CHAPTER 4
ICT DEVELOPMENT IN EGYPT

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4.1 INTRODUCTION

Even though IT diffusion has been proven to have significant spillovers on the world economy, these benefits have not appeared to be evenly distributed among countries. In fact, effective usage of IT equipment requires many other complementary investments including factors like human capital and the provision of a reliable telecommunication infrastructure which many of the developing countries still lack.

Consequently, in order to examine and assess the possibilities of using different forms of information and communication technologies for increasing "*Public Participation*" and citizenship in urban development "*particularly*" in Egypt, we need to consider similar experiences of utilizing the information technology in the Arab Countries & Africa.

This chapter reviews the disparities between countries and the gap between those with access to ICT and those without. It then explores the actual and potential existence of IT in Arab Countries & Africa, revealing the obstacles it faces & factors contribute to bridging it.

Focusing particularly on Egypt, the study provides a comprehensive overview of the information-technology sector in Egypt, statistics and indicators aiming at understanding the information-technology market in Egypt and potential investment opportunities.

4.2   DISPARITIES BETWEEN COUNTRIES

The last twenty years have witnessed an enormous expansion in the Internet usage all over the globe, from fewer than 200,000 in 1990, to over 1,966,514,816 in 2010. (**World Internet Users and Population Stats**, 2010)

Growth, however, has been anything but uniform. The geographic distribution of connections to the internet heavily favors developed countries, developing countries, on the other hand, have been far less intensive users of the internet. With more than 80% of the world's population, the developing world, currently owns a mere 4% of the world's computers. (**Harris**, 2008)
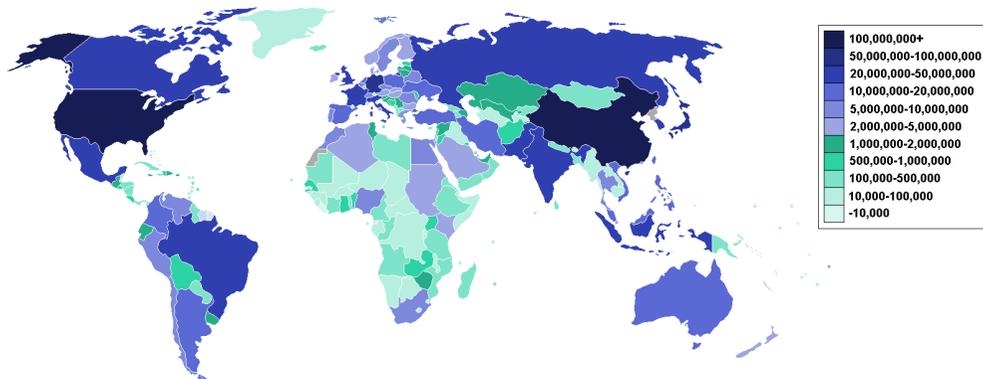

Figure 4.1: Internet users by country (**Internet world stats**, 2008)

According to Postnote (2008), OECD[15] countries have the highest access to new ICT, followed by South Asian and some African countries. Sub-Saharan countries fare worst (excepting South Africa). A detailed list of internet usage statistics by country is provided in appendix 4

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[15] **OECD:** The Organization for Economic Co-operation and Development, an international economic organization of 34 countries founded in 1961 to stimulate economic progress and world trade.
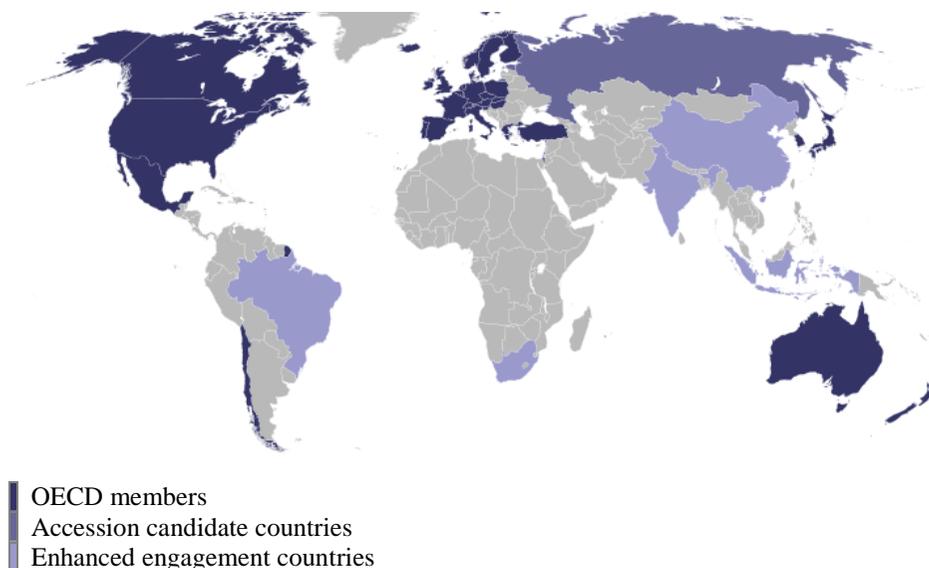
OECD members
Accession candidate countries
Enhanced engagement countries

Figure 4.2: OECD members, (**Internet world stats**, 2010)

WORLD INTERNET USAGE AND POPULATION STATISTICS						
World Regions	**Population (2010)**	**Internet Users 2000**	**Internet Users 2010**	**Penetration (% Population)**	**Growth 2000-2010**	**Users % of Table**
Africa	1,013,779,050	4,514,400	**110,931,700**	10.9 %	2,357.3 %	5.6 %
Asia	3,834,792,852	114,304,000	**825,094,396**	21.5 %	621.8 %	42.0 %
Europe	813,319,511	105,096,093	**475,069,448**	58.4 %	352.0 %	24.2 %
Middle East	212,336,924	3,284,800	**63,240,946**	29.8 %	1,825.3 %	3.2 %
North America	344,124,450	108,096,800	**266,224,500**	77.4 %	146.3 %	13.5 %
Latin America/ Caribbean	592,556,972	18,068,919	**204,689,836**	34.5 %	1,032.8 %	10.4 %
Oceania/ Australia	34,700,201	7,620,480	**21,263,990**	61.3 %	179.0 %	1.1 %
WORLD TOTAL	6,845,609,960	360,985,492	**1,966,514,816**	**28.7 %**	444.8 %	100 %

