

Digitalization and the UAE Economy: A New Driver of Sustainable Development

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Abstract

This paper defines and examines the state of the digital economy in the United Arab Emirates (UAE), highlighting the essential role played by digital technologies in sustaining the economy and the people of the UAE through the COVID-19 pandemic. In the years before the pandemic, the UAE invested heavily through expenditures by government-related enterprises, private companies, and households to establish the required broadband and wireless infrastructure and devices necessary to push forward the digitalization of the economy. This has enabled the rapid adoption of information and communication technologies (ICTs) in the production and consumption of goods and services at the level of the government, the private sector, and households. The paper takes stock of the benefits drawn from digitalization as an enabling and disruptive force in the development of the UAE economy and suggests some high-level policy principles that inform the government policy agenda for inclusive ICT sector development in the post-COVID-19 era.

Keywords: Digital economy, Broadband and wireless infrastructure, Information and communication technologies, UAE

JEL Classifications: D7

ملخص

تحدد هذه الورقة وتدرس حالة الاقتصاد الرقمي في الإمارات العربية المتحدة، وتسلط الضوء على الدور الأساسي الذي تلعبه التقنيات الرقمية في الحفاظ على الاقتصاد وشعب الإمارات العربية المتحدة من خلال جائحة الكورونا. في السنوات التي سبقت الوباء، استثمرت الإمارات العربية المتحدة بكثافة من خلال الإنفاق من قبل الشركات ذات الصلة بالحكومة والشركات الخاصة والأسر لإنشاء البنية التحتية اللازمة للنطاق العريض واللاسلكي والأجهزة اللازمة لدفع رقمنة الاقتصاد إلى الأمام. وقد مكن ذلك من الاعتماد السريع لتكنولوجيات المعلومات والاتصالات في إنتاج واستهلاك السلع والخدمات على مستوى الحكومة والقطاع الخاص والأسر المعيشية. تقوم الورقة بتقييم الفوائد المستمدة من الرقمنة كقوة تمكينية ومزعجة في تنمية اقتصاد الإمارات العربية المتحدة وتقدم بعض مبادئ السياسة رفيعة المستوى التي تسترشد بها أجندة السياسة الحكومية لتطوير قطاع تكنولوجيا المعلومات والاتصالات الشامل في حقبة ما بعد جائحة الكورونا.

Introduction

Digitalization – or the application of digital technologies to existing business processes, the government, and households – has been transforming economic activity globally for several decades, but this evolutionary process has been accelerated by the restrictive economic and social measures required to face the COVID-19 pandemic. The speed at which digitalization has been transforming economic activity and social relations in different countries before the pandemic has been supported by the required public and private investments in technological infrastructure, market competition and the appropriate government regulation, and the evolving education and skills base of the population. However, it has become clear that the extent of digitalization will be a major influence on how fast economic activity will recover in the post-COVID period. In this respect, the United Arab Emirates (UAE), as a service-dominated economy, already has a potential comparative advantage over many other countries in the region because of a far-sighted government strategy that enabled the adoption of well-developed digital infrastructure and the existing efficiency of the information and communication technology (ICT) sector. The resilience of the UAE’s economy during the pandemic is evidence of the tangible results of this strategy.

This paper focuses on how digitalization has affected the UAE economy. Section 1 briefly discusses the measurement of digitalization and presents some salient facts on how digital transformation is affecting economic growth and development. Section 2 surveys how digital transformation has affected households (individual users), businesses, and government services in the production and consumption of goods and services. Section 3 turns to policy and assesses the regulatory environment deemed to stimulate private investments and induce more effective market competition in the ICT sector as well as the affordability of digital services. Finally, the paper concludes with remarks and policy recommendations.

I. How digitalization promotes development: Facts and analysis

i. Defining and measuring digitalization

Digitalization and the digital economy

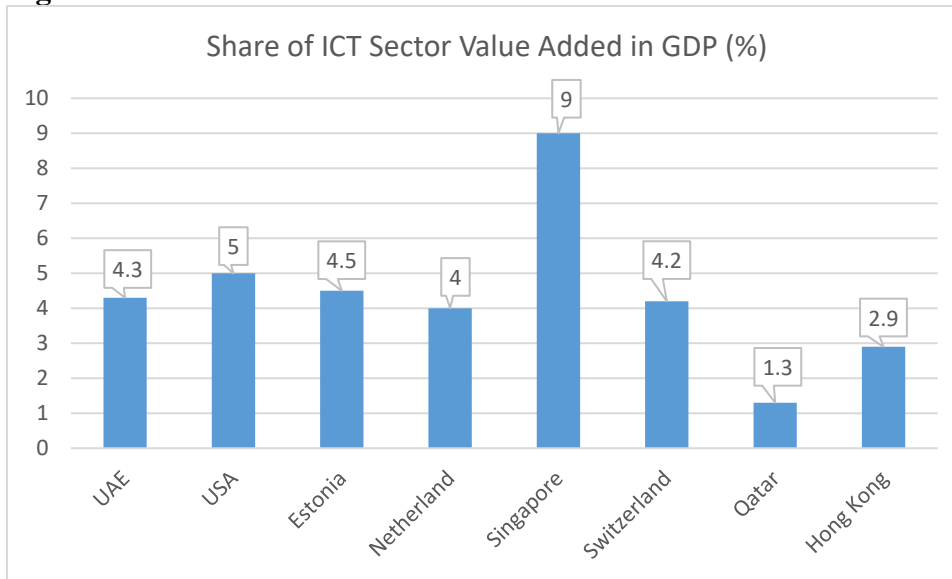
Digitalization is defined here as the shift to a more digital economy through the deployment and use of digital technologies and applications, including the use of the Internet and digitized data by the main agents of the economy (people, businesses, and the government). However, the rapid change in the features and scope of the digitalization of economic activities and the lack of clear-cut industry and product definitions for many Internet-delivered platforms, applications, and services make the precise measurement of the digital economy virtually impossible. To help measure the statistical dimension of digital activities, the IMF (2018) makes the distinction between the ‘digital sector’ and the ‘digital economy’ to facilitate an estimation of the contribution to and impact of digitization on GDP, growth, and productivity. The ‘digital sector’ comprises the producers at the core of digitalization. This includes activities; the comparatively well-defined economic sector, which estimates the value added by the suppliers of ICT goods and services; and the online platforms and platform-enabled services where there are serious measurement issues.

The digital economy versus the ICT sector

A first focus on the digital economy can be to examine the ICT sector as an important driver for enhancing the efficiency of practices and the economy's innovation and growth.

The value-added of the ICT sector in UAE National Accounts² amounted to around AED 46 billion in 2021 and grew at a faster rate than the UAE GDP growth rate in 2020. The contribution of the ICT sector's value-added to the UAE's GDP reached four percent and is fairly like many digitally advanced countries such as Switzerland (4.2 percent) and the Netherlands (four percent) but less than Singapore, which, accounts for a much higher share of the GDP at nine percent.

