Statistical Compilation of the ICT Sector and Policy Analysis in EGYPT

Nagwa El-Shenawy
Publisher: Claude-Yves Charron

Published by

Orbiccom

UNESCO Chairs in Communication
Cátedras UNESCO de comunicación
Chairs UNESCO en comunicación

ISBN 978-2-922651-12-6

Legal deposit – Bibliothèque nationale du Québec
Legal deposit – National Library of Canada

Copyright © Orbicom, the International Network of UNESCO Chairs in Communication 2011

All rights reserved. No part of this publication may be reproduced or modified without prior permission of the authors or the publisher. Free PDF copy available on Orbicom’s website: http://orbicom.ca.

Bibliothèque et Archives nationales du Québec and Library and Archives Canada Cataloguing-in-Publication

Main entry under title:

Statistical Compilation of the ICT Sector and Policy Analysis

Includes bibliographical references.

1. Statistical indicators – ICT sector. 2. Policy analysis. 3. Information society
I. Charron, Claude-Yves. II. Orbicom

Orbiccom, the International Network of UNESCO Chairs in Communication, is a specialized network of UNESCO with consultative status with UN-ECOSOC. It embodies 30 chairs in communication and over 250 members in 75 countries with representation from communication research, ICT for development, journalism, multi-media, public relations, communication law and more. The Orbicom Network was established in 1994 with a view to promoting communication’s development through a multidisciplinary approach.

Orbicom International Secretariat
Université du Québec à Montréal
P. O. Box 8888, Downtown Station
Montréal (Québec), Canada H3C 3P8

This publication reports on a research project funded by Canada’s International Development Research Centre (www.idrc.ca)
Statistical Compilation of
THE ICT SECTOR
and Policy Analysis in
EGYPT

NAGWA EL-SHENAWY
Ministry of Communication and Information Technology (MCIT)
Ain Shams University

In collaboration with:
Ministry of Communication and Information Technology (MCIT)
National Telecommunication Institute (NTI)

This study benefited from valuable input from Heba Ali, Nancy Badr, Mai Ashraf,
and Safa Mostafa senior economists at MCIT Information Center.

Project Director: Pierre Giguère
Scientific Director: George Sciadas

Report Supervision and Design: Vana Sioris

The views expressed in this report are those of the author.
# TABLE OF CONTENTS

## TABLES AND FIGURES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ii</td>
</tr>
</tbody>
</table>

## Chapter 1

**INTRODUCTION AND ICT SECTOR BACKGROUND**

<table>
<thead>
<tr>
<th>Subtitle</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The significance of Egypt’s ICT sector against the background of the</td>
<td>1</td>
</tr>
<tr>
<td>information society and ICT for development</td>
<td></td>
</tr>
<tr>
<td>The adoption of national classifications</td>
<td>4</td>
</tr>
<tr>
<td>Egypt’s ICT sector: Strengths and Challenges</td>
<td>6</td>
</tr>
<tr>
<td>The importance of comparable cross sectional and time-series data</td>
<td>8</td>
</tr>
</tbody>
</table>

## Chapter 2

**MAGNITUDE AND COMPOSITION OF THE ICT SECTOR**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 ICT sector value added</td>
<td>9</td>
</tr>
<tr>
<td>2.2 ICT employment</td>
<td>12</td>
</tr>
<tr>
<td>2.3 Productivity</td>
<td>13</td>
</tr>
</tbody>
</table>

## Chapter 3

**EMPLOYMENT CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 3</td>
<td>14</td>
</tr>
</tbody>
</table>

## Chapter 4

**EVOLUTION OF THE ICT SECTOR**

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 ICT revenues</td>
<td>18</td>
</tr>
<tr>
<td>4.2 ICT sector contribution to GDP</td>
<td>19</td>
</tr>
</tbody>
</table>

## Chapter 5

**OTHER VARIABLES**

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Capital issued</td>
<td>22</td>
</tr>
<tr>
<td>5.2 International trade</td>
<td>22</td>
</tr>
</tbody>
</table>

## Chapter 6

**POLICY RELEVANCE AND LINKAGES**

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzing the effect of the broadband initiative on the number of high-speed ADSL subscribers in Egypt</td>
<td>24</td>
</tr>
<tr>
<td>Analyzing the effects of the deregulation process in the mobile market on mobile prices and mobile subscribers</td>
<td>27</td>
</tr>
</tbody>
</table>

## Chapter 7

**INTERNATIONAL COMPARISONS**

<table>
<thead>
<tr>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Economic performance of the Egyptian ICT sector</td>
<td>29</td>
</tr>
<tr>
<td>7.2 ICT diffusion in Egypt</td>
<td>29</td>
</tr>
<tr>
<td>7.3 Affordability of ICT services in Egypt</td>
<td>31</td>
</tr>
<tr>
<td>7.4 Egypt competitiveness: Moving up... along the way</td>
<td>35</td>
</tr>
<tr>
<td>7.5 Outsourcing in Egypt</td>
<td>35</td>
</tr>
</tbody>
</table>

## CONCLUSION

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
</tr>
</tbody>
</table>

## REFERENCES

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
</tr>
</tbody>
</table>

## ANNEX – PROJECT VARIABLES

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
</tr>
</tbody>
</table>
TABLES AND FIGURES

Tables

Table 1: The relative importance of the ICT sector within the Egyptian Economy in 2008/09 .................................................................................................................. 10
Table 2: The relative importance of female employees in Egyptian telecoms, 2008 ... 15
Table 3: Benefits granted to employees in the ICT sector ............................................. 16
Table 4: The percentage of employees’ satisfaction on their work in ICT companies ..... 16
Table 5: Number of fixed line, mobile and Internet subscribers, 1999–2009.................. 18
Table 6: The value added of ICT sector and other fast growing sectors in the Egyptian economy at current prices (Billion EGP) ......................................................... 20

Figures

Figure 1: Growth rates of some of the fast growing sectors in the Egyptian economy, 2008/09 .................................................................................................................. 9
Figure 2: Public and private sectors’ contribution to ICT value added ......................... 9
Figure 3: Telecommunications revenue (% of GDP) in selected countries, 2007 .......... 10
Figure 4: The relative importance of the ICT subsectors in generating total ICT revenues, 2008/09 ............................................................................................................. 11
Figure 5: The evolution of ICT direct employment during the period 2000–2009 ........ 12
Figure 6: Egypt’s talent pool by specialization and languages of studies .................... 14
Figure 7: Percentage of female trainees in ITI and NTI institutes ............................... 15
Figure 8: Training activities within ICT companies .................................................... 16
Figure 9: The evolution of the value and composition of the mobile market in Egypt ... 19
Figure 10: The ICT sector’s GDP at current prices, 2001/02 to 2008/09 ....................... 19
Figure 11: ICT value added at constant prices ............................................................ 20
Figure 12: ICT value added contribution to real GDP .................................................. 21
Figure 13: ICT value added at constant prices contribution to real GDP growth rates ... 21
Figure 14: ICT issued capital and its subsectors distribution, 2005–2009..................... 22
Figure 15: The tremendous growth of ICT exports, 2006–2013 ............................... 23
Figure 16: The major restructuring processes that took place from 2004 to 2009 and its impact on ADSL users ................................................................. 26
Figure 17: Proportion of households using Internet by access mode, 2007–2009 ........ 26
Figure 18: The effect of deregulation process on both mobile prices and mobile subscribers, 2002-2009 ................................................................. 28
Figure 19: Fixed lines subscribers for Arab countries, 2007 & 2008 ........................... 30
Figure 20: Mobile subscriptions for Arab countries, 2007 & 2008 ............................ 30
Figure 21: Internet users for Arab countries, 2007 & 2008 ....................................... 31
Figure 22: Price basket for residential fixed lines (US$/month) in MENA countries .... 32
Figure 23: Price basket for residential fixed lines (US$/month) in Egypt and OECD enhanced engagement countries ......................................................... 32
Figure 24: Price basket for mobile service (US$/month) in MENA region............... 33
Figure 25: Price basket for mobile service (US$/month) in Egypt and OECD enhanced engagement countries ................................................................. 33
Figure 26: Price basket for Internet service (US$/month) in MENA countries ......... 34
Figure 27: Price basket for Internet service (US$/month) in Egypt and OECD enhanced engagement countries ................................................................. 34
Egypts extensive efforts to transform to an information society started in September 1999 when the government announced the inauguration of a new national program to develop the information and communication technology (ICT) sector. The goals of the program were to foster the development of an information society in Egypt and stimulate the growth of a strong, competitive, vibrant, export-oriented ICT industry. The cornerstone of this program was the creation of the new Ministry of Communication and Information Technology (MCIT) to lead these efforts.

