Using ICT for Development, Societal Transformation, and Beyond: Closing the Digital Divide in Developing Countries: Case of Egypt

Sherif Kamel
Published online on: 14 May 2014

How to cite :- Sherif Kamel. 14 May 2014, Using ICT for Development, Societal Transformation, and Beyond: Closing the Digital Divide in Developing Countries: Case of Egypt from: Computing Handbook, Information Systems and Information Technology  CRC Press
Accessed on: 04 Jan 2024
Using ICT for Development, Societal Transformation, and Beyond: Closing the Digital Divide in Developing Countries: Case of Egypt*

7.1 Overview

Developing countries around the world face various challenges across different sectors. These challenges vary depending on infrastructure availability, level of education, and economic conditions among other reasons. During the past few decades, new challenges have been imposed on the developing world. These challenges were introduced following the massive introduction and diffusion of information and communications technology (ICT) with different societies experiencing digital inclusion in some sectors but also digital exclusion and gaps in many more areas. The digital divide

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has been described and defined in a variety of ways; it is fundamentally the gap between those who have access to and control of technology and those who do not (Tinio, 2003). In other words, the term describes the difference between the haves and the have-nots when it comes to information access and knowledge dissemination (Loch et al., 2003).

One of the important factors in bridging the digital divide is the availability of ICT and Internet skills and capacities coupled with the spread of the ICT infrastructure investment (Opesade, 2011). Unless that is realized, ICT could be the platform through which gaps widen between societies not only inter (between) but also intra (within) communities and countries alienating remote and underprivileged communities and leading to the widening of the socioeconomic gap resulting from minimal information access and dissemination as well as knowledge acquisition opportunities.

Different countries experience different reasons for which readiness of infrastructure for digital inclusion is realized. For example, in the case of South Africa, technology infrastructure and human skills exist; however, there is a need for more determination and political will from the government (Parker, 2011). Information-poor and information-rich societies are still present in different countries around the world reflecting the case of intrasociety digital divides. In the case of Egypt, closing the divide is handled by a public–private partnership where the government enabled the regulatory environment, the private sector made the bulk of the investment and the civil society had an invaluable role to play in education and learning. The diffusion of ICT is not following the conventional wisdom in most developing nations where technology is only diffused in the capital, but it is also in the remote areas, villages, and towns as well as in different cities around Egypt. According to Opesade (2011), “investment in ICT alone cannot bridge the digital divide, but a value-based investment targeted at specific developmental issues will go a long way in achieving this.” It needs a holistic view for comprehensive societal development.

While the World Bank classifies nations based on gross national income (GNI) per capita, in the ICT age, introduction, diffusion and access to information and knowledge, technology platforms, and the percentage of digital literacy are important factors for societal development and growth. Moreover, these elements are used to rank nations and represent important factors attracting companies and foreign direct investment (FDI). Penetration rates of ICT, Internet, and mobility are vital indicators that help minimizing the digital gap (Kamel and Hussein, 2002). Basic needs, food, shelter, and housing, are no more the same; both information and technology have become of primary importance. According to the World Bank (2002), “the knowledge gap in many developing countries is a contributory factor to poverty, and there is no better way to bridge this divide than through the use of ICTs.” For emerging economies and developing nations, one of the primary important issues that need to be addressed is a clearly defined information technology policy that is critical to the development of a comprehensive information technology infrastructure (Aqili and Moghaddam, 2008). These ideas were raised throughout the past decade and highlighted during the World Summit of the Information Society (WSIS) both in Geneva in 2003 and Tunis in 2005 (World Summit on the Information Society, 2008). One of the challenges that were discussed at both summits was to avail the ecosystem required to provide “a society where everyone can access and share information and knowledge that can enable individuals and communities to achieve their full potential in promoting their development and improving their quality of life, and by that the digital divide can only be closed through a collective multidimensional and multisectoral approach” (Rao, 2005). The ICT policies should be framed in conjunction with a more holistic ecosystem that serves ICT in the wider-national scale. This includes investment in education, ICT infrastructure, creating an environment conducive to ICT development and growth, and fostering innovation and entrepreneurial start-ups (Quibria et al., 2003).

The digital divide comes in different forms within countries as well as between countries. Wealthy people have better access than poor people, younger people usually have better access than older people and men usually have more access than women and usually access is better in cities rather than in rural areas (Busch, 2010). There is also a relation to the issue of classes across the community that leads to a
social hierarchy and having unequal access to resources (Lindquist, 2002). According to Illich (1973), “a convivial society would be the result of social arrangements that guarantee for each member the most ample and free access to the ICT tools of the community and limit this freedom only in favor of another member’s equal freedom.” Information, in itself, is a resource of immense social and economic value, and it is important as an invaluable tool for a productive, effective, and efficient economy since information impact different sectors and help rationalize the decision-making process when they are timely and accurate (Cawkell, 2001).

7.2 Introduction

Since ancient history, Egypt has witnessed massive information flows through different means. This included inscription on Rosetta stones and papyrus papers and the establishment of the library of Alexandrina, the world’s first and most famous library and the gateway for knowledge creation and accessibility (Kamel, 1998a). During the middle ages, Arabic manuscripts became one of the most common means for information and knowledge dissemination. In the modern age, paper printing and publishing started in Egypt during the nineteenth century, witnessing the publishing of the first journal in Egypt in 1826. A few years later in 1830, Egypt witnessed the establishment of the first national archive system (Kamel, 1998b).

However, in the twentieth century prior to 1985, a number of characteristics identified the status of information in Egypt. The country was rich in data but poor in information, known for accumulated bureaucracy through red tape, computers were viewed as ends and not means, and there were islands of innovation with no bridges (Kamel, 1998b, 1999). From a government perspective, the focus was more on technical issues and not decision outcomes; there was poor multisector coordination and no synergy between information and socioeconomic development strategies.

Given this reality, even as ICT was increasingly becoming a necessity for socioeconomic development (Press, 1999), the government of Egypt recognized the need to take proactive measures and build the required information infrastructure. The strategy deployed followed a two-tier approach, inviting society with its different stakeholders to contribute in shaping the infostructure, which, in turn, would effectively contribute to the socioeconomic development (World Bank, 2006). Between 1985 and 2007, the government announced nine major policy initiatives to promote the development of Egypt’s information society (Kamel, 2007). The policy initiatives were amongst the early attempts to close the nationwide digital divide in Egypt that was not just caused by the lack of ICT penetration rates but also by the level of illiteracy rates among the population. Such efforts were followed by a tenth policy initiative introduced in 2011 post Egypt’s uprising, where ICT and universal Internet access across the nation had an invaluably effective impact in its successful realization to meet its initial targeted objective of the population as shown in Table 7.1. The tenth initiative was mainly targeting availing better and universal broadband across Egypt’s different provinces. Since the uprising the Internet access grew to reach 32.4% of the population, mobility reached 105%, and Facebook 13.2% (Egypt ICT Indicators, 2012).

