personal use) pre-COVID-19, which spiked to 4.2 hours at the height of national social distancing, and now rests at 3.5 hours per day. With 8 out of 10 users viewing technology as very helpful during the pandemic, it has become an indispensable part of people’s daily lives. Technology has fundamentally impacted all aspects of life this year [13].

As such, *the digital infrastructure in Vietnam is being developed rapidly*. However, the most challenging point in digital infrastructure in Vietnam is that *these infrastructures are mainly concentrated in urban areas*.

2.2. The Digital Platforms

Digital platforms in the public and private sectors are growing but face high competitiveness, and their reach is limited in remote areas. For B2C or B2B platforms, famous e-commercial platforms in Vietnam are Shopee.vn, Tiki.vn, Lazada.vn, Sendo.vn, and Telio.vn, of which the first three platforms are in the top 20 most visited websites (Kemp, S.

2020). The total value of the B2C e-commerce market is at \$6.0 billion, with an annual growth rate of 20 per cent, accounted for 1 per cent of the real B2C retail spend. In 2020, the main categories traded on the platforms were fashion and beauty (\$717 mil.); Electronics and physical media (\$716 mil.); Furniture and appliances (\$526 mil.); Food and personal care (\$517 mil.); Toys, DIY and hobbies (\$487 mil) and video games (\$117 mil.) [11]. However, due to the high competitiveness between platforms, several went out of the Vietnamese market; for example, Muachung and Adayroi.

As for social media platforms, Facebook is the most used one, accounting for 90 per cent of internet users aged 16 to 64; followed by Youtube with a rate of 89 per cent; Zalo and FB Messenger with the same rate of 74 per cent and Instagram - 46 per cent [11].

For ride-hailing platforms (such as Grab, goViet, BE, etc.), in 2019, there were 4.7 million people using digitally enabled ride-hailing services with a total value of \$471 million. The annual revenue per user of digitally enabled ride-hailing services was \$101, with the yearly growth in the total value at 32 per cent in 2019 [11]. However, these services are only concentrated in several big cities like Hanoi, Hochiminh and DaNang – but not nationwide.

2.3. Digital Financial Services

Digital financial services include services related to payments, remittance, lending, insurance and investment. In Vietnam, the majority of people do not have a bank account, accounting for 70 per cent of the adult population, the highest rate in Southeast Asia. Therefore, consumers have less access to financial services. In 2020, credit card penetration and mobile money account penetration were at only 4.1 per cent and 3.5 per cent respectively in the population aged 15+ (see Table 2). Cash is still the primary means of transaction or “king” in Vietnam.

The number of bank branches and ATMs in Vietnam is deficient and has not developed

significantly in recent years. In 2019, there were only 3.98 commercial bank branches and nearly 26 ATMs per 100,000 adults (see Table 2). In addition, ATMs and POS terminals

are mainly concentrated in urban areas. The lack of ATMs and POS terminals will hinder the development of digital financial services in Vietnam in future.

Table 2. Vietnam's digital financial services development from 2016 to 2020

Digital financial services indices	2016	2017	2018	2019	2020
Bank account penetration (per cent of the population aged +15)			31	31	30
Credit card penetration (per cent of the population aged +15)			2	4.1	4.1
Mobile money account penetration (per cent of the population aged +15)			0.5	3.5	3.5
Commercial bank branches per 100,000 adults ²		3.45	3.91	3.98	
ATMs per 100,000 adults ²	24.24	24.59	25.32	25.90	
Product or service online purchase penetration (per cent of internet users)	37	39	47	77	75

Source: Digital 2012, 2016, 2017, 2018, 2019, 2020: Vietnam (published in January of the year) [6-11]

² World Bank Data 2020 [14].

Another Vietnamese limitation in developing digital financial services is that Vietnamese people have a lack of understanding of financial services. The Asian Development Bank Institute research, which surveyed 1,058 households in Vietnam, found that financial literacy varies depending on income level and age, with younger, wealthier populations being more knowledgeable, implying that digital financial services are failing to reach impoverished and disadvantaged communities because of low financial literacy [15].

Although the banking infrastructure for the development of digital financial services in Vietnam is underdeveloped, Vietnam has great potential to develop digital financial services. This is because the product or service online purchase penetration in Vietnam has seen strong growth, from 37 per cent in 2016 to 75 per cent of internet users in 2020 (see Table 2). In 2019, there were 51.10 million people who made digitally enabled payment transactions with a total value of \$8.52 billion [11].