Several steps to enhance and develop the Knowledge Economy were taken in line with the World Summit on the Information Society (WSIS) (Geneva 2003 - Tunis 2005). Within this context, The National Plan for Communications and Information Technology has paved the way in 2006 for the initiation of the Egyptian Information Society Initiative (EISI), which has been structured around seven major related tracks, each designed to help bridge the digital divide and facilitate Egypt’s evolution into an Information Society. These seven tracks were as follows:

5. E-Health: Increasing Health Services Availability.

Within this framework, three main objectives were defined by the Egyptian government where several polices were set in order to serve in fulfilling those objectives. In a way those objectives were interwoven to allow Egypt to present itself on an international level as a world class provider of services and industry and at the same time address development issues within the country. The first objective was to continue encouraging research and development in the field of ICTs applications in traditional and new industries. Secondly, greater access to the Internet and related services was promoted in order to encourage entrepreneurs and markets to fulfill their potential, and thirdly, maintaining the regulatory policies that allowed Egypt to become an attractive foreign investment opportunity (MCIT, 2005).

Following the successful conclusion of the Egyptian Information Society Initiative, MCIT initiated a new strategy covering the period from 2007 to 2010 with the objective of further liberalizing the sector, developing a knowledge society and

---

supporting the ICT industry with a focus on expanding ICT exports and finally emphasizing the role of ICTs in development. The 2007-2010 ICT Strategy consolidates and builds on the progress made to date. The Strategy’s main priorities are to:

- Continue the development of state-of-the-art ICT infrastructure that provides an enabling environment for government and businesses throughout Egypt and links it globally.
- Create a vibrant and export-oriented ICT industry; leverage public-private partnerships as an implementation mechanism whenever possible, and enable society to absorb, and benefit from, expanding sources of information.
- Create a learning community whose members have access to all the resources and information they require regardless of gender and location, thereby allowing all to achieve their full potential and play a part in the country’s socioeconomic development.
- Support the development of the skills required by the ICT industry.
- Support research and innovation in ICT.
- Promote ICT investment and Foreign Direct Investment (FDI).

Egypt is currently moving towards the formulation of a new strategy for ICTs for 2011-2014 that takes the successes already achieved and breaks through to the next level, providing a strategic roadmap to position Egypt and its ICT industries as a globally recognized innovation hub.

1.1 The significance of Egypt’s ICT sector against the background of the information society and ICT for development

During the last decade, the government of Egypt has recognized the ICT sector as a critical component of the national economy, not only due to its substantial contribution to value added, employment, exports and diversification of the economy, but for its dynamic and innovative potential and its broader role in providing enabling technologies, products and services that underpin the development of Egypt as a knowledge economy in the global market.

Concerning Egypt’s efforts to reach the Millennium Development Goals (MDGs), and more specifically to meet the target of making available the benefits of new technologies, Egypt has witnessed significant progress over the last ten years. The number of fixed line subscribers increased by almost 110% during the period 2000-2009. As new technologies emerged in the field of wireless communications, the number of cell phone subscribers has risen from 1 subscriber per hundred people at the end of 1999 to 70 subscribers per hundred by the end of 2009. Internet penetration has also increased drastically to reach 21.9% of individuals
in 2009 compared to only 0.58% in 1999, especially with the intensive
Asymmetric Digital Subscriber Line service (ADSL) provided by a larger number of
companies.

Egypt’s ICT sector has become also a cornerstone in social development efforts. Governments adopted many successful initiatives aimed at increasing and spreading ICT usage all over the country. The government formulated an ICT Master Plan in 2000 to ensure the effective deployment and use of ICT for the benefit of citizens and enterprises. “ICT for development” is a major pillar in Egypt’s ICT strategy 2007-2010 which mainly focused on realizing the following objectives:

- **ICT for All**: Seeking to guarantee universal, easy, affordable and rapid access for all Egyptian citizens to ICT and stimulating awareness of the potential uses and benefits of this technology. For instance, MCIT has implemented a number of programs promoting computer literacy and encouraging increased public use of ICT. Among the major programs to support these goals is Egypt PC 2010 – Nation Online, the successor to PC for Every Home, which aims to increase PC penetration within households and the academic sector. Then the government decided to leave the implementation of these programs for the private sector and the Non Governmental Organizations (NGO’s). These programs have been successfully increasing the proportion of households owning computers to reach 15.9% by 2009.

- **ICT for Education and Lifelong Learning**: Aware of the vital importance of education as an economic driver, as its progress affects all other sectors, Egypt has made educational reform a priority, spending one-third of government expenditures on this sector. A major component of this reform is the utilization of technology in education, which is believed to stimulate student-based learning. Working closely with the Ministry of Education and Ministry of Higher Education, MCIT has been strategically planning for best utilization of ICTs in education through a number of projects, the most notable of which is the Egyptian Education Initiative (EEI). As a result of these initiatives the usage of ICTs in education is increasing. The proportion of schools equipped with computers reached 78% in 2009 while the proportion of universities and higher institutions equipped with computers increased dramatically to 99.8%. In addition, the latest results in ICT usage by households and individuals revealed that 66% of the individuals used computers for studying and education purposes in 2009.

- **ICT for Health**: The government has established several e-health programs to bring better diagnostic and health services to a wider segment of Egyptian society. MCIT has facilitated the integration of ICTs in health services, through projects such as the integrated National Health Record System, which enables better storage and management of patients’ records, the National Network for citizen health, the Emergency Medical Call Center and the Women’s Mobile Health Unit project. Collectively, these programs aim to provide all citizens equal access to quality health services and enhance the skills of doctors and nurses.
e-Content: The digital content industry encompasses the creation, design, management and distribution of digital products and services and the technologies that underpin these activities. It comprises companies producing traditional content, media and entertainment, software and multimedia, and electronic hardware and telecommunications services. Convergence among these sectors is being led in large part by the rapid growth of ICTs, the Internet and broadband fixed and wireless access, which are driving demand for electronic distribution of content.

ICT for Government: While MCIT led the introduction of e-government in Egypt and the extension of ICTs into public services, this responsibility was shifted to the Ministry of State for Administrative Development in 2004. Nonetheless, MCIT remains committed to continue enhancing ICT infrastructure in Egypt. Today, as a general mandate, MCIT supports other ministries in their ICT-related advancement programs and is currently acting as the ICT consultancy house for the government. The proportion of government entities using the Internet increased to 58% of the total entities using computers, while the proportion of the governmental entities with a web presence increased to 69% of the total governmental entities that have access to the Internet. This will affect positively the performance of government entities, and is expected to increase the efficiency of the delivery of services by reducing the time and cost required to settle government transactions.

Following the WSIS recommendations, MCIT has conducted a number of projects in cooperation with international organizations for ICT measurements in Egypt, which cover ICT readiness, intensity and impact over time. In the same context, Egypt's ICT indicators follow the standards set by international organizations but, more importantly, they also cater to the local conditions in Egypt. Egypt's achievements in measuring ICT indicators have been realized through partnerships and cooperation with international organizations, such as the ITU, the World Bank, the Organization of Economic Cooperation and Development (OECD), the United Nations Conference on Trade and Development (UNCTAD) and the World Economic Forum (WEF) and the Economic and Social Commission for Western Asia (ESCWA). In managing the new measurement challenges brought about by ICTs, Egypt has benefited from the experiences, methodologies, and the capacity building programs that these organizations have to offer. This project continues on this path.

1.2 The adoption of national classifications

Egypt follows the internationally agreed-upon definition set by the OECD for the ICT sector, but with more emphasis on ICT services industries, which contribute the major part in Egypt's ICT value added and investments. The OECD defined the ICT sector as a combination of manufacturing and services industries that capture, transmit and display data and information electronically. This

2 Egypt ICT Indicators Portal. Available at: www.egyptictindicators.gov.eg.
definition, based on ISIC Rev.3 (International Standard Industrial Classification – Rev.3) and adopted by OECD member countries in 1998, was considered a first step towards obtaining comparable measurements of core ICT sector indicators. This definition has since been adopted also by the UN through the International Partnership on Measuring ICTs for Development, as well as has been updated under ISIC Rev.4. One important feature of the ICT sector definition is that it breaks the traditional ISIC dichotomy between manufacturing and services activities.

As for the national classification system adopted in Egypt, it is worth mentioning that The Central Agency for Public Mobilization and Statistics (CAPMAS) began to use the International Standard Industrial Classification (ISIC Rev.3) in 1996 in line with the applied domestic classification. This classification was used from 1996 until 2006 to classify different economic activities and match international standards. In addition to ISIC Rev. 3 classification, which consists of four digits determining the section and the chapter in which the activities belong to, a two-digit additional classification was applied to provide the national classification.

Since 2006, CAPMAS started using ISIC Rev. 4, based on the United Nations’ latest recommendations and with the appropriate concordance tables. Given that the UN made some recent changes to ISIC Rev. 4, the classification used by the CAPMAS may lack some of the final amendments.

