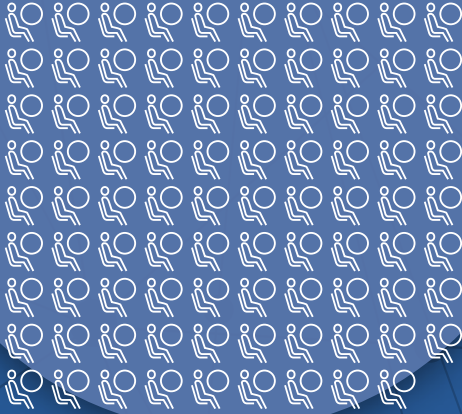


Transport, Storage, Communications and Information Technology

89 Million

Passengers in 2018



1

World's Busiest Air Hub

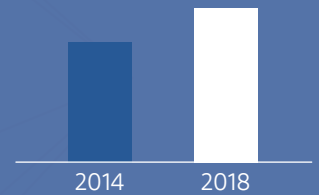
Dubai International Airport handled 89 million passengers in 2018, up from 88 million the year before. It is the world's busiest air hub for international passengers.

Economic Growth Promoted by World Class Infrastructure

In the GCC, UAE is #1 in transport infrastructure and the highest quality of air transport infrastructure (ranking 9th globally).

↑ 28%

from 2014 to 2018



2



Growth in Broadband

Installation of broadband lines grew by 28% from 2014-2018, increasing from around 493 thousand in 2014 to 633 thousand in 2018.



3

Migrating to a Public Cloud

The government's migration to public cloud infrastructure can improve operations and the experience citizens receive from their public services, and enable an economy of scale to lower costs.



Overview

The Transport and Storage sector was the second largest contributor to GDP in 2018 producing value added of AED 152.4 billion or 12.3 per cent of GDP. Accounting for 10.3 per cent of the employed workforce with 283,843 employees, this sector was the third largest employer in Dubai 2018. Real value added in the transport and storage sector rose by 2.1 per cent in 2018, just above the rate of growth in Dubai's GDP.

The Transport and Storage sector in Dubai has a special importance beyond its position as one of the main economic sectors in the Emirate in terms of its contribution to GDP. This stems from its interrelationships with other economic sectors, especially trade and tourism. The quality of the Emirate's transport infrastructure is a determinant of Dubai's international competitiveness and of foreign investment inflows.

Investing in transport infrastructure has been an economic priority for the government of Dubai as well as for the rest of the United Arab Emirates. The UAE is ranked in 1st place in the GCC region and in 7th place out of 140 countries, for the quality of its air transport infrastructure according to the 2019 World Competitiveness Report¹. The UAE was also in 9th position globally for quality of road infrastructure. Dubai International Airport handled 89 million passengers in 2018, up from 88 million the year before, and retained its position as the world's busiest hub for international passengers.

The Information Technology and Communications sector contributed value added of AED 32.0 billion in 2018, a share of 4.2 per cent of GDP. The sector employed just over 35 thousand employees, only 1.3 per cent of the total workforce, but labour productivity in the sector is high and ranked in third place across the Emirate.

In recent years, the Information Technology and Communications sector has become a main driver of global economic growth, and this makes it a point of interest and research for the governments of both developed and developing countries. This sector plays a pivotal role in many economic activities and related sectors, such as transport, education, industry, trade and tourism, and financial services. The benefits of the Information Technology and Communications sector extend to almost all the actors in economic activities as it increases the productivity of businesses and improves the quality of products and services through innovation and lowering production costs. The sector also contributes to the creation of new sectors and enables existing companies to expand their business and open new markets which ultimately leads to the creation of new job opportunities. In addition, the Information Technology and Communications sector facilitates the diffusion of information and knowledge at a low cost for individuals and companies, and this in turn fosters increased levels of technological knowledge, improving human capital and building potential to take advantage of economic growth opportunities.

¹ <http://reports.weforum.org/global-competitiveness-report-2018/>

The Transport and Storage Sector

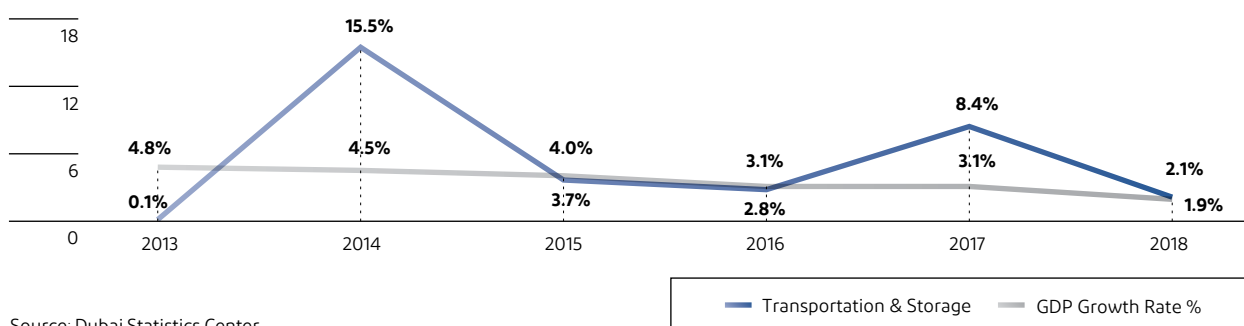
5.1 The Transport, Storage and Logistic Services sector has a great importance in the economy of Dubai not only due to its valued added contribution to GDP, but also due to its linkages with other economic sectors and activities. Given this importance, the Emirate’s government has spared no effort in providing the investment needed to improve and develop the infrastructure of the Transport and Storage sector, which includes ports, airports and roads. As a result of these ongoing government efforts, the Emirate of Dubai has become a global centre for international merchandise trade connected to the world through a wide and high quality network of sea and air routes.

5.2 Despite a decline in the growth rate of the Transport and Storage Sector in 2018 in comparison to 2017, the sector grew by 2.1 per cent, which exceeded the Emirate’s GDP growth rate of 1.9 per cent 2018, (Figure 5.1).

Moreover, the sector’s GDP contribution maintained its relative significance with a slight increase in 2018, from around 12.2 per cent of GDP in 2017 to 12.3 per cent in 2018, (Figure 5.2).

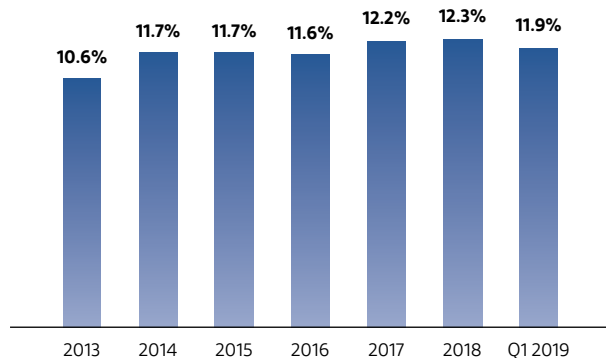
In terms of the sector’s workforce, the number of workers employed in the Transport and Storage Sector has increased consistently in recent years up from around 232 thousand workers in 2011 to around 241 thousand in 2013, then to about 273 thousand in 2016, and it exceeded 285 thousand in 2018, (Figure 5.3).

