

Toward a knowledge-based society - The case of Jordan

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Abstract: Knowledge is becoming one of the most important weapons –sometimes the only weapon- to be shared among countries like any material resources. This creates need to find more opened world which leads us to learn about globalization concept. Globalization increase more opportunities and better jobs; however Globalization can be accomplished by process of increased integration which links economics of countries close together if it is in trades, or investments, labor transfer, and even knowledge transfer. Information tools and communication media is playing key role in transmission of knowledge and to make the world closer. Jordan hopes to take its direction toward knowledge-based society to get competitive position. In this paper I will introduce how Jordan could move toward knowledge-based society through discussing two accesses: access to education, and access to information and communication technologies ICTs.

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1. Introduction

Change is the most dominant character of this century, the technical economical, and social evaluation had shaped people's way of living and thinking. The globalize market, technical and technological revolutions are transforming the modern economy into "a knowledge based society". Rapid speed of high performance, solid knowledge, and increasing responsibilities are indicators or causes for being a "knowledge based society" (Ghirmai, 2010).

Education and Information Technology and communication tools will play key role in the way of life specific to this knowledge based society. New E-learning and teaching techniques are significant for success and economic competitiveness (Sahlberg, 2009; Saba and Rehman, 2012).

Today, more so than any time, the Arab nations are concerning for knowledge that will prepare the next generation of leaders throughout education reformation, new universities, research institute, and ICTs.

ICT represent one of the main pillars of knowledge-based, in 2008, Jordan –as part of middle East and North Africa MENA- demonstrated high levels of development in ICTs (Arab Knowledge Report, 2009).

The number of Jordan's population annual growth rate of 2.6% over the past decade is expected to double the current population of 5.35 million (Census of Population and Housing 2004 Department of Statistics) to reach 10.7 million people by the year 2032 (DoS, 2012), there have been an increasing number of university graduates, compared with the number of jobs available in the local market, which

means continued labor force growth rates are high at present and the near future, because the presence of a large number of children in the next twenty years. This leads to greater attention to the subject of knowledge and the importance of effective workforce that work for real change in the market (Sehetna, 2011; Saba et al., 2012). The skills of labor force must therefore be increased at all levels, more people must have a qualifying education, and more people need to go through the education system faster and pass out into the labor market. Moreover, there is need for a significant increase in the adult education and continuing training.

According to above introduction, I will present in this paper the two most issues to arrive to a knowledge based society in Jordan through two accesses: access to information technologies which are pillars of the basis of any knowledge based society, and access to education as the quality of education that transforms information into knowledge is essential.

2. Access to education

The next discussion is conducted by the United States agency for international development under JORDAN FISCAL REFORM PROJET II-August 2011 and supported by:

- General Budget Department.
- Ministry of higher education.
- Ministry of education.
- Higher Education Accreditation Commission.
- Vocational Training Corporation.
- Ministry of Finance.

And I had used their resources and statistics to conclude the educational role for knowledge based society.

Jordan is one of the world's youngest countries with two-thirds of its population aged 30 years or younger, education is a very large enterprise. Almost two millions (from 6 million populations) were enrolled as students in kindergarten through university doctoral studies. In Support of these two millions students, about 165,000 people were employed in the education sector, both public and private, in 2009. Table 1: shows what changes has Jordan seen in the last 10 years?

Table 1. Changes seen in Jordan in the last 10 years

	2001	2011	%Change
Annual government budget as % of GDP	39.1%	30.1%	-9%
Annual Government Budget (JD)	2.5 billion	6.6 billion	+164%
Public education expenditures (JD)	310 million	836.5 million	+170%
Education spending as %GDP	4.9%	3.8%	-1.1%
Education spending as %budget	12.5%	12.7%	+0.2%
Higher education enrollment	172.688	294.000	+70%
Population	5 million	6.2 million	+26%
Public education employment	99.218	121.830	+23%
Government employment	247.405	300.507	+21%
School-age population (preprimary - tertiary)	2.2 million	2.6 million	+19%
Kindergarten to grade 12 enrollment **	1 million	1.2 million	+13%
*See *Source Consulted entries for ministry of education, UNESCO Institute for statics, world Bank Edstats, General Budget laws, Jordan Department of statics ** 2011 estimate is 2010 actual plus 25.000.			

The increasing of spending on education in last 10 years, reflect that Jordan hope seriously toward rapid development to be knowledge based society.

About one-third of Jordan's population was enrolled in Jordan's education system in 2009. They were enrolled in: 5,853 schools (3,600 public; 2,253 private) providing kindergarten through grade 12 education (K-12), 42 public Vocational Training Centers, 49 Community Colleges (25 of which receive support from Jordan's annual budget), and 31 universities (10 public, 21 private).

System enrollment divided between public and private enrollments are presented in Table 2. Over 70% of total enrollment is supported through the national budget. The lowest public support is for kindergarten, with only 12% of kindergarten students at public schools.

As shown in figure 1, the number of students enrolled in their schools for the basic education (1-10)

in 2009 is 1,084,988 students, secondary education (11-12) is 144596 students, university enrollment is 63391 students. 81% enrollment rate in the basic education (1-10), 87% enrollment rate in the secondary education, 59% enrollment rate in the colleges, 26% enrollment rate in unversities and the total for enrollment rate is 99% with very high rate.

Despite improvements, low enrollment in pre-school education remained an issue and the curricula and teaching quality across all levels of public education needed improvement. Furthermore, vocational education suffered from decreasing enrollment, inadequate funding, and several narrow occupational specializations that did not match labor market requirement. As shown in table 2.