Until 2003/04, the ICT sector was classified within the transportation and storage sector in Egypt's national accounts. But, starting in 2004/05, the sector has emerged as a separate sector in the national accounts. Concerning the adopted classification of the ICT sector within the Enterprises Establishments Census it is worth mentioning that it is focusing mainly on ICT services and namely on telecommunications activities - wired telecommunications activities (611) and wireless telecommunications activities (612), as these activities are generating most of Egypt's ICT value added. According to the National Telecom Regulatory Authority (NTRA), communications contribute about 70%-80% of the total ICT market. In addition, the Information Technology Industry Development Agency (ITIDA) estimates show that Information Technologies (IT) activities constitute about 20% of the total ICT market.

The application of the current classification of the ICT sector may need to be reviewed to include other ICT activities, especially IT activities. However, the implementation of this process depends largely on the availability of additional resources and could not be attained within the time horizon of this project. In addition to this effort, it is worth noting that ITIDA is now working on developing a new local classification for an IT sector. Through this project, ITIDA encourages ICT companies to classify their main activities within this local ICT classification using a diversified set of incentives. It is planned to have a future concordance between the intended national classification and ISIC Rev.4, adopted by CAPMAS, upon completion of this local classification.

Concerning the definition used to measure ICT employment, the current figures depend mainly on the statistics of the General Authority for Investment. The total
number of direct ICT employees is classified in three main activities: 1) Communications; 2) Information Technology and; 3) Information Technology-enabled services. However, MCIT is working now on classifying ICT employment according to ISIC Rev.4 to keep in line with the international classification adopted in this area and to have data that can be compared with other countries. MCIT expects to finalize this classification in 2010. This classification could be used in the coming years to enhance data collection on the value added generated by the IT sector and the rest of the communications sector. However, this project may face some obstacles due to the fact that small and micro enterprises constitute the majority of the companies operating in this sector.

1.3 Egypt’s ICT sector: Strengths and Challenges

In recent years, Egypt has established itself as a key regional ICT player. The principal driving forces for Egypt’s ICT sector growth are: the state-of-the-art telecommunications infrastructure, the multilingual and talented labor force at competitive wages, an adequate business environment that is attractive to MNCs, strong government priorities and support of the sector, and a strategic geographical location. Also, Business Process Outsourcing (BPO), Fiber Optic Cables, E-signature technologies, Wi-Max, Global System for Mobile Communication (GSM) solutions, triple-play services and applications represent good business opportunities for many local and international firms. For example:

⇒ Business Process Outsourcing (BPO): Egypt has successfully established itself as one of the best destinations of outsourcing across the globe. The offshoring industry in Egypt has matured over the past decade as reflected by its international positioning among different competitive destinations around the globe. In 2009, A.T. Kearney, ranked Egypt as the 6th best destination for providing outsourcing activities including call centers, IT services support and back-office support. In addition, Data Monitor ranked Egypt 4th among 21 destinations for outsourcing. As existing companies expand their operations and new companies arrive, Egypt plays an increasingly important role in the world of IT and business process outsourcing.

⇒ Fiber Optic Cables: Recently, Telecom Egypt announced the launch of its first Fiber-To-The-Home (FTTH) implementation in the Cairo suburb area of Qatamiya. This represents a major achievement that enables the company to provide new and integrated services that will cater to current and future needs of residential and business customers through the fixed networks (Telecom Egypt, 2009).

⇒ Global System for Mobile Communication (GSM) Solutions and Applications/Voice over Internet Protocol (VoIP): In 2006, the National Telecom Regulatory Authority licensed ISPs to provide enterprises with Voice over Internet Protocol (VOIP) for virtual private networks (MCIT, 2009).4

---

Provision of state-of-the-art communications services to the new communities: The National Telecommunications Regulatory Authority (NTRA) announced in October 2009 a bid inviting consortiums of local and international companies to submit their offers for two licenses for “triple-play” cable, telephone and Internet services to serve closed urban communities. It is expected that this initiative will generate $1 billion investments within five years.

Wi-Fi/Wi-Max/Wireless Networks and Solutions: The mobile telephony and broadband segments are starting to overtake all others ICT technologies in Egypt. The number of ADSL subscribers increased from near-zero in 2002 to over one million in 2009, offering many promising opportunities for expanding broadband services in Egypt.

E-signature technologies: In 2009, Egypt launched E-Signature services for the public and private sectors, marking the e-signature authorization by the Information Technology Industry Development Agency (ITIDA). The launch authorizes a number of private companies to offer e-signature authentication services to enterprises and individuals. In addition, it also authorizes the Ministry of Finance to provide authentication services to governmental entities and public sector companies. This service will boost the e-commerce activities undertaken by households and businesses.

Concerning the main challenges facing Egypt’s ICT sector, they are deeply rooted in the issue of reducing the digital divide in the use of ICTs between urban and rural areas. People in rural areas still lag behind in terms of participating in the digital economy and need to be further enabled to become part of it. In 2009, the proportion of households owning computers in rural areas reached only 6% while the same proportion in urban areas reached almost 28%.

It is worth mentioning that the government of Egypt has taken many steps to encourage ICT usage in rural and remote areas by increasing accessibility and affordability of different ICTs services in these areas. In this context, the Information Technology Clubs’ initiative is one of the most important initiatives adopted. It aims at providing ICTs services in rural and remote areas at affordable cost. A recent survey conducted by CAPMAS revealed that IT clubs in Egypt contribute positively to the welfare of such communities, where 66% of IT clubs users in rural areas benefited from these telecentres through acquiring advanced computer and Internet skills that helped them in many ways. For instance, those clubs helped 33% of users getting an International Computer Driving License (ICDL) certificate and enabled 18% in getting better job opportunities. MCIT is cooperating also with NTRA in setting up an enabling framework for the provision of satellite services and clearing the spectrum needed for provision of ICT services in rural and remote areas. MCIT will also cooperate with relevant stakeholders to promote investment for setting up and operating new satellite systems to provide rural connectivity and digital communications between aircraft, ships and land stations.

The analysis used in this report is based mainly on some highly important economic and infrastructure indicators released by MCIT. The report will try, in section 8, to relate the performance of some ICT indicators to both government
and private policies that have been undertaken within certain periods. These indicators will include: Internet subscribers, an Internet price index, mobile subscribers, and a mobile price index.

1.4 The importance of comparable cross sectional and time-series data

There is no doubt that the importance of ICT indicators has increased significantly in light of the rapid developments that took place in the ICT sector. These indicators enable policy makers to monitor and evaluate policies and strategies on a regular basis. It is clear that a worldwide standardized list of reliable and updated ICT indicators that capture the sector’s performance, efficiency, affordability and quality of goods and services, is essential for benchmarking and monitoring the sector’s progress.

Indicators are also needed for measuring the digital divide within each country and across nations, hence assisting in bridging these divides through the appropriate policy measures (The World Online, 2009). The variables that will be included in this project are illustrated in Annex 1. The scope of the current project does not cover some other important ICT variables such as ICT Foreign Direct Investment and ICT R&D.

---

CHAPTER 2
MAGNITUDE AND COMPOSITION OF THE ICT SECTOR

2.1 ICT sector value added

In 2008/09, total ICT sector revenues reached EGP 41 billion (US$7.4 billion). The sector’s value added (GDP) reached EGP 30.9 billion (US$5.6 billion) at current prices and EGP 30.3 billion (US$ 5.5 billion) at constant prices with an annual growth rate of 14.5%. During the same year, the ICT sector recorded the highest growth rate among industries. Figure 1 highlights the performance of Egypt’s ICT sector compared to other fast growing sectors in the economy in 2008/09.

Figure 1
Growth rates of some of the fast growing sectors in the Egyptian economy, 2008/09

Due to the continuous liberalization and deregulation processes, the private sector is playing a leading role in generating the total ICT value added. The private sector contributed about 69% of the total value added generated in 2008/09, at EGP 20.8 billion (US$3.78 billion) and an increase of 16% compared to 2007/08. Figure 2 shows the value added of both private and public sectors for 2007/08 and 2008/09.

Figure 2
Public and private sectors’ contribution to ICT value added

Source: Ministry of State for Economic Development.
According to the World Bank, Egypt’s ICT sector shows competitive performance regarding its telecommunications revenue as a percentage of GDP, which has reached 3.8% in 2007, ahead of a number of developed and developing countries, such as Argentina, China and Germany and leading the Middle East and North Africa region (MENA) average during the period (2000-2007), as shown from Figure 3.

![Figure 3](image)


Notes: (*) Data for 2006. (**) Data for 2005.

The relative importance of the ICT sector in the total services sector’s real GDP reached 9.4% in 2008/09 (see Table 1).

<table>
<thead>
<tr>
<th>The Relative Importance of ICT sector (%)</th>
<th>Real GDP (Billion EGP)</th>
<th>ICT value added (Billion EGP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.8</td>
<td>796.8</td>
<td>30.3</td>
</tr>
<tr>
<td>9.4</td>
<td>322.5</td>
<td>30.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICT Value added as (percentage of real GDP)</td>
<td>ICT Value added as (percentage of services sectors' real GDP)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Calculated based on figures released by Ministry of State for Economic Development.