Figure 5.1: Evolution of growth in the value added of Transport & Storage Sector



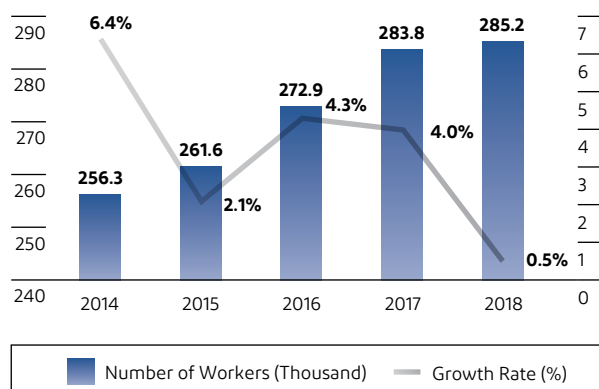
Source: Dubai Statistics Center

Figure 5.2: Percentage of Transportation & Storage Sector in Dubai’s GDP



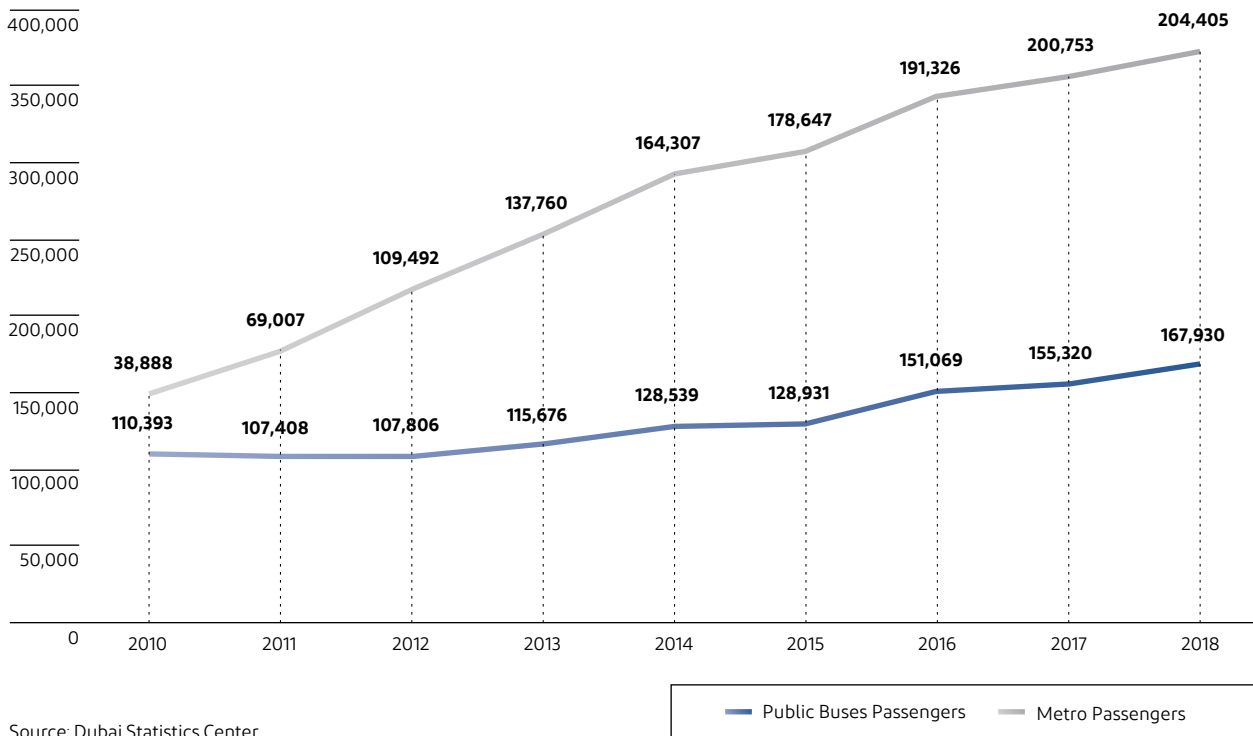
Source: Dubai Statistics Center

Figure 5.3: Evolution of number of workers in the transportation and storage sector



Source: Dubai Statistics Center

Figure 5.4: Evolution of number of metro and public bus passengers (2010-2018)



Source: Dubai Statistics Center

Land Transport System

5.3 The land transport system is the cornerstone of the domestic transport system in any economy. Other transport systems, such as maritime and air transports, cannot work efficiently without a strong road network consisting of highways, connecting roads, intersections, bridges and tunnels. Accordingly, the Emirate’s government has paid great attention to investing in and maintaining a road infrastructure whose quality is very high in terms of international standards. The UAE ranked ninth place globally out of 140 countries according to World Economic Forum’s indicators of international roads quality².

Despite the fact that Dubai is considered one of the most dense cities in terms of the ratio of private cars to population, the Emirate’s government provides a highly efficient and advanced public transport system which consists of public buses, metro and taxis, and this provides more transport options for the Emirate’s residents and visitors. In order to preserve the environment and transform Dubai into “a green city”, the Emirate has undertaken special initiatives and mechanisms to reduce CO2 emissions as an essential component of the public and private transport systems.

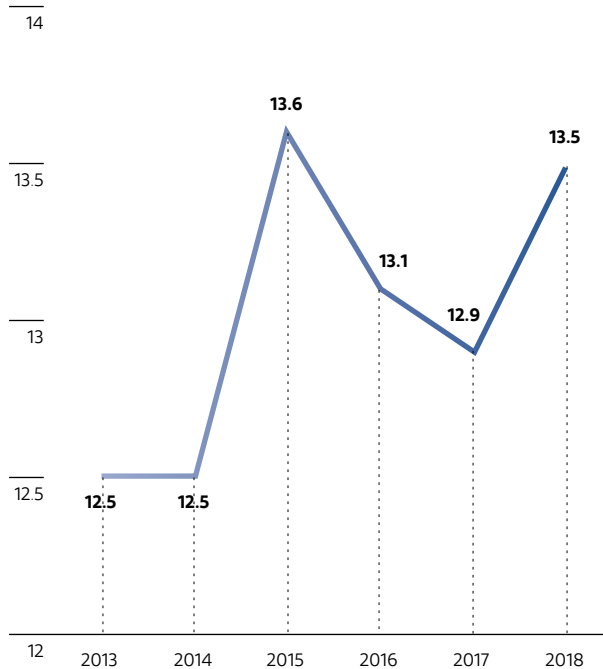
Mass Transport System

5.4 The mass transport system in the Emirate consists of an integrated network of public buses and a metro network which covers most areas of the Emirate through two main lines (red and green) with a current capacity of 79 trains covering a distance of 75 km. There are also excellent transport services by sea, which includes ferries, water buses, water taxis and Dubai Ferry.

