ERF WORKING PAPER SERIES

THE IMPACT OF ICT ON ECONOMIC DEVELOPMENT IN THE ARAB WORLD: A COMPARATIVE STUDY OF EGYPT AND THE GULF COUNTRIES

Samia Satti O. M. Nour

Working Paper 0237

As of August 1998, financial support towards the ERF Working Papers Series from the Commission of the European Communities (through the FEMISE Program) is gratefully acknowledged. The views expressed in the Working Papers are those of the authors and do not necessarily reflect the views of the European Commission.

ECONOMIC RESEARCH FORUM
منتدى البحوث الاقتصادية

7 Boulos Hanna St. Dokki, Cairo, Egypt
Tel: (202) 3370810 – (202) 7485553 – (202) 7602882
Fax: (202) 7616042. Email: erf@idsc.net.eg. Website: http://www.erf.org.eg

Abstract

This paper compares the ICT market in both Egypt and the Gulf countries. Both are lagging behind the developed countries, but Egypt has higher supply, while the Gulf countries have higher demand and spending. The two sides correlation between ICT and economic development is verified. ICT diffusion is positively correlated to economic growth and human capital/ education. ICT spending positively affects economic growth and human capital/ education. However, in both Egypt and the Gulf countries, the degree of significance is somewhat doubtful and ambiguous. .

1. Introduction

The fast diffusion of Information and Communication Technology (ICT) is now evident and its influence on economic systems in both the developed and developing countries has increased during the last two decades. Both the rapid development in ICT and the recent trend of globalization and their influences on different economic systems have been an exciting and interesting recent research issue that received increasing interest amongst economists in both developed and developing countries.

A debate was raised to link the recent rapid progress in ICT to the fast progress in globalization of world economy and because the role of ICT is vital in facilitating, motivating and activating communications and fast delivery of different products (good and services) between different world countries.

For a long time economists of different schools of thought indicated the important role of technical changes in economic growth and economic development. In recent times in economic growth literature, namely new growth theories, more attention has been paid to the impact of ICT in economic growth and economic development. More recent literature has focused on the various influences of IT on economic growth, productivity, employment, work organization, competitiveness and human capital development.

On the one hand, more recent theoretical and empirical studies in the literature discussed the positive impacts of ICT and mainly IT on productivity (Hitt and Brynjolfsson, 1996); Brynjolfsson and Yang, 1996), growth and development (Jorgenson and Stiroh, 1995; Mansell and When, 1998; Pohjola, 2000; and Pohjola, 2001), work place organization (Bresnahan, Brynjolfsson and Hitt, 1999), human capital development and skill upgrading Acemoglu, 1998; and Hwang, 2000).

On the other hand, some recent studies in the literature show the potential negative impacts of ICT on some dimensions of economic development. The majority of the recent studies that focused on this side were mainly related to the debate that technical change is creative destruction, although it has some positive impacts to enhance economic development. However, on the other hand, it has also some negative impacts on some dimensions of economic development. For instance, some studies, discuss the negative impacts of ICT on employment and the labor market (. Aghion and Howitt, 1998; Freeman and Soete, 1985; Freeman and Soete, 1994; and Freeman and Soete, 1997). Part of this literatures states that ICT or IT is similar to various kinds of technical change in imposing the so called labour saving or skilled biased effect, through the displacement of some unskilled labour due to either reduction or elimination of some unskilled jobs.

Moreover, some studies raised the controversy that ICT could impose some negative impacts for the developing countries, particularly, because the developed countries will have more advantages to raise their competitiveness in the global world at the expense of the developing countries, mainly because ICT will provide more comparative advantageous for the developed countries by facilitating the attack and open some new markets in the developing countries. So, not only will it be hard for the developing countries to compete with the developed countries in the international market, but it will also threaten / deprive the developing countries in their original local markets. Additionally, it might delay the catching up of the developing countries to the developed countries. Hence, it could raise the already existing differentials and widen the already existing gap between the developed and the developing countries. Moreover, ICT also might create some negative impacts on the status of the poor by raising the already existing inequalities in income distribution and increasing the poverty of the poor.