Figure 1. ICT sector value-added in UAE and selected countries

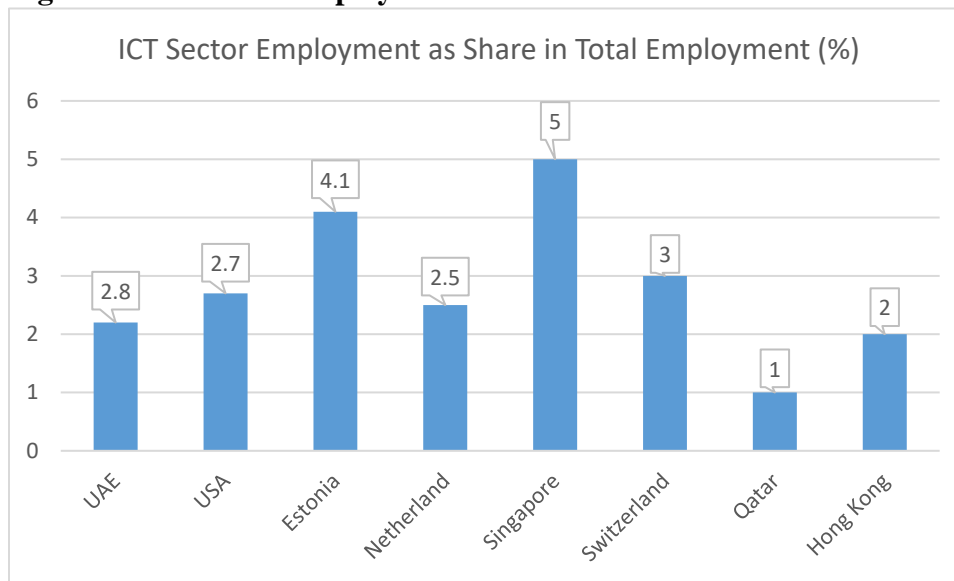


Source: UNCTAD, Digital Economy Report, 2019; FCSC. Data for the UAE are for 2021 and data for the other countries are for 2017.

An important feature of value addition in the digital economy is related to employment. Two dimensions are particularly considered in this regard. First, employment in the ICT sector itself, which corresponds to the core and narrow scope of the digital economy, and second, employment in new jobs in other sectors linked to the broad, digitized economy (e.g., e-commerce, e-commerce logistics, and the sharing economy such as Airbnb and Uber). UAE statistics show that employment in the ICT sector rose to 2.8 percent of total employment in 2020 from 2.2 percent in 2019. The UAE's share of employment in the ICT sector to total employment is fairly like that in the US (2.7 percent) but lower than in Singapore (five percent) and Estonia (4.1 percent).

² ICT activities classified in the two-digit Standard Industrial Classification (SIC4 Code) encompass telecommunications, computer programming, consultancy and related activities, and information services activities (see Dubai Statistics Center, Economic Survey 2019).

Figure 2. ICT sector employment in UAE and selected countries



Source: UNCTAD, Digital Economy Report, 2019; FCSC. Data for the UAE are for 2020 and data for the other countries are for 2017.

Despite the ICT sector's modest size, it still plays a pivotal role in the digital economy. Telecommunication services, chiefly Internet, mobile telephony, and data transmission services, provide the basic infrastructure and access capacity that allow for the provision of an array of services and facilitate the exchanges of goods and services through these networks. The Internet and related technologies, for instance, are essential for e-commerce by enabling online retail and wholesale trade to expand whether in the domestic market or cross-border.

Moreover, broadband network services enable businesses to develop new products and find innovative means for reaching out to their customers, connecting with other businesses, and managing their data storage. The Internet has become one of the most important business platforms for firms to operate both domestically and internationally. For example, in the US, the ICT sector's value-added, measured including online platforms (e-commerce platforms), accounted for 6.8 percent of GDP in 2018 (above the OCED average). When online platforms funded by advertisements, platform-enabled services, and other non-marketed Internet services were considered, the share of the US digital sector in GDP was raised to 9.3 percent.

Figure 3. The size of the digital sector in the US, 2018

Included in GDP (on a value-added basis)	% of GDP
ICT equipment, semiconductors, and software.	2.8
Telecommunication and internet access services.	3.3
Data processing	0.7
Online platforms (E-Commerce Platforms)	1.3
Platform-enabled services, e.g. sharing economy	0.2
Total	8.3
Not Included in GDP	% of GDP
Wikipedia and open source software.	0.2
Free media from online platforms funded by advertising	0.1
“Do-IT-Yourself” fixed capital formation of online platforms.	0.3
Output of MNEs	0.4
Total	1.0

Source: IMF (2018). “Measuring The Digital Economy,” Staff Report.

ii. How the digital economy fuels growth

Economic driver for growth, efficiency, and innovation

The use of digital technologies has transformed many traditional production processes and supply chains, making them more cost-effective. The use of the Internet enables firms of all sizes (small or large) to sell and market their products, promote new products, and enter new markets. These digital technologies raise efficiency by helping firms make better use of their labor and capital.

Ghoneim and Mandour (2023) examine the impact of digitalization and disruptive technologies in the Middle East and North Africa (MENA) and Sub-Saharan Africa regions and discuss how digitalization contributes to economic growth, innovation, and job creation. They show the role of digital technology in driving economic growth and employment by fostering innovation and creating new opportunities in various sectors.

Zaki (2022) explores the determinants and consequences of digitalization in Egyptian and Jordanian firms. He provides evidence that the adoption of digital technology leads to efficiency

gains for businesses, contributes to quality improvement, and ultimately enhances consumer welfare.

At a global level, a quantitative study published by the ITU Telecommunication Development Bureau in 2020 (ITU, 2021) applies econometric models to 139 countries using data between 2007 and 2020, providing evidence of the importance of ICT as a driver of economic growth and employment. The study finds that a one percent increase in digitization adds 0.133 percent growth in GDP per capita. A survey conducted by Redseer Consulting (2021) also finds that the use of Internet platforms and e-commerce has increased from a worldwide average of 9.5 percent of total retail trade in 2019 to 12.4 percent in 2020, with the revenue of e-commerce vendors in MENA jumping by 50 percent from 2019 to 2020.

Increasing consumers' welfare surplus

The adoption of digital devices by consumers is primarily considered to provide quality improvement and thus enhance their welfare, but most of the economic value of these gains is difficult to quantify. For example, a quality attribute of a smartphone camera is that it replaces a camera bought separately and eliminates consumer expense.

Moreover, digital technology has led to a major change in habits toward buying goods and services online. Internet-enabled devices such as laptops and smartphones provide consumers with real-time information about all varieties of goods and services and have fundamentally changed the way consumers search, compare prices, and buy and pay for items online. This has disrupted some industries such as music streaming and travel bookings and enabled others such as logistics, but it has led to a significant fall in search costs for both consumers and businesses, which are not fully reflected in estimates of GDP.

Digital technology has also changed the relationship between consumers and companies. It has enabled the latter to promote their brands on social media. To grasp consumers' shopping preferences, companies use recommendation engines. Amazon, a pioneer in using this technology, reports that 35 percent of its sales were attributed to the engine (World Trade Organization, 2018).