Since the early 1990s, Egypt has been undergoing a liberalization program of its public sector. The government has announced that it would invest in its human capital, encourage foreign direct investment (FDI), and emphasize innovative ICT as a platform for business and socioeconomic development (Kamel, 2005a). The government in collaboration with the private sector through a variety of public–private sector partnerships has announced the restructuring of sectors such as education and health as well as working on closing the digital divides and promoting social inclusion using ICT tools and applications. Egypt’s population is growing at 1.9% annually with over 58% under the age of 25 years. Since 2011, over 20 million of the population have successfully capitalized on the effective use and spread of ICT through social networking and managed to voice their opinion and introduce initial changes to the political scene in Egypt. The digital inclusion of many had effective and concrete outcomes on
engaging large segments in the community in the socioeconomic and political debates taking place in Egypt (Ghonim, 2012). Further examples include the huge increase of bloggers and online debates post January 2011, leading to being one of the top countries in the world in terms of active bloggers per capita. With the growing penetration rates in ICT-related tools and mobility, the digital divide is gradually closing across the nation, and many are gradually being digitally and socially included in the cyberspace. Many called it the emergence of Egypt 2.0.

This chapter examines the introduction and diffusion of ICT on Egyptian society and the role it played in providing awareness and access to knowledge to different clusters in the community. In January 2011, ICT applications—mainly social networks—proved to have had a direct impact on society at large being a platform enabler for Egypt’s uprising that was spearheaded by the nation’s youth and that successfully mobilized a nation and led to major transformation in the political landscape in Egypt. The chapter addresses four main research questions. These include: whether and how did ICT become a vehicle for development and a platform to access knowledge and minimize the digital divide? How did ICT for development policy and strategy formulation and infrastructure deployment evolve? What were the challenges and the lessons learnt from efforts aimed at using ICT for socioeconomic development? What are the implications of diffusing ICT on access to knowledge in the society in Egypt?

### 7.3 Building Egypt’s Information Society

The idea of ICT4Development (ICT4D) came into vogue in the early 1980s when Egypt was faced with the chronic challenges of developing nations, such as debt, economic reform, public sector reform, a balance of payment deficit, a high illiteracy rate, poor technological and telecommunications infrastructure, constrained financial resources, unemployment, environmental protection, and cultural heritage preservation. During that period, Egypt was striving to implement a nationwide strategy toward its socioeconomic development objectives and ICT was identified as a catalyst for that process. Therefore, the government of Egypt adopted a set of information-based projects leading to the establishment in 1985 of the Information Project Cabinet of Ministers (IPCOM), a project that was formulated to help introduce ICT into government and public administration in Egypt. With the growing interest in what IPCOM can offer to the government and decision makers, it was transformed into the Information and Decision Support Center (IDSC), a think tank affiliated with the cabinet of Egypt. The IDSC’s objective was to develop and implement, using a supply-push strategy, large informatics projects to achieve socioeconomic development using state-of-the-art ICT (El-Sherif and El-Sawy, 1988).

During the 1990s, technological innovation and economic and social organization became more tightly linked than ever. This was spreading across the government institutions, the public and private sectors as well as the civil society. Continuous innovation in ICTs geared industry and society toward

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**TABLE 7.1 ICT-Related Policy Initiatives and Programs**

<table>
<thead>
<tr>
<th>Year</th>
<th>Policy Initiatives/Programs</th>
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<tbody>
<tr>
<td>1985</td>
<td>Economic Reform Program</td>
</tr>
<tr>
<td>1985</td>
<td>Information Project Cabinet of Ministers (IPCOM)</td>
</tr>
<tr>
<td>1986</td>
<td>Information and Decision Support Program (IDSC)</td>
</tr>
<tr>
<td>1989</td>
<td>National Information and Administrative Reform Initiative</td>
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<tr>
<td>1994</td>
<td>Egypt Information Highway</td>
</tr>
<tr>
<td>1999</td>
<td>Ministry of Communications and Information Technology (MCIT)</td>
</tr>
<tr>
<td>2000</td>
<td>National Information and Communications Technology Master Plan</td>
</tr>
<tr>
<td>2003</td>
<td>Egypt Information Society Initiative (EISI)</td>
</tr>
<tr>
<td>2011</td>
<td>Broadband Initiative</td>
</tr>
</tbody>
</table>

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information acquisition and knowledge dissemination (Branscomb, 1994). Consequently, innovation has transformed the activities and relationships of individuals and organizations into a new information society, or knowledge society, in which ICT services pose both challenges and opportunities (Shapiro and Varian, 1999). The knowledge society refers to a second-generation information society. Whereas an information society aims to make information available and invent the technology necessary for this, a knowledge society aims to generate knowledge, create a culture of sharing and develop applications that operate via emerging ICTs like the Internet (ESCWA, 2005).

The knowledge society is now a force for fundamental global change (Garito, 1996). Knowledge and ICT innovation are becoming important values for business, socioeconomic development, and wealth creation with implications at the macro and micro levels (ESCWA, 2005). The changeover is complex, requiring new forms of partnership and cooperation between public and private sector organizations (Kamel and Wahba, 2002). Such partnerships were intended to engage different constituencies in the society to help leverage the role and impact of key sectors in the economy including education. This is best achieved through collaborative strategies that diffuse best practices and develop ICT applications, with the primary objectives of promoting growth and strengthening competitiveness. For many emerging economies such as Egypt, formulating strategies and policy frameworks to support the growing knowledge society could significantly accelerate development. In the context of Egypt, the goal of joining the knowledge society is to fill societal needs, create wealth, and sustainably enhance the quality of life of the community (Kamel, 2009). With a young and fresh population, the potential of a knowledgeable society will set the pace for years to come. For Egypt, intellectual power and contribution will be a crucial determining factor in the development process of the nation.

For millennia, the basic needs of humankind have been food, clothing, and shelter. Now it is time to add information to this list. Information and knowledge are nowadays the drivers in the global society, much more than land, capital, or labor. The capacity to manage knowledge-based intellect is the critical skill of this era; a firm and/or a society with a strong base of knowledge can leverage that base to create further knowledge, increasing its advantage over its competitors (Kamel and Wahba, 2002). ICT innovations are making a growing impact on business and socioeconomic development by introducing and diffusing the concepts of knowledge sharing, community development, and equality. These impacts are felt at the individual, organizational, and societal levels. ICT is not an end in itself, however, but a means of reaching broader policy objectives. The main objective of ICTs should be to improve the everyday lives of community members, fight poverty, and advance the Millennium Development Goals (MDGs). This is to a great extent related to addressing the different aspects that can help closing the digital divide. In this respect, ICT is delivering the key productivity gains that enable lives of material comfort for many around the world that would have been unthinkable only two centuries ago. Expanding access to knowledge through these new channels and tools creates emerging opportunities for learning and employment with strong implications for social and economic development. Moreover, in a country like Egypt, its young and growing human resources represents for the country “the oil of the 21st century,” an invaluable resource that could transform the nation with a strong economy and an educated society that includes over 16 million children in schools, 1.2 million students, and around 300,000 university graduates every year (Kamel, 2010).

