

The State of Information Technology in the Arab World

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Summary

Information technology has become extremely important in the post-Cold War world. Developments in information technology have been described as a revolution due to their role in spurring human communities into a higher stage of development based in on knowledge and information. Information capital has become an essential resource given that information technology, which refers to both information networks and telecommunications, is now considered a form of capital. The growing importance of information capital arises from the shift towards economic globalization, the growing need for diversifying sources of information to achieve sound decision-making, as well as the overall impact of information technology on the individual politically, socially, and culturally.

1 - Information Technology and Global Communication

" The Spread of Information Technology and Communication

According to the recent statistics, the rate of mobile phone and internet usage has substantially increased in more than one area. One in 5 people worldwide use a mobile phone, compared to 1 in 12, just three years ago.

The number of mobile phone lines increased from 692 million lines in 1999, to 1.2 billion lines today, thereby exceeding the number of fixed lines (1.1 billion worldwide); the number of mobile phones users increased by 134% compared to 12% only for fixed line users as of 1999. Moreover, 85 middle or low-income countries, out of 125, now have mobile phone services.

As for the internet, the number of users of the World Wide Web has increase by 119%, over the past three years (329 million users), raising the total number of users to 600 million people in 2002, i.e. 1% of the total world population use the internet. Estimates show that almost 550 million computers exist in the world as of 2002, recording an increase by 40% compared to the 1999 statistics. As for televisions, 1.8 billion persons have access to televisions worldwide, i.e. one in every 3 individuals has access to a TV, representing an increase by 13% over the past three years. Finally, the numbers of satellite dish owners increased by 25% over the past three years ago.

TABLE (1)

The Increase in the Use of Information and Communication Technologies Worldwide

INCREASE (1999-2002) MILLION %

Population	5,962 6,192 229 4
Real Estate Owners	1,484 1,552 68 5
WWW Users	276 605 329 119
PCS	394 550 157 40
Fixed Phone Lines	906 1,098 192 21
Mobile Phone Users	493 1,155 662 134
Receiving TVs	1,573 1,775 202 13
Cable Users	288 359 71 25
Satellite Dish Users	78 97 19 24

% Of The Total Population No. % Of Residents

1999 2002 1999 2002

Internet Users	5 10 19 39
PCs	7 9 27 35
Fixed Tel. Lines	15 18 61 71
Mobile Phone Users	8 19 33 74
Receiving TVs	26 29 106 114
Cable Users	5 6 19 23
Satellite Dish Users	1 2 5 6

Source: Based on data from the International Telecommunication Union, World Telecommunication Indicators Database, accessed July 2003.

“The Spread of Information Technology in the Most Densely Populated Countries

The most densely populated countries, such as China, India, Brazil, and Russia witnessed a significant increase in the spread of Information and Communications Technology (ICT). In 1999-2000, China received high scores on all indicators: it ranked second in terms of internet users, fifth for PC users, it provided 106 million new fixed lines (compared to 15 million in India), and had 163 million mobile phone users (compared to 55 million in the US). Brazil, in contrast, installed 14 million new fixed lines during the period 1999-2002, had 20 million mobile phone users, and 7 million PC owners. Russia came next on the list with 8 million PC owners, and 5 million new fixed lines. See Table (2).

Developed countries, with large populations, such as the US, Japan, and Germany achieved the highest rates in ICT. The US came first in terms of the number of internet users and PC owners, followed by Japan; Whereas Germany (the 12th largest country in terms of population) ranked third in the number of mobile phone users, and fourth in terms of internet users.

Table (2)

The Proliferation of Information technology in Seven Densely Populated Countries in Millions Country Population

2002 No.

Country	Population Millions	Internet Users	PCs	Regular Phone Lines	Mobile Users	Receivers
China	1,285	50	10	106	163	40
India	1,042	14	3	15	11	10
US	188	53	37	6	55	34
Indonesia	212	7	zero	2	9	2
Brazil	174	11	7	14	20	4
Pakistan	149	1	Zero	1	1	5
Russia	147	5	8	5	16	5

Source: Based on data from the International Telecommunication Union, World Telecommunication Indicators Database, accessed July 2003.

The Spread of Information technology in Developing Countries

The World Economic Forum conducted a study, over the 1999-2002 period, covering 200 countries, 180 of which were developing countries. The study found that these countries managed to double the number of internet users, achieving a growth rate of 44.4%, 61 countries doubled the number of PC users; 26 doubled the number of fixed line telephone users, 69 doubled the number of mobile phone users, and 32 doubled the size of their satellite communications.