Figure 5.4 shows the significant increase in the number of mass transport passengers in recent years and the clear difference in the growth rate between public bus passengers and metro passengers. The number of metro passengers increased by more than five times during the period 2010-2018, from around 39 thousand passengers per year in 2010 to around 204 thousand passengers per year in 2018. In addition, the rate of growth in the number of public bus passengers was 52 per cent during the same period as the volume of transports rose from around 110 thousand passengers per year to around 168 thousand passengers per year, (Figure 5.4).

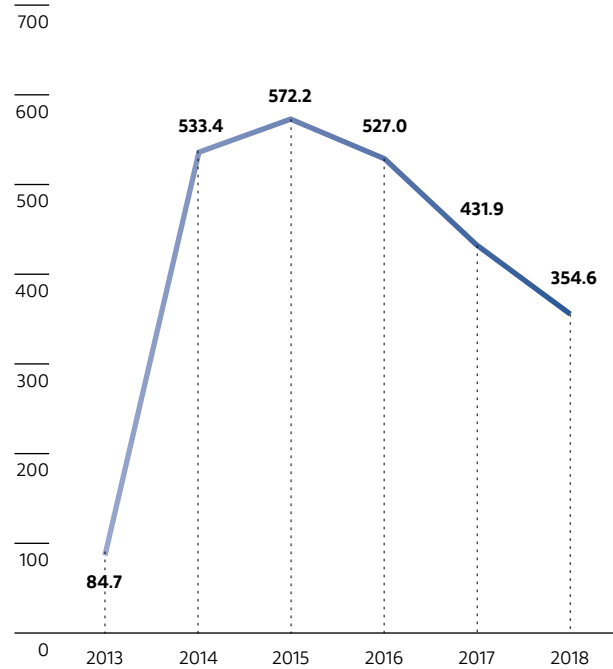
2 World Economic Forum: “Global Competitiveness Report 2019”.

Figure 5.5: Evolution of number of ferry passengers (in Million)



Source: Dubai Statistics Center

Figure 5.6: Evolution of number of water bus passengers (in Hundred)



Source: Dubai Statistics Center

Water mass transport

5.5 The Emirate offers diversified transport services, providing a complementary range of mass transport services via ferries, water buses, water taxis and the Dubai Ferry. Water-based public transport services attract both residents and visitors as they provide a fun and unique transport experience.

Ferries are commonly used as a means of travel in the mass transport system in the Emirate, and they account for the lion’s share of water transport users with a percentage of over 95 per cent of total journeys. The number of ferry passengers in 2018 was thirty seven times the number of water bus passengers.

In general, the number of ferry passengers has shown an upward trend during recent years, increasing from around 12.5 million passengers in 2013 to around 13.6 million passengers in 2015, while it decreased marginally to 13.4 million passengers in 2018, (Figure 5.5).

In addition, the available data shows significant growth in the number of water bus passengers since the service was launched, although this growth has decreased in recent years. The number of passengers rose from around 85 thousand in 2013 to over 572 thousand in 2015 (increasing sevenfold), and then decreased to 354 thousand in 2018, (Figure 5.6).



Ferries are commonly used in the public transport in Dubai — they attract both residents and visitors as a fun and unique transport experience.

Transport by Taxis

5.6 The land transport system in the Emirate also includes transport by taxis through six entities which are licensed to operate taxis: Dubai Taxi, Arabia Taxi, National Taxi, Cars Taxi, Metro Taxi and City Taxi. These entities operate under the supervision of the Roads and Transport Authority in Dubai. Taxis offer individual transport services, which are particularly suited to the visitors of the Emirate in order to complement the land transport system in a manner that meets the needs of both residents and visitors.

Data regarding the number of taxis in Dubai shows significant growth during recent years as their number increased from 7,944 vehicles in 2010 to 8,762 in 2014, then to 10,013 vehicles in 2016 and reaching 11,239 in 2018, (Figure 5.7).

The increase in the number of taxis serving Dubai is a result of the increasing demand for this service in recent years, and this is reflected in the number of trips which increased from around 82 million trips in 2010 to around 96 million in 2012, to around 108 million trips in 2015, then dropping to around 101 million trips in 2018, (Figure 5.8).

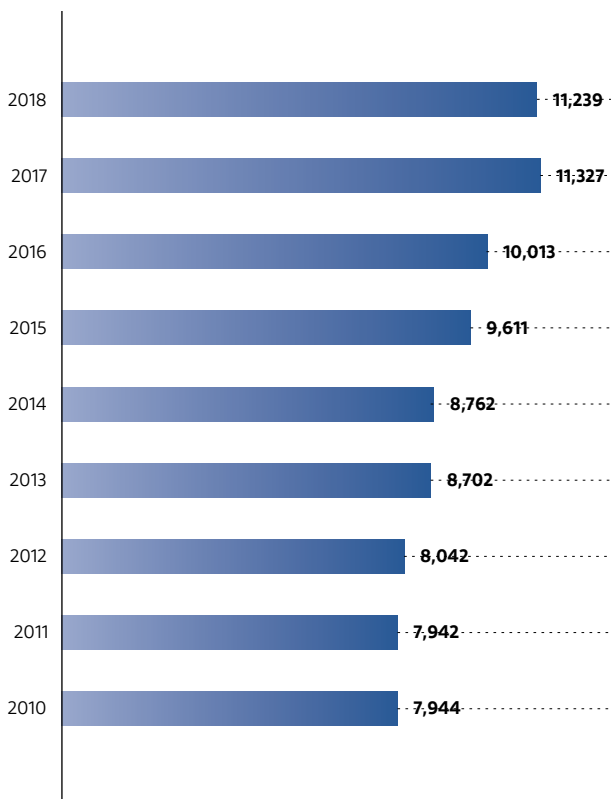
Maritime Transport

5.7 The Maritime Transport sector is of great importance in the economy of the Emirate due to the great openness of the Emirate to international trade through its access to the Gulf. The sector provides a high quality infrastructure that consists of ports, logistic services and storage.

There are three main ports which serve Dubai: Jebel Ali Free Zone Port, Mina Rashid and Mina Al Hamriya, in addition to traditional piers along the Dubai Creek. The number of ships arriving at the 3 ports was 21,849 in 2018 compared to 20,891 ships in 2017, an increase of 5 per cent.