The aims of this paper are two fold. One, to compare the market of ICT in Egypt and the Arab Gulf countries; and two, to test the complementary relations between ICT and economic development, mainly to test the influences of ICT and economic development on each other in both Egypt and the Gulf countries. The paper will use the descriptive approach using secondary data and information from different sources.

The rest of this paper is organized in the following way: Section two, compares the ICT market in both Egypt and the Arab Gulf countries. Section three, tests and compares the determinants of the ICT market in both of them. Section four, tests and compares the impact of ICT in both of them. Section five, provides the summary and conclusions.

2. The ICT Market in Egypt and the Arab Gulf Countries

This section compares the market status of ICT diffusion in both Egypt and the Arab Gulf countries.

Beginning with the status of ICT in Egypt and the Gulf countries, Table (1) shows the supply and demand for ICT as indicated by the total number of Internet services providers and the percentage of population using Telephone, Mobile and Internet respectively. It seems that both Egypt and the Gulf countries are lagging far behind the developed countries such as the United States, Japan, United Kingdom and the Netherlands. That also holds for ICT spending variables.

However, in the mean time, both Egypt and the Gulf countries together are leading in the ICT market (in terms of supply and demand) in the Arab region. For instance, Table (2) shows that compared with the other Arab countries, more recently, both Egypt and the Gulf countries have made a significant contribution to the growth of ICT diffusion in the Arab region. Despite the fact that the total population in both Egypt and the Gulf countries together represent about 35.75%

of the total Arab population, they represent the largest ICT market in the Arab world. For instance, during the period (1996 –2001) both Egypt and the Gulf countries together constitute around 74.43%, 67.30%, 81.20%, 79.54% and 77% of total number of Internet services providers and the percentage of population using Telephone, Mobile and Internet in the Arab world respectively.

The comparison between Egypt and the Gulf countries in Table (2) shows that Egypt exceeds the Gulf countries in the supply of ICT as indicated by the number of Internet service providers. While, on the other hand, the Gulf countries together have higher demand for ICT compared to Egypt. Although the total population in Egypt is more than double the total population in the entire Gulf countries, the percentage of the population using a Telephone, Mobile or the Internet in Egypt is marginal and lagging far behind the Gulf countries. Table (2) shows that although the population of the Gulf countries adds up to half of the total population in Egypt, they account for 76% - 78.6% of the total percentage of the Arab population using the Internet; 62% with access to main telephone lines; and 80.6%, with Mobile cellular telephones. Moreover, the Gulf countries account for 36.8% of Internet services providers in the Arab world. While the comparable percentages for Egypt are respectively: 0.43 – 0.82, 5.71%, 0.55% and 37.59%. Moreover, Table (3) illustrates that the number of Internet subscribers and users are higher in the Gulf countries compared to Egypt. On the other hand, Table (4) shows that the cost of Internet services in Egypt is lower than Saudi Arabia but higher than the UAE.

Moreover, the Ajeeb research survey (2001) indicates the high Internet penetration in the Gulf countries compared to Egypt. For instance, in the United Arab Emirates (UAE) approximately a quarter of the total population have access to the Internet. And so it has the highest Internet penetration amongst both the Gulf countries and the other Arab countries. Bahrain; Qatar; Kuwait, Oman and Saudi Arabia have the next highest level of Internet penetration with 16.67 %; 10.27%; 8.25%, 3.36% and 2.59% respectively, while Egypt has less than 1% of the population online, that is, less than all the Gulf countries. The gap between the Gulf countries (particularly, the UAE) and Egypt in terms of online population remained very wide.