China, India, and Russia have witnessed continued growth in the area of

ICT; and in south Asia, Pakistan showed significant increase in the number of internet users despite the limited number of computers recorded in it. The Middle East also realized a significant increase in the size of the ICT sector, especially over the past five years. Iran recorded 4.7 million new telephones lines, 2.7 million new internet users, 1.8 mobile phone users and one million PCs. Saudi Arabia recorded an increase in the number of internet users from one hundred thousand to 1.6 million, in addition to 4.4 million mobile phone users, and 1.8 million PCs. Egypt showed a remarkable advance by increasing the number of mobile phone users by 4.4 million, and the number of fixed lines by 2.7 million and boasting 1.3 million internet users. Morocco increased the number of mobile phone users by 5.8 million, Tunisia by 1.2 million, and Syria increased the number of fixed phone lines by half a million.

2 - The Future of Information and Communications Technology

The aforementioned statistics indicate that despite unfavorable economic conditions worldwide, there has been a great increase in the size of the ICT sector. In order to preserve this momentum, four policies need to be pursued. First, important legislative changes need to be undertaken; Second, workers need to be equipped with the skills necessary for the information age; Third, governments, particularly in developing countries, will require assistance to increase awareness about the importance of ICT; Finally, governments must create an appropriate environment for the free exchange of information and communications, and reduce tariff and non-tariff limitations imposed on electronic trade. In this context, four facts can help us discern future trends in the area of ICT growth:

1. Ninety percent of the world's population does not have access to the

internet; only 500 million PCs exist worldwide; 5.5 billion people do not have a mobile phone. These numbers show that the global market is still open before the producers of information technology and its applications.

2. Developing countries are still improving their infrastructure to accommodate information technology, which reflects a great potential for marketing information technology devices and products.

3. Increased demand for mobile phones is not a substitute for demand for fixed phone lines. Television technologies are also still widely demanded, in both poor and rich countries, and are still deemed among the most important communications devices worldwide.

International efforts are thus needed to reduce the digital gap separating developed and developing countries. Bridging this gap requires a favorable political environment, alleviating poverty, encouraging people to use ICT in their daily lives, setting national strategies to create electronic governments, and securing the prerequisites of electronic trade. As for international organizations, all sorts of technical and financial aid is required from them to support local communities seeking ICT development.

3 - The World Information Summit

The first UN convention on information technology was held on 10-12 December 2003, with the participation of more than 6 thousand individuals, and 67 heads of states, to discuss the regulation of the internet. This issue was the subject of a heated controversy over the past five years among governments, NGOs and multinationals.

Three work groups met before the Summit to discuss issues such as information security, intellectual property rights, funding the global information society, software, freedom of expression and opinion, and the

role played by the media. These discussions contributed to almost 90% of the Summit's final declaration; however, some issues remained unresolved.

The Egyptian Information Society Initiative

Presented to the World Information Summit, held in Geneva on 10-12 December 2003

The initiative included seven axes targeting the construction and development of an ambitious information society, as well as the establishment of a strong export-oriented industry:

First Axis: the provision of digital technology, which allows for the extension of ICT services nationwide.

Second Axis: The creation of an electronic government offering fast and efficient remote services to citizens and investors, as well as the computerization of government ministries to improve performance and monitoring and to provide quick and accurate information to support decision-making.

Third Axis: The applied side of ICT for a knowledge based society, which involves infrastructure development, a favorable legislative and organizational environment, and finally raising social awareness.

Fourth Axis: E-education to raise the competitiveness of the Egyptian labor force, locally and internationally, and to support the Ministries of Education and Higher Education in their efforts to introduce ICT in the Egyptian educational system using interactive media.

Fifth Axis: The provision of electronic services to the health sector, in cooperation with the Ministry of Health.

Sixth Axis: Using technology to document and preserve the cultural and

natural heritage.

Seventh Axis: the development of ICT industries with the aim of increasing Egyptian exports to world markets, as well as attracting multinationals to Egypt.

The Declaration of Principles of the Information Society Global Summit comprised joint obligations on the world information society actors. The declaration emphasized the role of governments, the private sector, civil society organizations, the UN, and other international organizations in developing the ICT sector worldwide. It also emphasized the importance of giving access to all individuals to acquire the skills and knowledge requisite for participating in the information society. Finally, it stressed the importance of cooperation among developed and developing countries in conducting and marketing ICT research.