Table 4.1: Internet Usage Statistics, (**World Internet Users and Population Stats**, 2010)
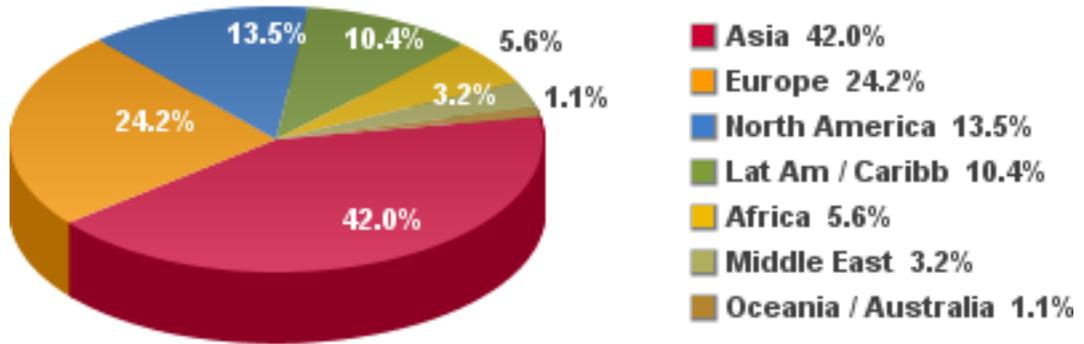
Figure 4.3: Internet users in the world by world regions, (**Internet world stats**, 2010)
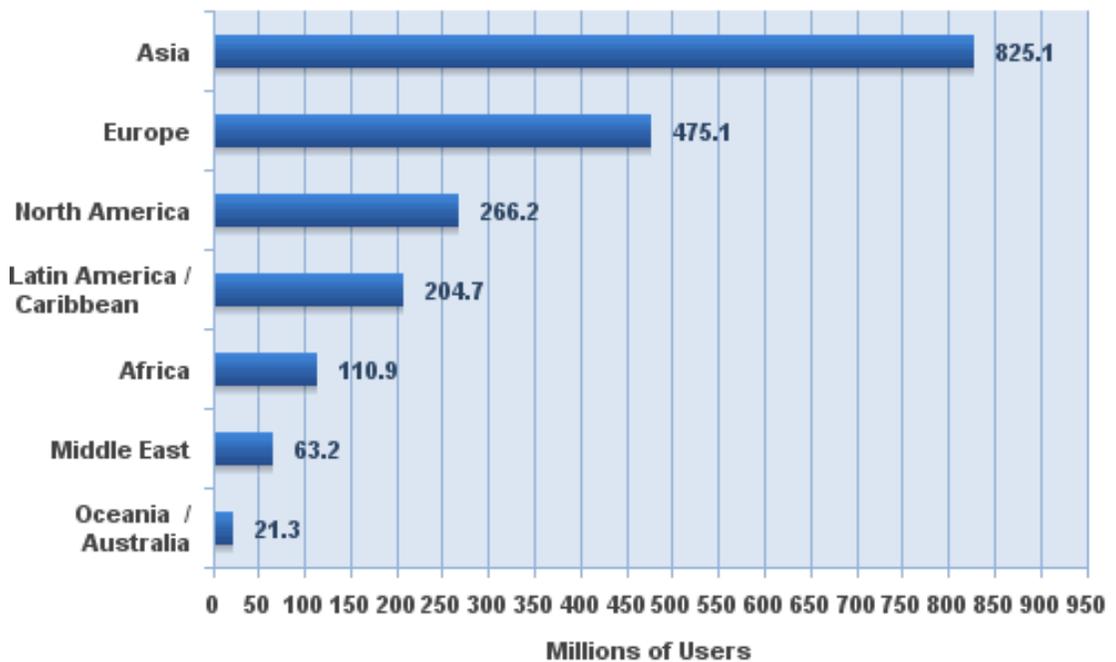

Figure 4.4: Internet users in the world by Geographical regions, (**Postnote**, 2010)

4.3   ICT IN DEVELOPING COUNTRIES

There are wide disparities between countries in the extent to which different developing countries, and different socio-economic groups within countries, benefit from ICT.

One reason for differences between developing countries is the wide variation in government policy. A range of government strategies, from cutting taxes on devices such as mobile phones, to liberalizing markets, can increase ICT uptake. (**Sanyal & Schon**, 1990)

> *"In Egypt a dynamic Ministry of Communications and Information Technology has played a strong role in catalyzing ICT development in collaboration with the private sector. For example, its transfer of internet subscription charges from consumers to Telecom Egypt and internet service providers (ISPs) coincided with a sharp rise in new users: from ~9 users per ten thousand inhabitants in 2001, to ~55 per ten thousand in 2004."* (**MCIT**, 2007)

It is argued that some policies increase only net ICT access. For example, efforts to develop the "*high tech*" end of the market, such as mobile phones with multimedia exchange, tend to benefit the middle classes rather than improving basic levels of access for all. It is also argued that governments sometimes set overambitious targets for ICT uptake, which have little hope of being put into practice.

> "*You'll find people in developing countries doing incredible things with their fingernails, scratching out access,"* said **Raul Zambrano** (2008), information technology specialist for the UN development project. "*But while this is wonderful, the gap between the haves and have-nots is widening.*"

New technologies, and changes in usage, can increase access to ICT. For example:

- Recent developments in wireless local area network technologies are raising new hopes for internet diffusion in parts of the developing world.
- Sharing of devices is common in developing countries; it can also generate employment.
- Open Source Software (OSS) is also an expanding area. Since there is no licensing fee attached to it, OSS can be cheaper to acquire than proprietary software. (**UN**, 2005)

- The '*One Laptop per Child*' project aims to supply schools with cheap Personal Computers (PCs) which run on OSS.

> *"This $100 laptop is a robust, open source based computer that can be cranked into operation. It has been developed by the non-profit One Laptop Per Child (**OLPC**) organization at the Massachusetts Institute of Technology (**MIT**), with assistance from corporate members such as **Google** and **NewsCorp**. It will be sold to governments and issued to children by schools."*

It is broadly agreed that ICT can play a part in bridging developmental disparities between and within countries. There is less agreement over how high a priority it should be, in relation to other developmental concerns.

Some suggest that the introduction of ICT in developing countries will rapidly improve wealth as well as social and personal well-being. They say it should be treated as a matter of urgency, since any delay puts developing countries at risk of being further marginalized. Others question the relevance of spending development aid on improving access to ICT, arguing that basic services should be prioritized. (**Compaine,** 2001)

However it is increasingly acknowledged that the two approaches are linked, since ICT can improve access to basic services, such as health and education.

There are thousands of technicians, entrepreneurs, and philanthropists working to increase Internet access in the developing nations. They all have different goals, but one common denominator. They want to make connections. The Internet will be much more important to the poorer countries of the world than it is to their wealthier neighbors.

It's a type of reverse colonialism. For a relatively small cost, citizens of developing countries can exploit industrialized wealthy nations for an endless supply of that precious commodity—information

The '*digital divide*' commonly refers to the gap between those with access to ICT and those without; yet, many factors besides physical access contribute to these disparities, among which are:

- Strong Governmental Support
- A Suitable Legislative and Investment Environment
- A State of the Art Infrastructure and Investment in Human Resources

Even in developing countries with relatively high net ICT uptake, ICT is still out of reach of many groups, according to **Compaine** (2001), this is due to:

- **<u>Lack of appropriate products:</u>** products are often not designed to meet the needs of the poor, or those in remote areas. These groups can face constraints such as access to electricity (lacked by two billion people worldwide).

- **<u>Cost:</u>** roughly half the world lives on less than four dollars a day. Many potential users are too poor to afford any form of access to ICT.

- **<u>Education:</u>** even where there is physical access to ICT, many people do not have the technical skills needed to benefit from them.

- **<u>Language</u>**: Poor literacy is a problem with ICT such as the internet. Of those who can read, many know only a local language, while the internet is dominated by English-language content.

- **<u>Human resources</u>**: As in many sectors, the migration of skilled ICT professionals from developing to developed countries contributes to a lack of human resources to support ICT.

- **<u>Lack of robust regulatory framework</u>** for ICT can limit uptake.

However, many factors could contribute to bridging the digital divide. National governments, NGOs [16], industry and international donors all play a role, often work together.

Focusing particularly on **Egypt**, as a leading country in North Africa & in the Arab World in the use of information technologies for governance, and according to **Internet world stats** (2010), Egypt is positioned in the rank 27th on the world regarding the number of internet users. However, in terms of penetration to the population, it is positioned in the rank 133.