The technology innovations could have remarkably positive implications for developing nations, if they are properly introduced and managed. However, if they are not well supported, or if ICT is marginalized in the development process, inequities may increase between the developed and developing world, leading to widening the digital divide. It is a commonplace in development literature that the developing world lacks access to ICT, leading to such a divide. Nevertheless, it is important to note that such a divide exists within nations, both developed and developing as well. This internal digital divide, also referred to as a gap between “haves” and “have-nots,” relates the possession of ICT resources by individuals, schools, and libraries to variables such as income level, age, ethnicity, education, gender, and rural–urban residence (Kamel, 2005b). It also addresses the illiteracy in computing as opposed to the conventional definition of illiteracy that addresses reading and writing.
The usual causes of this divide include, but are not limited to, expensive personal computers that are unaffordable for most developing country citizens, poor or limited telecommunications infrastructure especially in remote locations, and high illiteracy rates and poor educational systems (Kamel and Tooma, 2005). However, the major obstacle is the ICT ecosystem, including the complexity of the necessary operational details that need cultural adaptation and localization; this included the use of the Arabic language in what is widely known as Arabization. For societies to develop, grow, and benefit from the ICT revolution, nationwide introduction, adoption, diffusion, and adaptation of ICT should occur. ICT utilization is a living proof of the generation gap between different users and the case of Egypt’s uprising is one of the most recent examples. However, this is rarely seen in developing nations where most of the ICT implementations and infrastructure are focused in capitals and major cities and are mainly related to conventional utilization of ICT. Universal access is becoming widely advocated where ICT should reach all the remote and underprivileged communities. This could lead to leverage educational, cultural, and societal capacities. The power and outreach of ICT could help emerging economies like Egypt leapfrog in their quest for development and growth.

The knowledge society promises to capitalize on emerging ICTs to create economic and social benefits. It encompasses ways in which various high-technology businesses, including ICT, universities, and research institutions can contribute to the economy of a nation while enabling economic sectors to operate more efficiently and effectively. In this context, Egypt has made efforts toward adapting to the changing global and technological conditions while catering to local markets. The ongoing restructuring of the ICT sector to serve development is liberalizing the telecommunications sector and opening the market to new competition. This restructuring has involved designing laws and regulations related to telecommunications, electronic commerce, intellectual copyrights and industry development; investing in human resources and promoting innovation and research and development; and promoting entrepreneurial initiatives in the marketspace in a world increasingly becoming positively affected from the removal of time and distance barriers.

It is important to note that, ICT is not the only enabler of the knowledge society. The European Commission (2003) defined the knowledge society as characterized by a number of interrelated trends, including major advances in diffusing and using ICTs, increased emphasis on innovation in the corporate and national context, the development of knowledge-intensive business service economies and knowledge management, in addition to trends toward globalization and economic restructuring. The most highly valued and profitable assets in a knowledge society are intellectual: knowledge and expertise acquired by workers. Culture is one of the most important factors in formulating the knowledge society: universities, education and training institutions from both the public and the private sectors will also need to cooperate to realize the knowledge society paradigm. This should be coupled with massive efforts to introduce and diffuse the notion of ICT and lifelong learning as a medium for leapfrogging and realizing multiplier effects on the community.

As the impact of the availability of information on socioeconomic development became apparent, governments around the globe started to invest in national information infrastructure (Petrazzini and Harindranath, 1996). Egypt, too, has heavily invested in its technology and infrastructure to become the platform for the economy’s development and growth (Kamel, 2005a). During the period 1985–1995, a government–private sector partnership had a remarkable impact on the build-up of Egypt’s infrastructure (Kamel, 1995, 1997). Hundreds of informatics projects and centers were established in different government, public, and private sector organizations targeting socioeconomic development (Kamel, 1998b). These projects included human, technological, and financial infrastructure development. They also included projects promoting entrepreneurship and transforming youth-led ideas into start-ups. Such elements represented the major building blocks necessary to establish a full-fledged infrastructure capable of keeping pace with the developments taking place globally (American Chamber of Commerce in Egypt, 2001).

In 1999, ICT was identified as a priority at the highest policy level and a new cabinet office was established, namely, the Ministry of Communications and Information Technology (MCIT) (Kamel, 2005b).
MCIT was charged with the task of creating an information society, which started with the preparation of the national ICT plan. MCIT has articulated a strong vision and strategy on development and infrastructure deployment since its first national plan in 1999. The emphasis was on supporting the private sector so that it can take a leading role in transforming an ICT sector where the government could play the role of the enabler of a platform that could have various positive implications on different sectors and industries. Due to changes in global and local markets, both vision and strategy were amended in 2000 and 2004 (Kamel, 2009). MCIT took concrete steps like establishing the National Telecommunications Authority (NTRA) in 2003 and the IT Industry Development Agency (ITIDA) in 2004, and radically modernizing Egypt National Postal Organization (ENPO) in 2002. The partnership between these institutions and the ICT private sector accelerated ICT growth during the period 2006–2008, which reached 20% in 2006 and surpassed 25% in 2007 (American Chamber of Commerce in Egypt, 2007). The ICT sector is driving the gross domestic product (GDP) growth in many nations, and Egypt is no exception according to Tarek Kamel, Egypt’s Minister of ICT in 2011, “we are positively contributing to the treasury through a steady growth in our services to the local community and through outsourcing.” This is expected to grow given a more extensive liberalization of the sector and increasing competition with an emerging roster of local and private ICT companies in Egypt. Moreover, in 1993, the government established the Information Technology Institute (ITI) focused on providing high-end IT training for government and public and private sector employees. Almost, two decades later, ITI graduates represent the backbone and the invaluable workforce of the IT workforce in Egypt with hundreds of young promising human resource capacities trained every year. This has been the plan since the inception of ITI where the objective was to close the gap between the needs of the market in Egypt and the qualifications of Egyptian university graduates. Another divide is created by the quality of education when compared to the skills and capacities expected by different employers. “The mission of ITI is to create, shape, nurture and empower the Egyptian IT community by developing and disseminating state-of-the-art training processes,” according to the minister of ICT, Mohamed Salem (Press, 2010).

The government of Egypt has formulated various initiatives to promote ICTs and pave the way for an electronically ready community that can benefit from public, universal access to knowledge. Other factors, however, will also be critical to closing the digital divide and promoting social inclusion within the digital economy: the legal and regulatory environment, awareness and capacity development, and mechanisms needed for collaboration between different sectors in the economy. The experiences vary based on the access and sophistication of the use of computers and information technology in general (Selwyn, 2006). This underscores the importance of developing national ICT strategies that recognize the role of ICT in enabling access to knowledge. In the final analysis, the challenge is to leverage ICT as a platform for knowledge dissemination in the community, and the focus should always be on outcome assessment for this strategy. The use of computers as a gateway to knowledge accessibility plays an invaluable role in such setting.