Measuring the aggregate impact on economic growth and prices is difficult

At a more aggregate level, the expansion of the digital economy has brought into question the concept of GDP itself, as many benefits to individuals are not captured by GDP statistics. GDP per capita, for example, has been used as an imperfect proxy for national welfare for decades by estimating the output of goods and services that a country produces in a year, and then estimating the additional resources that are available to the population on average. One of the roles of the government is to raise GDP per capita through economic growth and thus the welfare of citizens. However, nominal GDP measures output at market prices, and many digital products have no market price. Much of the digital output is provided by volunteers, the consumers themselves, or platforms funded by advertising and collecting user data, and the data are not valued in national accounts.

The value of goods and services is reflected in the market prices that consumers and businesses are prepared to pay for them, and this forms the basis of national income accounting. The market price paid for a consumer good reflects some of the value or welfare generated by its consumption. Given that the welfare surplus of consumers is defined by measures of the gains from consumption set against the price of consuming goods and services, the considerable welfare gains from digital products such as search engines and mobile applications like Google Maps – particularly when they become “free” – are not being captured by the GDP statistics that are based on market prices. It has been estimated that if the share of US household consumption expenditures in GDP was adjusted to include the total consumer surplus of Internet users, as measured by what they would pay for these ‘volunteer’ services, its level would increase by around 30 percent (IMF, 2018).

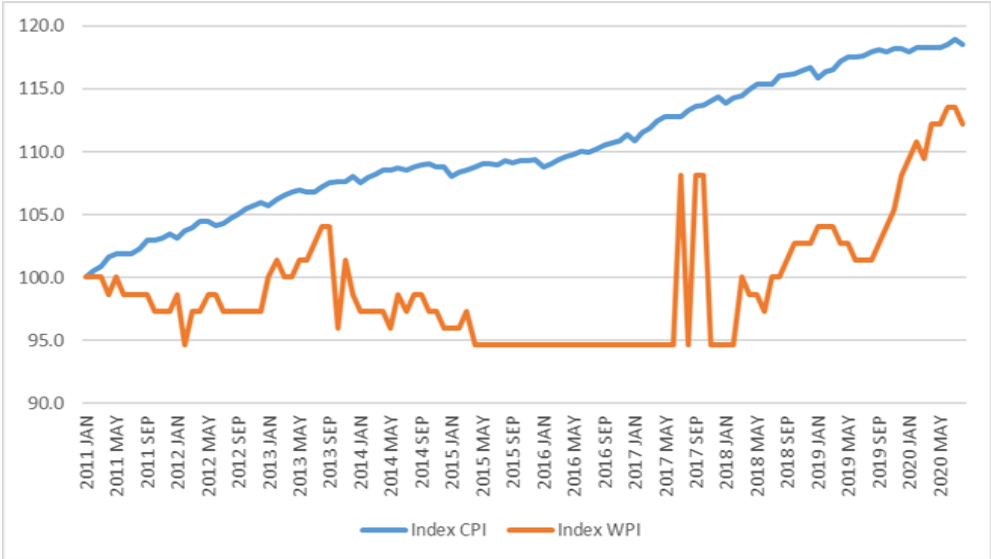
CPI and online consumer prices

Measuring the digital economy has been shown to have various dimensions and it is important to develop a methodology to measure digital products and services. The effort of compiling such data would enable the monitoring of emerging new sectors linked to digitalization in the economy to improve estimates of productivity, GDP, and real economic growth. These efforts would assist in attracting investments into the digital economy.

Another digital measurement-related issue is that online (web) consumer prices of e-commerce tend to be under-represented in the country’s regular consumer price index (CPI) samples. As shown by an IMF study (2018), the adequate coverage of e-commerce in price samples in the CPI is important because online (web) prices may have a different growth rate than regular consumer prices.

Figure 4. Divergence between Online Price Index (WPI) and CPI

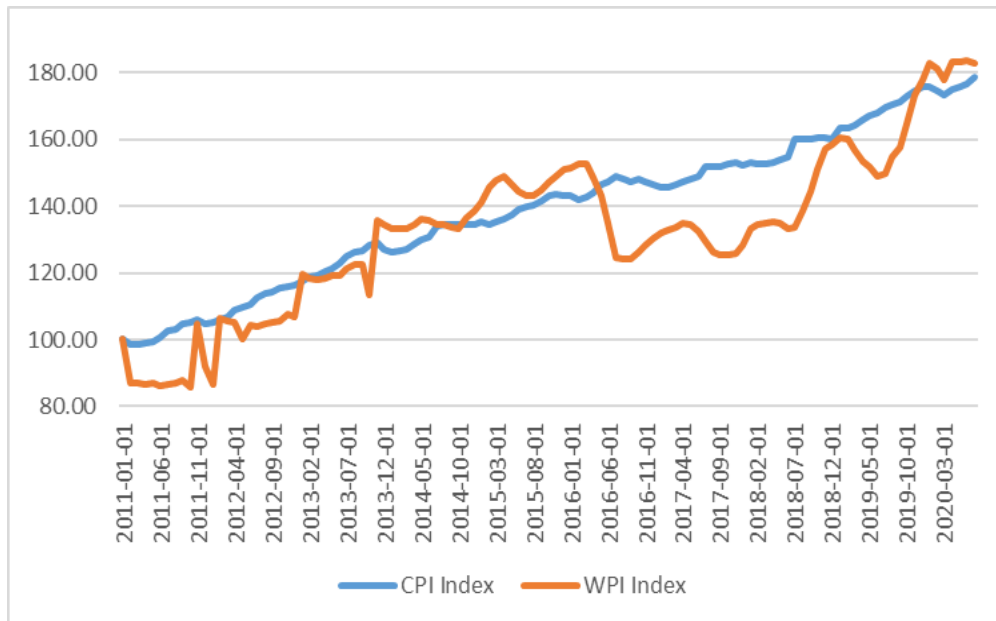
UK: CPI versus WPI
 CPI vs WPI 2011 January = 100



Source: www.worldeconomics.com

India: CPI versus WPI

CPI vs WPI 2011 January = 100



Source: www.worldeconomics.com

Comparing WPI data with regular CPI data in the UK and India (Figure 4) shows that there are considerable differences in the measured price levels. These differences are lower in India where online shopping has grown less than in the UK.

Enabler of jobs and skills

As stated earlier, the number of direct jobs created in the ICT sector is fairly small, but the number of jobs induced by the adoption of digital technology can be quite large. For instance, the share of the narrowly defined ICT sector in total employment is around three to five percent in the OECD countries. In the UAE, according to the latest available employment statistics, the share of the ICT sector in total employment was only 2.2 percent in 2019 and has been stable for the past decade. ICT jobs are productive and tend to pay well, generating high value-added. It was also reported that each high-tech job created five to nine new jobs in other sectors in the US (World Bank Development Report, 2016).