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[16] **NGOs**: non-governmental organizations, are legally constituted organizations created by natural or legal persons that operates independently from any government

Rank	Country	Internet Users	% Pop.	Date
—	*World*	1,966,514,816	28.7%	2010
001	China	425,000,000	31.8%	2010
002	United States	240,000,000	77.4%	2010
003	Japan	99,150,000	78.2%	2010
004	India	81,000,000	6.9%	2010
005	Brazil	75,943,600	37.8%	2010
006	Mexico	68,430,000	61.5%	2010
007	Germany	65,200,000	79.1%	2010
008	Russia	59,850,000	42.8%	2010
009	United Kingdom	51,450,000	82.5%	2010
010	France	44,630,000	68.9%	2010
011	Nigeria	43,985,000	28.9%	2010
012	South Korea	39,500,000	81.1%	2010
013	Turkey	35,000,000	45.0%	2010
014	Italy	34,000,000	54.0%	2010
015	Iran	33,200,000	43.2%	2010
016	Indonesia	30,000,000	12.3%	2010
017	Philippines	29,750,000	29.7%	2010
018	Spain	29,095,000	62.6%	2010
019	Argentina	26,615,000	64.4%	2010
020	Canada	26,224,900	77.7%	2010
021	Vietnam	24,269,083	27.1%	2010
023	Poland	22,450,600	58.4%	2010
022	Colombia	21,529,415	48.7%	2010
024	Pakistan	18,500,000	10.4%	2010
025	Thailand	17,486,400	26.4%	2010
026	Australia	17,033,826	80.1%	2010
027	**Egypt**	**17,060,00**0	**21.2%**	2010
028	Malaysia	16,902,600	64.6%	2010
029	Taiwan	16,130,000	70.1%	2010
030	Ukraine	15,400,000	33.7%	2010
031	Netherlands	14,890,200	88.7%	2010

Table 4.2: Internet Usage Statistics by country, (**World Internet Users**, 2010)

The main challenges that should be addressed are the digital divide (within the country itself), the language barrier (Arabic contents and Arabic Domain Names), the literacy rates, hardware and software prices, limited connectivity, awareness, and telecommunications infrastructure.

To establish E-Government programs we need to have a national vision and planning accompanied with more commitment and collaboration to carry out

such programs, the challenges facing both governments and citizens in their quest towards development, inclusion and empowerment.

The Resistance to change and Internet usage in addition to the public Trust in online transactions in general could be also part of the challenges. Some governmental procedures need long steps. (**Shaban**, 2008)

4.4   STATISTICS IN THE ARABIC COUNTRIES

According to **Department of Economic and Social Affairs Statistics** (2006), several Arab countries have already introduced some e-government applications while others are still in the process.

1. **The United Arab Emirates have implemented the following applications:**

   - Human Resources Management System (HRMS): Provides a tool for planning and managing employee related activities
   - Financial Management Information System: Comprehensive financial systems for the Federal government agencies
   - E-Stamps: The e-Dirham payment tool devised by the Ministry of Finance and Industry in order to facilitate collection of revenues and provide secure payment method.
   - E-Tender: Electronic tendering system used by the government
   - Other specialized systems related to some Ministries and authorities

2. **Bahrain**

   - The Financial and Human resources systems in 30 ministries and governmental department.

3. **Applications in Lebanon.**

   - Document Management and Archiving System, Business Automation and E-Procurement (with Italian Government assistance)

4. **Implemented Applications in Jordan**

   - Financial, purchasing and inventory systems in different governmental agencies
   - E-Payments in the telecommunications sector
   - E-Tendering

- Wideband network in 18 Ministries (will be the infrastructure of the E-Government services)

5. **Implemented Applications Kuwait**

- Financial and HR systems (in government educational universities too)

6. **Implemented Applications Egypt**

- ERP in 6 ministries
- Archiving systems in 6 ministries
- Workflow in more than 28 governmental agencies

7. **In progress Applications Oman**

- Disaster Recovery system
- E-Tendering
- E-payment Gateway
- Technology Park
- CRM (Oman Municipality)

The above programs to succeed there should be a leadership support and advocacy for E-Government, clear goals and specific performance targets.

4.4.1.   Internet Usage In Arab World

According to **Internet world stats** (2010), Egypt is ranked the first among the Arab countries regarding the number of internet users as shown in **Figure 4.5.**

Egypt is leading the Arab world in terms of Internet users with 17.5 million, followed by Morocco with 10.4 million users and Saudi Arabia with 9.8 million.

Rank	Country	Internet users	% of population
1	Egypt	17,060,000	21.2%
2	Morocco	10,442,500	33%
3	Saudi Arabia	9,800,000	38%
4	Algeria	4,700,000	13.6%
5	Sudan	4,200,000	10%
6	Syria	3,935,500	17.7%
7	United Arab Emirates	3,777,900	75%
8	Tunisia	3,600,000	34%
9	Jordan	1,741,900	24.2%
10	Oman	1,236,700	41%
11	Kuwait	1,100,000	39.4%
12	Lebanon	1,000,000	24.2%
13	Bahrain	649,300	55%
14	Qatar	436,000	51.8%
15	Yemen	420,000	1.8%
16	Libya	353,900	5.5%
17	Iraq	325,000	1.1%

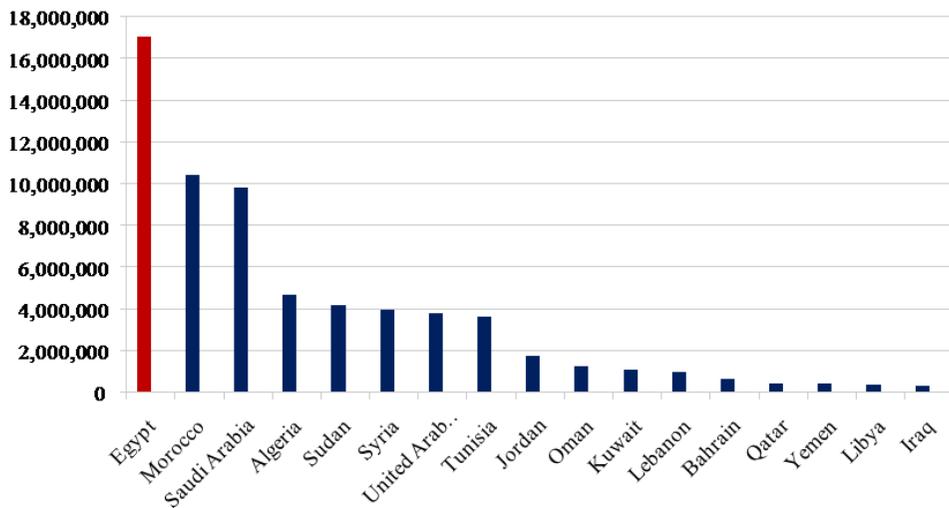**Table 4.3:** Internet usage in the Arab world, (**Nielsen Online**, 2010)

Figure 4.5: Statistics of internet usage in Arab world – (**Internet world stats**, 2010)

4.4.2. Internet Usage Penetration

In terms of Internet Usage Penetration, Egypt is positioned in rank 11 with penetration rate of only 21.2 %. This reflects disparities in utilizing the ICT within the country itself.

On the other hand, the United Arab of Emirates boasts the highest penetration of the Internet in the Arab world with 75%, however, most of the users in this country are expats.

Bahrain and Qatar are ranked second and third respectively with penetration rate of 55 % & 51.8. (**Nielsen Online**, 2010)
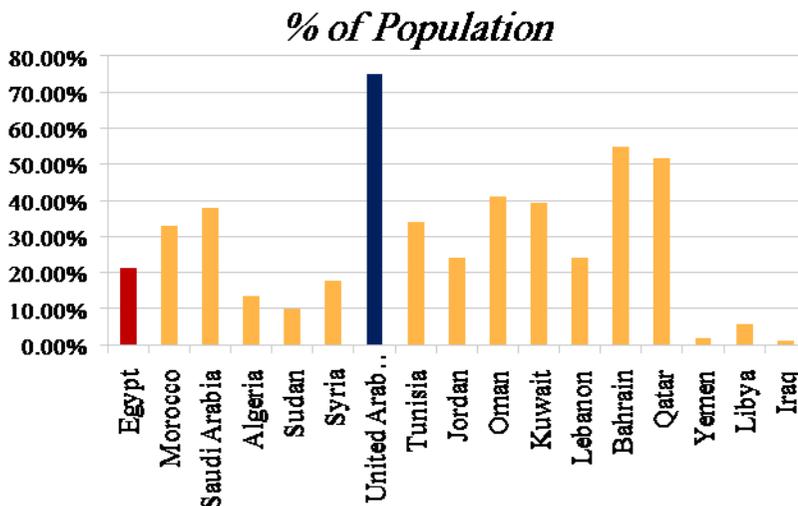

Figure 4.6: Statistics of internet users' numbers penetration in Arab countries (% of population). **Internet World Stats**, 2009

A new Arabic financial website (**www.nuqudy.com**) reported that the total number of Web users in the Arab world is estimated at about 75 million users by the end of July 2010. However, it said that the actual number of Internet surfers in the Arab countries is much higher in the case the users of the Web via mobile phones in this region are taken into account.