7.4 ICT4Development: How to Close the Digital Divide: Cases from Egypt

The evolution in the knowledge society heralds a new socioeconomic order. This era is witnessing the emergence of knowledge-based economies, with traditional economic, industrial, and business activities moving toward more knowledge-driven processes and the progressive transformation of advanced economies into knowledge-based, technology-driven, services-dominated economies. These shifts are increasingly laying emphasis on economic activities with intellectual content and knowledge, enabled by the development and exploitation of new information and communications technologies within all spheres of human endeavor. In the marketspace, ICT represents a massive opportunity for small- and medium-sized enterprises (SMEs), where the differential between large corporations and small
companies is relatively small. ICT can provide various opportunities for small entrepreneurs with ideas that can have impacts on employment opportunities but also develop solutions that could benefit the community.

Against that background, Egypt’s government has announced efforts aiming at developing its information and knowledge base through investments in ICT and human capacity development, improving and broadening universal access to higher and quality education, and training with an emphasis on lifelong learning and creating digital content accessible to the society. Efforts in Egypt for ICT development are government-led in collaboration with the private sector and civil society. In that respect, Egypt has developed a number of policies and strategies to facilitate socioeconomic development and accelerate the transformation of the nation’s economy and society to become information-rich and knowledge-based.

In May 2007, MCIT released its 2007–2010 national ICT strategy (MCIT, 2007b). The plan paved the way for the Egyptian Information Society Initiative (EISI), which represented the vision of the ICT strategy translated into specific initiatives and programs to diffuse ICT connectivity (MCIT, 2005a,b). EISI is structured around seven major tracks, each designed to help bridge the digital divide and progress Egypt’s evolution into an information society (MCIT, 2005b). The theme of the strategy is “closing the digital divide and promoting social inclusion” (Table 7.2).

<table>
<thead>
<tr>
<th>TABLE 7.2 Seven Tracks of the Egyptian Information Society Strategy</th>
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<tbody>
<tr>
<td><strong>eReadiness “Equal Access for All”</strong></td>
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<tr>
<td>• Enabling all citizens with easy and affordable access to new technologies</td>
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<tr>
<td>• Developing a crucial robust communication infrastructure</td>
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<tr>
<td><strong>eGovernment “Government Now Delivers”</strong></td>
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<tr>
<td>• Delivering high-quality government services to the public in the format that suits them</td>
</tr>
<tr>
<td>• Reaching a higher level of convenience in government services</td>
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<tr>
<td>• Offering citizens the opportunity to share in the decision-making process</td>
</tr>
<tr>
<td><strong>eHealth “Increasing Health Services Availability”</strong></td>
</tr>
<tr>
<td>• Improving citizens’ quality of life and healthcare workers’ work environment</td>
</tr>
<tr>
<td>• Using ICT through to reach remote populations</td>
</tr>
<tr>
<td>• Providing continuous training for doctors</td>
</tr>
<tr>
<td>• Developing the tools for building a national health network</td>
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**ICT export initiative “Industry Development”**

- Fostering the creation of an export-oriented ICT industry
- Developing an ICT industry that will be a powerful engine for export growth and job creation

* eHealth through its growing digital infrastructure attempts to provide an information/knowledge repository that caters to patients scattered throughout Egypt’s 27 provinces and who are geographically dispersed. The initiative’s primary objective is to decrease the health gaps for Egyptians in remote locations and villages when compared to others who live in the capital and major cities. Empowering marginalized citizens with information access on different health issues would have long-term positive effects on the economy at large and also on closing the digital divide enabling a healthier population and a society more equipped to develop and grow (Gilbert et al., 2007).
Following is an evaluation of some of the initiatives and programs implemented by the government to capitalize on emerging ICT and disseminate knowledge to the society with all its segments, sectors, and communities. Rather than attempt to cover all seven elements of the EISI, the discussion will emphasize efforts in the eReadiness, eLearning, and eCulture areas considered of greatest relevance to the access to knowledge theme.

7.4.1 Electronic Readiness: ICT for All

Electronic readiness is a complex process that harnesses social, political, economic, infrastructure, and policy issues to bridge the digital divide. Most countries adopt the same path where an assessment of eReadiness is followed by a strategy and an action plan. Therefore, digital inclusion and equality are becoming integral factors in the electronic readiness of different societies (Kamel, 2007). Therefore, the government of Egypt announced that it was launching efforts aiming at universal, easy, affordable, and fast access to ICT for all citizens while raising awareness of the potential in ICT tools and techniques. The MCIT has implemented different programs promoting computer literacy and encouraging the use of ICT across the nation. One of these programs is “ICT for all,” also known as the electronic readiness (eReadiness) building block of EISI. Recognizing universal access to ICT as key to socioeconomic development, the program is devised with two main objectives. First, it aims to assist the government policy to integrate ICT in government and public services by (a) increasing ICT penetration; (b) fostering inclusion in the knowledge society and better public services and quality of life; and (c) expanding the use of post offices to provide public services. Second and more obviously, this strategy aims to facilitate ICT access for all citizens by (a) increasing PC penetration, (b) expanding the reach of Internet connectivity and broadband to all communities, (c) raising youth employability through ICT training and (d) encouraging government employees to attain international accreditation in ICT skills. The process of ICT for all is obviously perceived to have multiple positive implications on the community including job creation and community engagement. Following is a description of three selected projects aimed at promoting electronic readiness: the Free Internet Initiative, Egypt PC 2010, and IT clubs. All three employ an implementation model of public–private partnerships in which the government’s role is to articulate policy and regulatory frameworks for the private sector and civil society to implement. At the close of this section, the impact of these projects will be examined through the lens of representative indicators and secondary analyses, to assess the nation’s progress in achieving its eReadiness goals.

7.4.1.1 Free Internet Initiative (Internet and Broadband Connectivity)

The Internet was first introduced to Egypt in 1993 by the Egyptian Universities Network of the Supreme Council of Egyptian Universities, originally serving 2000 users (Kamel and Hussein, 2002). In 1994, in an effort to diffuse Internet usage among the broader society, the Cabinet of Egypt’s Information and Decision Support Center (IDSC) in collaboration with the Regional Information Technology and Software Engineering Center (RITSEC) began providing free Internet access on a trial basis to public and private organizations. The vertical and horizontal penetration of Internet was intending to minimize the digital gap from the outset. This was done with financial support from the government, in an attempt to boost global exposure of the local market and pave the way for commercialization of Internet services.