Furthermore, Table (5) illustrates that during the period (1992 – 2001) the gap between Saudi Arabia / the Gulf States and Egypt in terms of ICT spending remained wide. Total ICT spending and spending on hardware, software, services, internal spending, office equipment and telecommunications is higher in the Gulf States compared to Egypt. That also holds for the economic ratios such as ICT/GDP ratio, ICT/ Capita ratio, software / hardware spending ratio and recently, the percentage of IT spending on e Business technology. Moreover, since 1994, all IT variables in terms of Total PCs installed including PCs installed in education, homes, businesses and government are higher in the Gulf countries compared to Egypt. Moreover, telephone line per household is approximately doubled in Saudi Arabia/ the Gulf States compared to Egypt.

Additionally, Table (6) shows that the number of top domain names, the number of web sites and the number of web site per 10,000 people are higher in the Gulf countries compared to Egypt. In particular, Egypt is lagging far behind all the Gulf countries except Qatar and also lagging behind Saudi Arabia, United Arab Emirates and Kuwait in terms of both the number of web sites per 10,000 people and the number of top domain names respectively.

3. Determinants of ICT market in Egypt and the Gulf countries

Concerning the determinant of ICT market, Tables (7) and (8) illustrate that the use of ICT as measured by the percentage number of population accessing the Internet in both Egypt and the Gulf countries is positively related to economic growth as indicated by GDP Per capita. That also holds for human development as indicated by schooling year / educational attainment. However, the regression results of the percentage of population accessing the internet as the dependent variables with both economic growth as indicated by GDP Per capita and human development as indicated by schooling year / educational attainment as independent variables shows unclear results. Equations (1) – (6) show that the degree of significance of these relations is somewhat doubtful and ambiguous.

4. The Impacts of ICT in Economic Development in Egypt and the Gulf Countries

Regarding the impacts of ICT spending on economic development in both Egypt and the Gulf countries, Table (9) illustrates that the increase in ICT spending in both Egypt and the Gulf countries in most cases are positively correlated with economic growth (as measured by GDP Per capita). That also holds true for human capital development (educational attainment as measured by schooling years). However, using ICT spending data illustrated in Tables (5) and (7) the regression results in Equations (1) – (7), shows that in both Egypt and the Gulf countries the significance of these impacts is somewhat doubtful and ambiguous.

5. Conclusion

This paper compares the ICT market in both Egypt and the Gulf countries. Both Egypt and the Gulf countries are still lagging far behind the developed countries in terms of ICT supply, demand and spending. However, in the mean time, both Egypt and the Gulf countries together constitute the largest ICT market in the Arab World, leading / dominating the remaining Arab countries in terms of ICT supply, demand and spending. While Egypt has comparative advantage in ICT supply as measured by the number of Internet Services Providers, the Gulf countries together have comparative advantage in ICT spending variables and ICT demand as indicated by the percentage number of population accessing the Internet, Internet subscribers and users of telephones and mobile telephones.

Although the test of the two sides complementary relations between ICT diffusion and economic development is verified, the significance of this relation is unclear. For instance, in both Egypt and the Gulf countries ICT diffusion is positively correlated with both economic growth as indicated by GDP Per capita and human capital development as measured by average schooling years. However, the significance of these correlation is somewhat doubtful and ambiguous. Also, the increase in ICT spending during the period (1992 – 2000) has had some positive influences in both economic growth as indicated by GDP Per capita and human capital development as indicated by average schooling years. However, the extent/degree of the significance of such influences is again somewhat doubtful and ambiguous.

References

Acemogul, D. (1998) "Why Do New Technologies Complement Skills? Directed Technical Change and Wage Inequality". *The Quarterly Journal of Economics*. Volume 113. Issue No. 4. November 1998. Pages 1055-1089.

Aghion, P. and Howitt, P. (1998). 'Endogenous Growth Theory'. Cambridge. Mass. MIT Press.

Barro, R. J. and Lee, J. W. (2001), "International Data on Educational Attainment: Updates and Implications", *Oxford Economic Papers*, 53(3), 541 – 63.