Among the controversial issues discussed by the Summit were information security, privacy, consumer and data protection, network control, funding ICT for development, stability of digital inflows, human rights, the role of the media, and the management of the internet. Some of the issues that were especially controversial were as follows:

1. How much authority and control over the internet? NGOs and some developing countries, such as Brazil, India, and China proposed transferring the responsibility over the internet to the UN to rid it from excessive US control. Currently, the five-year-old Organization of the International Network for Global Information supervises the naming of internet sites, and the technical aspects of sending electronic messages to more than 550 million users worldwide. Although, the board of directors of this organization comprises representatives from different countries, there is nonetheless an understandable fear that this organization is ultimately

subject to US control. Thus, there is growing international demand to delegate the management of the internet to a more comprehensive inter-governmental agency, such as the UN affiliated International Communications Association. This proposal is not welcomed by many western countries who believe the internet needs the least amount possible of direct governmental intervention.

2. The issue of data security: a compromise agreement was reached on the need to respect national laws and to refrain from using the internet in terrorist or criminal activities. It was also agreed that a law for the settlement of internet related disputes is needed and studies on this issue were commissioned.

3. The digital gap and means of confronting it: Senegal - supported by African and other developing countries - proposed the establishment of The Digital Solidarity Fund, along the lines of the AIDS fund, to finance efforts towards reducing the digital gap. Industrial countries opposed this proposal and proposed instead using existing development aid channels for tackling this issue.

In spite of divisions over these issues, the Convention succeeded in raising global awareness about ICT, as exemplified by some of the measures undertaken to overcome the digital gap, and the growing need for producing an action plan to guarantee the participation of all countries in the knowledge society.

4 - Arab Countries and Information Technology

Arab countries were classified into three groups in a study conducted by the World Economic Forum on the challenges to ICT and media in the Arab world: fast developing countries, comprising Kuwait and the UAE, emerging

countries, comprising Egypt, Jordan, Lebanon, and Saudi Arabia, and on the path to development countries, including Morocco, Oman, and Syria. The 2003 E-readiness indicator - a 60-country comparative measure to evaluate the digital environment, the ICT infrastructure, government programs, as well as the scope of e-commerce in each country - covered only three Arab countries. Saudi Arabia ranked 45, Egypt ranked 51, and Algeria ranked 58 on the E-readiness indicator. The Investment Guarantees Bulletin (no.177, April 2003: the Inter-Arab Investment Guarantees Corporation) reviewed the results of the above mentioned survey and maintained that the main obstacles hindering E-readiness in any country are as follows: weak government intervention, poverty, economic instability, mistrust of e-commerce on the part of consumers, lack of access to foreign currency, mistrust of e-payment, weak marketing, lack of incentives for e-commerce (in the form of tax exemptions or subsidies to small and medium enterprises), lack of intellectual and copy right legislation, weak or expensive internet services, government control over the communications sector, lack of investors training, and finally lack of smart government initiatives supporting the internet and e-commerce. Another issue of the Investment Guarantees Bulletin (no.174 , Jan. 2003) stated that access to the internet in Arab countries will reach 0.7% of the population by 2003 compared to 70% and 50% in the US and Western Europe, respectively. These figures indicate the scope of problem in the Arab world. Expenditure on information technology and high-tech development in both the Arab countries and the developed countries needs to be substantially increased. Sweden tops the list of developed countries that need to increase their expenditure in this area, followed by the US, Germany, France, and the UK. In the Arab world, Tunisia comes first in terms of spending on information technology, followed by Jordan, Egypt, Saudi Arabia, Syria,

Kuwait, and the UAE.

The report of the Arab Union for Information Technology showed that Arab countries rank third in terms of middle range technical products after Latin American and the Caribbean, and Eastern European countries. The report also shows that the Arab digital gap has reached \$5.4 billion in the field of computer programs. Finally, the rate of internet usage among Arabs does not exceed 4% (one of the lowest rates in the world), while only 14 million Arabs own PCs, and 39 million have a fixed phone line.

5 - The State of ICT Development in the Arab World

There are several leading areas for the application of strategies of information and communications technology development in the region, including: initiatives for building technologies, the establishment of R&D institutions, and increasing awareness about ICT among Arab governments. However, the gap among Arab countries in terms of awareness and interest in ICT is noteworthy.

Legislative Frameworks

Most Arab countries are members of the World Trade Organization (WTO), and of the World International Property Organization (WIPO), and most have domestic legislation protecting intellectual and copyrights. In addition, eleven Arab countries have acceded to the Paris Treaty for the Protection of Industrial Rights (with varying degrees of involvement in the treaty: only four countries signed the Patent Cooperation Treaty PCT, and three signed the Patent Law Treaty PLT). The degree of Arab interest in the issue of intellectual rights increased as of the mid-nineties, as eight Arab countries

acceded to the Trade Related Aspects of Intellectual Property Rights agreement (TRIPS).