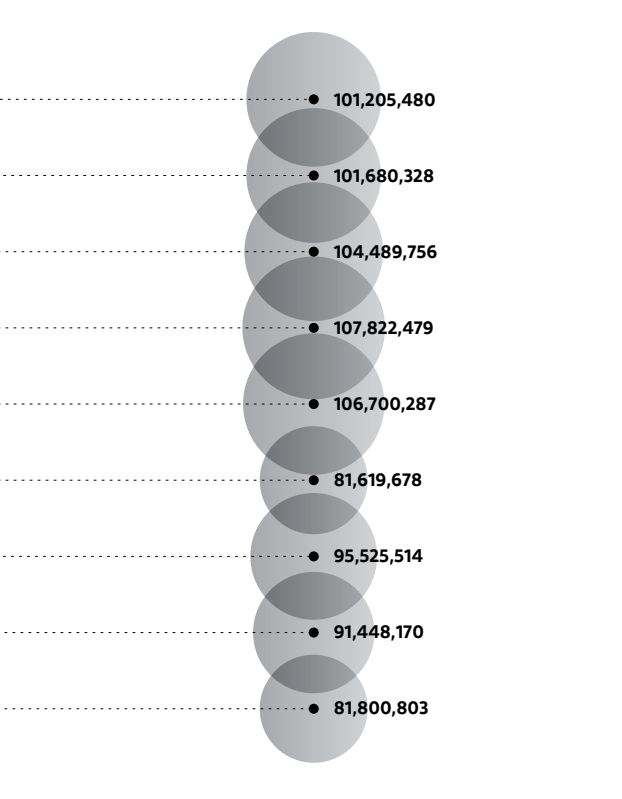
Maritime Transport has developed in the Emirate thanks to the highly developed infrastructure constructed in Jebel Ali Port, which is ranked the ninth largest port in the world. Jebel Ali Port consists of four Stations: Container Terminals, General Cargo Terminal, Roll on-Roll off (RORO) Terminal and Liquid Bulk Terminal. Jebel Ali Port is considered the main gateway for Dubai's foreign trade. In 2018, the value of Dubai's foreign trade of goods (imported and exported) amounted to AED 1.3 billion and half of it was transported via this port.

Figure 5.7: Number of Taxis (2010-2018)



Source: Roads and Transport Authority (RTA)

Figure 5.8: Evolution of number of taxi rides (2010-2018)



Source: Roads and Transport Authority (RTA)

In contrast, Mina Rashid is specifically used to receive cruise ships and its use has expanded in line with the increased popularity of Dubai as a tourist destination. In 2018, 128 cruise ships entered the port carrying around 625,000 passengers and tourists.

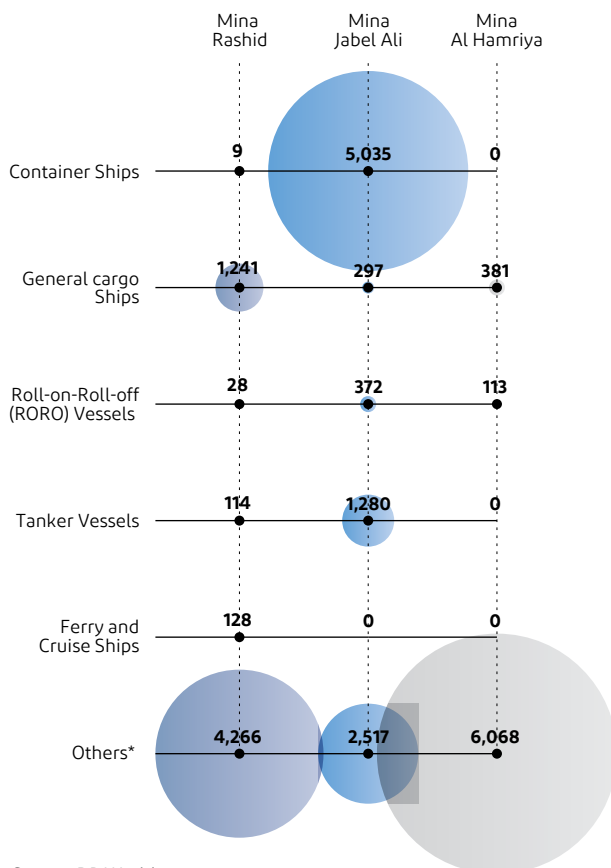
Mina Al Hamriya, the third largest port in Dubai in terms of size, is well situated for shipments going to and arriving from GCC countries, Iraq, the Horn of Africa and India. It also contains one of the largest veterinary control centres for imported livestock in the Arab Gulf region, (Figure 5.9).

Dubai as Global Maritime Capital

5.8 Dubai was ranked ninth in the *Leading Maritime Capitals of the World Report 2019* which is issued once every two years by Menon Economics and DNV GL Publication, which specialises in rating world leading maritime capitals. The indicators used for rating leading maritime capitals measure ports efficiency, port infrastructure and the city’s maritime and logistic capabilities. Maritime capitals are ranked based on the following sub-indicators:

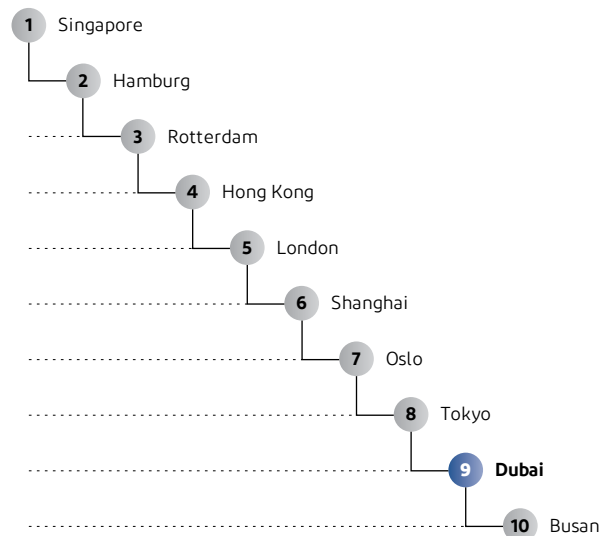
- **Maritime shipping centres.** Dubai ranked 11th due to the huge number of cargo ships received by Dubai ports;
- **Maritime finance and legal experience.** Dubai ranked 13th due to its location as a global financial centre for financing foreign trade, shipbuilding industry, presence of global banks branches, and global insurance companies for maritime shipping and related services;
- **Maritime technology.** Dubai ranked 15th according to the indicator on the use of digital technology, innovation and R&D centres in maritime shipping technology and the presence of global expertise in this field;
- **Ports services and logistic services performance.** Dubai ranked 5th according to this indicator which evaluates the quality of ports infrastructure services. Dubai is considered a global hub for maritime shipping and maritime, air and land shipping logistic services (Multimodal Transportation). This position is due to the close attention paid by the Dubai Government to the transport and maritime industry in order to make Dubai one of the best maritime capitals in the world;
- **Very attractive and competitive working environment.** Dubai was ranked as the 9th best global maritime capital due to the location’s high level of attractiveness and competitiveness, making it suitable for large international corporations to establish regional operations offices, (Figure 5.10).

Figure 5.9: Total Ships Arriving to Dubai in 2018 by Type of Vessel



Source: DP World
 * Dry bulk ships (iron, ore, coal, bauxite, etc.); Liquid bulk (fuels and industrial chemicals, lubricants, etc.)

Figure 5.10: The leading maritime capitals of the world in 2019



Source: Menon Economics, “The leading Maritime Capitals of the World 2019”

Air Transport

5.9 The Air Transport sector is one of the core pillars of the Emirate’s economy and is a main driving force for economic growth in the Emirate due to its linkages with other economic sectors within the country and across the world. The significant accomplishments attributed this sector have been praised by international and regional institutions in recent years. The sector is served by a high quality airport infrastructure and includes one of the best airlines in the world, Emirates Airlines.