Bresnahan, T. F. Brynjolfsson, E. and Hitt, L. M. (1999) " Information Technology, Workplace Organization, and the Demand for Skilled Labour: Firm Level Evidence ". NBER Working Paper No. 7136.

Brynjolfsson, E., and S.Yang (1996). "Information Technology and Productivity: A review of the literature". Advances in Computers 43: 179-214.

CIA World Fact Book (2001): www.globastat.com.

Freeman, C. & Soete, L (1985) "Information Technology and Employment: An Assessment". SPRU Sussex. UK. April 1985.

Freeman, C. & Soete, L (1994) "Work for all or Mass Unemployment? Computerized Technical Change into the Twenty – first Century." London, Printer, 1994.

Freeman, C. and Soete, L. (1997). "The Economic of Industrial Innovation". 3rd Edition. London and Washington Printer.

Hitt. L. and E. Brynjolfsson (1996) "Productivity, business profitability, and consumer surplus: Three different measures of information technology value". MIS Quarterly 20:121-42.

Hwang, Gyu-heui (2000) " Diffusion of Information and Communication Technologies and Changes in Skills ". September 2000. SPRU Electronic Working Paper No. 48.

Jorgenson, D. W., and K. Stiroh (1995) "Computers and growth". *Economics of Innovation and New Technology* 3:295-316.

Mansell, R. and U.Wehn (eds.) (1998). "Knowledge Societies: Information Technology for Sustainable Development" Oxford: Oxford university press.

Pohjola, M. (2000) "Information Technology and Economic Growth: A Cross-Country Analysis ". WIDER/ UNU Working Paper series: WP173, January 2000.

Pohjola, M. (ed.) (2001) "Information Technology, Productivity and Economic Growth: International Evidence and Implications for Economic Growth". Oxford University Press April 2001.

Ajeeb Research Unit (2001): “Number of Internet Subscribers and Users in the Arab Region”. March 2001, in www.ajeeb.com :http://eit.ajeeb.com/ViewArticle.asp?Article_ID=28132.

Internet Al Alam Al Arabi (Arabic Language Edition), (1999): “Internet users in the Arab World 1998 –1999” July 1999 - Dabbagh Information Technology (DIT): in http://www.2bits.com/me/netusers.phtml.

Internet Software Consortium domain survey of July 1999, http://www.isc.org.

DITnet news article (2000): “Internet users in the Arab World March 2000” in www.ditnet.co.ae/itnews/newsmar2000/http%3A//www.ditnet.co.ae. in http://www.2bits.com/me/netusers.phtml.

Middle East Directory: MiddleEastDirectory.com: www.Middleeastpolls.com.

2 BITS (2001): 2BITS.com: 2B International Technology Solutions - Saudi Arabia's ISPs “Cost of Access: Arabs and West”: http://saudi-isps.2bits.com/isp/0012-arab-vs-west.phtml. March (2001)

The World Bank (2001), “World Development Indicators”.

UNDP (1994), “Human Development Report” (1994).

UNDP (1995 – 2002) “Human Development Reports (1995 – 2000, 2002)”.

WITSA (2002), Digital Planet 2002: “The Global Information Economy”, The World Information Technology and Services Alliance. Arlington – USA. February (2002).

World Development Indicators Database (2002) – The World Bank: www.worldbank.org

Table 1: Comparison across countries of ICT Spending and IT Variables (2001)