In addition, the application of new technology in banking and financial services is highly encouraged. The State Bank of Vietnam established the SBV's Fintech Steering

Committee. Vietnam's fintech startup landscape tripled in size between 2017 and 2020, growing from 44 startups in 2017 to 118 startups now (2020) [16]. Payment remains the most significant segment, representing 31 per cent of all fintech startups. As of October 2020, Vietnam was home to 39 licensed non-bank payment service providers, with the five biggest e-wallets being MoMo, Payoo, Moca, ZaloPay, and ViettelPay. However, as of 2019, there were only 4.2 million e-wallet users out of the country's total population of 100 million people. While Vietnam's payment startups continue to grow and attract investors' interest, the most robust growth was recorded in peer-to-peer (P2P) lending and the crypto/blockchain space. These two segments saw the number of startups rise from less than 5 in 2017 to more than 15 startups in 2020. Despite significant traction and strides, Vietnam's fintech sector remains nascent when compared to neighbouring Singapore for example, and parts including data/credit/scoring management and crowdfunding are still unrepresented [16].

In Covid-19 time, consumers and SMEs have adopted Digital Financial Services like never before. Social distancing measures put in place to prevent the spread of the virus have

pushed consumers towards online commerce and digital payments. In Q2 2020, overall visits to shopping apps in Vietnam reached 12.7 billion, growing 43 per cent quarter-on-quarter and surpassing that of most other Southeast Asian countries. Digital payments have also significantly increased this year amid the COVID-19. In Q1 2020, electronic payments increased by 76 per cent with the total value of transactions jumping 124 per cent compared to Q1 2019 [17].

Consequently, there are immense opportunities but tough challenges in digital financial services in Vietnam. Vietnam is predicted to grow the fastest in the region in terms of digital financial services revenue from \$0.5 billion in 2019 to \$3.8 billion in 2025 with a rate of 38 per cent CAGR [13].

2.4. Digital Entrepreneurship

The digital entrepreneurship ecosystem in Vietnam is nascent but dynamic. Vietnam aims to build a startup nation, primarily focused on e-commerce. Vietnam has invested significantly in science, technology, engineering and mathematics (STEM) and digital and entrepreneurial education in-country and is seeing positive results. Vietnam has created new funds in critical agencies from the National Technology Innovation Fund, to the National Agency for Technology, Entrepreneurship and Commercialisation Development.

Most of Vietnam's startups are operating in the digital market. There is a promising future for digital entrepreneurs in online retail, logistics and payments locally and beyond Vietnam's borders. The Vietnam Silicon Valley in Ho Chi Minh City launched in 2013 as part of a national ecosystem of innovation and technology commercialisation boasts the largest cluster of startups. One high-profile example is Flappy Bird, a gaming application which shot to fame in 2013, reportedly netting its founder USD50,000 per day. DesignBold, a rival to Photoshop, Digipencil MVV and GiaoHangNhanh, an online delivery service, are three other success stories. Vietnam is the 3rd

most active startup ecosystem in ASEAN, behind Singapore and Indonesia [18].

Digital entrepreneurship is contributing to Vietnam's remarkably effective handling of the COVID-19 pandemic. Part of this is due to the widespread accessibility of digital resources in the country. For example, online retailer Saigon Co.Op already counts itself as the most popular retailer in the nation. Now, it and fellow retailers like Tiki have seen a remarkable surge in popularity. However, it is not just the private sector that is experiencing more significant volumes of visitors amid the quarantine. Vietnam's National Public Services Portal has seen a 154 per cent increase in traffic from January to March. With more citizens able to conduct their business online, more can afford to stay home, saving lives in the process [17].

2.5. Digital Skills

Advanced digital skills are limited in Vietnam. Many enterprises lack regular practice using ICT software and systems. Approximately 30 per cent state their employees are familiar with and use collaboration software such as virtual teams on a daily basis. However, less than 20 per cent of enterprises said that they offer regular training or retraining on ICT-related skills for employees. There are also large digital skills shortages - for example, Vietnam was projected to be short of 500,000 data scientists by 2020 [19].

A recent study of Vietnam-based businesses conducted by RMIT researchers from the School of Business & Management and KPMG Vietnam revealed that many companies in Vietnam lacked the leadership ability to drive innovation, one of the reasons why many digital transformation projects failed [20].

However, there is much potential for Vietnam to improve digital skills since Vietnam is a regional leader in math and science education (primary and secondary) [18].

The analysis and assessment of the five main pillars of the digital economy in Vietnam show the following: i) There is an uneven development among the pillars. The first two

pillars showed significant growth, but the latter did not; ii) Although not yet strongly developed, the following three pillars have great potential for amplification in the future. The important thing is whether Vietnam is determined to develop these pillars; iii) The pillars are grown mainly in significant urban areas, not yet in remote and isolated areas.