In China,³ the digital economy accounted for 34.8 percent of GDP in 2018 and created 191 million jobs, accounting for one-quarter of the workforce, and was growing at 11.5 percent year-on-year. The 2016 boom in China's e-commerce sector also generated an estimated 10 million jobs in online stores and other related services. Likewise, the digital economy has been shown to offer opportunities for entrepreneurship and self-employment. By reducing transaction costs, people

³ [http://www.xinhuanet.com/english/2019-5/06/c_138038007.htm#:~:text=FUZHOU%2C%20May%206%20\(Xinhua\),Administration%20of%20China%20on%20Mon](http://www.xinhuanet.com/english/2019-5/06/c_138038007.htm#:~:text=FUZHOU%2C%20May%206%20(Xinhua),Administration%20of%20China%20on%20Mon)

who face barriers in finding jobs can have more opportunities for Internet-based jobs in addition to the ability to work flexible hours from home.

The successful use of digital technology by firms and businesses depends on the ability to invest in the skills of the workforce and the ability to reorganize management processes. Only then can firms make better use of the efficiency gains that digital technology has to offer. For instance, the World Bank's Development Report (WDR, 2016) reports that firms in the US and Brazil have comparable investments in digital technologies, but the US invests much more in training and skills upgrading as well as in improving business management, which explains why productivity in US firms is higher than that in Brazil. The reason for the growth of the digital sector in China is that most of the employment growth accrues to young, educated adults, significantly and positively impacting urban unemployment rates.

More generally, at the aggregate level, a shortage of skills in a country can lower aggregate productivity growth despite making investments in broadband infrastructure and connectivity. Therefore, countries need to invest in education to tackle the digital skills issue and come up with a digital skills strategy to ensure widespread access to digital technology across the population. Recently, the EU set out a vision for the digital transformation of its member countries and proposed an enhanced framework for capacity building in emerging digital technologies. The framework includes a digital education plan to boost digital literacy and competencies at all levels of education, and a "Youth Guarantee" initiative to put a strong focus on digital skills in early career transitions, (European Commission, 2020a).

II. The state of digitalization in the UAE

As mentioned earlier, the COVID-19 pandemic has shown the importance of digital technologies to the UAE as well as to most countries around the world. Networks and connectivity, data access and transfer, artificial intelligence (AI), and the diffusion of both basic and advanced digital skills all supported the economy and the people by enabling businesses and governments to continue to work remotely. The digitization of businesses was accelerated in areas such as e-commerce, online training, and videoconferencing. Furthermore, the provision of online education resources and digital public services was also accelerated to deepen digital inclusion.

In the UAE, official data on the recent developments in the digital economy on a national level throughout the pandemic are not yet available. However, we can review the case of the digital economy in the Emirate of Dubai, based on available statistics as well as a review of the initiatives to deploy and use digital technologies and applications undertaken at the federal and local governments to manage the pandemic and support the economic recovery.

i. Connectivity and individual users

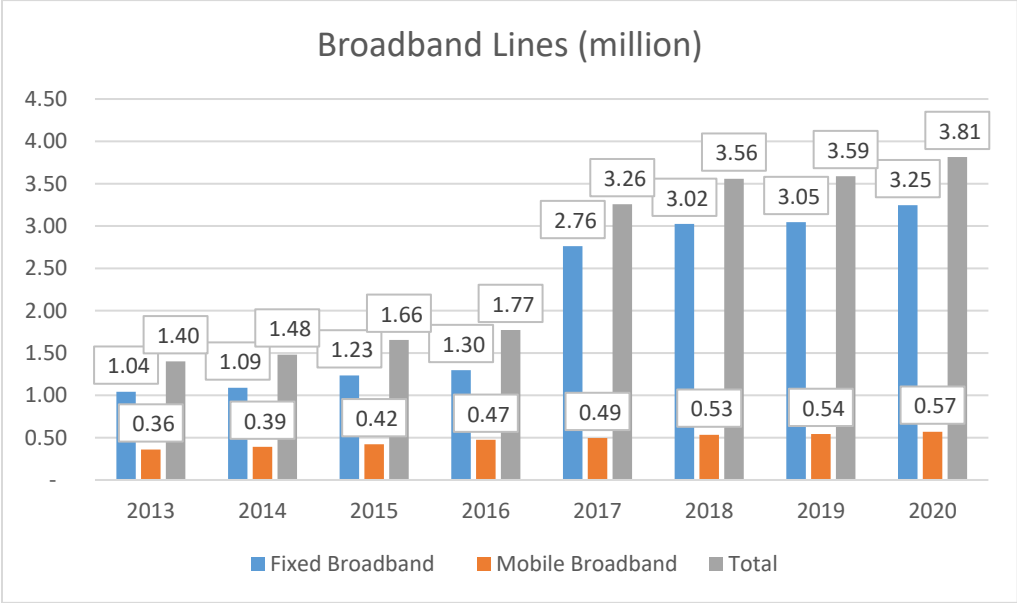
Access to a fast and reliable Internet connection (fixed and mobile) was crucial to UAE residents throughout the COVID-19 pandemic. This was essential as, due to the UAE's lockdown,

businesses sent their employees to work from home and the closure of schools resulted in the provision of online education. The UAE, through its two telecom providers (Etisalat by e& and du), was ready to provide digital services and fulfill the increasing consumer demand for information and entertainment services.

Fixed and mobile broadband penetration

The number of broadband lines has grown significantly in recent years. In terms of the number of individuals and business users, the total number of fixed and mobile broadband subscriptions has risen from around 1.5 million in 2013 to around 3.56 million in 2017 and reached 3.8 million in 2020.

Figure 4. Fixed and mobile broadband subscriptions in Dubai, 2012-2020



Source: Telecommunications Regulatory Authority (du and Etisalat).

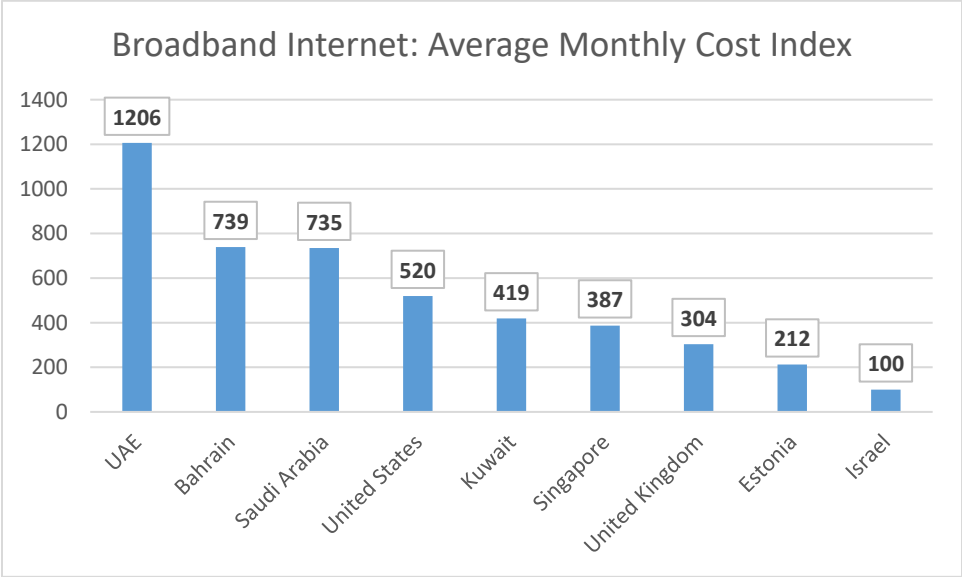
While the number of broadband lines is an important variable in ensuring digital connectivity to deliver Internet services for businesses and consumers, the cost of access and the speed of data downloads and uploads are also important determinants of the efficiency of the digital economy.