	USA	Japan	UK	Germany	World Total	Saudi Arabia / Gulf States	Egypt
(1) ICT Spending (US$M)							
IT Hardware Spending	$136,051	$49,686	$21,287	$24,488	$376,119	$1,043	$417
IT Software Spending	$96,556	$13,729	$13,798	$14,697	$196,237	$302	$124
IT Services Spending	$199,203	$52,320	$27,354	$27,018	$425,660	$922	$245
IT Internal Spending	$107,428	$67,786	$26,723	$29,075	$345,500	$557	$223
IT Other Office Equipment Spending	$7,442	$4,491	$2,194	$2,982	$33,705	$94	$38
Total IT Spending	$546,681	$188,012	$91,356	$98,260	$1,377,221	$2,918	$1,046
Telecommunications Spending	$265,954	$225,761	$46,370	$56,385	$1,037,877	$3,276	$1,337
Total ICT Spending	$812,635	$413,772	$137,726	$154,645	$2,415,098	$6,194	$2,383
(2) Economic Ratios							
ICT/GDP	7.9%	9.6%	9.7%	7.9%	7.6%	3.6%	2.5%
ICT/Capita	$2,923.8	$3,256.2	$2,318.6	$1,880.4	$395.3	$309.4	$36.8
Software/Hardware Spending	71.0%	27.6%	64.8%	60.0%	52.2%	28.9%	29.8%
(3) IT Variables							
PCs Installed in Education	16,322,694	2,172,000	1,824,106	1,054,871	36,778,755	66,391	48,816
PCs Installed in Homes	80,943,489	24,276,412	10,201,092	13,550,184	204,483,990	220,386	147,827
PCs Installed in Business and Government	129,868,818	22,791,000	8,906,587	12,762,242	299,914,464	618,054	454,441
Total PCs Installed	227,135,001	49,239,412	20,931,785	27,367,298	541,177,209	904,831	651,084
Telephone lines/HH	1.98	1.50	1.50	1.30%	N.A.	1.12	.34

Source: WITSA (2002): ICT Spending Data: Digital Planet 2002. * N.A: data not available.

Table 2: Demand and Supply of ICT in the Egypt and Arab Gulf Countries (1996 – 2001)

Country	Total Population	Internet Services Providers (ISP) [a]	Percentage of Population with access to main Telephone lines [a]	Percentage of Population with Mobile Cellular Telephones [a]	Percentage of Population using the Internet [a]	Percentage of Population using the Internet [b]
Egypt	69,536,644	50	5.71%	0.55%	0.43%	0.82
UAE	2,407,460	1	38.02%	41.54%	16.62%	24.44
Bahrain	569,202	1	23.55%	9.07%	5.81%	16.67
Kuwait	1,930,132	3	20.18%	10.28%	4.90%	8.25
Qatar	762,887	1	18.46%	5.65%	5.58%	10.27
Saudi Arabia	22,757,092	42	13.62%	4.39%	1.76%	2.59
Oman	2,622,198	1	7.67%	2.28%	1.91%	3.36
Total Gulf States	31,048,971	49	121.50%	73.21%	36.58%	65.58
Total Arab States	281,355,999	133	189.03%	90.84%	46.53%	86.08
Average Arab Countries	16,550,352.882	8.31%	11.81	6.99	3.10	N/A
United States	278,058,881	7,800	69.77	24.89	53.23	N/A
Japan	126,771,662	73	47.63	50.39	21.35	N/A
United Kingdom	59,647,790	245	58.47	21.79	32.64	N/A
The Netherlands	15,981,472	52	57.14	25.54	42.55	N/A
Percentage of the Gulf States to Total Arab	11.04%	36.84%	64.28%	80.59%	78.62%	76%
Percentage of Egypt to total Arab	24.71%	37.59%	3.02%	0.605%	0.924%	0.953%
Percentage of the Gulf States and Egypt to total Arab	35.75%	74.43%	67.30%	81.20%	79.54%	77%

Sources: (a) CIA World Factbook 2001: www.globastat.com for the population data and the percentage of population using Telephone, Mobile, Internet and ISP data and (b) Ajeeb Research Survey (2001): www.ajeeb.com. for the percentage of population accessing the Internet 2001. * N.A: data not available.