The free access formula was credited with accelerating the growth of Internet users, particularly within small and medium-sized enterprises and industry professionals (Kamel, 1998b). In 1996, the government replaced its free access policy with an open access policy: commercial Internet services were privatized, and a dozen Internet service providers (ISPs) began operation (Mintz, 1998). By December 2001, more than 600,000 Egyptians were online, but only 77,000 were paid subscribers, served by 51 private ISPs. Such limited growth was perceived as hindering the development of the knowledge society and creating a divide between the haves and the have-nots. Therefore, in January 2002, MCIT launched...
a new initiative providing free nationwide Internet access to all citizens (Kamel and Ghaffar, 2003). This has contributed to the fast-growing use, with the percentage of the population online rising from 5.5% (3.9 million users) in 2004 to 15.6% (11.4 million users) in 2008, still rising at a rate of 16.7% annually (MCIT, 2008, p. 1). Table 7.3 demonstrates the current demographics of the ICT sector in Egypt. It is important to note that huge increase in all indicators was realized post Egypt’s uprising in January 2011. This was caused by an overwhelming engagement of Egypt’s youth in learning, communicating, and exchanging ideas and starting-up companies as part of what has been widely known since the uprising as Egypt 2.0 and the creation of an environment that promotes freedom of expression, the private sector, and more engagement of different constituencies in the society.

Egypt’s free Internet initiative has made connectivity affordable to most citizens by enabling access on all fixed phone lines without additional monthly fees. The cost of dial-up access is the same as a local telephone call, less than 5 U.S. dollars per month (MCIT, 2008, p. 4). Dial-up modems, however, are generally capable of a maximum speed of only 56 kbps and occupy the telephone line. To enhance the Internet experience, broadband (ADSL) connectivity, which supplies at least 256 kbps and does not disrupt telephone use, has been offered since 2004. The continued expansion of broadband service may be expected to positively affect access to knowledge on the web due to its reliability, stability, and capacity compared to the dial-up option. In 2011, as a reaction to Egypt’s uprising, a new initiative was introduced focused on diffusing broadband across the nation’s 1 million km². This would help reach out to the remote locations spread across the country and could be effective in one of the priority sectors in Egypt post January 2011: education.

Today, however, the higher cost of broadband connectivity still remains a challenge to its acquisition by more households. The broadband tariff initiated in 2004 has been revisited twice and in March 2009 was reduced again to 17 US dollars per month for a 256 kb speed. This cost may be further reduced by

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**TABLE 7.3** Electronic Readiness in Egypt

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<tbody>
<tr>
<td>Internet subscribers</td>
<td>300,000</td>
<td>1.2 million</td>
<td>3.6 million</td>
<td>6 Million</td>
<td>11.4 million</td>
<td>29.8 million</td>
</tr>
<tr>
<td>ADSL subscribers</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>206,150</td>
<td>593,042</td>
<td>1.65 million</td>
</tr>
<tr>
<td>Internet penetration</td>
<td>0.38%</td>
<td>2.53%</td>
<td>5.57%</td>
<td>8.25%</td>
<td>15.59%</td>
<td>34.83%</td>
</tr>
<tr>
<td>per 100 inhabitants</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile phones</td>
<td>654,000</td>
<td>4.5 million</td>
<td>7.6 million</td>
<td>18 Million</td>
<td>38.06 million</td>
<td>78.99 million</td>
</tr>
<tr>
<td>Mobile phones penetration</td>
<td>0.83%</td>
<td>5.76%</td>
<td>9.74%</td>
<td>23.07%</td>
<td>50.7%</td>
<td>97.93%</td>
</tr>
<tr>
<td>per 100 inhabitants</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed lines</td>
<td>4.9 million</td>
<td>7.7 million</td>
<td>9.5 million</td>
<td>10.8 million</td>
<td>11.4 million</td>
<td>8.96 million</td>
</tr>
<tr>
<td>Fixed lines penetration</td>
<td>6.2%</td>
<td>9.8%</td>
<td>12.1%</td>
<td>13.8%</td>
<td>15.2%</td>
<td>11.98%</td>
</tr>
<tr>
<td>per 100 inhabitants</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public pay phones</td>
<td>13,300</td>
<td>48,000</td>
<td>52,700</td>
<td>56,449</td>
<td>58,002</td>
<td>23,664</td>
</tr>
<tr>
<td>IT clubs</td>
<td>30</td>
<td>427</td>
<td>1,055</td>
<td>1,442</td>
<td>1,751</td>
<td>2,163</td>
</tr>
<tr>
<td>ICT companies</td>
<td>870</td>
<td>1,533</td>
<td>1,870</td>
<td>2,211</td>
<td>2,621</td>
<td>4,250</td>
</tr>
<tr>
<td>IT companies</td>
<td>266</td>
<td>815</td>
<td>1,374</td>
<td>1,970</td>
<td>2,012</td>
<td>3,599</td>
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<tr>
<td>Communications companies</td>
<td>59</td>
<td>75</td>
<td>152</td>
<td>244</td>
<td>265</td>
<td>295</td>
</tr>
<tr>
<td>Services companies</td>
<td>88</td>
<td>121</td>
<td>148</td>
<td>211</td>
<td>242</td>
<td>356</td>
</tr>
<tr>
<td>IT economic indicators</td>
<td>48,090</td>
<td>85,983</td>
<td>115,956</td>
<td>147,822</td>
<td>174,478</td>
<td>212,260</td>
</tr>
</tbody>
</table>

* There are also 26,000 indirect workers in both IT clubs and Internet cafés.
sharing a connection across multiple households. More than 1.6 million Egyptians now subscribe to the web through broadband service, yet this is small compared with more than 29 million total Internet subscribers; this encouraged the formulation of the broadband initiative in 2011. Both figures likely reflect the use of superior connections in Internet cafés, as well as sharing of a single broadband subscription across households (MCIT, 2008, p. 4). According to a survey by Arab Advisors Group released in April 2008, 63.4% of households in Egypt with ADSL subscription reported sharing the ADSL with neighbors, and 81.9% of those share it with more than three neighboring households (Arab Advisors Group, 2008).

### 7.4.1.2 Computer in Every Home: Egypt PC 2010

Egypt PC 2010 is an initiative to bring Egypt as a nation online. It is an amended version of the 2002 PC for every home initiative launched in collaboration with Telecom Egypt (TE) (MCIT, 2007a). The first initiative offered locally assembled PCs with bank credit for up to 3 years, using ownership of a landline telephone as loan collateral. PCs could be bought on hire–purchase terms by anyone with a TE telephone line, with the periodic loan repayments included in the phone bill. In the original initiative, a limited variety of PC models and specifications were offered, which rendered the product unaffordable to many. Additionally, only TE customers could participate, which limited the project’s scope to urban communities. These two issues hindered the success of the program among the community. Five years after the launch of the 2002 initiative, the Internet penetration rate had increased to only 7% (MCIT, 2007a). Since, as noted earlier, dial-up service is available to any home with a telephone landline at no additional charge, the slow Internet penetration rate must be attributed to the continuing difficulties to acquire home computers.