3. Recommendations for Vietnam's Future Digital Economy

There are four scenarios for Vietnam's future digital economy. These will be determined by a range of external and internal factors, and have been created based along two axes: whether or not Vietnam is a net buyer or seller of digital products and services; the level of adaptation to new digital products and services across the Government, the community and industry (see Figure 3) [21]. In my opinion,

the fourth scenario is most likely to happen in Vietnam because Vietnam already has a relatively good digital infrastructure and digital platforms. Adoption, acceptance and usage for both consumers and SMEs are accelerated in Vietnam. However, the development of digital services in Vietnam is limited due to inadequate digital skills. The growth of digital financial services is also underdeveloped. Therefore, becoming one in the second scenario is unlikely to happen.

There is an unprecedented advance in digital services, bringing digital technology to the centre, now and in the future in Vietnam. Vietnam's internet economy will hit \$100 billion in 2030 and be on track to reach over \$52 billion by 2025, despite challenges [13]. Market competition remains healthy, with more opportunities within an open ecosystem. Vietnam is believed to be the fastest-growing digital economy in the Asia Pacific [18].

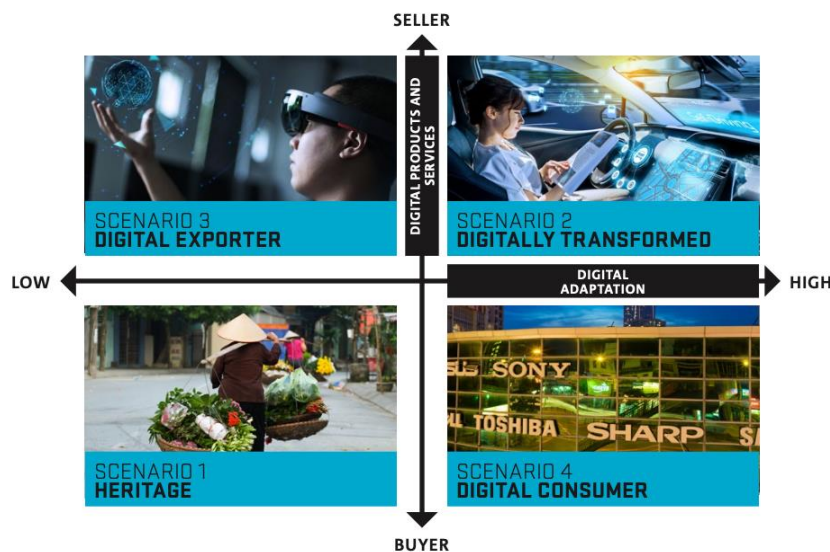


Figure 3. Four scenarios for Vietnam's future digital economy.

Source: T.P., Tran S.T., Nguyen T.N., Trinh H.Y. & Hajkowitz S. (2019) [21].

The Vietnamese Government has shown a strong commitment to digital transformation. Decision No. 749/QĐ-TTg dated June 03, 2020, is a testament to this. According to the

Decision, by 2030, "Vietnam becomes a digital country characterized by stability and prosperity and a pioneer in experimenting with novel technologies and models; the

management and administration activities of the Government, the production and business practices of enterprises and the way people live and work are renovated fundamentally and comprehensively; the established digital environment is safe, humane and all-encompassing". Based on this vision, Vietnam sets the major targets, as shown in Table 3.

However, Vietnam will risk falling behind regional countries in its efforts to become a digital economy. The development of virtual operations will not only reduce transaction costs and create efficiency benefits across the economy but also facilitate the nation's vulnerability to mobility restrictions of people and goods. Such an effort would include:

Table 3. Major targets by 2025 and 2030 in Vietnam's digital economy

Targets	By 2025	By 2030
Digital economy (per cent of GDP)	20 per cent	30 per cent
Digital economy forms of each sector	at least 10 per cent	at least 20 per cent
Annual productivity	7 per cent	8 per cent
Ranked on the ICT Development Index (IDI)	in the top 50	in the top 30
Ranked on the Global Competitiveness Index (GCI)	in the top 50	in the top 30
Ranked on the Global Innovation Index (GII)	in the top 35	in the top 30
Ranked on the Global Cybersecurity Index (GCI)	in the top 40	in the top 30
Coverage of Fiber optic internet infrastructure	more than 80 per cent of households and 100 per cent of communes	nationwide
Broadband service and smartphones	4G/5G service and smartphones are available nationwide	5G service is available nationwide
Digital checking account (per cent of the population)	More than 50 per cent	More than 80 per cent

Source: Decision No. 749/QĐ-TTg dated June 03, 2020, by the Prime Minister [22].

