Views On News
رأي في أزمة
ECES
المركز المصري للدراسات الاقتصادية
The Egyptian Center for Economic Studies

Date: 13 April 2020 **Issue: 8**

Views on The Crisis
The Communications and Information Technology Sector in Egypt

Introduction

While the whole world shares the broad outlines of the economic and social repercussions of the Coronavirus (COVID-19), which are unprecedented in its recent history, the implications thereof for each country are linked to the nature of each country's economic system, its ability to withstand the entailed repercussions and the speed of its recovery.

In light of the need to study the sectoral implications of these repercussions in order to address the crisis properly, the Egyptian Center for Economic Studies (ECES), in its initiative, is producing a set of daily reports entitled "Views

on Crisis". The reports aim to analyze the implications of the coronavirus crisis for Egypt in relation to a number of vital production and service sectors and to key macroeconomic variables. This ECES initiative comes from the belief that the current critical conditions require directing state's efforts towards achieving two main goals: providing a decent life for Egyptians during the crisis and in the recovery phase, preserving the existing investments- especially domestic investments- and helping to overcome the crisis and prepare for a rapid launch with the gradual decline of the crisis and recovery of the global economy.

The methodology used in these reports is based on an analysis of the supply and demand shocks associated with the crisis cycle in its various stages. Given the lack of detailed data on the sectoral impact of the crisis, the sectoral analysis is based on logical assumptions related to the nature of each sector and the degree of sector vulnerability to previous sever crises that were certainly less severe than the current crisis and different in nature. However, it is a starting point for the urgently required scientific diligence at this stage.

"In the battle against Covid-19, emerging technologies have stood out by making immense contributions in an unexpected, creative and amazingly responsive way."

Lu Chuanying
Senior Official at Shanghai-based
Global Cyberspace Governance

First: Brief description of the subject of the report

- The institutional framework for the sector as a whole comprises three main entities: 1) the Ministry of Communications and Information Technology; 2) the National Telecom Regulatory Authority; and 3) the Information Technology Industry Development Agency (ITIDA).
- The Minister of Communications and Information Technology is the head of the National Telecom Regulatory Authority and the Information Technology Industry Development Agency (ITIDA).
- ICT Sector Structure:

  1) The telecommunications sector

  - The telecommunications sector has gone through four stages of development:
    - *The first stage (1985 to 1995)*: the beginning of the Egyptian government's efforts to introduce information and communications technology and engage businessmen with the government.
    - *The second stage (1995 to 1999)*: Privatization of Internet services, and the start of the mobile phone operators Mobinil and Vodafone in Egypt.
    - *The third stage (1999 to 2004)*: Most of the institutional framework for telecommunications and information technology has been established after creation of the

new Ministry of Communications and Information Technology.

- The fourth stage (2004 to date): The Minister of Communications and Information Technology was replaced[1] and the introduction of new mobile operators.

- The telecommunications sector consists of two blocs: The first, a small number of large companies that control the sector and work in the field of infrastructure and networks (mobile operators and Telecom Egypt),[2] while the second is a large number of small companies that work primarily in the field of applications and outsourcing services, where Egypt has a comparative advantage. Telecommunications companies are required to have government licenses to conduct their activities.
- The sector witnessed a remarkable boom in investments in recent years, as the value of investments in the sector increased during fiscal year 2018/2019 to EGP 35 bn from EGP 28 bn, an increase of more than 20 percent compared to the previous year.
- Most investments in this sector are concentrated in major cities and decrease in rural areas.

[1] This period witnessed the appointment of the second ICT Minister in Egypt, succeeding the first ICT Minister who was appointed as Prime Minister.

[2] Telecom Egypt is a mobile operator and according to the licenses of the integrated operator that were launched in 2017, the four companies are equal in terms of the services they provide except for the establishment of infrastructure and the ownership of marine cables, which are exclusive to Telecom Egypt.

2) The information technology sector

- It contains four divisions:[3] hardware, IT services, software development, and IT-enabled services.
  - The hardware division consists of all related equipment (computers, printers, telephones, etc.).
  - IT services division includes all types of systems integration (hardware and software services tailored to the needs of a specific project or application).
  - Software development is at the heart of the IT sector.
  - IT-enabled services include call centers.
- Companies operating in the information technology sector are not required to obtain licenses to conduct their business, although they must conduct a number of procedures to start their activities.
- The Government accounts for about 60 percent of clients in the IT sector.