It is claimed that in some countries the internet penetration rate is low but the cellular penetration rate is close to 100%. For example, the Internet penetration rate in Algeria is put at about 15%, while the penetration rate of mobile phones in this country is over 100%.

4.4.3. Internet Growth

Willingness and ability to change, knowledge sharing, starting small and growing quickly and developing acceptable privacy and security safeguards are needed to achieve good e-government application.

Although some Arab countries are investing huge amount of money on restructuring their electronic infrastructure such as Saudi Arabia; others are still far away and depend on receiving aid from developed countries.
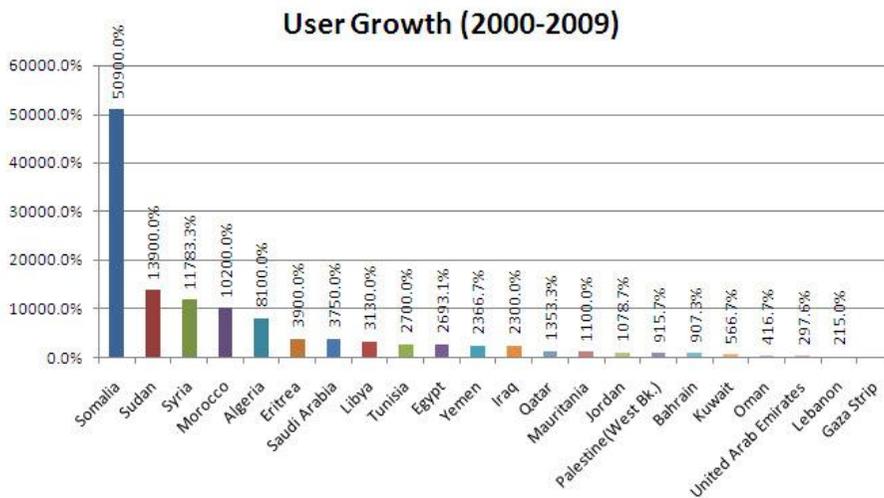

Figure 4.7: Statistics of Internet usage growth in Arab countries, (**Internet World Stats**, 2009)

Saudi Arabia investment in E-Government has topped SAR 3 billion recently which will lay the foundations for the beginning of a comprehensive implementation of e-Government.

There is no doubt that Dubai E-Government has played a pioneering role in driving the E-governance initiative in the region and through its comprehensive web portal, citizens, residents, visitors and business enterprises can access more than 2,000 electronic services, including payment of traffic fines, payment of Municipality fees, applying for visas for friends and relatives, renewing health cards, company registration, among others.

Meanwhile while others are still struggling with culture and tradition, some countries have already shortened the distance between them and the developed world believing in the future generation of E-life.

4.5   INTERNET USERS IN AFRICA

New Internet usage figures for Africa were published by Internet World Stats. African countries have advanced very much recently in Internet usage, but they still exhibit low penetration rates.

Statistics show for the second quarter 2008, a World Penetration Rate of 31.8 %. However, Internet penetration in Africa was 10.9 %, a fourth of the world average.

INTERNET USERS AND POPULATION STATISTICS FOR AFRICA						
AFRICA REGION	**Population (2010 Est.)**	**Pop. % in World**	**Internet Users, Latest Data**	**Penetration (% Population)**	**Use Growth (2000-2010)**	**% Users in World**
Total for Africa	1,013,779,050	14.8 %	**110,931,700**	10.9 %	2,357.3 %	5.6 %
Rest of World	5,831,830,910	85.2 %	**1,855,583,116**	31.8 %	420.5 %	94.4 %
WORLD TOTAL	6,845,609,960	100.0 %	**1,966,514,816**	28.7 %	444.6 %	100 %

Table 4.4: Africa Internet Usage and Population Stats, Internet usage in the Arab world, (**Nielsen Online**, 2010)
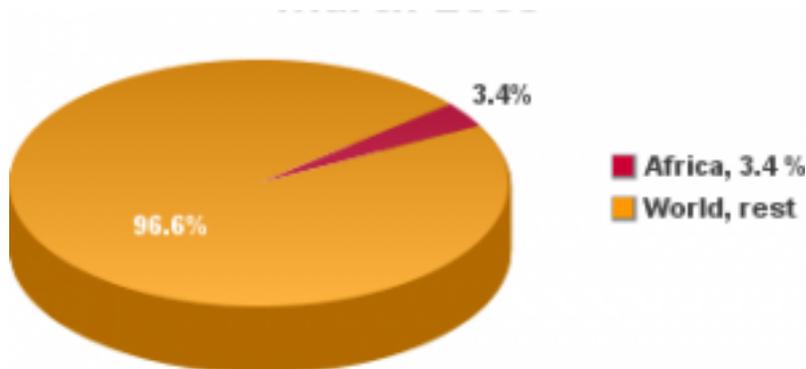

Figure 4.8: Internet users in Africa, (**Internet World Stats**, 2009)

According to Internet world stats (2010), Egypt is ranked the Second after Nigeria regarding the number of internet users.
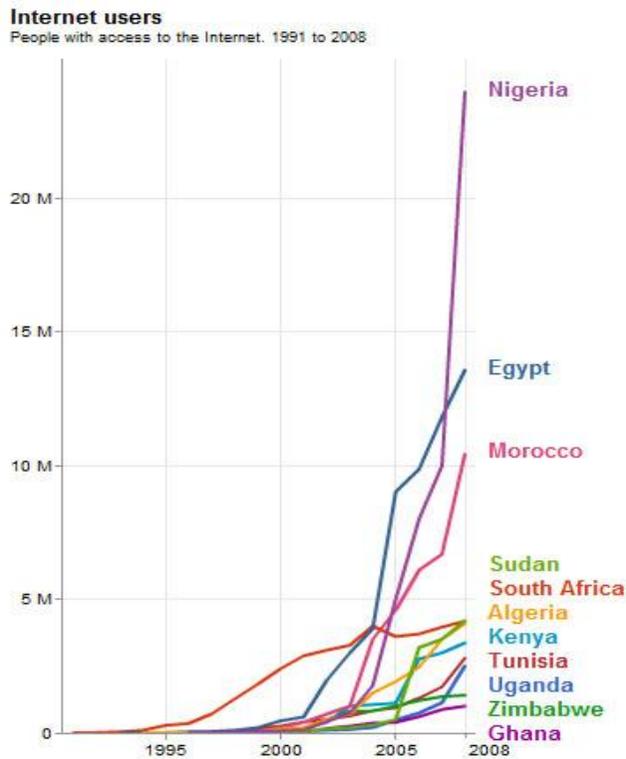
Internet users
People with access to the Internet. 1991 to 2008

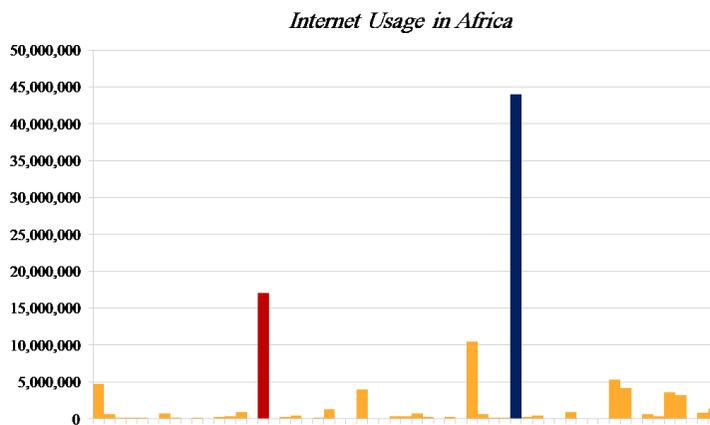**Figure 4.9:** Internet users in Africa, 2008

Figure 4.10: Internet usage in Africa, (**Internet world stats**, 2010)

4.5.1.   Internet Usage Penetration in Africa

The penetration of Internet in Africa is quite limited compared to the rest of the world. Measurable parameters such as the number of ISP-registered users, overall number of hosts, IXP-traffic, and overall available bandwidth all indicate that Africa is way behind the "*digital divide*".