Air Passengers

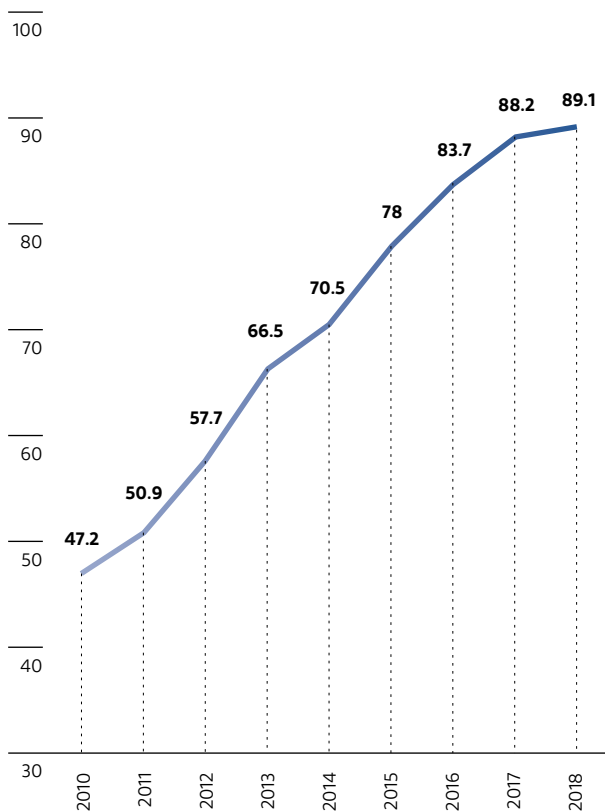
The Air Transport sector has a distinguished global status and is recognized by many specialized indicators and surveys. For example, Dubai International Airport maintained its number one position as the world’s largest airport in terms of the number of international passengers for the fifth consecutive year³ according to the Dubai Civil Aviation Authority in a report issued at the beginning of this year (2019). The airport administration stated that a total of 89,149,387 passengers used the airport during 2018, an increase of 1 per cent compared to 2017.

In terms of the number of flights, air traffic remained relatively stable in 2018 with 408,251 flights (a slight drop of 0.3 per cent compared to 2017). The average number of passengers per flight out of Dubai slightly increased to 226 passengers or 1.3 per cent compared to 2017.

As shown in (Figure 5.11), the number of international passengers from Dubai International Airport has increased during the last eight years from 47.2 million passengers in 2010 to more than 89.1 million passengers in 2018.

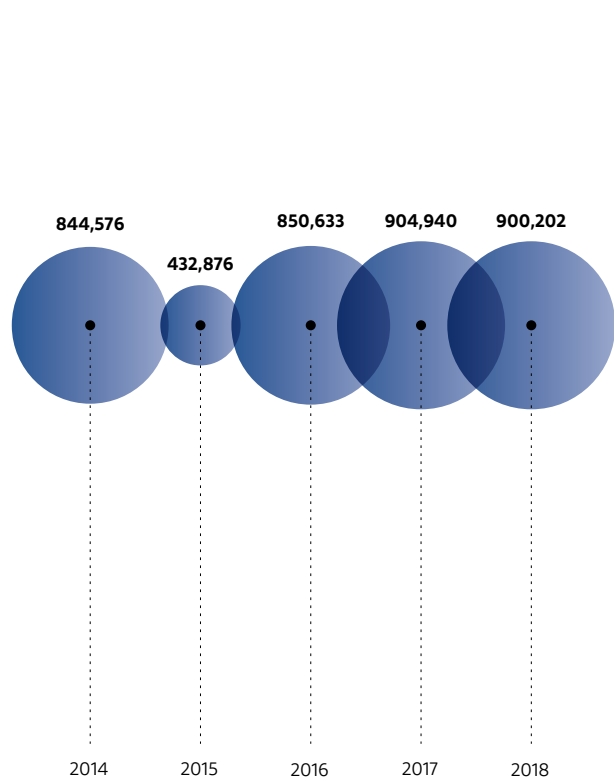
Al Maktoum International Airport, the second airport in Dubai, is at the core of Dubai South a planned residential, commercial and logistics complex. Since the start of its operations and the opening of the passenger terminal in October 2013, Al Maktoum International Airport has witnessed a constant increase in passenger numbers. The volume of passenger traffic at Al Maktoum International Airport increased from around 851 thousand passengers in 2016 to around 905 thousand passengers in 2017, dropping to around 900 thousand passengers in 2018, (Figure 5.12).

Figure 5.11: Evolution of number of Dubai International Airport passengers (million)



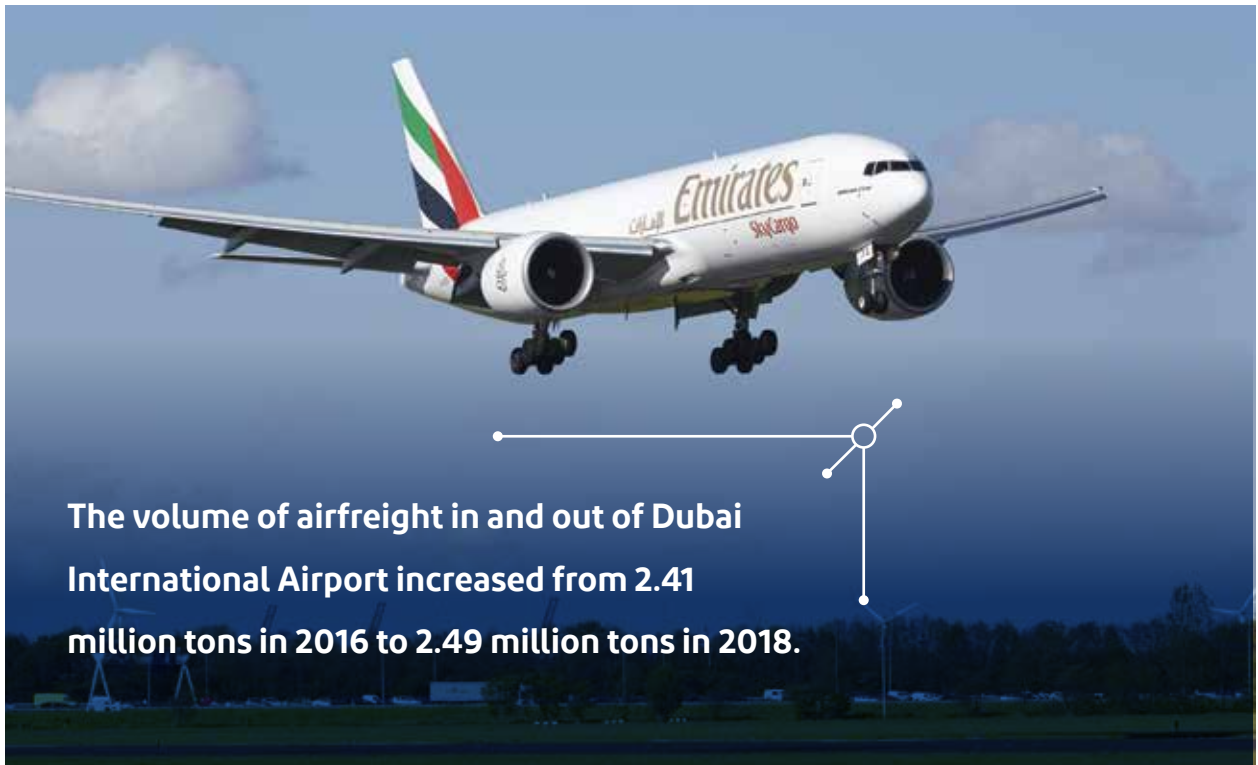
Source: Dubai Statistics Center

Figure 5.12: Number of Al Maktoum International Airport passengers (2014-2018)