The PC 2010 initiative implemented several lessons learned. The new program offers local and international brand PCs, from simple models for beginners to high-end desktops and laptops. Participants no longer need to be TE customers to be eligible for the extended payment terms because financing banks offer the required loans through facilitated retail banking procedures. Under the new scheme, the PC can be purchased on installments for as little as 8.50 U.S. dollars per month, which comes to just over 100 U.S. dollars per year. Compared with Egypt’s average GDP per capita of approximately 4337 U.S. dollars per year (UNDP, 2007, p. 231), this rate is quite affordable. Moreover, the new initiative focuses on improving PC distribution in all provinces, with an emphasis on serving underprivileged communities through partnerships with civil society organizations. This is likely to change with the broadband initiative that is currently being prepared with plans to cover Egypt across its different provinces. The importance of PC 2010 could be seen in the context that access to computers reflects the extent to which technology use enables individuals to participate and be part of society versus being social excluded through the barrier of not having access to a growing network of connected communities of interest (Berman and Philips, 2001; Haddon, 2000).

### 7.4.1.3 Integrated Computing and Training through IT Clubs

The digital divide is often created by the remote and demographic location of some communities that prohibits the access and use of the Internet in the first place (Katz and Aspden, 1997; Katz and Rice, 2002). These are the underprivileged societies located in rural settings especially in developing nations. This has been the case in Egypt which led to the emergence of a network of IT clubs across Egypt’s 27 provinces that provide citizens with access to information technology tools and applications for minimal cost, many services are for free. Their primary objective is to open the global eSociety to Egyptian youth and rural and underprivileged communities by offering an affordable site for Internet access and training. The initial vision for the program was to open 300 such IT clubs (MCIT, 2001, p. 2). The model proved highly replicable; today there are over 2163 IT clubs across the nation, a figure still growing by approximately 13.5% annually (http://www.egyptictindicators.com). This number is likely to increase...
with a growing number of business plan competitions and enabling platforms for young entrepreneurs from different provinces who are eager to start their own businesses. The American University in Cairo (AUC) School of Business Entrepreneurship and Innovation Program (EIP), the American Chamber of Commerce in Egypt, Google Egypt, Sawari Venture’s Flat6 initiative, and others are among a number of organizations that have been growing regularly since January 2011 with a targeted objective to support young entrepreneurs with innovative ICT ideas that could have various impacts on the community. Most of the start-up ideas are IT services and solutions. There is a massive need for training and lifelong learning for those young and potential entrepreneurs who want to make a difference for their society and for the future of Egypt. These ICT clubs are perfectly positioned to play such much needed role in disseminating knowledge in ICT-related issues and help prepare those future private sector leaders creating jobs at the local level. An example of AUC School of Business EIP efforts is helping over 3500 seniors and fresh graduates from 11 different provinces train on taking their ICT ideas to the next level and starting their own companies. The key is to create jobs throughout the nation; this could be the most effective way to close the holistic divide that includes among its implications the digital divide.

At this time, more IT clubs are connected and many of these are remote in the sense that new IT clubs that are touring the nation in the form of buses were introduced so that those living in remote and underprivileged communities also benefit from such effort. The remote and poor villages benefited the most from this project, especially those who distantly located from major cities and towns. The case of the IT clubs diffusion in remote locations reflects the notion that it is difficult to adequately account for the effective uses of ICTs without accounting for the availability of appropriate and current ICT infrastructure (Grabill, 2003).

7.4.2 Assessing the Impact of Egypt’s eReadiness Initiatives

Through the efforts exerted as described previously, significant progress has been made in achieving Egypt’s eReadiness goals. As a reflection of this point, Egypt ranked 76th out of 134 economies surveyed for the 2009 Networked Readiness Index (WEF, 2009, p. xvii).* Egypt also earned recognition as “an emerging outsourcing gateway in the Middle East” (WEF, 2009, p. xiii), in part due to its competitive Internet usage charges (WEF, 2009, p. 116). An alternative eReadiness index puts Egypt even higher, at 57th out of 70 nations, noting an upward momentum due to improvements in connectivity (Economist Intelligence Unit, 2008a, p. 3).†

However, it is obvious that additional work is still needed. The slow increase in fixed line density rates, in particular, has been identified as an element slowing down Egypt’s eReadiness. An external source reports that “Despite the moderate growth which Egypt’s fixed-line market has continued to experience, the market has failed to keep pace with the country’s expanding population” (Business Monitor International, 2008). The report predicted a shrink in the sector in 2009, with more customers relying on mobile phones in place of fixed lines. A chance to move forward again was predicted,

* The World Economic Forum (WEF) and INSEAD develop the NRI. The index is based on hard data produced by organizations such as the World Bank, the International Telecommunication Union and the United Nations, and survey data generated from the Executive Opinion Survey that is annually conducted by WEF. The three components of the index include the ICT environment created by the government, the readiness of the community’s key stakeholders including government, businesses and individuals and the usage of ICT amongst those stakeholders. The index ranks Egypt 60th in terms of market environment and 70th in terms of IT infrastructure; while Egypt ranks 51st in government readiness, it is still lingering at 97th rank in individual readiness.

† The Economist Intelligence Unit’s eReadiness ranking is based on a set of quantitative and qualitative criteria that include connectivity and technology infrastructure, the business environment, the social and cultural environment, the legal and policy environment, the government’s policy line and business adoption. The data is sourced from such institutions as the World Bank, the World Intellectual Property Organization, and the Economist’s network of national experts and economists. In 2008, Egypt held an eReadiness score of 4.81 out of 10 as opposed to 4.26 in 2007 (The Economist Intelligence Unit, 2008b).
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however, only if competition enters the market. “The arrival of a new fixed-line operator sometime in the next 2 years could result in a new round of growth for the sector, particularly if the new entrant started providing fixed wireless services,” according to the former minister of ICT. Given the recent developments in Egypt, this plan has been put on hold. However, it is perceived that in the coming few years, a new fixed line operator will be introduced into the market in Egypt, which will be in favor of market competition.

Taking the long view, significant progress on eReadiness has unquestionably been made. The ICT infrastructure witnessed in the past decade massive developments in international links for telephony and the Internet backbone in addition to disseminating Internet across Egypt’s 27 provinces. The ultimate goal, however, is not to achieve increased ICT adoption for its own sake. As the name “eReadiness” implies, these efforts merely lay the foundation to take advantage of ICT tools for development ends. With this in mind, the following section examines Egypt’s efforts to date in leveraging ICT development for education.