In this respect, the Global Broadband Index,⁴ which conducted an international comparison of average costs of broadband Internet subscriptions across countries, places the UAE as the costliest country globally out of the 54 countries sampled. Moreover, the broadband Internet subscriptions in the UAE were also significantly more expensive than other GCC countries. Measured in index terms, broadband Internet access in the UAE was over 12 times more expensive than in Israel (the cheapest out of the 54 sampled countries), over 1.5 times more expensive than in Saudi Arabia and Bahrain, and nearly three times more expensive than in Kuwait.

⁴ comparethemarket.com

The higher cost of access restricts the distribution of new digital services and provides an economic disincentive for high-tech startups. Furthermore, the higher cost of access in the UAE is not reflected in better quality, with an average download speed of data delivery of 38.16 megabytes per second (Mbps). Although this is higher than 29.83 Mbps in Saudi Arabia and 18.32 Mbps in Bahrain, it is much lower than the download speeds of 185.25 Mbps in Singapore (the fastest out of the 54 sampled countries) and 69.24 Mbps in Israel.

Figure 5. Broadband Internet: Average monthly costs index across selected countries (out of the 54 sampled countries)



Source: Comparethemarket.com: The Global Broadband Index.

Fifth-generation cellular wireless connectivity (5G)

In 2018, Etisalat was the first MENA telecom operator to provide a wireless 5G mobile network. Not long after Etisalat announced its 5G network, the UAE’s second telecom operator (du) also joined to support the growth of 5G mobile networks throughout the UAE. Through its telecom operators, the UAE launched 5G commercially, and the assignment of the 5G spectrum is well advanced. 5G far surpassed its predecessor (4G) in terms of the speed of data transfer and represents a major change in how digital services operate. 5G will serve and enhance the use of many applications and promote the digitization of sectors, including professional uses such as connected automated mobility, e-health, energy management, and safety applications.

Moreover, Etisalat is planning to invest AED four billion toward research and development to focus on 5G-related research. The telecom operator has also formed a partnership with Ericsson, the Swedish telecommunications company, to expand 5G coverage across mobile and fixed wireless broadband to deliver new functionality and benefits to UAE businesses and customers. An example of the benefits 5G provides is in assisting people with hearing impairments to obtain voice-to-text transcripts on smart glasses by using a 5G network.

For businesses, 5G offers companies greater opportunities to support the use of connected automated mobility, AI, the Internet of Things (IoT), cloud computing, and big data analysis. Such advanced digital technologies will enhance productivity, improve efficiency, and offer new opportunities for UAE businesses in all sectors, all of which are essential for the growth of the UAE economy and the generation of digitally skilled jobs.

i. Digital adoption of Dubai businesses

Adoption of digital technology in enterprises

During the COVID-19 pandemic and the necessary lockdown enforced by the government to reduce social interaction, UAE businesses had to adapt by adopting alternative working arrangements. According to a Dubai SME survey (2019) undertaken just before the pandemic, around 71 percent of SMEs – largely in the manufacturing and service sectors – have websites, and the larger the size of the company, the more digitized the enterprises. In terms of the use of computing services, around 45 percent of respondent SMEs already use subscription-based cloud services for accounting and financial management.

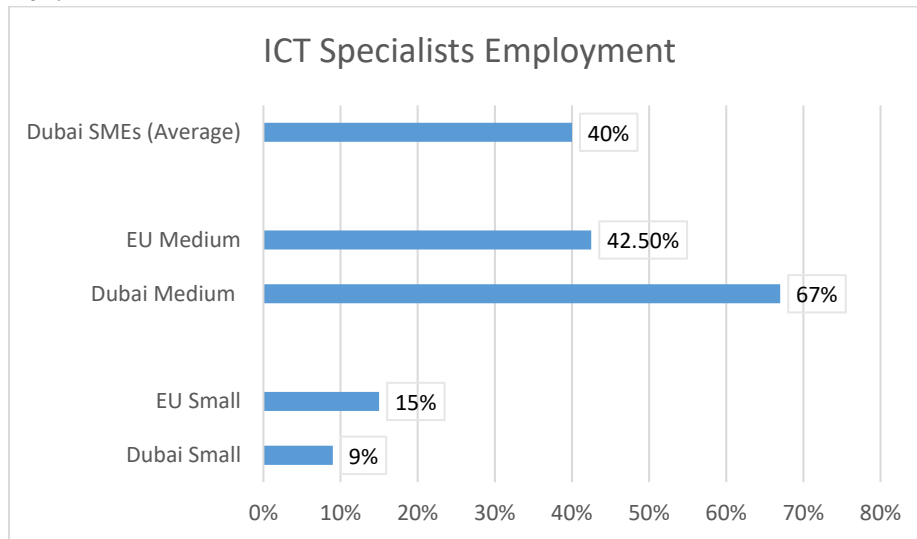
However, enterprises in Dubai’s SME sector with a low level of digital readiness found it challenging to provide their staff with the possibility to work from home. One of the main challenges facing Dubai SMEs, especially microenterprises, is the digital knowledge gap resulting from the low level of computer literacy among business owners, managers, and employees. Addressing these shortcomings through investment and training will be vital to ensure a robust post-pandemic recovery. Zaki (2022) reaches a similar finding regarding larger firms adopting more digital technology and higher e-commerce participation than small- and medium-sized firms in Egypt, Jordan, and Morocco.

ICT specialists

The COVID-19 pandemic has shown that adequate digital skills empower businesses to access information and services and that the possession of these skills is crucial for sustainability. This is especially relevant to staff in the healthcare system and in banking, and for teachers, professors and students.

ICT specialists are the backbone of the digital workforce needed to achieve digital transformation in the economy. Dubai statistics show that in 2018, around 25,000 people worked as ICT specialists in the sector. This represents a share of around one percent of total employment in Dubai, while this ratio reaches an average of 3.9 percent of total employment in the EU. At the firm level, the Dubai SME survey shows that 40 percent of SMEs in Dubai have “at least one dedicated employee or a formalized function for IT.” In terms of the distribution by size, the proportion of small Dubai enterprises employing internal ICT specialists was only nine percent, while the proportion for medium enterprises was much higher, reaching 67 percent. In comparison with EU enterprises, the Digital Economy and Society Index (DESI2020) report indicates that the share of small-size enterprises employing internal ICT specialists was 15 percent in 2019; for medium-sized EU enterprises, the proportion was 42.5 percent, which was lower than for Dubai’s counterparts.