The contribution of the ICT sector to the total growth rate of real GDP which stood at 4.7% in fiscal year 2008/09, increased to 0.50 percentage points from its 0.47 percentage point contribution during fiscal year 2007/08.

The telecommunication sector accounts for the largest share in ICT revenues and value added as it generates about 70% of the total revenues, while the Information Technology and the other informal telecommunication activities contribute 30%. Within the telecommunications sector, the wireless telecommunication sector contributes around 65% of the total communications revenues, while the fixed telecom contributes the remaining 35%. Figure 4
illustrates the relative importance of the ICT subsectors in terms of the total ICT revenues.

Figure 4
The relative importance of the ICT subsectors in generating total ICT revenues, 2008/09

Source: Ministry of Communications and Information Technology, Information Center.

One of the main ICT measurement projects aiming ultimately to measure ICT value added at constant prices began with a pre-requisite of developing a new price index for ICT services in order to provide the real cost of ICT services. In the past, the Consumer Price Index (CPI) was used to deflate the ICT-GDP, which consequently overestimated the prices of communications services.

In 2008, MCIT conducted this project with the World Bank in order to develop the methodology of calculating Egypt’s ICT value added at fixed prices to reflect the tremendous growth in Egypt’s ICT sector more adequately. The methodology developed requested the following:

- The cooperation of ICT companies, to provide MCIT with quarterly financial data for ICT sector.
- The development of a New Price Index (deflator) to calculate ICT value added at constant prices.

Hence, a quarterly price index for ICT services was developed, based on a representative basket of the telecommunication services available in Egypt, starting from the first quarter of 2002 to the present. The new index has four subcomponents:

- Fixed line telecommunication services
- Mobile telecommunication services
- Internet services
- Postal services
Different types of services for each of those four subcomponents have been included in the index. The OECD’s Guide to Measuring the Information Society (2009); and the Methodological Guide for Developing Producer Price Indices for Services (2005) have been used as references for the construction of the index. MCIT uses this deflator to calculate the time series of ICT value added at constant prices.

### 2.2 ICT employment

The ICT sector in Egypt has succeeded in attracting numerous local and international companies to establish projects in various fields, including value-added services and call centers. The number of ICT companies reached 3,470 at the end of 2009, of which 79% were IT companies, 13% IT-enabled services companies, and 8% telecommunications companies.

The increase in the number of ICT companies in 2009 was 18% higher than in 2008. As a consequence, the total number of direct employees in the ICT sector reached 182,000 employees in 2009 from 175,000 in 2008. It is worth noting that the growth rate of ICT direct employment increased by 19% during the period 2006-2009. This figure includes: ICT sector employees, Telecom Egypt employees, Post employees and Smart Village employees, but does not include jobs created in the outsourcing industry (including call centers which reached 50,000 employees during the same period). Also, this figure does not include employees in IT clubs, Internet cafes and private IT and communication stores.

In this context, Egypt’s ICT sector is expected to create around 40,000 new direct jobs within the next 2-3 years, in line with the official launch in 2010 of the second investment ICT zone in Maadi. Figure 5 shows the evolution of ICT direct employment during 2000-2009.

**Figure 5**

The evolution of ICT direct employment during the period 2000–2009

![Graph showing the evolution of ICT direct employment from 2000 to 2009](image)

Source: Ministry of Communications and Information Technology, Information Center.


2.3 Productivity

Many macro-level studies show that ICT has considerable economic effects through the expansion of ICT-related production of goods and services, as well as via capital deepening. For instance, some studies indicate that the U.S. productivity has grown faster than in the EU because of a larger employment share in the ICT producing sector and faster productivity growth in services industries that make intensive use of ICT. Wholesale and retail trade and the financial securities industries account for most of the difference in aggregate productivity growth between the EU and the U.S.\(^6\)

In this context, Egypt’s ICT sector has witnessed a significant increase in productivity in the last five years. The number of employees specialized in the outsourcing industry in Egypt has increased from 6,000 in 2005 to 33,000 in 2010, generating an increase in employee productivity of USD 30,000 a year according to 2009/2010 figures. The expansion in technology parks and the growth in IT services exports have contributed greatly to the remarkable increase in employees. Currently, the Smart Village – the technology flagship of Egypt – employs more than 40,000 employees and is expected to grow to more than 100,000 by 2015. In addition, the inauguration of Maadi Technology Park is expected to create around 150,000 direct and indirect job opportunities by 2015.\(^7\)

---


Chapter 3

EMPLOYMENT CHARACTERISTICS

Egypt’s large population (close to 80 million) is characterized as a young population, with an average age of 24. This constitutes a strong advantage in a world where young talent is needed at a rapid pace. Egypt is rich in multilingual talented, skilled workers who are eager to work. Egypt has also been able to build on its familiarity with Western culture and its long-established international educational institutions (English, French, and German high schools and universities). In addition, in Egypt, around 330,000 students graduate annually from universities. The ICT sector benefits from this strong critical mass of talented pool. Figure 6 represents Egypt’s talent pool.

Figure 6

Egypt’s talent pool by specialization and languages of studies

<table>
<thead>
<tr>
<th>Specialization</th>
<th>Number of Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commerce</td>
<td>~330</td>
</tr>
<tr>
<td>Education</td>
<td>63</td>
</tr>
<tr>
<td>Arts</td>
<td>43</td>
</tr>
<tr>
<td>Law</td>
<td>28</td>
</tr>
<tr>
<td>Arabic studies</td>
<td>27</td>
</tr>
<tr>
<td>Engineering</td>
<td>~14</td>
</tr>
<tr>
<td>Sciences &amp; tech Medicine</td>
<td>~8</td>
</tr>
<tr>
<td>Other</td>
<td>~96</td>
</tr>
</tbody>
</table>

Table 2 represents the relative importance of female employees within the telecom sector in 2008.

In terms of gender distribution, it is notable that women in Egypt have started to play an increasing role in the ICT sector. Many indicators have confirmed the trend in the reduction of the gender gap in ICT employment. Females now account for around 30-40% of the sector’s total workforce. Females’ participation is higher in the fixed telecommunications sector with 35% of employment, while the proportion of females in mobile communications services account for 27% of total employees. Also, the official figures of the Ministry of Higher Education revealed that in Egypt, women constitute about 49% of ICT graduates and 32% of ICT postgraduate students.

Table 2 represents the relative importance of female employees within the telecom sector in 2008.

---

8 The figures refer to the Greater Cairo Metropolitan area alone, not the entire country.
### Table 2
**The relative importance of female employees in Egyptian telecoms, 2008**

<table>
<thead>
<tr>
<th>Employees</th>
<th>2008</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Females (%)</td>
<td>Males (%)</td>
</tr>
<tr>
<td>Total employees</td>
<td>34</td>
<td>66</td>
</tr>
<tr>
<td>Fixed</td>
<td>35</td>
<td>65</td>
</tr>
<tr>
<td>Mobile</td>
<td>27</td>
<td>73</td>
</tr>
</tbody>
</table>

Source: Ministry of Communications and Information Technology, Information Center.

Most ICT companies in Egypt have no gender preferences when recruiting new employees. The results of a recent field survey study conducted by the Information and Decision Support Center (IDSC) revealed that 72% of ICT surveyed companies have no gender preference with respect to hiring new employees (Information and Decision Support Center, 2009).

In order to increase the skills of new ICT female graduates, MCIT provides equal ICT training opportunities to females to enhance their role within the sector. The female trainers in the Information Technology Institute (ITI) and the National Telecommunication Institute (NTI), which provide specialized and professional ICT training, account for 59% and 42% respectively. In addition, females constitute 49% of ICDL certificate holders in Egypt through other initiatives adopted by MCIT to enhance the computer skills of the different segments of the society. Figure 7 below illustrates the percentage of female trainees in both institutes.

**Figure 7**
**Percentage of female trainees in ITI and NTI institutes**

<table>
<thead>
<tr>
<th></th>
<th>ITI</th>
<th>NTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>43%</td>
<td>42%</td>
</tr>
<tr>
<td>Females</td>
<td>57%</td>
<td>58%</td>
</tr>
</tbody>
</table>

Source: Ministry of Communications and Information Technology, Information Technology Institute (ITI) and National Telecommunication Institute (NTI).

ICT companies in general are keen to grant their employees many incentives to attract the young and talented. It was found that 98% of surveyed ICT companies provide social insurance and allow their employees to have annual leaves, while 86% offer health insurance, 74% offer promotions, and 70% ensure the right of their female employees to maternity leave. Table 3 highlights different incentives granted by ICT companies to their employees.