Source: Dubai Statistics Center

3 Dubai Airport, Fact Sheets, <https://www.dubaiairports.ae/corporate/media-centre/fact-sheets/detail/dubai-airports>



The volume of airfreight in and out of Dubai International Airport increased from 2.41 million tons in 2016 to 2.49 million tons in 2018.

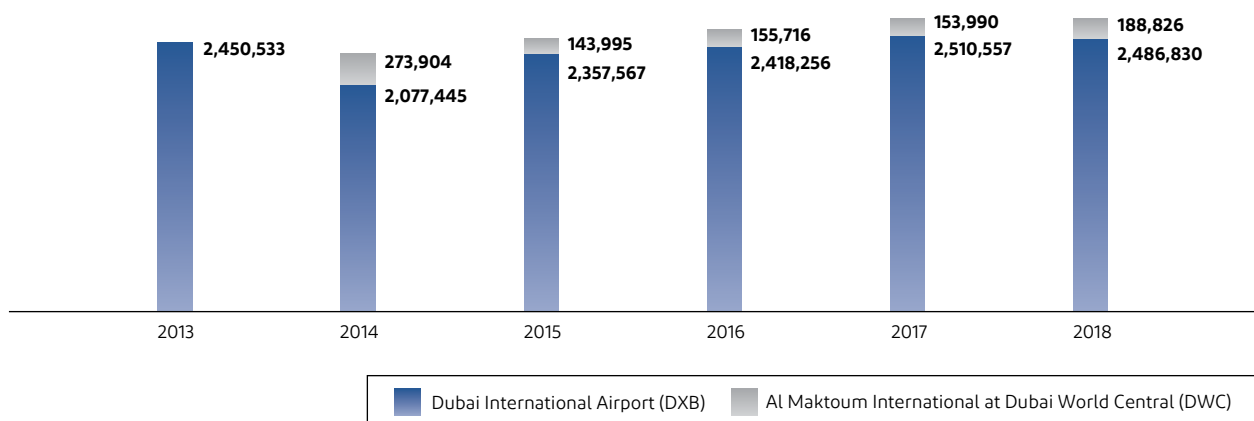
Air Cargo

5.10 Airfreight is one of the main activities of the Air Transport sector due to Dubai’s status as a global trade centre and a trans-shipment hub for goods from around the world. Airfreight operations in Dubai pass through both Dubai International Airport and Al Maktoum International Airport. Data shows that the volume of airfreight in and out of Dubai International Airport increased from 2.07 million tons in 2014 to 2.41 million tons in 2016, and then to 2.49 million tons in 2018. Airfreight traffic at the Al Maktoum International Airport achieved similar growth, with the volume of airfreight from and to the airport increas-

ing from 144 thousand tons in 2015 to 154 thousand tons in 2017, reaching 189 thousand tons in 2018, (Figure 5.13).

Overall, Dubai’s airfreight volume achieved a growth rate of 6.4 per cent in 2015, and then it dropped to 2.9 per cent and rose again to 3.5 per cent in 2016 and 2017, respectively. In 2018, it dropped to 0.4 per cent. The drop in airfreight volume growth rates in the Emirate was a result of weak global trade due to slower global economic growth and the continuing trade dispute between the world’s largest economies, the USA and China.

Figure 5.13: Air traffic transport from-to Dubai (Cargo tons)



Source: Dubai Statistics Center



Information and Communications Technology Sector

5.11 The Information and Communications Technology sector recorded a growth of 2.7 per cent in 2018, higher than the rate of growth of GDP growth rate (in constant prices) for the same year, (Figure 5.14). The sector's contribution to total GDP has stayed at approximately the same percentage during the period 2016-2018.

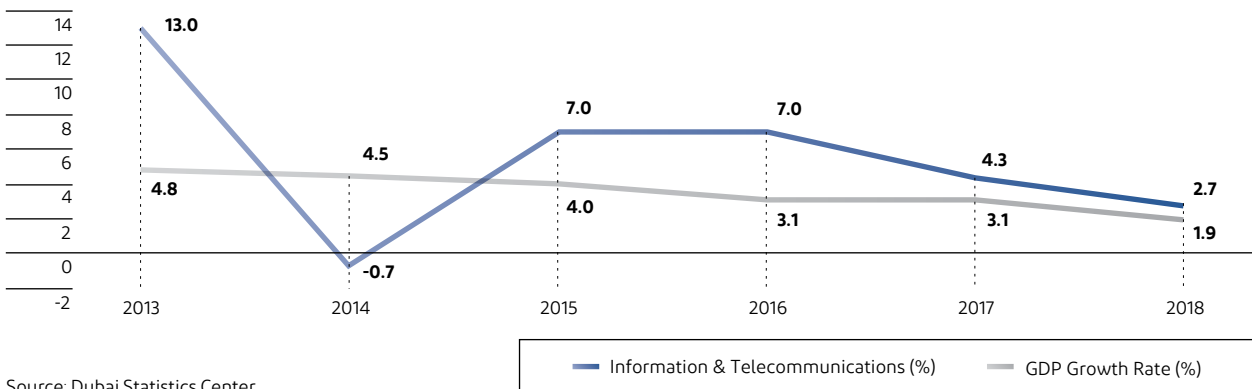
The numbers of workers in the sector has steadily increased, from around 24 thousand workers in 2010 to over 30 thousand in 2014, then to around 37 thousand in 2018, (Figure 5.15).

5.12 One of the most significant events in the Communications sector in 2018 was the UAE's

hosting of the ITU Plenipotentiary Conference 2018 in Dubai, which is considered the highest policy-making body of the International Telecommunication Union (ITU). The UAE also won, for the fourth consecutive time, Council membership of the International Telecommunication Union for the region of Asia and Australia. Moreover, the two main telecommunications operators in the UAE, Etisalat, based in Abu Dhabi, and du, based in Dubai, succeeded in launching the first commercial network for fifth generation (5G) broadband technology in the region.