- The National Telecom Regulatory Authority is responsible for managing and regulating the telecommunications sector. As for the information technology sector, it is the domain of the Information Technology Industry Development Agency (ITIDA). ITIDA's role is limited to developing information technology by identifying the needs of the local industry and addressing them through specially-designed highly-efficient programs, providing

[3] There is some overlap between the four divisions in terms of the activity of operating companies.

advice on sector policies and promoting trade in local and international markets. Therefore, the information technology sector is less regulated than the telecommunications sector.

a. Facts in figures about the sector

- Egypt's ranking in the Global Connectivity Index4 is 58 out of 79 countries, with a score of 37 points from 120, which is clearly a low ranking compared to other countries:

Country	Egypt	Role models				Direct competitors			Neighboring countries			Other countries		
		US	UK	Canada	China	Turkey	South Africa	India	Morocco	UAE	KSA	Israel	South Korea	Brazil
Global Connectivity Index	58	1	9	14	26	45	52	65	61	24	43	NA	13	44

Source: Global Connectivity Index, 2019.

- Egypt is among countries where electronic transactions do not have widespread popularity compared to countries of the developed world.
- The sector achieved the highest sectoral growth rate in real GDP (16.7 percent) in 2018/2019, and even exceeded the target rate

[4] The Global Connectivity Index relies on a measure of what the country has achieved in the ICT infrastructure, and how much it has achieved towards digital transformation.

for the same fiscal year by about 7 percent. This is due to the State's efforts towards financial inclusion.

- The number of mobile Internet users stands at 39 million, with an annual growth rate of 11 percent.
- 4 out of 10 people use the Internet via mobile.
- The number of subscribers to mobile payment services reached 13 million, but the number of active accounts does not exceed 5 percent, or about 500 thousand accounts.5
- The sector's share of investment in the telecom and information technology sector was 5.44 percent in 2018/2019.6
- High-speed internet was introduced to 2530 public schools (general secondary school) all over the country.
- 25.8 percent is the percentage of school students using the Internet for educational purposes, and 27.4 percent is the percentage of teachers using the Internet in preparing educational content and for information search in 2018/2019.7
- Internet use is not widespread enough, as only 48 percent use the Internet. The Government is targeting to bring it to 50 percent by the end of the current year, which is a low figure compared to the global average estimated at 53.6 percent.

[5] Source: The Egyptian Center for Economic Studies, workshop series entitled " A Detailed Research Agenda to Enhance Ongoing Governmental Efforts to Digitize the Egyptian Economy: Horizontal issues," workshop 5, March 2019.

[6] Source: Egyptian Center for Economic Studies, Handbook of Economic Statistics 2020.

[7] Source: Ministry of Communications and Information Technology, Communications and Information Technology Indicators Bulletin, September 2019.

- Despite the significant increase in Internet speed in Egypt in recent years, it is still less than the global average. The average speed of fixed internet in Egypt is 27 MB (the global average is 60 MB), and the speed of mobile Internet reached 17.7 MB (global average is 30 MB).
- This is due to the lack of a complete overhaul of the network with “fiber optics” instead of the copper network, and increasing number of Internet users. This was not matched by appropriate development in infrastructure, which is overburdened with these increases and pressures, besides the limited authorized frequencies.
- The number of high-speed internet users is meagre, as they represent only about 18.6 percent of total internet subscribers via mobile phone, in addition to being limited at the level of the governorates.8
- 61 percent of Egyptian companies do not have adequate information protection, and their financial losses amounted to about $3.78 million.9

[8] The calculation was done according to the data of the Ministry of Communications and Information Technology, Communications and Information Technology Indicators Bulletin, September 2019 for the first quarter (July-September) 2019/2020.

[9] Source: The Egyptian Center for Economic Studies, workshop series entitled " A Detailed Research Agenda to Enhance Ongoing Governmental Efforts to Digitize the Egyptian Economy: Horizontal issues," workshop 3, February 2019