---


---
Table 3
Benefits granted to employees in the ICT sector

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Insurance</td>
<td>98</td>
</tr>
<tr>
<td>Annual leaves</td>
<td>98</td>
</tr>
<tr>
<td>Health Insurance systems</td>
<td>86</td>
</tr>
<tr>
<td>Promotions</td>
<td>74</td>
</tr>
<tr>
<td>Maternity leave for females</td>
<td>70</td>
</tr>
<tr>
<td>Insurance against accidents</td>
<td>58</td>
</tr>
<tr>
<td>Other (Training, production, financial incentives, ...)</td>
<td>20</td>
</tr>
</tbody>
</table>

*Multiple answers were allowed.


The table below indicates that incentives contributed positively to the employees’ work satisfaction in ICT companies. The percentage of employees’ satisfaction is similar for both males (95.8%) and females (95.2%)

Table 4
The percentage of employees’ satisfaction on their work in ICT companies

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
<th>Employee satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfied</td>
<td>95.2</td>
<td>95.8</td>
<td></td>
</tr>
<tr>
<td>Unsatisfied</td>
<td>4.8</td>
<td>4.2</td>
<td></td>
</tr>
</tbody>
</table>


ICT employees benefit from the various professional training opportunities offered by ICT companies to upgrade their skills and help their promotion to higher positions. Figure 8 revealed that 60% of ICT surveyed companies indicated that they had a training plan, while 14% revealed that they had training plans only for some occupations. The ICT companies usually pay for the financial cost of ICT training courses (76%).

Figure 8
Training activities within ICT companies

Does your company have an identified training plan?

- Yes 60%
- No 26%
- Only for certain occupations 14%

The average daily working hours for ICT employees are 9.2 hours, which is higher than the similar average working hours of other sectors in the Egyptian economy. Most ICT employees (90%) work 5 days a week, while 9.3% of them work 6 days a week. ICT employees usually spend a period ranging between three to six months under probation before signing a contract with the company. After this period and depending on qualifications, employees get a contract that defines the job responsibilities and the financial incentives. It is worth mentioning that 90% of ICT employees have contractual relationships with their organizations.¹⁰

CHAPTER 4
EVOLUTION OF THE ICT SECTOR

During the past few years, Egypt’s ICT sector has become one of the key drivers for growth and socio-economic development. It has also become a role model in terms of the pace and policies of deregulation and privatization, as well as a catalyst for reform in other sectors. This section highlights these points through a review of ICT performance within the current global financial crisis and its role in increasing the efficiency and competitiveness of other economic sectors.

4.1 ICT revenues

As a result of the government’s continuous efforts to increase the usage of ICTs within different segments of the society and to ensure high levels of competition across the sector, the prices of most ICT services have decreased significantly through the period of 1999-2009. Consequently, the number of ICT users has increased notably during the past ten years. Mobile subscribers have increased from 650,000 in 1999 to 55.4 million in 2009, with a high compounded annual growth rate (CAGR) of 55.9%, while Internet users have increased from only 300,000 in 1999 to 16.6 million in 2009, with a CAGR of 49%. Fixed line subscribers have also increased during this period but at a modest CAGR (7.7%), consistent with the global trend towards more growth in mobile compared to fixed lines (Table 5).

<table>
<thead>
<tr>
<th>Table 5</th>
<th>Number of fixed line, mobile and Internet subscribers, 1999–2009 (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Subscribers (million)</td>
</tr>
<tr>
<td></td>
<td>1999</td>
</tr>
<tr>
<td>Mobile subscribers</td>
<td>0.7</td>
</tr>
<tr>
<td>Fixed line subscribers</td>
<td>4.9</td>
</tr>
<tr>
<td>Internet subscribers</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Source: Calculated based on MCIT data.

The substantial increase in ICT usage during the period led to a parallel increase in telecommunications revenues, which rose from EGP 5.3 billion in 2000 to 34.2 billion in 2009, with a CAGR of 23%. Mobile revenues have witnessed an enormous increase during the past ten years reaching EGP 24.8 billion in 2009 (72.5% of the total telecommunications revenues) from EGP 2.12 billion in 2000 (40% of the total telecommunications revenues). Figure 9 presents the evolution of the mobile market.
4.2 ICT sector contribution to GDP

The ICT sector contributed significantly to GDP and its growth. As shown in Figure 10, the ICT sector component of GDP at current prices was only 6.4 billion EGP in 2001/02, while in 2008/09 it reached 30.9 billion EGP.
The CAGR of ICT sector GDP at current prices reached 25%, which is significantly higher than other sectors, with the exception of tourism. Table 6 represents the CAGR of the ICT sector compared to some other fast growing sectors in the Egyptian economy (2001/02 - 2008/09).

<table>
<thead>
<tr>
<th>Sectors</th>
<th>2001/02</th>
<th>2008/09</th>
<th>CAGR (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT</td>
<td>6.4</td>
<td>30.9</td>
<td>25.2</td>
</tr>
<tr>
<td>Housing and construction</td>
<td>16.5</td>
<td>36.7</td>
<td>12.1</td>
</tr>
<tr>
<td>Storage and transportation</td>
<td>17.3</td>
<td>34.7</td>
<td>10.5</td>
</tr>
<tr>
<td>Financial intermediation</td>
<td>21.1</td>
<td>31.7</td>
<td>6.0</td>
</tr>
<tr>
<td>Tourism</td>
<td>6.4</td>
<td>32.4</td>
<td>26.1</td>
</tr>
<tr>
<td>Whole and retail sale</td>
<td>42.9</td>
<td>93.4</td>
<td>11.8</td>
</tr>
</tbody>
</table>

Source: Calculated based on data of Ministry of State for Economic Development.

The ICT sector’s GDP at constant prices\(^{11}\) has also been increasing. It reached EGP 30.3 billion in 2008/09 compared to EGP 23 billion in 2006/2007. This increase reflects the growth of ICT users and the decrease in the ICT services’ prices. Using quarterly data, the ICT value added at constant prices increased from EGP 5.1 billion in the first quarter of 2006/07 to EGP 8.7 billion in the second quarter of 2009/10. The private sector contribution in the total ICT value added increased from 63% to 67% during the same period. Figure 11 highlights the growth of ICT value added during this period.

![Figure 11](image)

Source: Ministry of State for Economic Development.

\(^{11}\) With respect to the ICT sector component of GDP at constant prices, the report will focus on tracing the performance of the ICT sector in the period from 2006/07 until the first half of 2009/10 using quarterly data due to unavailability of long time series.
Moreover, the ICT sector contribution to GDP reached 4.2% in the second quarter of 2009/10 compared to 2.8% in the first quarter of 2006/07. The private sector contribution to the ICT sector’s real GDP reached 4.6% from 3.7%, in the same period as shown in Figure 12.

Figure 12
ICT value added contribution to real GDP

Source: Calculated based on data released by Ministry of State for Economic Development.

The ICT sector contributed 0.45 percentage points to the overall GDP growth, which reached 6.5%, in the first quarter of 2007/08. This contribution increased to 0.50 percentage points in the second quarter of 2009/10, when GDP growth was 4.9% (Figure 13).

Figure 13
ICT value added at constant prices contribution to real GDP growth rates

Source: Calculated based on data released by Ministry of State for Economic Development.
CHAPTER 5
OTHER VARIABLES

5.1 Capital issued

Egypt’s ICT sector is highly dynamic and attractive for both local and foreign investment. The total issued capital for ICT companies reached EGP 44.4 billion (US$ 7.9 billion) in 2009, compared to EGP 38.6 billion in 2008 (US$7 billion), thus an annual growth rate of 15%. It is worth noting that the percentage of issued capital of the telecommunication companies reached 81.4%, while it reached 16.5% for IT companies and 2.1% for IT-enabled services companies. Figure 14 highlights ICT issued capital and its distribution for the period 2005-2009.

Figure 14

5.2 International trade

One of the principal areas of industrial development for the government is the creation of a framework that will attract multinationals to Egypt, and foster the growth of new ICT lines of businesses such as contact centers. Another objective is to improve the international competitiveness of existing exporters to enable them to successfully manage market-led development. Ultimately, this should result in improved export capability and penetration of new markets.
Between 2004 and 2010, Egypt’s ICT exports grew from US$150 million to US$1.1 billion, with an average annual growth rate of 90%. The key element that led to such growth in ICT exports was the tremendous development in off-shoring business. By 2013, Egypt aims to achieve a target of export revenues of over US$2 billion (Figure 15).

Figure 15
The tremendous growth of ICT exports, 2006–2013

Source: Ministry of Communications and Information Technology, Information Center.
Note: (*) Targeted
CHAPTER 6
POLICY RELEVANCE AND LINKAGES

In October 1999, the Ministry of Telecommunications and Information Technology (MCIT) was established with a mandate to develop and improve the telecommunication infrastructure and to promote the development of Egypt’s information society. In this context, the Egyptian government has taken the responsibility of drawing policies that would aim at deregulating the sector and improving its competitiveness. As a primary step towards that goal the National Telecommunications Regulatory Authority (NTRA) was established in 1998 to oversee telecommunications’ technical aspects, such as monitoring frequencies and their spectrum, to issue service licenses, and to approve all sector related tariffs, hence helping in attracting more investment.