Membership in these treaties and organizations will allow Arab countries to attract investments, especially since by January 2005 Arab countries will include a range of new products under the protection of intellectual property rights. It is also expected that the Arab region will become more integrated into R&D and will meet international standards in this area. Moreover, Arab countries are trying to issue new laws to maximize the growth of ICT and gain the confidence of investors. There is, however, great variation among Arab countries in the area information-related legislation, with the Levant countries, Egypt, and North African Arab countries having better legal frameworks than the Gulf countries.

Creating a Research Friendly Environment

Despite weak spending on scientific research, Arab countries are showing great interest in technological initiatives. The creation of an environment conducive to research and development, with the aid of governments and the private sector, will undoubtedly improve the transfer of technology, create new job opportunities, deepen the partnership between the public and the private sector. This will, however, require essential legislative amendments to make existing laws compatible with international standards in the areas of research and development.

Gulf countries (particularly Kuwait, Qatar, Saudi Arabia, and the UAE) offer wide-ranging facilities to scientific research, especially in mining and petrochemicals. Egypt, Syria, Lebanon, Jordan, and Morocco also offer ambitious plans for the provision of similar facilities.

Developing the Dormant Scientific Energy of Arab Countries:

Many Arab countries are working hard on developing their scientific research capacities and on providing their national researchers with resources and work opportunities. In Morocco, scientific research, and the development of information technology is undertaken by the National Center for Scientific Research and Technology which is backed by France. In Saudi Arabia, King Abdulaziz University for Science and Technology extended the scope of its studies to include atomic energy, astronomy, geophysics, computers, electronics, and space. Egypt and Syria established what is known as the Information Valley. The development achieved by the smart city in the UAE helped raise the rate of internet users to 38% in 2005, and it seems that these results have spurred other Arab countries to follow suit, as Lebanon is planning an internet city along the lines of the one in Dubai. Jordan, despite limited funding to applied research, is planning to raise the number of internet users to 80% by 2020. Other Arab countries are struggling to overcome the obstacles to internet usage: Saudi Arabia, for example is planning to connect all schools to the internet within the framework of what is known as the National Saudi Project.

Programs for Developing and Improving the Information Technology Infrastructure:

Over the past five years, Arab countries made great progress in the field of ICT, as exemplified by the size of network activities, the increase in the density of phone usage and the ease of communications nationally and internationally. The number of ISPs and e-commerce facilities and private sector involvement has also increased in recent years.

Gulf countries have the advantage of small populations and a wealth of resources, which they have used to improve national communications networks and to catch up with the rest of the world; Syria, Egypt, Morocco, Jordan, and Lebanon, on the other hand, are struggling to overcome the challenges of entering the age of digital networks. There have nonetheless been important developments in recent years in areas such as increased budget allocations for the ICT sector. There are also attempts to connect Arab countries, through efforts such as the establishment of the Arab satellite Nile sat and a range of Pan-Arab cable channels. The Gulf Cooperation Council (GCC) has established a 1300 Km long intranet using fiber optics, owned by ISPs in Kuwait, Qatar, Bahrain, and UAE. A similar project is being conducted between Syria, Lebanon, Egypt, and Cyprus.

Arab Interest in ICT

Many Arab countries shows good records in terms of access to the internet. Gulf countries have higher levels of dissemination of information technology and access to the internet than some European countries. The UAE have achieved 30% access by the end of 2001, ranking twentieth worldwide and preceding Israel by six points.

It is expected that information technology will spread further in the Arab region with the increase of ISPs and PC providers, in addition to government support of the ICT sector. However, poor technological awareness and language barriers are among the major reasons behind slow ICT dissemination in several Arab countries. In some Arab countries, the educated are outnumbered by the illiterate; rich Gulf countries are

overshadowed by other poor heavily populated Arab countries. These factors lead to an uneven distribution of ICT in the Arab region and hence to an intra-regional digital gap.

Moreover, access to PCs and the internet is still a luxury that only a small elite, and some segments of the middle class, can afford. The gap in internet access between the Arab world and other regions is increasing, with the Arab world collectively showing the third lowest rate of internet access of 2.2% in 2001, ranking only higher than south Asia and the Sub-Saharan Africa. Therefore, despite initiatives to increase technological awareness in the Arab world, there are still numerous difficulties confronting PC and internet access.