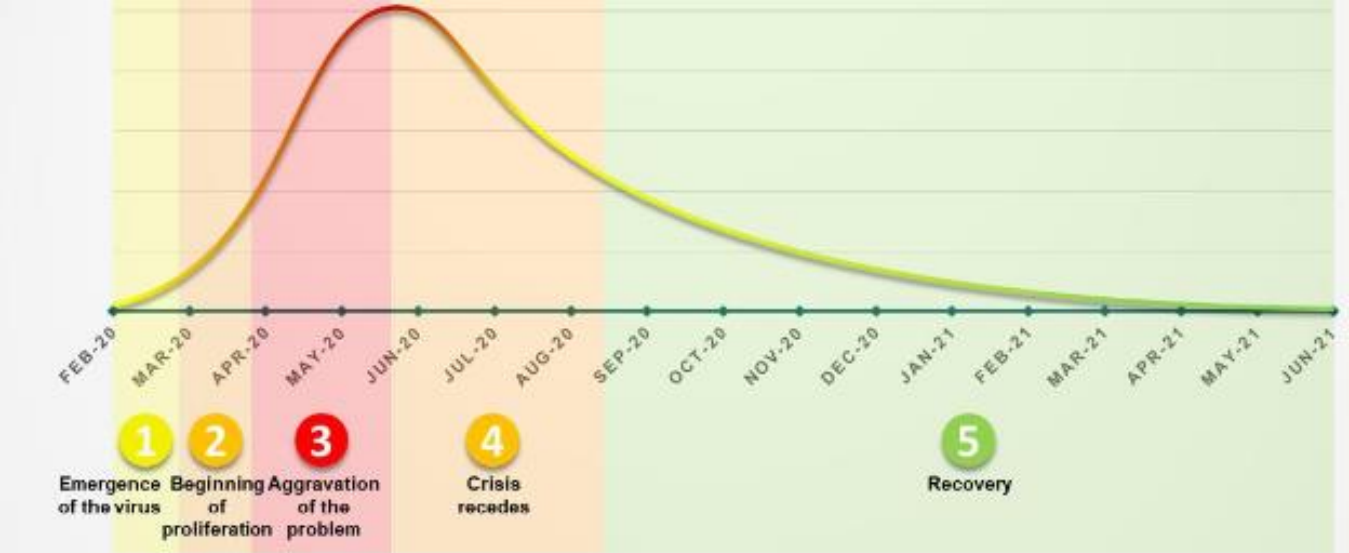
Second: Demand and supply shocks in context of the crisis cycle

- This report focuses on the role of the telecommunications and information technology sector in terms of both infrastructure and available services that are supposed to contribute to two specific goals in light of the current crisis:
  1. Assist in the health care needed to face COVID-19, through four basic stages, all of which rely mainly on information technology, which are: awareness of the virus, identifying where it spreads, identifying contacts (potential infections), and how to handle the isolation phase. The following is a detailed description of the above stages and potentials for using communications and information technology according to each stage as is universally followed (and was one of the reasons for bringing the virus under control in China):

Stage	Technological means used	Required technological infrastructure
Awareness of the virus	E-mails, SMS messages and brief videos	Strong communication infrastructure and data analytics capability
Knowing where the disease has spread	Mobile applications Heat Maps	
Identification of contacts	Digital Footprint Analytics	
Procedures for isolating patients remotely	Electronic application	

2. Supporting the sudden shift towards intensive use of the Internet for purposes of distance learning and work from home for a large segment of the population, in addition to electronic payments. This was linked to the State imposing precautionary measures similar to most countries of the world.

- The expected impact on the demand and supply sides depends on the relevant stage of the crisis cycle. We can trace five stages of the crisis cycle, as shown in the figure below:



Below is a brief description of each stage:

The first stage: Emergence of the virus

The crisis began and aggravated in China only. The rest of the world, including Arab and European countries, were not yet affected by the crisis.

The second stage: Beginning of proliferation

The spread of the virus globally. Arab countries began to be affected at the end of February and hence initiated

precautionary measures to prevent the spread of the virus. European countries are greatly affected.

The third stage: Aggravation of the problem

The situation in the world has worsened, tougher measures in the Arab countries, especially in Saudi Arabia and the European countries, a major worsening of the crisis in Italy, beginning of the virus's receding in China, and the beginning of its spread in the US.

Fourth stage: Crisis recedes

The beginning of recovery from the virus globally, starting from China, which is expected to be followed by European countries, and finally, the Arab countries and the US.

Fifth stage: Recovery

Gradual recovery for all countries, including Arab countries, although the latter's recovery is expected to be delayed due to being strongly impacted by the global economy and its weak impact on it.

The table below presents an analysis of the extent to which the above-mentioned two goals have been achieved in the context of the supply and demand shocks at the various stages of the crisis, coupled with scenarios of future expectations for the performance of the sector according to the crisis cycle, under the following assumptions and concepts:

1. Demand shock: The increase in the number of users of the Internet and related programs for work, study, lectures,

conducting e-meetings and electronic payments, as well as in personal tasks such as purchasing home needs through e-applications.