Moreover, Africa itself exhibits an inner digital divide, with most Internet activity and infrastructure concentrated in Nigeria, Egypt, Morocco, and South Africa as well as some smaller economies like Mauritius and Seychelles. According to **Internet world stats** (2010), Egypt is ranked the 9th in terms of Internet Usage Penetration, a detailed list of internet usage statistics for Africa by country is provided in appendix 4
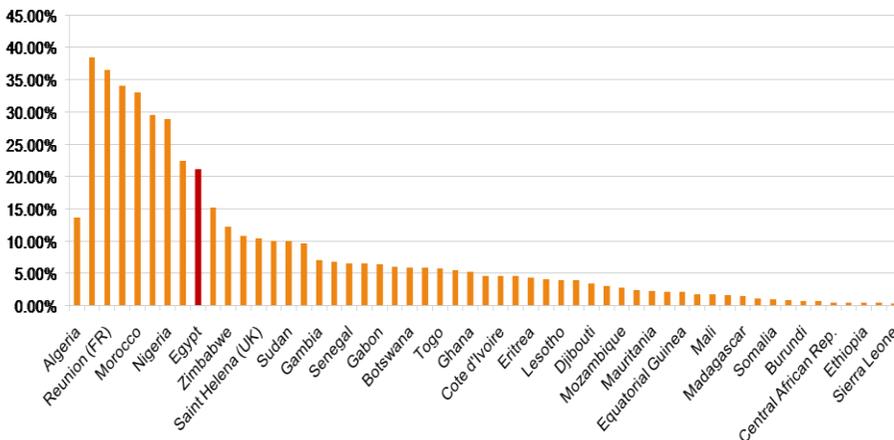

Figure 4.11: Statistics of internet users numbers penetration in Africa, (**Internet World Stats**, 2009)

4.5.2.   Internet Growth in Africa

One of the most basic issues to be faced by Internet users in Africa is that the overall available bandwidth is scarce. Most Internet traffic to or from Africa has to go through expensive satellite links, since cable connections are few and limited in capacity. This has the effect to boost the cost of Internet use, especially for broadband. In 2007, Africa had about 1,000,000 broadband subscribers overall, most of them being companies and institutions.

4.6   ICT FOR DEVELOPMENT (ICT4D)

Although Information and communication technology (**ICT**) was argued to have significant spillovers on the world economy, (**www.grameentelecom.net**)

> *"Information and communication technology (**ICT**) can help developing countries tackle a wide range of health, social and economic problems. By improving access to information and by enabling communication, ICT can play a role in the elimination of extreme poverty, combating serious disease, and achieving universal primary education and gender equality".*

These benefits are not fully realized as many countries have inadequate infrastructure and human capacity to support ICT; ICT is often out of reach of the poor and those in rural areas. The international community plays a key role in stimulating access to ICT. Some major initiatives are outlined in more detail in appendix 5.

According to **Zgodzinski** (1996), Some ICT4D commentators suggest developing country governments should encourage uptake of technologies such as mobile phones, which have proved popular among the poor. They say this is better than promoting ICT like the PC, uptake of which has been comparatively slower. There is consensus that education and IT skills training play a role in improving access to ICT.

However there is a debate over how to raise awareness and generate demand: some say donor-funded tele-centers (which offer a range of telephone, computing, internet and information services) have a role to play in familiarizing people with basic ICT. Others suggest generating consumer demand is more important, citing the growth of the internet among middle-classes. (**Zgodzinski**, 1996)

ITDG[17] has undertaken a pilot research study, funded by **DFID**[18], on strengthening the information systems and knowledge of poor urban people. This involved a literature review and field studies in informal settlements in Peru, Sri Lanka and Zimbabwe. (**KIS**, 2002)

The field studies also helped to identify key informants - people playing a particularly important information provision role for communities, and some of these were followed up with supplementary interviews. Key informants were generally individuals, Community Based Organizations (**CBOs**), NGOs and Government institutions.

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[17] **ITDG**: Intermediate Technology Development Group

[18] **DFID**: Department for International Development

In Zimbabwe, however, individuals were not mentioned. Specific groups or bodies mentioned included community and village development committees, housing co- operatives, the Local Board (in Zimbabwe), political leaders and women's societies. Useful characteristics of key informants were:-

- Being able to provide information in an accessible format
- Willingness to share information rather than hold onto it
- Ability to access information and extensive outside links
- Experience, education, skills, knowledge and reliability
- Being close to the communities
- Being interested in the development of the community and being willing to listen
- Leadership and influence

Identified constraints to poor people being better able to access information included:-

- Too much information is supply-led rather than demand driven and poor people have little influence on this situation
- Information is sometimes not in a suitable format
- Some information is not reliable and cannot be independently verified
- Some people or institutions act as 'gatekeepers' and make it difficult for others to get their information
- Many poor people are unwilling to pay for information.
- Few key informants match up to most of the seven desirable characteristics given above, and their own information sources would also be likely to be deficient
- Access to Information and Communications Technologies (ICT's) is still very limited, few poor people have televisions and not that many have radios
- Women's specific information needs might be overlooked or ignored
- People might not prioritize information sources in an effective way, e.g. they are more likely to believe imported soap operas than information from a local medical centre.

4.7   NATIONAL STRATEGY REGARDING IT IN EGYPT

Over the past decades, Egypt has witnessed a major technological development and an outstanding revolution in the domain of communications; that constituted what so-called "*fast way for information*".

The communication services have become available for most of the social categories through a strategy that contributed to realizing a qualitative move in the field of communication and information network. This has rendered Egypt a producer of elements of sophisticated technology and a main base for information industry.

Egypt continuously seeks to cope with scientific and technological events and has powerfully entered the world of communications and information with the aim of creating a modern society capable of efficiently dealing with the perquisites of the age of globalization and future challenges. (**Egypt State information Service**, 2008)

> *"To invest in the technological industry is to invest without the least hesitation in Egypt's future, particularly in view of the fact that the promising beginnings we have already seen reaffirm that Egypt has the capability of catching up with this significant development."* **Ex-President Mohamed Hosni Mubarak** said.

Developing Egypt into an Information Society is a top priority. With these key words, Egypt's Ex-President **Mubarak** gave impetus to the development of information and communication technologies (**ICT**) in Egypt, linking them to the economic and social development of the country. (**Ex-President Mohamed Hosni Mubarak**'s **address** to the National conference on Information technology Development in 1999)

The government of Egypt as a major stakeholder is committed to building an Egyptian Information Society, offering every individual, business and community the opportunity to harness the benefits of the new information era to achieve national priorities.

The Information Decision Support Center that was established in 1985 was instrumental in establishing E-Government as early as 1990.

Egypt launched its National Information Highway program to support and energize its socio-economic development as early as 1994. Egypt was also one of the countries that recognized the need for highly skilled human resources development as early as 1992. The Regional Information Technology and Software Engineering Center (**RITSEC**) were established in 1992 to support and develop the information communication technology industry and infrastructure in Egypt.

In September 1999, Ex-President Mubarak announced the inauguration of a national program for the development of the communication and information technology sector. The national program goals were to create the Information Society in Egypt, and an export oriented ICT industry.

In October 1999, a new Ministry of Communications and Information Technology (**MCIT**) was formed to facilitate Egypt's transition into the global Information Society.. This ministry, in spite of being new, has succeeded in achieving tangible technological development through a wide leap in the field of communications, which led to establishing an advanced communication network that contributed to the spreading of computers and Internet services to all categories of the society.