Figure 6. Dubai enterprises employing internal ICT specialists versus EU enterprises (%), 2019



Dubai Small (51-200); EU Small (10-49)

Dubai Medium (51-200 employees); EU Medium (50-249 employees)

Source: Dubai SME Survey 2019; EC "Digital Economy and Society Index Report 2020."

It became noticeable during the COVID-19 pandemic that basic and advanced digital skills have been essential for the effective use of hardware equipment as well as for COVID-19 tracing and testing digital applications and related training. This increased demand for ICT specialists occurred not only in the healthcare sector but also for online education and distance learning, including support to schools and children with special needs to avoid the risk of social exclusion.

Use of e-commerce and online sales

Before the COVID-19 pandemic, around 23 percent of SMEs surveyed in Dubai were already using e-commerce platforms, with a higher use by SMEs in manufacturing and services. Online platforms may facilitate economic growth by enabling sellers to access new markets and reach new customers at lower costs.

Cross-border e-commerce is another important channel for exporting companies, especially for SMEs selling in the small home market to exploit economies of scale. Cross-border e-commerce helps reduce costs, increase efficiency, promote competitiveness, and enhance productivity. The results of the SME survey show that Dubai SMEs are relatively small users of e-commerce for international sales. For example, the Dubai survey reports that Dubai SMEs use cross-border e-commerce four times less than UK SMEs and 5.5 times less than their counterparts in the Netherlands. International surveys (European Commission, 2020b) report that a lack of knowledge of foreign languages and problems related to resolving complaints and disputes are cited as the main obstacles for SMEs to venture into selling online through cross-border e-commerce.

Figure 7. Adoption of digital technology in Dubai enterprises

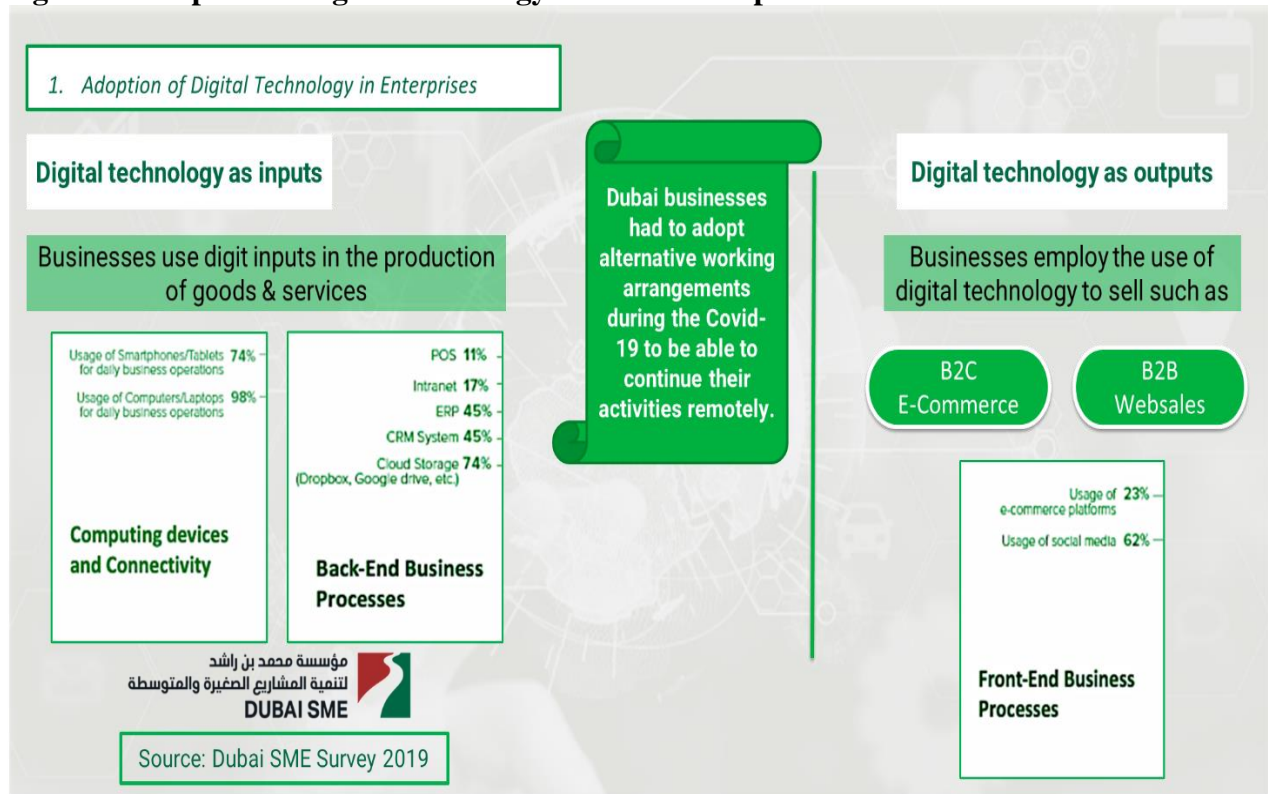
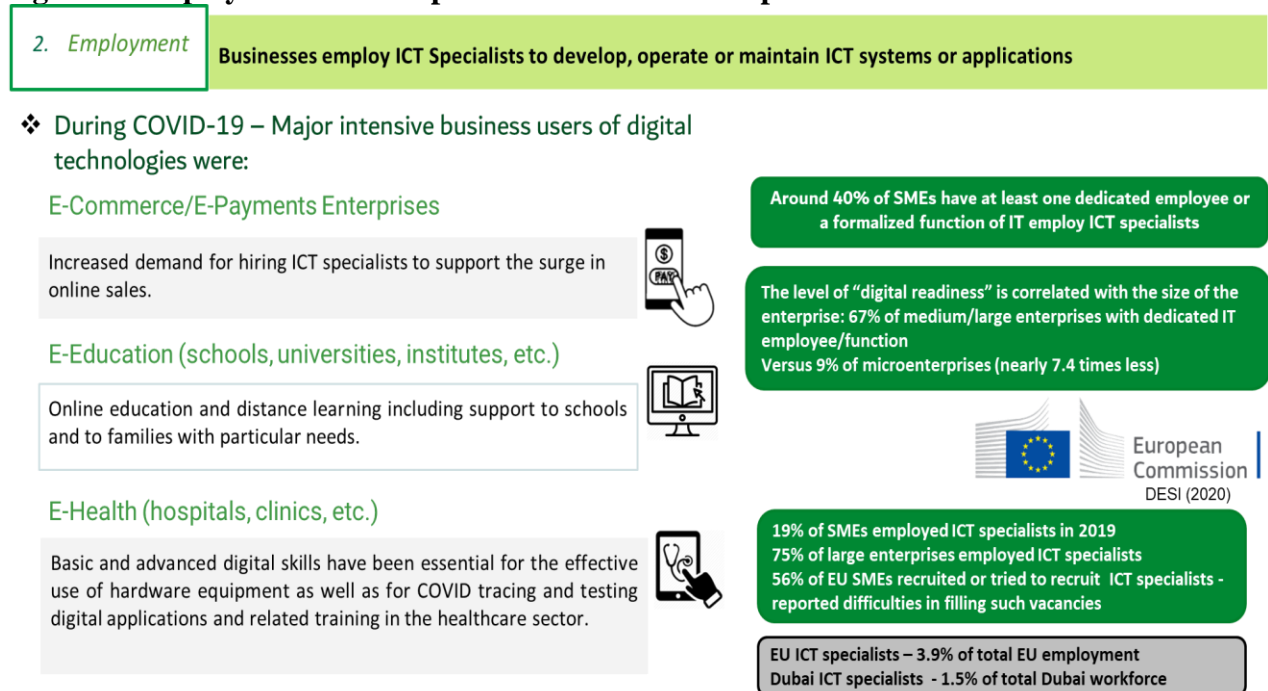