The Arab Business Sector and Capitalizing on Information Technology

Some Arab central banks employ electronic systems in their operations and provide telephone-based services. The use of credit cards remains noticeably low in most Arab countries. However, some Arab countries such as Saudi Arabia, the UAE, Lebanon, and Jordan are taking initiatives towards providing banking services over the phone and the internet.

Traditional Arab Business Sectors and Information Technology

The traditional business sector (comprising the majority of companies and projects) in the Arab world has a long way to go towards the utilization of modern communications technologies. This sector, particularly in Egypt and Morocco, still depends on face-to-face interactions. Even those industries or projects, which have sites on the internet, do not fully utilize the potential of that medium, as the site is at best only employed to provide dry information about the services offered. This could be the result of low training and

awareness levels.

" The Development of E-Government

Although total electronic activities in the Arab region amount to 0.2% of world business electronic transactions, some Arab governments are still striving to employ modern technology in the provision of administrative services and the operation of government agencies, in order to achieve more integration in the world economy. Gulf countries, such as UAE, Kuwait, Bahrain, and Saudi Arabia, have made some progress in this respect, largely because these countries are the regional centers of operation of several multinational corporations. However, E-commerce forecasts show that the Arab region does not possess an adequate infrastructure due to the low density of economic and financial transactions, as most Arab economies are based on the extraction and sale of primary commodities. See **Table (3)**.

Table (3)

Forecasts of E-Commerce for 2006 According to Region in Billion Dollars
Region Among Commercial Institutions Percentage Among Commercial
Institutions& Individuals Percentage

North America	7127 58	211 37.5
Asia and the Pacific	2460 20	185 33
Western Europe	2320 18.9	138 24.6
Latin America	216 1.8	16 2.9
Eastern Europe	84 0.7	6 1.1
Africa & ME	69 0.6	5 0.9
World	12275 100	526 100

Source: UNCTAD

6 - Obstacles Confronting Information technology and Communications in the Arab World

Several obstacles explain the backwardness of the region in terms of ICT.

Such obstacles are cultural, as well financial and technical., in nature and they include the following:

1. Insufficient funding for ICT research: insufficient funding for the production of software leads to heavy dependence on foreign experts and products. The contribution by the information sector to the GDP of the Arab region is 0.5%, as most Arab countries are pure importers of ICT.
2. Slow progress in the area of legal regulation: In most Arab countries, there is an increased tendency towards aligning existing communications related legislation with WTO terms and conditions. However, the process of issuing laws governing information technology requirements is still very slow, due to the lack of social pressure in this direction.
3. Digital Poverty: Most Arab countries are still suffering from poor internet services. The total number of internet networks in the region is equal to 500 cables in the US alone. This is partially a result of the lack of direct communication among Arab ISPs, and the lack of a region-wide initiative to solve the problem.

There is also a big digital gap among Arab countries. The UAE ranks highest in term of the number of internet users which amount to 29.9% of the population, followed by Bahrain, Qatar, and Kuwait with 17%, 12.81%, and 11.29% respectively. In contrast, Morocco, Egypt, Algeria and Libya, Iraq and the Sudan have weaker rates of internet usage.

4. Weak local ICT capabilities: Most information tools in the region are imported from abroad and there is no integrated Arab initiative to redress this problem. The Arab world suffers from heavy dependence on international programming languages, from the lack of skilled developers, and from low quality education, and lack of government funding.
5. Marginal use of the local language may lead to a regional failure to meet the requirements of high-tech and E-commerce. Even though there are 300

million people who speak Arabic, which makes it the sixth spoken language worldwide, Arabic websites represented only 1% of total sites in 2001.

7 - Towards an Arab Information and Communications Strategy

The objective is to make the Arab world a major player in the field of ICT, not only as a consumer but also as an active participant. The fulfillment of this objective will necessitate the following prerequisites:

1. Putting together an Arab plan for funding the ICT sector, taking into consideration the comparative advantages of every Arab country;
2. Putting together plans for an Arab ICT infrastructure, relying on independent technology and local human resources;
3. Increasing the competitiveness of Arab ICT services and industries, through facilitating access to technology, encouraging innovation, changing regulations, and developing new technologies;
4. Capacity building through the establishment of institutes of higher education focused on research and development;
5. Focusing on youth and attracting them to the ICT sector, which requires the qualitative development of Arab educational systems, as well as increased attention to foreign languages, as well as the Arabic language, with the aim of integrating Arabic in information applications, and the activation of Arabic linguistic research.