Among the key programs that were launched by the Ministry was the National Plan for Information and Telecommunications Development[19] based on studies conducted by international consulting houses and business consortiums affiliated with the telecommunications and information sector.

Egypt has since embarked on a number of projects that aim at improving the ICT industry and advancing universal access to information and communication and the creation of jobs. Among which are:

- Electronic government program that aim to improve the effectiveness and efficiency of ministries and public institutions

- Establishment of free zones and ICT parks; incentives to private sector particularly in software development and export and the creation of enabling policy environment for telecommunications and Internet services industry

- Youth and community development programs, comprehensive human resource development strategies targeting research and young people, information society awareness programs for the public

- Increasing number of public access centers and Reduction of cost of access to information and communication services. That goal (building Egypt's information society) has been the chief objective of the Ministry since its creation, as it launched the Free Internet initiative at Cairo Telecom 2002, and adopted an equally ambitious project that of "*PC for Every Home*".

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[19]**The National Plan For Information And Telecommunications Development:** The Ministry of Communications and Information Technology (MCIT) proposed the "National Plan for Communications and Information Technology". The plan is Egypt's blueprint for the future, mapping out projects aimed to achieve successive leaps in the ICT sector

Indicators show the rise of revenues of IT and communication sector to L.E. 9.6 billion in the period of April-June 2008 compared to L.E. 8.3 billion in the same period of the previous year and at an annual growth rate of 16%.

4.7.1.   Electronic Government Program

The E-Government is an advanced system that aims at promoting the efficiency and quality performance of the economic and government bodies, companies and banks. It started in 2001, aiming at providing high standard service to citizens and investors, overcoming red tape through making the government services available as soon as needed to everybody wherever he is. A government portal on the internet is being launched, allowing citizens to have certain transactions processed.

In 2007, the experimental operation of the purchases gate in the E-Government was triggered. The goal of this initiative is to reach a new level of convenience in government services, offer citizens the opportunity to share in the decision making process, and greatly improve efficiency & quality.

In 2010, The Egyptian minister of state for administrative development announced that 200 government services will soon be available online through a new e-government portal. The portal will offer 70 services in both English and Arabic. According to the Ministry for Administrative Development, more than 20 government agencies currently offer services and licenses online.

Cultural and Natural Heritage Documentation Center

Established in the smart village in 2004, it is considered the first of a kind in Egypt. It aims at promoting the public awareness of Egypt's cultural and natural heritage by submitting the information technology tools in order to document this rich heritage of Egypt.

"*Eternal Egypt*" website is one of ten distinguished programs administrated by the center. These programs are:

1. Egypt's Archeological Map
2. Egypt's Architectural Heritage
3. Egypt's Natural heritage
4. Egypt's popular heritage
5. Egypt's musical heritage
6. Egypt's Photographic memory

7. Islamic scientific heritage
8. Manuscripts
9. Heritage panorama & Joint international projects

It is worth mentioning that "*Eternal Egypt*" project won the Universal Top Prize for information in Tunisia in 2005 as it is considered a vivid record about Egypt's history, people, places and religions and arts related to it.

UNESCO Award for The Heritage Documentation Center

Due to its distinguished role on the international arena, the cultural and natural heritage documentation center won the UNESCO Award for its role in preparing a file about As-Sira Al-Hilaleya "*The Helal's Biography*". This biography was added to the UNESCO list for the international moral heritage.

The center participated in several exhibitions and conferences such as "*the international heritage conference*" held in Alexandria in cooperation with the UNESCO.

Information and Communication Technology Advanced Performance on The World Level in 2008

Communication and information technology sector's advanced performance in 2008 gained an unprecedented world appreciation. The most significant of such achievements are as follows:

- The development and economic co-operation organization announced in 2008 that Egypt has officially joined the information technology and communication committee affiliated to the organization.

- Over recent years the communication sector has succeeded in attracting a number of major international companies in this field to operate in the Egyptian market.

- Egypt in fact has achieved a remarkable progress pertaining to the indicator of network availability issued by The World Economic Forum in Davos.

- Egypt hosted Africa telecom exhibition in May 2008 which is organized by the international federation of communications.

- The Egyptian telecommunication company won the award of the best fixed line operator in the Middle East by Comms Mea Organization.

- Egypt ranked first in the international competition for electronic content in the electronic education among 16 competing countries.

- In El-Maadi, the implementation of the first new technological zone was started as the first application of the amended investment law of 2007 pertaining to technological zones.
- Egypt launched the first electronic gateway to informational technology and communication indicators in Egypt in cooperation with Microsoft cooperation.

More Developed Postal Services

The affiliation of the Postal Authority to the Ministry of Communication and Information Technology contributed to upgrading its services and introducing it with more efficiency and activity. The Electronic Data Interchange (**EDI**) was introduced, thus providing secure exchange of electronic documents among users through the central unit for communication (EDI SWITCH). This contributes to finding reliable various applications of E-Business, E-Commerce and E-Government systems.

The first phase of the project of creating a modern digital communication network for the Postal Authority was opened in 2003 with total investments of LE 1 million as a new step to link all offices in Egypt together with the main centers. According to the world rating of the average mail transport time between Egypt and the outside world, Egypt was classified under the first category.

Postal Service… An Increase in Post Offices and Savings in 2007

The National Postal Authority witnessed several achievements during 2007, salient of which: Number of post offices increased to 3,591, number of automated post offices increased to 750 and the savings in the Saving Fund increased to about LE 50.1 billion.

Implementing Phase II of Automating Postal Offices

In cooperation with the Postal Authority, the Ministry of Communication and Information Technology had prepared an executive plan for the second phase of linking the postal offices with a unified network through which all the state-of-the-art financial and postal services are provided. This phase is a pivotal turning point in the modernization process of the Egyptian postal sector as it includes extending and automating all services to more than 2500 postal offices in villages and remote areas. The first phase of such a plan included 600 offices and was successfully implemented in 2004.

Electronic Archive Project

This project is an electronic method to store the documents of companies and industrial establishments participating in the project. Within one year during its first phase, the project is providing 1000 job opportunities. The National postal Authority has finished storing all documents of the postal Authority and putting them in archives.

In the meantime documents of Egypt Tele-Communication Company are being stored in a step to expand the project to spread all over Egypt.

Mobile Offices

It is a new attempt applied by the postal Authority within recent development which converted the authority from an authority for services to an economic authority and from a fixed to a mobile authority that can reach out to clients wherever they were 20 more mobile offices are under way to spread the project all over Egypt.

Postal Authority Social Services

The postal authority offers a group of postal services; these services are offered in coordination with the parties concerned with these services.

Among these parties   the ministry of social solidarity, insurance and pensions as the pensions of 3 million pensioners were paid and delivered to their residence. There are bother various services like housing project "*Build Your House*" and "*Housing of Low income Categories*" and taxes. Thee stands of the postal authority are being used to give the documents of these projects to citizens who ask for them.

700 Electronic services

The postal authority is able to provide the needs of the citizens through the internet. 700 electronic services are offered to citizens among which are: inquiries and interrogations in addition to the services of real-estate, traffic and courts.