In light of promoting Egypt’s ICT competitiveness several policies were set to address the tariffs of the telecom services either directly or through increasing the level of competition among operators. As a result of those policies the prices of telecommunication services declined by 55% through the period 2002-2009. Moreover, on an international level the prices of ICT services in Egypt are considered very competitive compared to many countries around the globe.

This section will address the relevance of some selective ICT policies in term of their impact on Egypt’s ICT sector performance measured by indicators reflecting the success of such policies. Specifically, it will attempt to analyze the impact of two policies, the first being the broadband initiative which subjected ADSL prices to major reductions and the second is the deregulation of the mobile market which raised the level of competition among mobile operators.

6.1 Analyzing the effect of the broadband initiative on the number of high-speed ADSL subscribers in Egypt

The Egyptian Internet service providers (ISPs) market, with over 200 ISPs offering a range of services including dedicated, dial-up, pre-paid and premium services, is fully liberalized and highly competitive. With the introduction of ADSL for homes and businesses, more subscribers were introduced into the market. Since the launch of the broadband initiative, the number of broadband subscribers has been growing at a pace promising the prevalence of high-speed Internet across the entire country in the near future.

High-speed Internet was availed in Egypt in 2002. Slowly, a base of broadband subscribers was starting to grow, signaling the need to encourage demand that is constrained by high prices. Hence, in May 2004, the Broadband Initiative was launched under the auspices of MCIT and in partnership with NTRA, Telecom Egypt (TE) and licensed data operators.
The initiative set a roadmap to boost the broadband industry in Egypt based on the following elements:

- Reducing ADSL prices by 40%-60% in order to make it appealing to the end-customer, while keeping in mind the average household income and the competitive cost of Internet dial-up access in Egypt.

- Raising public awareness of ADSL benefits to attract new subscribers through a multi-stakeholder approach based on the cooperation between the government and the private sector.

- Setting the appropriate licensing of public hotspots services to increase the diffusion of Wi-Fi services.

- Partnering government with the private sector to keep increasing laptop penetration though the "Laptop for Every Professional" initiative. This approach will help increasing Wi-Fi penetration across the nation.

Since its inception, the Broadband Initiative was subject to gradual restructuring processes, aiming mainly at reducing ADSL monthly fees as follows:

- In 2004, the first restructuring process lowered the basic monthly subscription fees for unlimited ADSL from EGP 250 (US$48) to EGP 150 (US$24). As a consequence the total number of ADSL subscribers increased by 214% in 2005.

- In 2005, the second restructuring process lowered the basic monthly subscription fees for unlimited ADSL from EGP 150 to EGP 95 (US$16.9). The total number of ADSL subscribers increased by 126% in 2006 to reach 2.1 million, up from 900,000 in 2005.

- The third restructuring process occurred in 2007, when MCIT reached an agreement to direct all subsidies and reductions offered by NTRA and TE for new subscribers to the recently amended US$8/month for ADSL service, with a maximum downloading capacity of 2KB. The new fees’ reduction aimed at expanding the subscriber base and to provide them with additional benefits and services. The broadband subscription fees were renewed according to subscribers' preferences while offering new options and alternatives through additional promotional offers and introducing the services of limited ADSL (for 256 Kbps) at a cost of EGP 45 (US$8).

- As part of the third restructuring process, ISPs were allowed also to offer competitive prices that would not be subject to any restrictions from NTRA. Such offers could either combine Internet and mobile phones or Internet and landlines. These were in line with the ministry’s intension to respect free competition rules, while avoiding market dumping and monopoly in the presence of competitors. This restructuring was very successive in attracting new segments of Internet users from different income brackets. The total number of broadband users increased by 81% to reach 10.3 million subscribers in 2009 compared to 3 million in 2007.
Figure 16 highlights the major restructuring processes that took place between 2002 and 2009 and their impact on increasing ADSL users.

The evident success of the Broadband Initiative lead to increasing the number of Internet users. Of the 16.6 million Internet users in 2009, broadband users accounted for about 74%. The ADSL Internet connection is increasingly replacing the dial-up connection due to the Broadband Initiative. This trend appears obvious in Figure 17, where the proportion of households using the Internet through ADSL has increased by 31% in 2009 compared to 2008, while the proportion of households using dial-up Internet decreased by 21% in the same period.
On the other hand, high-speed Internet connections (with speed greater than or equal to 256 Kbit/s) are the most prevalent modes among private businesses. In 2009 the proportion of private sector enterprises using ADSL reached 88.2% of the total private sector enterprises using the Internet, while enterprises connected to the Internet using other access modes decreased to 16.4%. Furthermore, ADSL usage witnessed a notable increase in government entities and business enterprises. In 2009, the proportion of government entities connected to the Internet through ADSL reached 70% of the total government and public entities using the Internet.

Statistical analysis was conducted to measure the quantitative impact of the broadband initiative on the number of high-speed Internet connections (ADSL) users. The study highlighted the effect of the reduction of ADSL prices on users. Using a Regression model the following findings were concluded:

- There is strong and significant relationship between fees and subscribers. Fees can explain 77% of the variance in the number of ADSL subscribers.
- In general, fees affect significantly the number of ADSL subscribers. If fees decrease by EGP 10 (US$1.8), the number of ADSL users will increase in average by 90,000.

### 6.2 Analyzing the effects of the deregulation process in the mobile market on mobile prices and mobile subscribers

A liberalization process of the mobile market started in the late 90s with the entrance of the second mobile operator. Later on, this liberalization process was continued after licensing a third operator in 2006. These companies provide services beyond voice communication, such as 3G and 3.75G services. The competition among these operators resulted in a major decline in mobile service prices and improving their quality.

Prices of mobile services have decreased by an annual compounded growth rate of 83% during the period 2002 to 2009 as a result of the increasing competition between mobile operators. The mobile price index has declined from 319 in 2002 to 85 points in 2009. As a consequence of the price decline, the number of mobile subscribers increased from 4.5 million in 2002 to 55.4 million in 2009, with a CAGR of 43%. Figure 18 shows the effect of the deregulation process on both mobile prices and mobile subscribers.
In order to observe the relation between the deregulation processes and mobile prices in Egypt, a non-parametric test (Mann-Whitney) was used. The finding was:

- The entry of the third mobile operator (Etisalat) affected significantly mobile prices, as the mobile price deflator decreased by 162.4 points after its entry in the market.

The report also examined the effect of the mobile price index on the number of mobile subscribers. A regression model was constructed, where the dependent variable was the number of subscribers and the independent variable was the mobile price index. The findings were that:

- There is strong and significant negative relation between price basket deflator and subscribers. The mobile price index can explain 87% of the variance in the number of mobile subscribers.

- The mobile price index affects significantly the number of mobile subscribers. If the price basket deflator decreased by one point, the number of mobile subscribers would increase on average by 10,510 subscribers.
CHAPTER 7
INTERNATIONAL COMPARISONS

This part of the report focuses on Egypt’s position with respect to ICTs compared to world economies. It addresses the diffusion of ICTs in Egypt in terms of accessibility and affordability. Finally, it shows the performance of Egypt’s ICT sector performance from the perspective of International organizations. Also, it demonstrates how Egypt was able to achieve a world-class business environment for outsourcing and become an international and regional competitor according to international reports specialized in outsourcing.

7.1 Economic performance of the Egyptian ICT sector

In many aspects ICTs became the main driver for economic growth and development in the world’s economy. This is reflected by the rapid change of technology development and innovation acceleration along with ICT integration in other socio-economic sectors (health, education, etc.). Hence, measuring the contribution of the ICT sector to the economy became an important benchmark for countries’ positioning on the world map.

The most recent figures published by the World Bank (2009) in its report “Information & Communications for Development 2009: Extending Reach and Increasing Impact” demonstrate the increasing role of the ICT sector as a major contributor to the Egyptian economy in comparison to other countries in the world. According to the report, Egypt telecommunication revenue as a percentage of GDP accounted for 4%, a rate higher than other countries in the region, such as Saudi Arabia, Syria, Algeria, Oman and United Arab Emirates where it reached 3% on average for each country. This percentage was also higher than other countries such as China (3%), Indonesia and India (2%).

Also, ICT expenditure as a percentage of GDP reached 5.8% in Egypt, while it represented only 4.7%, 4.5%, and 2.5% in Saudi Arabia, Kuwait and Algeria respectively. It is worth noting that Egypt is in a better position than other ICT tigers, such as India, accounting for 5.6% of ICT expenditure as a percentage of GDP. ICT services exports as a percentage of total services exports is another indicator that reflects the progress of Egypt’s ICT sector, reaching a rate of 4% compared to 3% in Morocco, 2% in Lebanon, and 1% in Tunisia.