Table 3: The demand for Internet Services in Egypt and Gulf region (1999- 2001)

Country \ Year	1999		2000		2001	
Country	**Subscribers**	**Users**	**Subscribers**	**Users**	**Subscribers**	**Users**
Egypt	51,800	207,200	55,000	440,000	70,000	560,000
UAE	81,700	204,300	160,000	400,000	220,000	660,000
Kuwait	25,100	62,800	40,000	100,000	55,000	165,000
Oman	16,000	40,000	20,000	50,000	28,000	60,000
Qatar	11,000	27,500	18,000	45,000	25,000	75,000
Total Gulf countries	133,800	334,600	238,000	595,000	328,000	960,000
Total Arab Countries	338,200	923,100	545,500	1,899,500	938,000	3,538,000

Sources: Internet Al Alam Al Arabi (Arabic Language Edition), July 1999. Published by Dabbagh Information Technology (DIT) for the year 1999, DITnet news article (2000) in http://www.ditnet.co.ae/itnews/newsmar2000/http%3A//www.ditnet.co.ae for the year 2000 and Ajeeb Research Unit (2001a): www.ajeeb.com. for the year 2001: * N.A: data not available.

Table 4: The Cost / Charge of Internet Services in Egypt and the Gulf countries (1999-2000)

Country	Cost in US $	Hourly Charges US $	Monthly Total US $
Emirates	5.4	13.85	27.7
Egypt	26.4	15.6	42.0
Saudi Arabia	37.3	24.0	61.3

Source: 2 BITS (2001): http://saudi-isps.2bits.com/isp/0012-arab-vs-west.phtml.

Table 5: ICT Spending and IT Variables in Egypt and Saudi Arabia/ Gulf States (1992 - 2001)

	Egypt									
	1992	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
(1) ICT Spending (US$M)										
IT Hardware Spending ($)	113	116	133	156	204	261	336	347	414	417
IT Software Spending ($)	19	20	25	36	41	49	64	78	105	124
IT Services Spending ($)	53	59	70	65	76	91	116	152	210	245
IT Internal Spending ($)	99	103	104	108	107	104	154	198	213	223
IT Other Office Equipment Spending ($)	12	12	15	16	18	24	30	31	37	38
Total IT Spending ($)	*296*	*310*	*346*	*381*	447	529	700	807	981	1,046
Telecommunications Spending ($)	508	568	603	721	867	980	1,098	1,240	1,294	1,337
Total ICT Spending ($)	**$804**	**878**	**949**	**1,101**	1,315	1,509	1,798	2,047	2,275	2,383
(2) Economic Ratios										
ICT/GDP (%)	1.9	1.9	1.8	1.9	2.0	2.0	2.2	2.3	2.4	2.5
ICT/Capita ($)	14.5	15.6	16.5	18.8	21.7	23.8	27.2	32.7	35.7	36.8
Software/Hardware Spending (%)	16.3	17.4	19.0	22.7	20.3	18.7	18.9	22.4	25.4	29.8
Percentage of IT spending on e Business Technology (%)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.0	15.1	18.3

Table 5: Cont'd.

Egypt cont'd	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
(3) IT Variables										
PCs Installed in Education	7,059	7,461	7,885	8,333	10,340	10,317	16,752	27,235	41,443	48,816
PCs Installed in Homes	14,297	18,395	3,667	3 0,451	39,179	44,524	72,458	82,259	115,555	147,827
PCs Installed in Business and Government	78,608	83,076	87,799	92,790	96,531	96,312	156,384	254,245	385,806	454,441
Total PCs Installed	99,964	108,931	119,350	131,573	146,050	151,143	245,594	363,739	542,805	651,084
Telephone lines/HH (%)	13.0	14.0	15.0	16.0	16.0	17.0	29.0	30.0	32.0	34.0
Saudi Arabia/ Gulf States										
(1) ICT Spending (US$M)										
IT Hardware Spending ($)	578	598	695	654	736	886	537	607	975	1,043
IT Software Spending ($)	102	111	136	81	96	120	72	84	286	302
IT Services Spending ($)	193	221	264	374	450	554	457	546	833	922
IT Internal Spending ($)	326	355	358	386	428	404	171	496	531	557
IT Other Office Equipment Spending ($)	61	62	76	70	67	80	49	55	88	$94
Total IT Spending ($)	1,262	1,347	1,529	1,566	1,777	2,045	1,285	1,788	2,714	2,918
Telecommunications Spending ($)	2,117	1,958	2,044	2,083	2,406	2,669	2,953	3,276	3,276	3,276
Total ICT Spending ($)	3,379	3,305	3,573	3,649	4,184	4,714	4,238	5,064	5,989	6,194