4.7.2.   Establishment of free zones and ICT parks

This initiative is designed to foster the creation of an export-oriented ICT industry. The development of an ICT industry can be a powerful engine for export growth and job creation. (**UNIDO**, 2007)

In Operation	**Map/Index**	**Under Development**	

- **MUCSAT -** Mubarak City for Scientific Research and Technology Application
- **ESV -** Egypt's Smart Villages
- **STV -** Sinai Technology Valley

- **NCTV** - Northern Coast Technology Valley
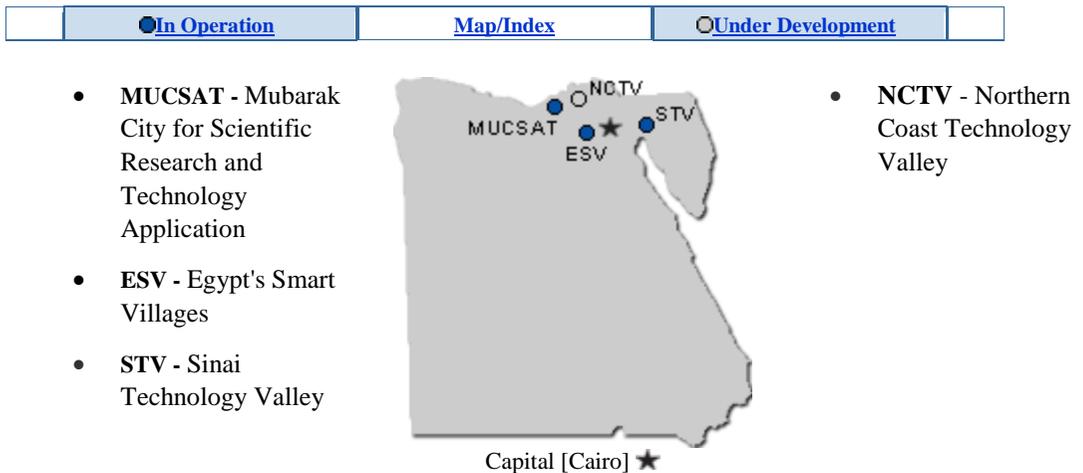
Capital [Cairo] ★

Figure 4.12: Locations of Technological parks in Egypt

In this section, the main ICT parks and incentives in Egypt shall be presented briefly, however, a detailed description is provided in appendix 6.

These are mainly:

1. Mubarak City for Scientific Research and Technology Applications (MuCSAT)
2. Egypt's Smart Village (ESV)
3. Sinai Technology Valley (STV)
4. Northern Coast Technology Valley (NCTV)
5. Alexandria Telecom Free Zone

Mubarak City for Scientific Research and Technology Applications (MuCSAT)

Mubarak City for Scientific Research & Technology Applications (MuCSAT) is the newest addition of research institutes in Egypt that was directed to the development and renovation of industry. A decision to develop a science park in the Alexandria region was reached in 1993 in order to acquire and improve scientific technologies in different areas of human life.

Figure 4.13: The main building in Mubarak City for Scientific Research and Technology

MuCSAT is located at New Borg El Arab City, west of Alexandria & occupies 250 acres in the industrial area.

It is engrossed to both scientific researches & application of technologies. This is the foremost spirit that distinguishes the city from other scientific research in Egypt.

Moreover, the technology centers in the city are unique in their aim to spread the modern technology application and to provide the training in order to develop small industry and develop new jobs which is the leading concern of the government. (**MuCSAT**, 2010)

Egypt's Smart Village (ESV)

Figure 4.14: A Maquette showing the Master Plan of the Smart Village

Founded in 2001 to lead and foster branded chain of Technology clusters and Business Parks on the local and regional level. Smart Villages Company is a successful model of "*Public Private Partnership- PPP*" investment model, with 80% ownership to the private sector and 20% to the Ministry of Communications and Information Technology.

Smart Village Cairo was launched in 2003 as the first fully operational Technology Cluster and Business Park in Egypt that accommodates Multinational and Local Companies, Governmental, Financial Authorities and Organizations, as well as Educational Institutions and Research & Development Centers all of which share the sophisticated state of the art infrastructure, up to date facility management and a full range of business and recreation services.

It offers a thriving environment full of innovative spirit & a growing number of business services to assist their business process, in addition to top notch services and facilities including a nursery, School, Club, Restaurants, clinic and a number of business support services.

By 2009 Smart Village hosted more than 28,000 professionals in more than the 120 companies in the park & is expected to host more than 500 companies and more than 100,000 employees by 2014.

Smart Villages Company is expanding its presence, experience and know how in different locations locally and internationally, with a concept plan

for Smart Village Damietta Business and Logistics Park, and Smart Village Alexandria Business Park, this as well as the Smart Villages Company's Franchise and consultancy Services. (**ESV**, 2008)

Sinai Technology Valley (STV)

The Sinai Technology Valley is one of the major techno-poles projects for socioeconomic development in Egypt. It is located at the northwestern access to Sinai Peninsula, on the east bank of the Suez Canal within the territorial jurisdiction of Ismailia governorate, covering an area of 72 square kilometers.

The "*Technology Valley*" project will be implemented in five stages, in which the investments in the first stage amounted to nearly 500 million Egyptian pounds. It focuses on ICTs, Microelectronics, Biotechnology, New materials, Fine tools, and Renewable energy. (**Technology in Egypt**, 2008)

Northern Coast Technology Valley (NCTV)

This proposed techno-pole is still at the study stage. The project is being considered by Alexandria Governorate, the Ministry of Higher Education, and the Ministry of State for Scientific Research and the Social Fund for Development.

Alexandria Telecom Free Zone

Egypt is in the process of establishing the first transit telecommunications free zone. Located in Alexandria, the free zone will offer co-location services, managed services and application services via the *'Telecom Hotel'*.

In 2010, Egypt's Ex-Minister for Communications, Information and Technology **Tarek Kamel** announced that the government would launch a new innovation strategy.

The new strategy will mirror initiatives such as the recently established entrepreneurship and innovation centre in Smart Village, as well as the Technology Cluster and Business Park. The aim behind the strategy is for Egypt to move up the value chain from basic business process outsourcing (**BPO**) and call centre services.

4.7.3.   Youth and Community Development Programs

ICT is a complementary tool for higher standards of education at all levels and for upgrading the skills and productivity of the citizenry.

This initiative aims to promote the use of ICT in education and to develop a new generation of citizens who understand and are comfortable with the use of ICT in their daily lives.

The IT Boom that took place in Egypt during the past few years and the success of the Egyptian graduates' project which led to an IT skill upgrade for Egypt's graduates and Human resources were among the factors for choosing IBM Egypt to build the "*Knowledge Factory*".

IBM Egypt knowledge factory is the 14th unit worldwide and the first unit in Middle East and Africa. The unit is designated to be the core of the development and export of e-learning content for IBM in the Middle East and Africa.

The development of the content requires efficient professional teams to handle the technical design, development and analysis of the content, assigning experts for Software and multimedia development and using a team for quality monitoring and assurance according to international standards. This is achieved through partnering with "*Subject Matter Experts*" who take the responsibility of preparing the course material, and the "*Knowledge factory*" team handles the development of the required content using latest technologies.

"We are so proud for being selected to establish the "knowledge Factory" in Egypt, that is considered one of the Egyptian Graduates Projects fruits, which is a part of the plan framework of the ministry of communications and IT to train the graduates on latest e-business technologies and software development" said Eng. Amr Tawfik, General Manager, IBM, Egypt.

"This unit will avail employment opportunities for the graduates, and as a start, we will recruit 25 specialists" he added.

The "*knowledge factory*" is a new addition to the efforts exerted by Cairo Technology Development Center (**TDC**) of IBM Egypt which focuses on software and skills exports in order to contribute to the development and advancement of IT industry in Egypt.

Moreover, The former Minister of Communications and Information Technology Dr. **Tarek Kamel**, has sponsored the call center training initiative, which provides international high level training for call center agents, supervisors, and personnel.

4.7.4. Increasing Number of Public Access Centers and Reduction of Cost of Access to Information and Communication Services.

In the framework of the technological advancements in communication, the free-of charge Internet services were launched in January 2007. (**Egypt State information Service,** 2007)

In order to make the transition to E-Egypt, the Telecom Regulatory Authority (**TRA**) licensed several companies to build and operate CIT infrastructures that provide data services such as IP, DSL and frame relay. The goal is to help private Internet and data communications providers extend data communications and free Internet services throughout Egypt, bringing the establishment of E-Egypt closer.