2. Supply shock: The reduced ability of the communication and information technology infrastructure to meet the sudden and increasing demand caused by the Corona crisis, linked mainly to network readiness.
3. The report is based on a number of assumptions:
    a. The absence of a change in the infrastructure, specifically the speed of the Internet, and the extent of its spread and outages.
    b. The following analysis focuses on the pre-university and university education sectors. In spite of the extensive use of communications and information technology services by all economic sectors (banking, commercial, industrial, etc.), the pre-university and university education sectors are the most dependent on these services (in distance learning), and therefore most affected by its quality.
    c. Using the Chinese model as a reference and advanced experience in using telecommunications and information technology services to deal with the health measures' aspect of the crisis.

Stage	Sector	Demand and/or Supply Shock	Analysis	Impact on the communications and information technology sector
1- Emergence of the virus (December 2019 to January 2020)	**Health**	N/A	- The crisis is confined to China. - The virus has not yet spread to many countries, including Egypt.	- There is no impact on the sector in Egypt during this period.
	Distance learning and doing business	N/A	- Work and study are pursued on regular norm, according to the usual use of technology. - Using the tablet in the school years where the new educational system is applied.	
2- The beginning of proliferation	**Health**	Slight shock on the demand side	- The crisis has reached the European and Arab countries.	- Little negative impact on the efficiency of networks in

(February through mid-March 2020)			- But Egypt was not significantly affected by the crisis, especially in February. - In the first half of March, Egypt began to be affected by the emergence of the virus. - Rising need for awareness campaigns about the disease, which was already achieved through the Internet.	providing their services.
	Distance learning and doing business	Minor then moderate shock on the demand side and slight shock on the supply side	- February witnessed only a slight shock in demand as a result of increased contacts between Egyptians and their families abroad who had the disease. - In the first half of March, the virus	

			appeared in Egypt, and voluntary isolation of many students and staff began.	
3- Aggravation of the problem (From mid-March to mid-May 2020)	**Health**	Violent shocks in demand and supply	- The spread of panic in the world and the spread of the disease in many countries, and more spread in Egypt than previously. - Serious need to control the disease - Not taking advantage of information technology except through awareness of the dangers of the virus and prevention ways.	- The sector's limited ability to contribute to containing the disease - Simple technology is used to identify and diagnose cases, although infrastructure allows for more sophisticated procedures / initiatives. - Lack of a sophisticated technological system, and therefore lack of data analytics.
	Distance learning and doing business	Violent shock in demand and moderate shock in supply	- With the issuance of the decision to suspend schooling, imposing a partial curfew, and expanding precautionary	- Extensive pressure on networks, though the communication infrastructure still has sufficient capacity to deal with the boom in

			measures, the demand for Internet networks has increased dramatically. - Many governmental and private institutions allowed their employees to perform their duties from home via the internet. - The continuation of this shock in demand (resulting largely from distance learning) until the end of the school year.	demand, especially with the Ministry of Communications announcing a 20 percent increase in monthly download capacities for home Internet on March 15th. - It is worth noting that the use of distance education is limited, primarily used by private and international schools and universities, and it is almost absent from public schools10. - The use of the Internet in education decreased with the decision to cancel exams (except for secondary school).
4- The crisis recedes	**Health**	Violent shocks in demand and	- Limited ability of the sector to contribute	- The sector's inability to deal with the problem of the

[10] Distance education is only available to first secondary students.

(Mid-May-August 2020)		persistent shortfall in supply	to containing the disease.	virus in the four phases described above. - With the increasing rates of infection and the rapid spread of the disease, the sector is unable to play its role in helping to control the disease, relying only on reporting by the patient or those around him without benefiting from technological development.
	Distance learning and doing business	The demand shock continues but at a lower rate with a slight supply shock	- The end of the school year, and thus the demand decreases slightly, although work from home still continues.	- Continued pressure on networks, but it can be sustained without a negative impact on the services of the sector.
5- Recovery (As of September 2020)	**Health**	**<u>Optimistic scenario</u>**: Once life returns to normal, the demand and supply sides will	Despite recovering from the virus, there is still a need for new technological means to identify patients and track	- Networks return to their normal levels with the continued absence of information infrastructure that can be analyzed to

		return to normal	disease and outbreaks if any new viruses or even natural disasters occur.	avoid new crises (data analytics)
		Pessimistic scenario: As long as the crisis persists, more violent shocks are expected on both the demand and supply sides	Continued spread of the virus and inability to contain it.	- Failure of the sector to play its role, which is extremely dangerous at this stage if new investments are not pumped and new applications are not developed that serve this health dimension.
	Distance learning and doing business	**Optimistic scenario:** Once life returns to normal, the demand and supply sides will return to normal.	Containment of the disease, the resumption of schools and return to work from offices, and consequently, the crisis passes without disruption in the services provided by the communications and information technology sector.	- Return of networks to their normal levels, although some electronic activities will continue. Therefore, the pressure on the network will continue.
		Pessimistic scenario:	The spread of the virus	- Unprecedented high pressure