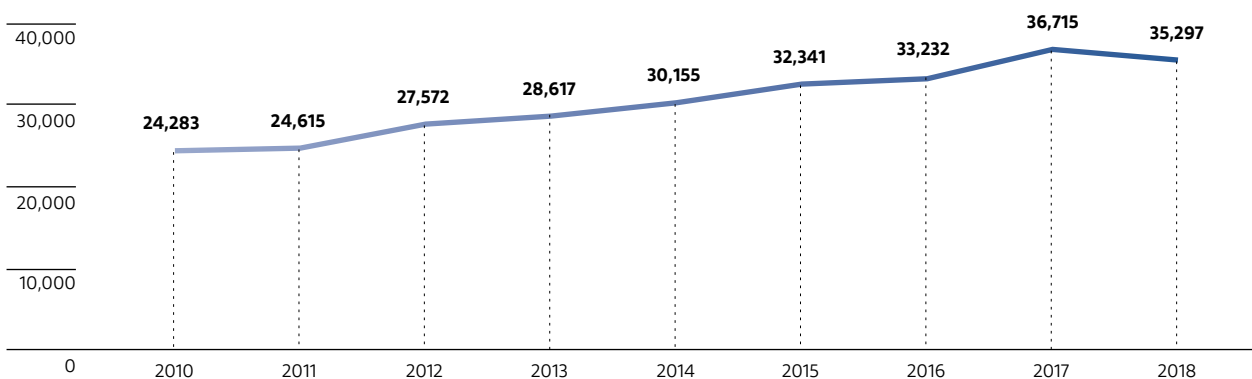
The year 2018 also witnessed a significant growth in the number of companies that introduced new technologies and digital infrastructures into their work systems. This

Figure 5.14: Evolution of growth in the value added of the Information and Telecommunications sector (%)



Source: Dubai Statistics Center

Figure 5.15: Evolution of number of workers in the Telecommunication Sector



Source: Dubai Statistics Center

growth is in response to the benefits offered by such technologies, especially with regards to increasing productivity, efficiency of operational processes and lowering operational costs. The Initiative for the transition of the Emirate into a mobile smart government also emphasizes the importance of the role of communications in developing and improving government performance and offering services.

The Communications and Information Technology sector is expected to provide strong growth potential in the coming years, especially with new trends and initiatives to adopt artificial intelligence technologies and Internet of Things. The UAE and the Government of Dubai is aware of this potential and is both investing in and creating initiatives that will hasten the digital transformation of the economy, (see Box 5.1).

5.13 The number of fixed telephone lines installed in Dubai has witnessed a significant increase during the last five years. The network capacity increased from 1,304 million lines in 2014 to around 1,383 million lines in 2016, reaching 1,431 million lines in 2018.

Data also shows an increase in the number of mobile phone subscribers from around 5.9 million lines in 2017 to around 6.4 million lines in 2018, (Figure 5.16).

Due to continued expansion in the supply of services provided by the Government and by businesses through the internet and the demand for these services, the total number of broadband lines in Dubai has continued to increase. Broadband lines achieved a growth rate of more than 28 per cent over the period 2014-2018, increasing from around 493 thousand in 2014 to around 623 thousand in 2016, then to 633 thousand in 2018. The main increase in the total number of broadband lines in Dubai came from an increase in the number of residential sector lines, which grew from 421 thousand in 2014 to 495 thousand in 2016, then to 543 thousand in 2018. On the other hand, business sector lines increased from around 72 thousand in 2014 to around 128 thousand in 2015, then the number dropped to around 90 thousand lines in 2018 due to the slowdown in the rate of economic growth in the Emirate, (Figure 5.17).

Figure 5.16: Evolution of telephone lines in Dubai

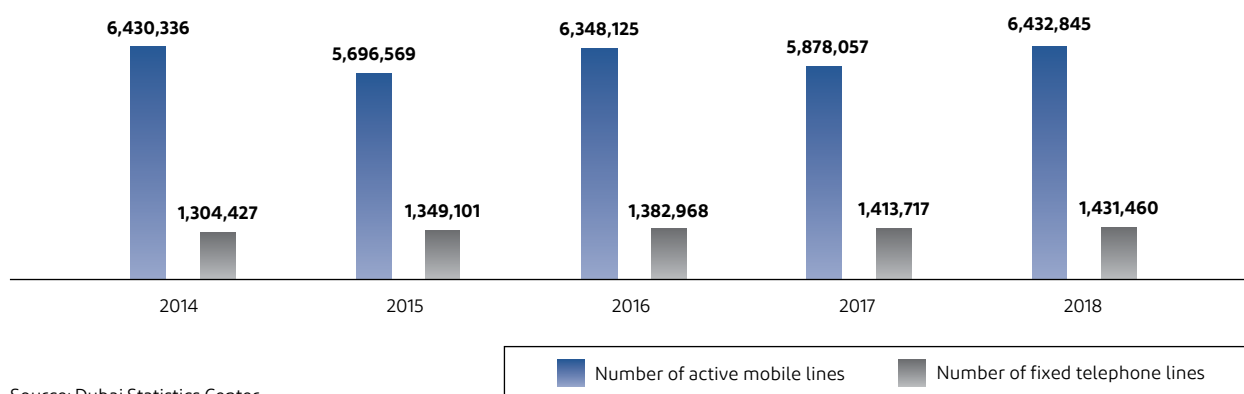
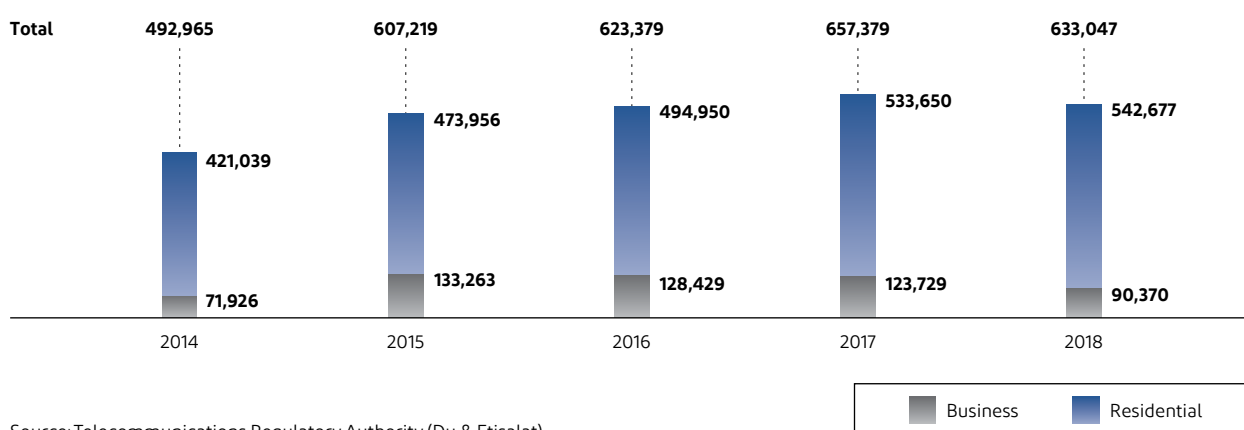


Figure 5.17: Broadband lines in Dubai



BOX 5.1

The Future of Information Communication and Technology in Dubai & UAE



New technological trends centered on the emergence of artificial intelligence (AI), cloud computing, mobile/5G, cyber security, blockchain and the Internet of Things (IoT) will revolutionize how societies function. The age of connectivity, also known as the 'Fourth', is resulting in increased investment in Information and communication technology (ICT) projects.