7.2 ICT diffusion in Egypt

Improved access to ICTs is necessary to narrow the digital divide is considered an important step towards the creation of an information society, where everybody is equitably connected to ICTs. Thus, Egypt is well positioned in comparison to almost all the Arab countries by having high ranks in terms of the infrastructure indicators in absolute numbers; fixed lines, mobile and the Internet. Egypt has the highest number for fixed lines subscribers for 2007 and 2008
reaching 11.3 and 11.9 million subscribers respectively, followed by Saudi Arabia with 4 million subscribers in 2008 (Figure 19).

Figure 19
Fixed lines subscribers for Arab countries, 2007 & 2008 (in thousands)

![Graph showing fixed lines subscribers for Arab countries, 2007 & 2008. Source: ITU, ICT Eye, visited 14/2/2010.]

In terms of mobile phone subscriptions, Egypt witnessed the highest growth rate, going from 30.1 million subscribers in 2007 to 41.3 million subscribers in 2008, an increase of 37%, making Egypt the top market among the surveyed Arab countries (Figure 20).

Figure 20
Mobile subscriptions for Arab countries, 2007 & 2008 (in thousands)

![Graph showing mobile subscriptions for Arab countries, 2007 & 2008. Source: ITU, ICT Eye, visited 14/2/2010.]

According to the UNCTAD (2009) *Information Economy Report (IER)*, Egypt is among the top five most dynamic economies within the region in terms of the increased Internet penetration for the period 2003-2008. This was further confirmed by ITU reports showing the progress of Egypt compared to other Arab countries in terms of Internet users, which reached 13.6 million users in 2008 (Figure 21).

**Figure 21**
Internet users for Arab countries, 2007 & 2008 (in thousands)

Source: ITU, ICT Eye.

### 7.3 Affordability of ICT services in Egypt

Affordability of ICT services is one of the key elements in increasing their accessibility. Hence, policy makers have always given it a special attention as one of the important tools for increasing ICT penetration. According to the data published by the World Bank, Egypt proved that it has a competitive edge in terms of ICTs’ affordability compared to the MENA countries and some of the comparable OECD countries (World Bank, 2009). For the price of residential fixed line in 2007, Egypt offers a price of US$4/month, which is cheaper than the price offered in countries like Algeria, Morocco, Kuwait, Qatar, Saudi Arabia, Oman and other MENA countries as shown in Figure 22.
As shown in Figure 24, mobile services’ prices in Egypt are among the most competitive in the MENA region, as it offers the lowest price basket for mobile

12 Some selected countries that opened negotiations with OECD to “Enhance engagement to the organization” and called as “OECD observer countries” – they are comparable to Egypt as Egypt had gained the opportunity to be observer in ICCP committee.
services reaching US$4 in 2007, compared to US$75 in Kuwait, US$20 in Lebanon and Morocco.

Figure 24
Price basket for mobile service (US$/month) in MENA region

Source: World Bank Development Indicators

Figure 25 depicts the price basket of mobile services compared to other countries.

Figure 25
Price basket for mobile service (US$/month) in Egypt and OECD enhanced observer countries

Source: World Bank Development Indicators
Egypt also offers competitive prices for Internet services compared to the MENA and some OECD countries as shown in Figures 26 and 27. In 2007, the price basket for Internet services was US$4/month in Egypt, compared to US$30 in Bahrain and US$29 in Brazil during the same period.

Figure 26
Price basket for Internet service (US$/month) in MENA countries

Source: World Bank Development Indicators

Figure 27
Price Basket for Internet service (US$/Month) in Egypt and OECD enhanced engagement countries

Source: World Bank Development Indicators
7.4 Egypt competitiveness: Moving up... along the way

According to the *Global IT Report (2009/10)* published by the World Economic Forum (WEF), Egypt was able to improve its ranking in the Networked Readiness Index (NRI) by achieving the 70th position (out of 133 economies), up 6 ranks compared to the previous year. By this way, Egypt has surpassed countries like: Bulgaria, Senegal, Kuwait, Mexico, Russia, Ukraine, Morocco, Ghana, Libya, Syria and Algeria. The report had also praised the performance of Egypt as it is the only African country that have advanced by 6 ranks, while the performance of other African countries was either stable like Tunisia or had declined such as Libya, Morocco and Algeria.

The change mainly resulted from the improvement in business monthly telephone subscriptions (22nd) and residential monthly telephone subscriptions (21st), laws relating to ICTs (51st) and ICT use and government efficiency (53rd) among other variables. In addition, Egypt was highly ranked +18th for the new variable: fixed broadband tariffs. Egypt outperformed countries such as Russia, Morocco and Mexico (WEF, 2009). The report included another NRI ranking for the countries that are similar in the income level, where Egypt was ranked 8th among 31 countries that lies within the “medium – low group”.

7.5 Outsourcing in Egypt

Egypt is recognized as an off-shoring global destination. The government has adopted in this regard a holistic approach integrating all the aspects necessary to support the outsourcing activity in Egypt. This approach relies on the conducive business environment driving the growth of this activity in Egypt which was created by the support of three distinct pillars: 1) investment in infrastructure (telecom, Internet connectivity); 2) development of dedicated BPO/ITO parks for ~100,000 employees and; 3) institutional and regulatory frameworks providing the investor with the assistance and a favorable environment (laws to protect intellectual property and copyright) to foster long term business commitments.

In addition, a unique focus is placed on education and human capacity building. Approximately 330,000 students graduate every year with unique multilingual skills in Arabic, English and French. This comes in line with the multiple initiatives launched by the MCIT and the supporting institutions (e.g. ITIDA, SECC, ITI, Nile University, etc.) to enhance talent supply and address functional skills, languages and soft skills.

Many recent reports published throughout 2009 by distinguished Marketing and Consultancy research companies confirm the progress that Egypt has made in the outsourcing business. In the 2009 report “Outsourcing to Africa”, Egypt was ranked as the first outsourcing destination in Africa among the fifteen countries

---

included in the report. It classified Egypt as being the best in the case of “People and Skills” while achieving the third position for “Infrastructure”

Egypt also ranked as the best location by the British National Outsourcing Association (NOA) (Commonwealth Business Council and CyberMedia, 2009) due to the positive and healthy growth of the BPO and Outsourcing industry in Egypt.

Another report published by Gartner in September 2009\textsuperscript{14} found that Egypt is an attractive offshore alternative, because IT salaries are low compared with other "near-shore", low-cost locations available to Europe, with an average 5% yearly wage increase.

The Everest Research Institute (2009) published a report\textsuperscript{15}, which indicated that Egypt was positioned as one of the leading African countries in terms of the scale of direct employment in IT and BPO, having more than 10,000 offshore jobs in the IT-BPO sector. According to this report, Egypt and South Africa are said to be leaders in the area of the English language in Africa. Together with Kenya, they form the so-called “English-language belt”. Egypt is also considered one of the lowest cost off-shoring African countries, in terms of payroll costs, facilities cost, technology, management and administration costs.

An Outsourcing Unit Report published by the London School of Economics & Political Science,\textsuperscript{16} compares Egypt with 13 non-BRIC countries. The report declares that Egypt provides the highest market potential due to its: cultural fit with Western European countries; strong language fluency and capability; convenience for cost-effective ‘near-shoring’ for European business; positioning as both a partner to other countries (e.g. India) and as a gateway to the Arabic world.\textsuperscript{17}

"Egypt has become an outsourcing destination of choice for call centre work, and it is now seeking to extend this capability into back office, BPO, software development, and longer term into R&D. Despite its smaller size, it is hungry to join the BRIC country categorization, and its current focus is aimed at achieving this" (Willcocks, Griffiths and Kotlarsky, 2009).

The report discussed that Egypt’s government provides an attractive tax regime that helps keep start-up costs low along with cutting the bureaucracy for business and establishing a “one stop shop” for attracting new international companies and investment. In addition, the Government is offering incentives in order to establish clustered groupings in a range of new business parks (Smart Villages).

\bibitem{14} Gartner (2009). \textit{Analysis of Egypt as an Offshore Services Location}.
\bibitem{15} Everest Research Institute (2009). \textit{Curtain Raiser: Offshoring to Africa}.
The 2009 A.T. Kearney Global Services Location Index in its report\textsuperscript{18} “The Shifting Geography of Offshoring” ranked Egypt in the 6th position with an increase of 7 positions compared to 2007. It is worth mentioning that in 2004 only two Middle Eastern countries were considered for that index: Israel and Turkey.

The report further discussed that Egypt with the availability of low-cost qualified labour has succeeded in attracting Multinational IT giants such as IBM and EDS, and also Wipro and Infosys, which are now aggressively expanding in Egypt.

CONCLUSION

Egypt has exerted many successful efforts to move towards the knowledge economy, starting with the successful implementation of the Egyptian Information Society Initiative in 2006, which focused on improving productivity, citizens’ quality of life and the Business Park establishment, and followed by an ICT strategy covering the period 2007-2010 with the objective of increasing ICT exports and industry development. This strategy consolidates and builds on the progress made to date. Egypt now is moving towards formulating a new strategy for ICTs for 2011-2014 that shall focus on innovation, aiming at moving Egypt to the high end of the value chain.