		As long as the crisis persists, more violent shocks are expected on both the demand and supply sides.	continues, the beginning of the school term with continued distance learning and work from home.	on network for long periods and throughout the year, which threatens network failures, assuming that no new investments are pumped and new applications are not developed.

Source: Prepared by the Egyptian Center for Economic Studies.

Third: Interventions required to mitigate the effects of the crisis

Procedures must be put in place immediately to help the telecommunications and information technology sector overcome the period of this pandemic, so the sector can play its role. The Egyptian government should also capitalize on the Corona crisis in its digital transformation process, as follows:

- Organizing a multi-disciplinary digital task force to develop a detailed work plan to deal with the various scenarios of the crisis (optimistic, less optimistic and pessimistic), whether for the health aspect, remote learning or work from home, for different periods of time to ensure the communications and

Information technology sector continues to meet the needs of citizens.

- Providing new frequencies that allow expanding the use of networks.
- Activate the e-signature law to facilitate conduct of business, especially government business, from home.
- Issuing indicators to monitor network performance at the time of the crisis in all parts of the country in terms of volume of Internet use in distance learning and work from home, and to extract information about the characteristics of citizens, including identifying, for example, those with chronic diseases and those vulnerable to Corona infection. This should be done through conducting periodic surveys.
- Take advantage of the data stock available in the sector to analyze its results and benefit thereof in understanding the mechanisms of disease spread by using big data, identifying disease hotbeds, areas of large gatherings or violations of curfew (heat maps), using artificial intelligence (as is currently the case in China), and directing more investments towards technological applications in the areas highlighted by the crisis, especially health with regard to identifying the virus's hotbeds and chance for spreading.

- Expanding technological solutions to continue the outsourcing industry (whose demand will increase) with a different work style that includes social distancing.

Fourth: Institutional weaknesses revealed by the crisis

The crisis revealed the existence of institutional imbalances in the telecommunications and information technology sector in Egypt, as shown in the following:

- The lack of a strategy for digital transformation. Therefore, there is a need for a full-fledged national strategy in this respect, with the participation of all parties, along with a body in charge of following up on its full implementation with all relevant authorities.
- Lack of equitable geographical distribution in terms of connecting all governorates to the internet, especially high-speed internet. Hence, there is a need to increase investments in landline networks of various types, whether access networks or the central network. This would enable absorbing the amount of data that the coming period will witness, especially in rural areas to enable the sector to meet the needs of various activities, most importantly the educational system.

- The absence of an information technology regulator, as this sector lacks mechanisms to regulate and monitor its adherence to quality standards, and how to deal with the confidentiality of information and others.
- The absence of a mechanism to collect medical data related to the current crisis and the degree of its spread, including records of cases of survival and death. This mechanism is required to be able to analyze data (data analytics) to avoid new crises or at least mitigate their effects, in addition to the need to have bio informatics labs with the aim of developing medical research.
- The delay in using the latest technology in this field, which calls for the adoption of modern technologies such as cloud computing and block chains to reduce transaction costs and provide information for analysis, thus benefiting economic sectors.

Disclaimer

This report was prepared for distribution to members of the Egyptian Center for Economic Studies only and may not be published or distributed without the written consent of ECES management. The data, analyses or information contained in this report do not constitute any form of recommendation or assurance of the commercial feasibility of the activity subject of the report or its ability to achieve certain results.

The data and investment analyses contained in this report were prepared based on the viewpoint of ECES, and rely on information and data obtained from sources we believe in their validity and integrity. We believe the information and conclusions contained in this report are correct and fair at the time of their preparation, and should not be considered as a basis for taking any investment decision. ECES is not responsible for any legal or investment consequences as a result of using the information contained in this report. Any errors that may have occurred at the time of preparing these data are accidental and unintentional

Egyptian Center for Economic Studies (ECES)

All rights reserved