Table 5: C ont'd.

Saudi Arabia/ Gulf States cont'd.	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
(2) Economic Ratios										
ICT/GDP (%)	2.2	2.8	3.0	2.9	3.	3.2	3.3	3.6	3.5	3.6
ICT/Capita($)	178.1	169.9	179.4	177.5	198.3	215.5	188.1	250.7	297.8	309.4
So ftware/Hardware Spending (%)	17.7	18.5	19.6	12.4	13.1	13.6	13.4	13.9	29.4	28.9
Percentage of IT spending on e Business Technology (%)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.0	14.0	20.6
(3) IT Variables										
PCs Installed in Education	10,627	14,480	19,730	26,883	28,345	43,008	54,936	62,737	56,946	66,391
PCs Installed in Homes	5,412	12,947	30,972	74,091	177,241	129,359	168,303	195,576	189,231	220,386
PCs Installed in Business and Government	18,339	161,242	219,699	299,349	264,610	401,497	512,848	585,671	530,126	618,054
Total PCs Installed	**134,378**	**188,669**	**270,401**	**400,323**	**470,196**	573,865	736,087	843,984	776,303	904,831
Telephone lines/HH	0.44	0.44	0.45	0.47	0.52	0.53	0.97	1.01	1.07	1.12

Source: WITSA (2002): ICT Spending Data: Digital Planet 2002.

Table 6: The Intensity of IT Services

Country	Number of top domain names [1] [a]	Number of Web Sites [b]	Number of Web sites (per 10,000 people) [c]
Egypt	1746	455	1
Bahrain	1110	455	17
Kuwait	4573	225	23
Oman	673	140	3
Qatar	32	N/A.	1
Saudi Arabia	2508	180	2
United Arab Emirates	11 103	705	92
Total Gulf	8896	1705	137
Arab Countries	25 611	3020	2

Source: (a) UNDP Human Development Reports (b) MiddleEastDirectory.com and (c) World Bank (2001), "World Development Indicators".

[1] According to the Internet Software Consortium domain survey of July 1999, www.isc.org: A top – level domain nam e refers to the address of an Internet site that ends with a country code (such as kw [Kuwait], or one of the extensions (com, net, org, edu, mil, gov, int)). The number of top – level domain names reflects the presence of a country on the World Wide eb. This is considered more of a representative indicator of Internet diffusion than, for example, the number of national Internet accounts or the number of operational Internet service providers.

Table 7: Percentage number of population accessing the Internet, GDP Per Capita and Average Years of Schooling (1996–2001)

Country	% Of Population Accessing the Internet		GDP Per capita (PPP US $)		GDP Per capita (US $)[e]		Average Years of Schooling	
	1996 [a]	2000 [b]	1999 [c]	2000 [d]	1996 [e]	2000 [e]	1992 [f]	2000 [g]
Egypt	0.43%	0.82%	3041	3635	1,100.0	1,490.0[3]	3.0	5.05
UAE	16.62%	24.44%	9960	17935	20.830.0	18,060.0[1]	5.6	NA.
Bahrain	5.81%	16.67%	25341	15084	10,430.0	9,370.0[2]	4.3	6.09
Qatar	5.58%	10.27%	19115	18789	N.A.	N.A.	5.8	NA.
Kuwait	4.90%	8.25%	16527	15799	19,020.0	18,030.0[3]	5.5	7.05
Oman	1.91%	3.36%	20987	13356	N.A.	5,050.0[4]	0.9	NA.
Saudi Arabia	1.76%	2.59%	10120	11367	7,360.0	7,230.0[3]	3.9	NA.
Total Gulf countries	36.58%	65.58%	102050	92330	36,810.00	57,740.13	26	13.14
Average Gulf countries	6.10%	10.93%	17008.33	15388.33	9,202.50	11,548.03	4.33	6.57