7.4.3 Electronic Learning: ICT for Education

Education and lifelong learning are central drivers of socioeconomic development and growth, and have particularly relevant implications for access to knowledge. Boosting performance on these measures, however, has historically been a challenge for Egypt. The country’s adult literacy rate stands at only 71.4% (UNDP, 2007, p. 231), indicating that a substantial proportion of the country must overcome barriers beyond the merely technological in order to take advantage of the Internet. Egypt’s education system has been fully subsidized by the government for decades, yet challenges with regard to infrastructure and quality persist. In the public school system, class sizes of 70–80 pupils are common, teachers are poorly qualified, and the emphasis is on rote memorization rather than problem-solving (Kozma, 2004, pp. 14–15). Since 2003, the country’s former ruling National Democratic Party has declared education reform to be a key priority (Essam El-Din, 2003); nothing has materialized in a sector that has been suffering since the coup d’état of 1952 that always managed the education sector based on a fire fighting approach rather than developing a holistic approach that could transform a sector highly needed for socioeconomic development. This has been one of the key elements for the creation of the knowledge and digital gaps in the community. Education has been and will always be the determining platform of whether these gaps diminish or grow.

One major component of such reform is embedding ICT in education to promote information acquisition and knowledge dissemination. The objectives of deploying ICT for education include optimizing ICT investments to avail the required infrastructure that promotes education and lifelong learning, satisfying the ICT industry training requirements, creating an open learning environment by connecting the education community through broadband, and increasing the efficiency and effectiveness of education institutions and embedding ICT in the curriculum. Based on the events of January 2011, the growing access to ICT tools and applications and the exposure of Egypt’s youth were benefiting from enabling the unconventional use of the technological platforms in changing the political landscape of the nation.

Toward those ends, MCIT is supposed to work closely and strategically with the Ministry of Education (MOE) and Ministry of Higher Education and Scientific Research (MOHE); where in the context of developing nations, ICT deployment is invaluable for educational improvement and spread across the society. Accordingly, a number of projects were devised; most notably the Smart Schools Network, the Egyptian Education Initiative (EEI), and ICT for Illiteracy Eradication. These programs share the common target of increasing ICT awareness and promoting education and lifelong learning. Their strategy is meant to capitalize on the potential of ICT to provide universal access to knowledge and education to all constituencies in Egypt, irrespective of socioeconomic group, gender, age, or background. Egypt offers a model for how rising economies can develop a skilled IT workforce and a healthy IT sector that are closely aligned with each other.
7.4.4 Assessing the Impact of Egypt’s eLearning Initiatives

Although Egypt has made significant progress in achieving its eReadiness objectives, its eLearning programs are generally still at the pilot stage. According to a regional report, Egypt’s ICT for education implementation was ranked at a maturity level of two out of four, indicating a number of sporadic projects and initiatives that had concrete impacts, but lacking the consistency and long-term vision for successful implementation and sustainability (ESCWA, 2007). It is important to note that of the three eLearning programs, the Egyptian Education Initiative has had the greatest impact, training over 100,000 teachers in using ICT. The Smart Schools Network, although still quite small, holds the potential to build on this success to use ICT in a way that truly transforms the educational experience. Finally, the ICT for Illiteracy Eradication project demonstrates that eLearning can be leveraged to achieve results in lifelong learning, even for those at the greatest educational disadvantage. To achieve a significant impact upon access to knowledge in Egypt, however, these programs must be greatly scaled up. This will require broader advancements in access to computers and the Internet (eReadiness) than has already been achieved. Once this infrastructure is in place, however, the eLearning programs may benefit from the economics of easily reproduced open source software to scale up with an efficiency of resources.

7.5 Social Networks Impact: 2011 and Beyond

In recent years, many case studies indicated that ICT tools and applications including mobile phones, short messaging systems (SMS), and the Internet have had a variety of impacts on democratic freedoms (Shirazi et al., 2010). The provision of such tools and applications are central to information access and participation in social and political life (Becker, 2001; Bennett and Fielding, 1997; Drezner and Farrell, 2008; Harwit and Clark, 2001; Snellen, 2001). These mechanisms help facilitate the diffusion of information and in many ways help in closing the digital divide and in improving social inclusion (Norris, 1999). Moreover, some people think that ICT diffusion help create a new type of technology adopter called the “digital citizen” (Katz and Aspden, 1997). According to Balkin (2004), “the digital revolution brings features of freedom of expression to the forefront of our concern and makes possible for widespread cultural participation and interaction.”

ICTs provided the platform to enable citizens the participation in the transformation and democratization process as well as mobilization of resources, debating issues, influencing decisions, and leveraging civic engagement, all contributing to minimizing the digital divide (Bennett and Fielding, 1997; Dertouzos, 1997 and Sussman, 1997; Gilbreth and Otero, 2001; Norris, 2001; Suarez, 2006; Weber et al., 2003).

The impact of ICT with an emphasis on social networking was optimized in Egypt in the past few years. This was spread across the community. It also enabled an effective platform to oppose the convention wisdom that in the Middle East women face unequal access to the Internet. Social networking phenomenal growth, from 6 to 20 million in 18 months, allowed social inclusion through the digital world for different groups including women, youth, and underprivileged communities in remote areas in Egypt. Since 2008, Egypt’s youth (58% of the population totaling 90 million in March 2012) realized the power of sharing news, knowledge, and momentum using emerging ICT tools and applications, social networking. Applications such as Facebook were growing in popularity in the Middle East region for a few years now recording, as a region, one of the highest growth rates in the world. The tools were perceived as a platform to share ideas, empower them, as well as a mechanism that can help transform the society. This is made clear in Ghonim’s statement, as one of the young Egyptians who contributed in Egypt’s uprising “the power of the people is greater that the people in power” (Ghonim, 2012). The experience witnessed in Egypt in early 2011 for the duration of 18 days demonstrated the power ICT can provide and how access to information and knowledge in a nation that is one million square kilometers can be effective with concrete impacts. As an attempt to stop the uprising, one of the strategies used by the government of Egypt was cutting-off cellular phones and Internet connectivity; a clear statement of
how effective communication devices were influential, even in a country that rates high in illiteracy. In the case of Egypt, the Internet has been instrumental in setting the stage for a revival of Egypt’s political scene for the first time in 60 years. There is no doubt that ICT and social networks made public exposure inevitable (Ghonim, 2012). In the build-up to January 2011 and to date, the impact on the growth of Internet users and mobile holders was phenomenal as indicated earlier. Mobile phones have increasingly and effectively helped in closing the digital divide among the different constituencies of the community irrespective their social class, income, educational background, skills, and capacities (James, 2011). In many ways, the likes of Facebook and Twitter in Egypt became the primary news channel of communication for many Egyptians both in Egypt and with the over 6 million Egyptians who are living around the world but very much connected to their homeland. Over a year after Egypt’s uprising, the transformation process continues in different models using various ICT tools and techniques supported by several ICT-based business plan competitions and initiatives that target several start-ups aiming at addressing socioeconomic and political issues and developing solutions and suggestions to approach them by different constituencies.