The focus of the new strategy will be to stimulate an innovation-based economy through the promotion of innovation and entrepreneurship, and increase the value added of the Egyptian economy through creating advanced jobs, generating revenues from sharing IP, and attracting high-end multinational FDI. In addition, the new strategy will address Egypt’s socio-economic problems using highly skilled resources and fostering innovation capabilities for local SMEs. The strategy will also assume the responsibility for building Egypt’s innovation brand such that foreign and third parties recognize the leading position of Egypt in the field.

The ICT sector is highly dynamic, contributing significantly to economic growth and social development. Despite the effect of the financial crisis, the sector has successfully managed to maintain positive growth rates. This report confirms the economic importance of Egypt’s ICT sector with respect to its contribution to real GDP, growth rates, employment and the overall economy.

In 2008/09, ICT sector GDP at current prices reached EGP 30.9 billion (US$5.6 billion), while at fixed prices it reached EGP 30.3 billion (US$5.5 billion) with an annual growth rate 14.5%. The ICT sector recorded the highest growth rate proving that it can maintain growth momentum even during times of crisis. The private sector is playing a leading role in generating much of the value added, with about 69 % of the total. Egypt’s ICT sector shows competitive performance regarding telecommunications revenue as a percentage of GDP, which reached 3.8% in 2006, ahead of a number of developed and developing countries according to the World Bank,

The data shown in this study revealed the evolution of the mobile sector in Egypt during the past ten years, as the compound annual growth rate of mobile subscribers reached 56%. Mobile revenues have also witnessed an enormous increase during the same period, increasing to EGP 24.8 billion in 2009 (72.5% of the total telecommunications revenues) compared to EGP 2.12 billion in 2000 (40% of the total telecommunications revenues).

The ICT sector in Egypt has succeeded in attracting local and international companies to invest in different lines of businesses, including high value-added services and call centers. The number of ICT companies in 2009 was 18% higher than in 2008. Consequently, the total number of direct employees in the ICT sector reached 182,000 in 2009. Egypt’s ICT sector is expected to generate
around 40,000 new direct jobs in the next 2-3 years, in addition to 100,000 indirect jobs, after the launch of the second investment ICT zone in Maadi.

The government has been keen in the past ten years to continue the process of liberalization of Egypt’s ICT sector, which in turn increased levels of competition among different operators. As a result of these policies, a major decline in the prices of ICT services took place, declining by 55% throughout the 2002-2009 period. This reduction in prices has lead to increasing the number of ICT users. In order to assess such impact, an analysis on the effects of the broadband initiative, which was launched in 2004 to increase broadband subscribers, was assessed. The broadband initiative, which was very successful in reducing ADSL prices, led to a real increase in the number of ADSL users. Moreover, the results showed that ADSL prices affect significantly the number of subscribers. If prices decrease by EGP 10 (US$ 1.8), the number of ADSL users increases, on average, by 90,000 users.

In addition, this report attempted to analyze the effects of the deregulation process of the mobile market on both mobile subscribers and prices. The deregulation process led to a significant reduction in mobile prices and increase in the number of subscribers. This study revealed how the entry of the third mobile operator, Etisalat, led to a decrease in the mobile price index by 162 points. Results also showed that on average, a one-point decrease in the mobile price index leads to an increase of 10,500 subscribers.

Looking ahead, the modernization of the ICT infrastructure will remain the main focus of the government during the next years, in order to connect an increasing number of homes with fiber optic network. In addition, investing in new submarine cables will be necessary to increase Egypt’s international Internet bandwidth capacity and meet the increasing demand for broadband services. Furthermore, policies shall aim to develop the value added services through launching a new national broadband initiative with a target of increasing the broadband subscribers to reach 40 millions by 2015 with more than 3 billions dollars new investments. Egypt also aims at increasing ICT exports to reach more than US$2 billion by 2015 from outsourcing activities. The total ICT revenues in Egypt shall also increase as technology innovations and entrepreneurship are expected to generate more than 1 billion $ revenue. Ultimately, the set of policies and targets mentioned above besides the attention given to diminish the digital divide between the urban and rural areas through the utilization of more advanced techniques like satellite connections, shall lead the ICT sector in Egypt to further prosper and continue its increasingly crucial role in the Egyptian economy and society.
REFERENCES


Gartner (2009). *Analysis of Egypt as an Offshore Services Location.*

ITU. *ICT Eye,* visite 14/2/2010.


Ministry of Communications and Information Technology, Information Technology Institute (ITI) and National Telecommunication Institute (NTI). Statistics on training activities.

Ministry of Investment, General Authority for Investment and Free Zones.


World Bank, *World Development Indicators Database.*


## ANNEX – PROJECT VARIABLES

### Variables and years:
This project focuses on the following variables and years.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Variables</th>
<th>Disaggregation levels</th>
<th>Used Definition</th>
<th>Available years</th>
<th>Periodicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Communications ICT Revenues</td>
<td>1. Total Communications Revenues</td>
<td>Fixed/mobile, Private/public</td>
<td>It includes the revenues of telecommunications activities</td>
<td>2000-2009</td>
<td>Quarterly and Annually</td>
</tr>
<tr>
<td>2. ICT Value added at current prices</td>
<td>2.1 ICT Value added at current prices.</td>
<td>Fixed/mobile, Private/public</td>
<td>Total ICT revenues excluding operating expenses, wages and interests</td>
<td>(2006-2007 to first half of 2009-2010) For corrected series</td>
<td>Quarterly and Annually</td>
</tr>
<tr>
<td>2. ICT Value added at current prices</td>
<td>2.2 ICT value added growth rate</td>
<td>Fixed/mobile, Private/public</td>
<td>Growth rate of ICT value added</td>
<td>(2006-2007 to first half of 2009-2010) For corrected series</td>
<td>Quarterly and Annually</td>
</tr>
<tr>
<td>2. ICT Value added at current prices</td>
<td>2.3 ICT sector contribution to the GDP.</td>
<td>Fixed/mobile, Private/public</td>
<td>Percentage of the ICT value added to total nominal GDP</td>
<td>(2006-2007 to first half of 2009-2010) For corrected series</td>
<td>Quarterly and Annually</td>
</tr>
<tr>
<td>2. ICT Value added at current prices</td>
<td>2.4 ICT sector contribution to the GDP growth rate.</td>
<td>Fixed/mobile, Private/public</td>
<td>Percentage points that can be attributed to ICT in total nominal GDP growth rate</td>
<td>(2006-2007 to first half of 2009-2010) For corrected series</td>
<td>Quarterly and Annually</td>
</tr>
<tr>
<td>3. ICT Value added at constant prices</td>
<td>3.1 ICT Value added at constant prices.</td>
<td>Fixed/mobile, Private/public</td>
<td>It includes the revenues of telecommunications activities.</td>
<td>(2006-2007 to first half of 2009-2010) For corrected series</td>
<td>Quarterly and Annually</td>
</tr>
<tr>
<td>3. ICT Value added at constant prices</td>
<td>3.2 ICT value added at constant prices growth rate</td>
<td>Fixed/mobile, Private/public</td>
<td>Growth rate of ICT value added</td>
<td>(2006-2007 to first half of 2009-2010) For corrected series</td>
<td>Quarterly and Annually</td>
</tr>
<tr>
<td>3. ICT Value added at constant prices</td>
<td>3.3 ICT sector contribution to the real GDP.</td>
<td>Fixed/mobile, Private/public</td>
<td>Percentage of ICT value added to total real GDP.</td>
<td>(2006-2007 to first half of 2009-2010) For corrected series</td>
<td>Quarterly and Annually</td>
</tr>
<tr>
<td>3. ICT Value added at constant prices</td>
<td>3.4 ICT sector contribution to the real GDP growth rate.</td>
<td>Fixed/mobile, Private/public</td>
<td>Percentage points that can be attributed to ICT in total real GDP growth rate</td>
<td>(2006-2007 to first half of 2009-2010) For corrected series</td>
<td>Quarterly and Annually</td>
</tr>
<tr>
<td>4. Communication price index</td>
<td>4. ICT Deflator</td>
<td>- fixed, - Mobile, - Internet, - post</td>
<td>Price deflator for communications services</td>
<td>2002-2009</td>
<td>Monthly, Quarterly and Annually</td>
</tr>
<tr>
<td>5. Employment</td>
<td>5. ICT Direct Employment</td>
<td>Communications/IT/IT Systems.</td>
<td>Total direct ICT employment doesn't include indirect employment.</td>
<td>2000-2009</td>
<td>Quarterly and Annually</td>
</tr>
<tr>
<td>7. Contribution to the treasury</td>
<td>8. ICT contribution to the treasury by type of contribution</td>
<td>Total ICT contribution to the treasury including the proceeds of IPO, Licenses, taxes, and other ICT proceeds.</td>
<td>2000 to 2009</td>
<td>Annually</td>
<td></td>
</tr>
</tbody>
</table>