In this regard, Egypt's IT spending is expected to increase from US$1.4bn in 2010 to US$2.6bn by 2014. BMI forecasts that Egyptian IT market growth will remain below pre-economic crisis levels in 2010. Growth is expected to bounce back in 2010/2011 as the external and public sectors lift the Egyptian economy, but unemployment and the threat of inflation could act as an inhibitor on spending. (**BMI**, 2010)

Telephone Services… Wide spread in Cities and Villages

Telephone services are widely spread all over Egypt. Fixed line subscribers increased to 11.4 million in October 2008 up from 11.045 million in May 2007 at an annual growth rate of 3.9%. Telephone exchange capacity increased to 13.960 million lines in 2008 compared to 717 million lines in 2007 with an annual growth rate of 1.8%

Within the framework of this development, Egypt has witnessed the spread of cell phone service at an unprecedented rate. In 2008, the number of cell phone subscribers rose to 39.147 million up from 27.787 million in the same period of the previous year at an annual growth rate of 40.9%.

Giving access to the intelligent network which offers ADSL services contributed much to providing more free of charge services thus increasing number of ADSL connections to 603.6 thousand in 2008 compared to 366.8 thousand in the same period of the previous year at an annual growth rate of 64.5%.

Internet Rise In The Number Of Subscribers

In January 2002, Ex-President Mubarak gave the go-ahead to the free of charge internet as a pilot initiative all over the world which contributed to increasing the number of internet subscribers to reach 76 million in 2008 up from 8.01 million in the same period of the previous year at an annual growth rate of 47% users of free of charge internet that constitute 48% of internet network users.

The international internet capacity rose to 27,077 million pulses / second by the end of October 2008 up from 14,556 million pulse / second in October 2007 at an annual growth rate of 93.5%.

IT Clubs… Computers and Internet for All

Due to the keenness on increasing the social IT awareness and providing computer and internet services for the whole society, the IT clubs were established.

The number of these clubs reached 1771 by October 2008 up from 1556 in October 2007. Such clubs are open areas in the youth centers, public libraries, civil society's headquarters, cultural palaces, information centers, schools and universities.

The clubs are equipped with computers and internet so as to provide low-cost services to youth and children in all cities and villages especially in poor and remote areas.

The Major part of these clubs lies in Upper Egypt at a rate of 24% of the total number of the clubs in Egypt.

PC for every Home

Nevertheless, portable computers supplied by four international companies including Toshiba, IBM, Compaq & Siemens are offered in the first stage of the "*Portable Computer for every Professional*" initiative.

The total unit price stands at about L.E. 9,000 - 10,000 ($1500). The deal will only be guaranteed by the commercial telephone line (of the company) & the commercial/ professional register of the line owner. Monthly installments for the new computers will only range about L.E. 250-300 ($50); but a down-payment representing 20% of the total price will be also required. Banque Misr (the leading Egyptian bank) is the lead financer of the initiative.

Targeted under this initiative are businessmen, Medical Doctors, Architects, Journalists, Accounting Firms, Etc… Meanwhile a committee at the ministry is said to continue reviewing applications of other companies to join the initiative.

All computers sold under the initiative would be exclusively imported & companies included in the initiative need to guarantee their disposal of a branch and a maintenance & service center in the country.

Meanwhile, under the "*PC for every Home*" sister initiative also promoted by MCIT; some 15 Egyptian IT companies are now licensed to supply PC to Egyptian household under the umbrella of the initiative that is also sponsored by Telecom Egypt & Banque Misr.

Egypt as a global call center destination

Moreover, Egypt is strongly emerging as a global call center destination, with a highly competitive industry offering a combination of operational expertise, people skills, cutting-edge technology, and competitive pricing schemes, and with a government committed to supporting and booting the industry, Egypt is moving steadily towards becoming one of the world's most attractive call center destinations.

The progress made in the CIT sector has made Egypt the choice of many Multinationals, on the call center industry; many multinationals have chosen Egypt to be their call center destination either through outsourcing their business to existing call centers or through opening a branch for their operations in Egypt.

Egypt is positioned to host state-of-the-art customer service call centers. Egypt's telecommunications infrastructure (network), combined with its highly trained IT professionals makes the country ideal for operating international customer service call centers. The creation of international call centers based in Egypt and serving international markets in fields such as travel information, banking services, and IT services, is just one of the opportunities possible.

The Competitive edge of the call center industry in Egypt is the direct result of many factors some are related to Egypt's' social and economic environment and others that have evolved and excelled with the emergence of the call center industry.

In 2010, a number of factors help IT spending growth, including new hardware and software upgrade cycles as well as sales of Microsoft's new Windows 7 operating system. Economic recovery, tenders delayed from 2009 and higher incomes boosted by pay raises for civil servants and other groups should help to keep IT sales on an upward trajectory.

4.8 THE INNOVATION IN THE AREA OF PARTICIPATION IN EGYPT

Over the past decades, Egypt has witnessed a major technological development and an outstanding revolution in the domain of communications.

There are limitless Information Technology and telecom investment opportunities in Egypt. Not only the government invests in the nation's infrastructure, but it also creates a strong human base by investing in the nation's youth. New generations of Egyptians are now receiving a quality education and have plenty of opportunities for skills development and professional training.

However, despite the excitement about the potential of using the Information and Communications Technologies (**ICT**) to promote more efficient and effective government services and allow greater public access to information, the innovation in the area of participation has been limited to facilitate individual communication (e.g. email) to government officials. Despite advances in teleconferencing, the subtle aspects of face-to-face interaction cannot be easily substituted.

Moreover, although access to the Internet has grown considerably in Egypt, access remains unequally distributed among the country; not all the Governorates of Egypt enjoys the same ICT services.

The main challenge that should be addressed is the digital divide within the country itself, with more than 60% of Egypt's population lives in rural areas, the language barrier (Arabic contents and Arabic Domain Names), literacy rates, limited connectivity, awareness, in addition to telecommunications infrastructure, can consist a strong barrier for Planners to use technology in planning process.

The next chapter aims to evaluate and assess the experience of involving the public in the planning process within the frame of new technologies such as the GIS in one of the Low Rate Category of Internet Users in Egypt, i.e. an average Egyptian village.

It comments on how advanced technologies and internet based programs can be fitted in the framework of the planning process to overcome the drawbacks and consequently enhance the public participation.

4.9   CONCLUDED REMARKS

Even though IT diffusion has been proven to have significant spillovers on the world economy, these benefits have not appeared to be evenly distributed among countries. In fact, effective usage of IT equipment requires many other complementary investments including factors like human capital and the provision of a reliable telecommunication infrastructure which many of the developing countries still lack.

The '*digital divide*' commonly refers to the gap between those with access to ICT and those without; yet, many factors besides physical access contribute to these disparities, among which are:

- Strong Governmental Support
- A Suitable Legislative and Investment Environment
- A State of the Art Infrastructure and Investment in Human Resources

Even in developing countries with relatively high net ICT uptake, ICT is still out of reach of many groups, this is due to:

- **Lack of appropriate products:** products are often not designed to meet the needs of the poor, or those in remote areas. These groups can face constraints such as access to electricity (lacked by two billion people worldwide).

- **Cost:** roughly half the world lives on less than four dollars a day. Many potential users are too poor to afford any form of access to ICT.

- **Education:** even where there is physical access to ICT, many people do not have the technical skills needed to benefit from them.

- **Language**: Poor literacy is a problem with ICT such as the internet. Of those who can read, many know only a local language, while the internet is dominated by English-language content.

- **Human resources**: As in many sectors, the migration of skilled ICT professionals from developing to developed countries contributes to a lack of human resources to support ICT.

- **Lack of robust regulatory framework** for ICT can limit uptake.

However, many factors could contribute to bridging the digital divide. National governments, NGOs, industry and international donors all play a role, often work together.

Moreover, latecomer advantages enable developing countries to benefit from the rapidly decreasing prices of IT equipment resulting from technological innovations and R&D conducted by the developed world.

Also, using open source software which is provided for free on the Internet, in addition to importing used or low-specification computers are all considered low cost options that developing countries may benefit from.

Focusing on **Egypt**, as a leading country in North Africa & in the Arab World in the use of information technologies for governance, Egypt has witnessed a major technological development and an outstanding revolution in the domain of communications.

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