Dubai's prime objective is to transform itself into a smart city by harnessing those emerging technologies. Through ICT projects, Dubai is propelling the economy through a digital transformation to increase its efficiency and the quality of life. Current initiatives include the establishment of Smart Dubai, the Dubai Future foundation and the appointment of a Minister of State for artificial intelligence (AI). Recently, Smart Dubai unveiled its Dubai Paperless Strategy and its Dubai Blockchain Strategy plans. These strategies aim to transform the Dubai Government to be paper free by 2021 and make Dubai the first city completely powered through blockchain technologies by 2020. The UAE is involving its two mobile network operators, the Emirates Telecommunications Corporation (*Etisalat*) and *du*, which are both majority government-owned companies, to facilitate the digital transformation process of society.

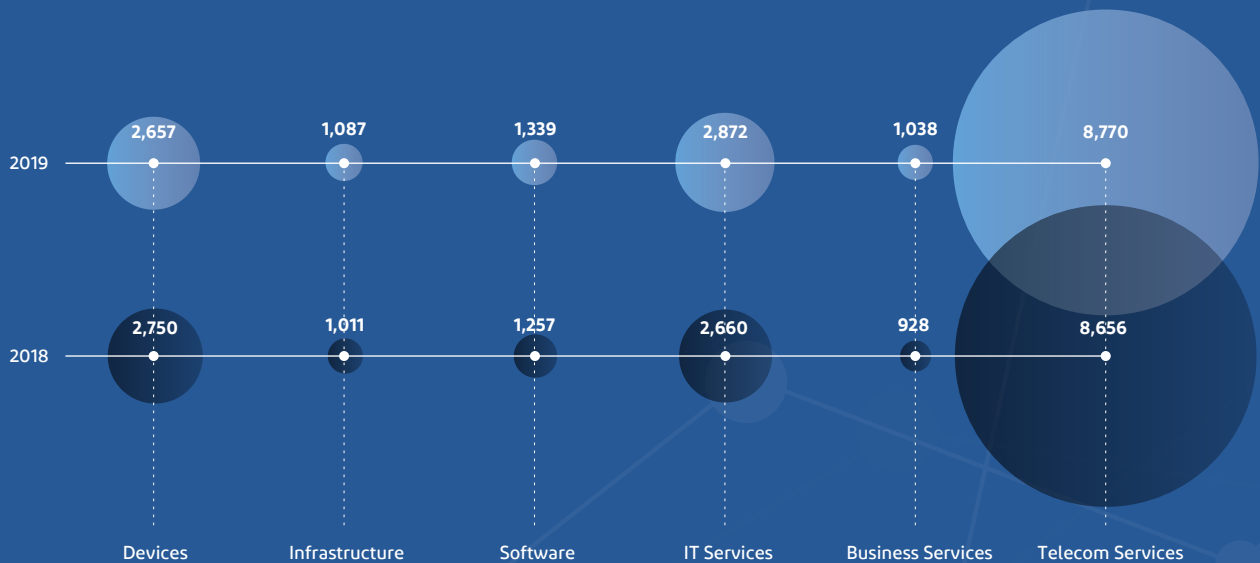
According to International Data Corporation (IDC), the UAE is projected to increase its spending on ICT, includ-

ing software, to reach US\$17.8 billion in 2019 as opposed to US\$17.3 billion in 2018, up by nearly 3.0 per cent. Spending on business services is expected to rise by 11.8 per cent to just over US\$1 billion, while hardware sales for devices such as mobile phones, laptops, tablets, etc. are expected to decline by 3.4 per cent, (Figure 1).

Fifth generation cellular wireless connectivity, known as 5G, will propel the world's digital transformation. Surpassing its counterpart 4G in terms of data speed, 5G will also represent a change in how digital services operate. Its internet speed is expected to be 100 times faster than 4G, given that it performs at up to 1.2 giga bits per second. 5G is also superior to 4G in terms of its latency of less than one millisecond, compared to 4G at 20 milliseconds. With better features, 5G-enabled devices will support faster downloading time of HD movies in 10 seconds, compared to at least 10 minutes using 4G technologies.

In 2018, Etisalat was the first among the Middle East and North Africa telecom operators to provide a 5G mobile network. To support the launch of 5G mobile networks, Etisalat is planning to build 1,000 5G base stations to create an infrastructure to facilitate the network throughout the UAE by the end of 2019. Moreover, the telecom operator is planning to invest AED 4 billion towards research and development to focus

Figure 1: UAE ICT spending by category (U\$ millions)



Source: IDC

on 5G related research. Etisalat has also formed a partnership with Ericsson, the Swedish telecommunications company, in order to tap into the possible growth opportunities 5G that provides. The objective of the partnership is to expand 5G coverage across mobile and fixed wireless to deliver new functionality and benefits to UAE businesses and customers. An example of the benefit 5G provides for consumers is how it can assist people with hearing impairments to obtain voice-to-text transcripts on smart glasses by using a 5G network. In terms of business, 5G offers companies greater opportunity to support the exploration of artificial intelligence as well as automation to aid their productivity and service delivery.

Not long after Etisalat announced the availability of its 5G network, the UAE’s second telecom operator du highlighted plans to support the growth of a 5G network. Emirates Integrated Telecommunications Company (du) plans to increase their technology capital expenditure to up as much as 25 per cent to invest a total of AED 1.5 billion to accelerate the growth of 5G in UAE. Currently, du has 120 5G towers covered in UAE, but plans to increase this amount by adding 580 more by the end of 2019.

Cloud computing allows computing services such as storage, databases and networking to be delivered over the internet. This capability offers companies the opportunity

to reduce operational cost and efficiently streamline the performance of their infrastructure through faster and more flexible performance. According to International Data Group (IDC), public cloud services spending in the Emirates is expected to quadruple over the span of four years, from AED 439 million in 2017 to AED 1.51 billion by 2022. Their analysis places the UAE as first among the MENA regions most actively participating in the adoption of cloud computing. In order to advance UAE’s Vision 2021, government organizations like Dubai Smart City require real-time operations, such as servers that function in real-time and are immediately responsive when data is received. Such features could help the UAE facilitate and transform the experience citizens receive from their public services. Therefore, UAE government’s transformation from a private to public cloud infrastructure can improve operations and enable an economy of scale to lower costs. The technical and economic potential of cloud computing is clearly recognized in the UAE, as Oracle opened a data center in Abu Dhabi and Microsoft opened data centers in Dubai and Abu Dhabi.

The new data centers will provide cloud services that will support organizations, governments and businesses in achieving higher standards of practice. Over all, these centers will positively contribute to the transformation of the UAE into a digital economy.