Figure 8. Employment of ICT specialists in Dubai enterprises



ii. Digitalization of public services

Prior to the COVID-19 pandemic, Dubai, for instance, had already set a prime objective to transform itself into a smart city by harnessing digital technologies to enhance growth,

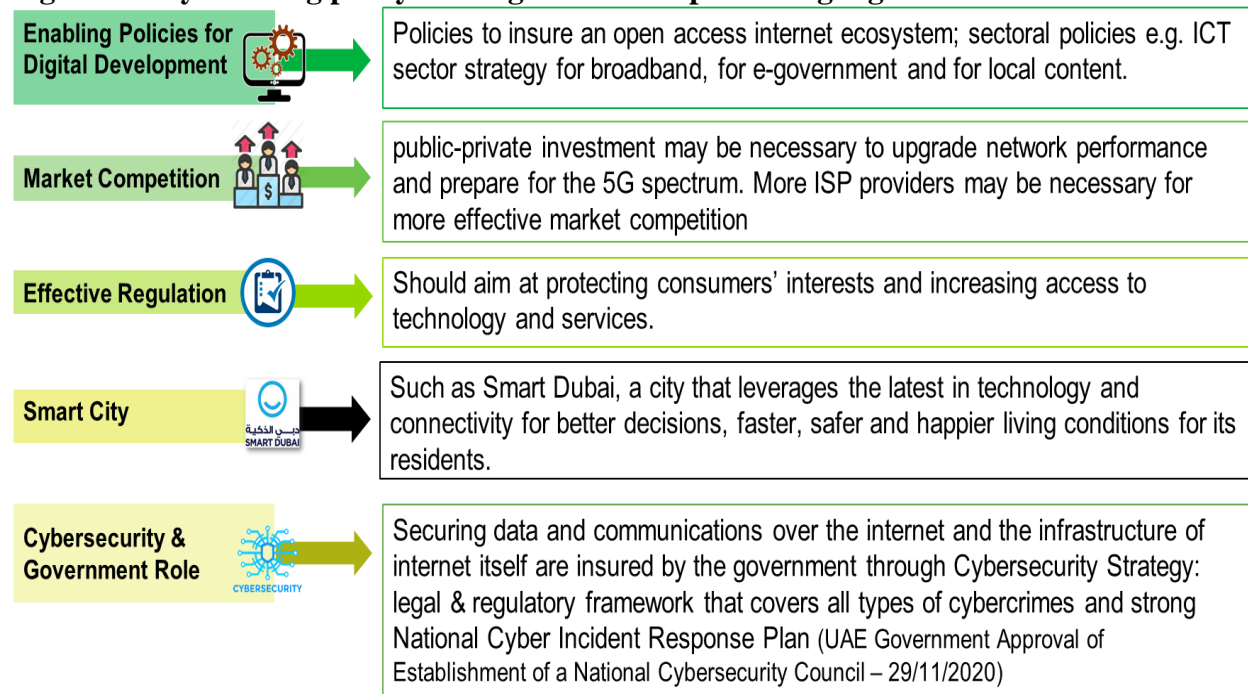
development, and the quality of public services. The Smart Dubai strategy aims to achieve digital transformation that enables people, businesses, and organizations to have fast fixed and mobile Internet interconnectivity, access city services easily, and conduct transactions online.

The COVID-19 pandemic showed the resilience of the activities of Dubai and the UAE government when social distancing measures were put in place. The Dubai government has been able to plan an exit strategy using its robust digital public services, including e-health and advanced technologies for pandemic tracing and medical data exchange. Digital public services or e-government users were able to perform tasks completely online. Public services for businesses, ranging from starting a business (registration) to conducting regular business operations, were also available online during the pandemic.

III. The UAE’s enabling policy and regulatory environment for digital development

Government policies and the regulation of the digital sector are important in helping the digital transformation of the economy. Government and regulatory agency policies as well as a cybersecurity strategy all create an enabling environment for the private sector to develop services and provide applications for users. Overall, the general objective is to ensure that Internet connectivity is universally available, accessible, and affordable, as summarized in Figure 9.

Figure 9. Key enabling policy and regulations for promoting digitalization



i. The supply of telecom services in the UAE

In the UAE, the Internet and mobile services market is currently a monopolistic market with two telecom operators, the Emirates Telecommunications Corporation (Etisalat) and the Emirates Integrated Telecommunications Company PJSC (du). Both telecom operators are majority government-owned and controlled companies. Etisalat and du, along with the Telecommunications Regulatory Authority (TRA), a government entity that is not an independent regulator, have worked together to facilitate the digital transformation of the UAE economy and society. However, since both telecom operators maintain state-run monopolies in the provision of mobile services and the Internet, access to (live) Voice over Internet Protocol (VoIP) services (such as Microsoft's Skype, Viber, and WhatsApp), which all have great impact on the telecom revenue streams, have been blocked/banned in the UAE.

The efficacy of restrictive regulatory policies on the telecommunications sector was tested by the lockdown caused by the COVID-19 pandemic, which produced an increase in the demand for Internet and mobile services from business and residents alike. Two regulatory issues have become apparent: the impact of regulation on the traffic capacity of the digital economy and the impact of excess demand and restricted access to (live) VoIP services for small businesses and households. As part of the government's response to support employees working from home and the switch to e-schooling, the TRA was permitted to lift some of the restrictions on Skype Business during the period of the pandemic "until further notice" and also allowed the use of Teams and Zoom, both popular videoconferencing software applications. Given the acceleration of the remote working trend resulting from the pandemic, the government will have to assess the productivity gains for the UAE's business community from enhanced connectivity by allowing free access to VoIP and other software against the losing revenues for the government-owned operators from international phone calls.

ii. Market competition

In the past decades, in many developing countries, the government's main role was in building telecommunication networks and acting as both an owner and operator. That role has now evolved into policymaker and regulator, with the objective of establishing an enabling environment for the private sector to run most of the telecommunication networks.

Market competition in telecommunications with independent regulation worked well for mobile telephony, leading to more growth in subscriptions worldwide than the global population.⁵ Competition and private participation should also work well for Internet services. However, private network operators extending Internet access have faced the erosion of their revenues from the market entry of third-party content and service providers of "over-the-top services" (OTT), which include telephony, VoIP services such as Skype, Viber, WhatsApp, and WeChat, and streaming services like Netflix and YouTube.