First, further complete the framework for the effective implementation of the digital economy. To develop the digital economy, in recent years, Vietnam has promoted the application and development of science and technology and innovation, research, and improvement of accessibility and proactive participation in the fourth industrial revolution. However, this is not enough for Vietnam to have a complete legal framework for the digital economy.

The legal framework is an essential element in the effective functioning of the digital economy. An appropriate legal framework will facilitate a faster and more drastic transition

between the traditional and digital economies, which means the improvement of the legal framework for an intellectual framework, digital banking, fintech, stock exchanges, e-commerce, internet transactions, e-customs, e-payments, online logistics, network security, and network information security, etc. This has created a legal framework for the state management of digital economy activities and has continued to improve institutions for the digital economy to be strong enough to support, facilitate and regulate the economic and commercial relations.

Second, increase investment in science and technology to modernise and synchronise

digital technology. Investing in the core and narrow aspects of the digital economy (ICT, e-commerce, telecommunications, cloud computing and information technology, etc.) requires a large amount of capital. However, up to now, the total investment in science and technology of the whole society has only reached 1 per cent of GDP, while in 2013 in Korea it was 4.15 per cent; and 2.01 per cent in China and Singapore [23]. It is essential to have strong support from the Government with an open management mindset to "untie" and support small and medium enterprises, and promote innovation. Conversely, if the management policy is not open and remains inflexible and stagnant it will make both domestic enterprises and the country's economy vulnerable to competition with foreign firms and other economies all around the world.

In addition, Vietnam should encourage e-commerce and e-payments since they have a significant opportunity to develop. E-commerce has been thriving in Vietnam (see section 2), but most e-commerce transactions in Vietnam are in cash. Therefore, Vietnam needs to accelerate the promotion and use of e-payment in e-commerce. Recent advances in e-wallets and fintech are being encouraged, but the adoption of e-payment platforms needs to be accelerated. To be successful in digital transformation in the banking-finance sector, Vietnam needs to: i) develop e-finance and establish a modern and sustainable digital finance platform; ii) apply digital technology to all areas of tax, customs, treasury and securities; iii) Facilitate access to loans through credit scoring solutions with reliable scoring models and a customer database.

Third, invest more in systematic e-learning and train high-quality human resources. Currently, the workforce in digital content is about 148,000 people [23]. The Vietnamese quickly adopt digital technologies and can work in the field of IT. However, Vietnam lacks people that can play the role of 'architect' (those in the elite group) to lead the digital transformation process. Talent, however, remains a critical blocker that all parties will

need to keep working on to ensure the momentum. Therefore, it is essential to invest in education.

The Government of Vietnam has effectively prevented COVID-19 outbreaks by shutting schools across the country to minimise widespread exposure and spread of the virus. At that time, this resulted in disruptions in the country's learning situation. Social communication platforms, such as Zalo and Viber, were used by parents and teachers, so homework could still be assigned to students. Some schools have used online meeting software such as MS Team, Skype and Zoom. However, these platforms are only well used in metropolitan areas with better connectivity and the availability of smart devices. Therefore, the Government needs to make strategic investments in systematic e-learning and education in public schools, with innovative platforms and methods, to enable more online learning and teaching. Effective e-learning and education will improve teaching methods in the current situation and form an essential foundation for Vietnam to benefit from the digital economy it is striving for.

In addition, institutes and training schools must be proactive and pay more attention to the training of high-quality human resources and consolidate and raise the qualifications of the contingent of experts and lecturers. The content of the training programs must be renewed, updated and followed with the reality to combine theory and practice well. Training institutes and schools must increase investment in modern tools and technologies and coordinate with enterprises to provide practical training associated with new technologies such as the Internet of Things (IoT), AI, robotics technology, and linkage between schools and businesses for practical training in information technology application.

Last, motivate data-driven e-government and enterprises' proactiveness and innovation. Better data and information systems will allow governments to quickly make timely decisions. Information may indicate a critical bottleneck in the overall decision-making, for example, in

public investment and disbursement or HRM in the public sector, etc. Reliable and updated data can allow credible reforms that will unlock the potential to drive further growth in Vietnam. The Government needs to put data at the heart of the business model.

Business initiative in developing digital technology is an essential issue for the development of every business. Enterprises that are slow in implementing digital transformation will soon be eliminated due to their inability to compete in terms of productivity and quality (the ability to understand customers through data, forecast to deploy flexible production and business methods; and ability to create new models and services, etc.). Thus, enterprises must shift firmly from “imitating” existing technologies to “innovating technologies”, and developing new and advanced technologies, mainly digital technology, must be a strategic breakthrough.

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