7.6 Conclusion

Over the past decade, Egypt has made significant progress toward realizing the vision of the knowledge society through ICT. The developments of the initial phase addressed legal, technical, and business fundamentals, enabling the ICT industry to develop significantly (IDSC, 2005). These have been reflected positively in the overall growth of the sector, which exceeded 20% during the period 2006–2008 and contributed to overall GDP growth by more than 7% (Fayed, 2009). In the words of the former ICT minister, the ICT sector has transformed itself “from a sector looking for support and subsidies to a sector contributing tangibly and intangibly to the economy with a total of 5.2 billion US dollars received by the treasury since early 2006” (Kamel, 2008). The ICT sector has also served as a role model for other sectors of reform and liberalization, capitalizing on a free market economy and catering to different social groups and interests.

The National ICT Action Plan 1999–2009 was realized in many ways over the past decade, although not in its full capacity as envisioned in 1999. This action plan, set shortly after the establishment of MCIT, aimed to build a knowledge-based society that can boost socioeconomic development and entice economic growth. As originally conceived, the plan identified eight goals: completing the ICT infrastructure build-up to avail universal interconnectivity among all 27 provinces including 520 local administrations and over 8000 cities and villages; realizing infostructure interconnectivity among value-added information networks in government, private sector, and civil society organizations; linking Egypt locally and globally within the growing global digital marketspace; investing in human capital through lifelong learning programs and serving different segments of the community; building an electronically ready community capable of engaging in the global information society; updating Egypt’s information infrastructure as a step in building the nation’s information highway; encouraging an ICT export industry by promoting and supporting innovation, creativity, and research and development in ICT-related areas; and collaborating through public–private partnerships engaging different stakeholders in high-tech projects with business and socioeconomic implications.

Although none of these objectives have been fully attained, the achievements to date of the plan lie in gradually helping Egypt to bridge the nation’s digital divide and in sharpening its competitive edge on the global ICT scene. Penetration rates are gradually increasing for infrastructure like Internet access, PCs, and mobile and fixed phone lines. The liberalization of the telecom sector created competitive forces that are working for the best interest of the consumer; more is expected in the years to come. The action plan also helped avail an ecosystem that is empowered by deregulation policies, which laid the foundations of the ICT sector’s continuing development. The MCIT has gained valuable experience through a number of public–private partnership initiatives that can be expanded and improved upon to achieve fully the vision of the knowledge society over the coming decade.
The development of the knowledge society cannot be left to market forces; it deserves and needs the attention of the highest political decision-makers with a vision to expanding access and contribution to knowledge. Nations like Egypt should prioritize information needs for business and socio-economic development, just as they do already for sectors such as industry, agriculture, education, and health. Governments are responsible for taking a strategic approach to the demands of an information-intensive global environment. This approach should include creating a shared vision of the knowledge society, intensifying the process of information acculturation, generating the necessary human capacities, accelerating the development and deployment of ICT infrastructure, and building an electronically ready community.

A critical issue in the information age will be developing a win–win partnership between the government and the private sector. According to the former MCIT Minister Tarek Kamel, “institutional build up is important for the optimization of effective impacts of ICT on the society” Transparency is important. Adherence to law is important. But I believe that the most crucial issue is genuine public–private partnership including all the various stakeholders in the dialogue and in the development process (Atallah, 2008). The private sector is now seen as a major stakeholder in the progress toward the knowledge society. Use of public–private partnerships will continue to be instrumental for the government’s strategy. The nature of this partnership will be determined by the answer to this question: how will governance be exercised in the information-based world? While the framework is not yet defined, the private sector will probably provide information-based services while governments construct a supporting regulatory framework based on the greater public participation and consensus essential for a knowledge society.

The knowledge society requires not just an intricate web of legal measures but also a strong, comprehensive infrastructure, a human resource investment plan, good education, and concrete incentives for local and foreign investments. Moreover, it requires full transparency in the transfer and use of data within an environment that encourages creativity and innovation. Information is power, and it is a factor in the manipulation of discourse about socioeconomic reform (Stiglitz, 2002). Historically in Egypt, the government has dominated the supply of information. The process of information sharing and dissemination was orchestrated by a number of public and private sector organizations led by the Central Agency for Public Mobilization and Statistics (CAPMAS), established in 1964 and considered the official source of data collection in the nation (El-Mikawy and Ghoneim, 2005). This strategy has been gradually changing since the mid-1980s, when the government opted for a relatively more transparent strategy by collaborating with the private sector and by allowing research entities to conduct market studies, sharing findings and outcomes, and generally contributing in the build-up of the knowledge society. This promising trend has opened venues for information sharing to the public, empowered the society, and disclosed opportunities for business and socioeconomic development.

Access to knowledge will not reach all segments of the society across all provinces, however, until further efforts are expended. Despite significantly increasing ICT penetration rates, too many Egyptians are still excluded from the opportunity to participate in the knowledge society. Not only technological expansion is needed, but also educational opportunities and the economic resources for Egypt’s people to avail themselves of the opportunities the new technologies provide. Moreover, a political revisiting and reform for media freedom will be conducive to an improved access to information, which is currently still perturbed by a series of legal and extra-legal restrictions. A critical leveraging of the potential of open source software and open-licensed content is also in order to expand access to eLearning and eCulture. This is becoming on-the-top priorities of the agenda especially with Egypt’s uprising and the growing role of ICT, the Internet, and social networking in information sharing, acquisition, and dissemination.

In this respect, access to knowledge emerges as an invaluable platform for development and growth in the global marketplace of the twenty-first century. With the increasing competition taking place around the world, investing in human capacities and disseminating knowledge through multiple channels is integral to business and socioeconomic development. Expanding access to ICT plays a pivotal role in this effort. Over the next decade, Egypt should further develop its ICT policies and programs within an
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overall ecosystem that entices knowledge sharing and collaborative work, and which is guided by the
notion that access to knowledge is the path to societal development and growth.

The developing world must understand the importance of ICT in order to optimize the associated
benefits. ICT investments and infrastructure should be considered as a platform, a tool for develop-
ment; only then ICT can help solve societal problems and realize its targeted objectives. ICT, through
connectivity, timeliness, currency, and accessibility, is an enabling environment for digital inclusion
and can have positive and concrete impacts on different sectors such as education, health, and more.
Bridging the digital divide goes beyond the influence of ICT penetration. Closing the gap caused by the
digital divide is a precondition to many more influences on the community including reducing poverty,
improving economic conditions, supporting education diffusion, and achieving sustainable markets.
While the digital divide reflects the gap in information and knowledge access, it also relates to gaps that
relate to different elements including economic, social, political, and cultural aspects. In addition, it is
important to note the role of income and education as significant contributors to access to computers
and the Internet (Grabill, 2003). Access to information and the closing of the digital divide within the
community is becoming as important as the creation of wealth, jobs, and prosperity for citizens.

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