⁵ gsmintelligence.com

As a result, mobile and Internet operators in many developing countries have been losing revenues from traditional voice, text, and video services, which altogether are highly profitable, and now face the burden of lacking capital for long-term investments in fixed assets, thus threatening their survival. This threat has given some arguments to countries such as the UAE to continue raising barriers to entry for private telecom companies.

iii. Regulatory framework

Effective telecom sector regulation in a matured ICT market should aim at protecting consumers' interests and increasing access to technology and services. In particular, the regulator should strive to ensure that the benefits from technological change, greater efficiency, and reduced costs are passed on to consumers rather than allowing the telecom operators to keep the surplus in the form of higher profits. However, since the UAE government is a majority owner of the incumbent operators, the TRA has been entrusted with responsibilities that support government policies, including e-government initiatives, rather than being an independent regulator – with no apparent regulatory role over the pricing policies of Etisalat or du.

Such monopolistic market conditions have served the UAE ICT sector well in the early stage of building out the national backbone infrastructure for fixed-line and mobile telecommunications. However, such state monopolies turn out to be less effective today and could restrict the size and growth of the overall market. As the Global Broadband Index showed, the UAE is still among the costliest countries out of the 54 sampled for Internet connectivity. This evidence-based comparison pinpoints that an absence of improved regulations – especially promoting further competition, economies of scale, Internet affordability, and access to applications brought by technological change – could well lead to the market power and surpluses generated by the network operators to mainly benefit shareholders without passing the benefits on to the business users (to increase their labor productivity) or to consumers (in terms of paying lower monthly phone and Internet use charges).

iv. The smart city strategy

For some time, Dubai's government has been directly involved in enabling and shaping the evolving digital economy. In March 2014, the Smart Dubai strategy (Smart Dubai 2021) was launched, which features several initiatives involving the government in partnership with the private sector, academia, and the public sector in order to apply new technology, particularly digital and AI, to enhance the performance of the city. The strategy anticipates improvements in performance across the six areas of transport, communications, infrastructure, electricity, economic services, and urban planning.

A prime objective of Smart Dubai 2021 is to transform the Emirate into a smart city. The strategy relies on three pillars: (1) automated mobility: Dubai will adopt autonomous cars as a transportation alternative to ensure that residents reach their destinations safer, faster, and happier; (2) smart living: Dubai will provide Internet connectivity for remote access to various city public

services and making transactions online, thus reducing city traffic while saving time for Dubai's residents; and (3) smart city for business: Dubai will provide city entrepreneurs with convenient digital services for starting up their business and supporting them with accelerators and incubators to strengthen its position as an innovation hub.

The Smart Dubai Office has already launched more than 130 initiatives transforming 1,000 government services into smart services. To give just one example, since 2021, the Dubai Government has been paper-free, eliminating more than 1,000 pieces of paper used in transactions, thereby saving time, resources, and the environment.

v. Cybersecurity and the protection of individual privacy

The issue of cybersecurity and securing data and communications over the Internet is a significant problem worldwide. Threats to personal security online, such as online identity theft and phishing attacks on bank accounts and credit cards, erode public confidence in e-commerce and e-government applications. Cybersecurity involves both financial losses and the costs of fighting those threats. Around the world, governments are taking action to address cybersecurity concerns. In the UAE, the government stepped in early during the COVID-19 pandemic to enforce cybersecurity with punitive measures against fake news and phishing attacks and the establishment of the Cybersecurity Council.

Concluding remarks

In the MENA region and globally, the UAE has been at the forefront of adopting digital technologies that have the potential to propel future economic growth. In the post-COVID-19 era, the UAE, like many other countries, will face a newly evolving environment. However, the country is already well-positioned for the challenge of transforming its economy for the digital era, supported by a long and successful track record of capturing opportunities that give rise to new markets and increase productivity across some critical sectors. The UAE has been proactive in already adopting digital technologies such as AI, IoT, additive manufacturing (3D printing), and blockchain, as well as investing in digital infrastructure in the telecommunications sector. This digital foundation will play a catalyzing role in enabling the UAE to successfully build a digital economy and enhance economic growth in the future.

There are, however, important enablers of the digital economy that the COVID-19 pandemic revealed, and they should be addressed as a priority as part of a post-COVID strategy. These are human capital and investment, regulatory policy, and statistical measurement.

As far as human capital is concerned, the UAE government has intensified efforts to teach and train advanced ICT skills inside and outside the formal education system. During the pandemic, many enterprises, schools, and institutions reported difficulties in finding workers with advanced ICT skills.

In the case of ICT skills outside of the formal education system, partnering with the private sector to develop technical training in advanced IT skills is clearly recognized as a vehicle to foster the digital economy in the UAE. Such partnerships have already taken place with Oracle, for example, who opened a data center in Abu Dhabi. Microsoft also opened data centers in Dubai and Abu Dhabi. Other partnerships should be formed and should target professionals and university students to facilitate training and certification in ICT.

Foreign direct investment into the ICT sector and the wider digital economy needs to be significantly raised, especially given the UAE's position in the region as an important capital market and trading hub. This will be assisted by a more enabling regulatory policy, the existence of a growing number of skilled professionals, and incentives to attract professionals and companies operating in the digital sector in Abu Dhabi and Dubai either physically or remotely, as in the case of Estonia.

Turning to regulatory policy, shaping the digital economy for the post-COVID-19 era will become more complicated and will call for the implementation of a new set of policies to regulate the telecommunication sector in order to expand its size and rectify the inequalities created by differences in digital access and costs for small enterprises and households. Less restrictive policies allow us to take the opportunity offered by the health crisis to enable a quantum leap in the digital skills of the UAE population to raise productivity in the future.

There should be a broad ICT consultation process involving multiple stakeholders, including users, to ensure that there is an opportunity for all to express their views and that these views are reflected in policymaking and the regulation of the ICT sector in the UAE. ICT policy is too important to be left to the monopoly of the two telecom operators (Etisalat and du) and the TRA alone. Broad multi-stakeholder consultations on policy decisions related to the accessibility and affordability of Internet services will be tremendously important and are key to a successful digital economy for the UAE.⁶

There should be a debate by multiple stakeholders on future access to existing banned and future VoIP services and applications to avoid widening the gap in the digital divide between various socioeconomic groups in society.

Finally, in statistics, developed efforts to measure the digital economy have been shown to have various dimensions, and there is a need for the UAE's federal and local statistics authorities (DSC, ADS, FCSC...etc.) to develop methodology and conduct surveys to measure digital products and services. The effort of officially compiling such data would enable the monitoring of emerging new sectors linked to digitalization in the UAE economy to improve estimates of productivity,

⁶ The TRA organized a virtual forum on 13 August 2020 with the participation of representatives from multi-stakeholders. Such initiatives should be encouraged as they allow for discussions and expressions of views on the UAE's ICT policymaking.

GDP, and real economic growth. These efforts would assist in attracting further investments into the UAE digital economy.

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