Notes: (1), (2), (3), (4) and (5) refer to the years 1998, 1999, 2000, 1995 and 1989 respectively. * NA: data not available.
Sources: (a) CIA World Fact Book (2001): www.globalstat.com. (b) www.ajeeb.com for ICT data. (c) UNDP (2000), Human Development Report (2000). (d) Human Development Report (2002). (e) World Development Indicators Database (2002) – The World Bank: www.worldbank.org for GDP Per capita data. (f) UNDP (1994), Human Development Report (1994). and (g) Barro and Lee database (2001) for Average years of schooling data.

Table 8: Determinants of ICT market in Egypt and the Gulf Countries: Regression Results for the Period 1992- 2001.

	Egypt			The Gulf countries		
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	- 0.141	- 1.567	-.670	-3.237	56.842	-12.867
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
GDP Per Capita [a,b]		0.0007			-0.0029	
		(0.000)			(0.000)	
GDP Per Capita [c]			0.0010			0.0021
			(0.000)			(0.000)
Human Capital (Average Years of Schooling) [d,e]	0.190			2.156		
	(0.000)			(0.000)		
Adjusted R^2	1.000	1.000	1.000	1.000	1.000	1.000

Notes: (1) Standard errors are in Parentheses. (2) The regression is done under 5% level of significance.

Sources: (a) UNDP (2000), Human Development Report (2000). (b) Human Development Report (2002). (c) World Development Indicators Database (2002) – The World Bank: www.worldbank.org for GDP Per capita data. (d) UNDP (1994), Human Development Report (1994). and (e) Barro and Lee database (2001) for Average years of schooling data.

Table 9: The Impact of ICT Spending on Economic Growth[1] and Human Development[2]

(A) Egypt							
Variables/Equation No.	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Constant	71.000 (0.000)	-850.000 (0.000)	495.500 (0.000)	2120.300 (0.000)	1447.341 (0.000)	53.659 (0.000)	2.579 (0.000)
ICT/ GDP	1485.0 (0.000)						
ICT/GDP		975.000 (0.000)					
ICT/ Capita			27.857 (0.000)				
ICT/GDP				42.429 (0.000)			
Percentage of IT spending on e Business Technology					144.878 (0.000)		
Percentage of IT spending on e Business Technology						95.122 (0.000)	
PCs installed in Education							0.0596 (0.000)
Adjusted R^2	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Table 9: Cont'd.

(B) The Gulf countries							
Variables/Equation No.	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Constant	26728.330 (0.000)	-4870.680 (0.000)	20236.933 (0.000)	4527.941 (0.000)	19924.33 (0.000)	4980.55 (0.000)	3.816 (0.000)
ICT/ GDP	-3240.000 (0.000)						
ICT/GDP		4691.000 (0.000)					
ICT/ Capita			-16.281 (0.000)				
ICT/GDP				23.573 (0.000)			
Percentage of IT spending on e Business Technology					-324.000 (0.000)		
Percentage of IT spending on e Business Technology						469.106 (0.000)	
PCs installed in Education							0.00005 (0.000)
Adjusted R^2	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Notes: (1) Standard errors are in Parentheses. (2) The regression is done under 5% level of significance.

[1] As measured by GDP Per Capita

[2] As measured by educational attainment as measured by schooling years