Table 2: Enrollment in 2009-public and private

	Public	private	Total	%public
Basic Education (1-10)	1,084,988	250,589	1,335,577	81%
University Education	63,391	181,905	245,296	26%
Secondary Academic (11-12)	144,593	21,199	165,792	87%
Kindergarten	13,956	99,668	113,624	12%
Community College	18,120	12,843	30,963	59%
Secondary Vocational (11-12)	27,450	302	27,752	99%
Vocational Training	19,000	none	19,000	unknown
Armed Forced Education (k-12)	13,361	0	13,361	100%
TOTAL	1,384,859	566,506	1,951,365	71%
Source: Dept of Statistics Annual Statistical Report 2009, MOHESR statistical Report 2010				

Table 3 depicts planned performance of public education by comparison in percentages through 2006 -2012 and expected in the year 2017.

Table 3: National Agenda-Planned Performance in Public Education

	2006	2012	2017
Gross Enrollment Ratio in Pre-School Education	35%	50%	60%
Gross Enrollment Ratio in Primary Education	99%	100%	100%
Gross Enrollment Ratio in Secondary Education	86%	90%	95%
Employment Rate of Secondary Vocational Edu Grades	55%	65%	80%
Source: Dept of Statistics Annual Statistical Report 2009, MOHESR statistical Report 2010			

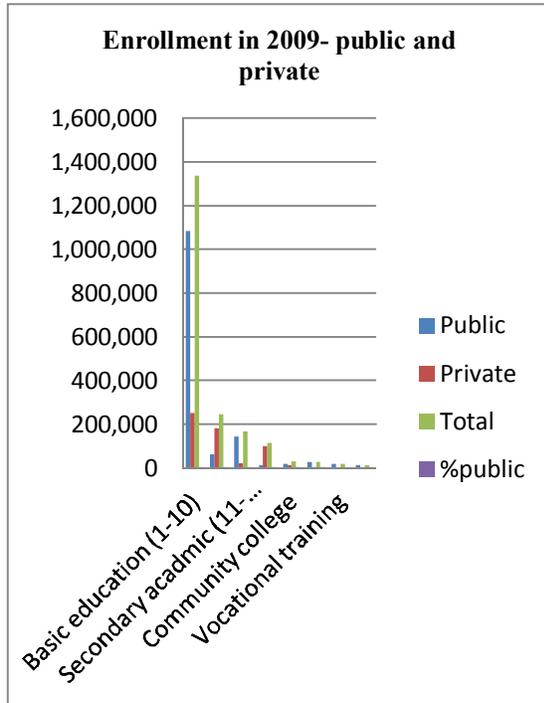


Figure 1: Enrollment in 2009-public and private.

As shown in figure 2, gross enrollment ratio in pre-school stage was 35% in 2006, increases to 50% by 2012 and expected to be 60% in 2017 (National Agenda, 2011).

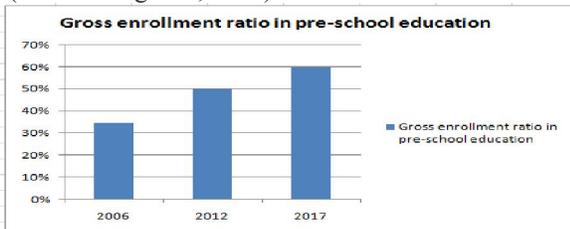


Figure 2: gross enrollment ratio in pre-school stage.

As shown in figure 3, gross enrollment ratio in primary school stage was 99% in 2006, increases to 99% by 2012 and expected to be 100% in 2017.

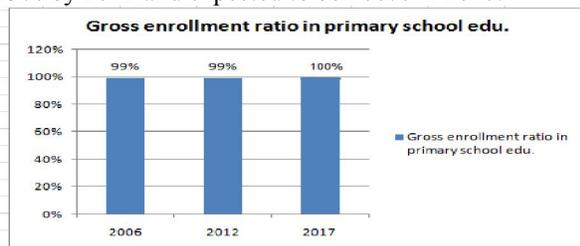


Figure 3: gross enrollment ratio in primary school.

As shown in figure 4, gross enrollment ratio in secondary school stage was 86% in 2006, increases to 90% by 2012 and expected to be 95% in 2017.

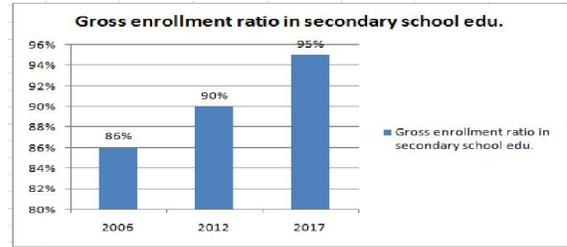


Figure 4: gross enrollment ratio in secondary school.

Vocational education took its place in the educational system; the employment rate of vocational education was 55% in 2006, increases to 65% by 2012 and expected to be 80% in 2017. See figure 5 below.

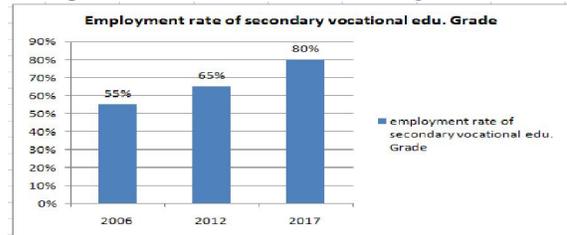


Figure 5: Employment rate of secondary vocational education.

The 2006 National Agenda was especially critical in asserting that the higher education sector lacked a unified and comprehensive strategy to strengthen governance and drive sector development. The sector structure was skewed toward academic learning at the expense of technical education, placing increasing pressure on public universities as demand for higher education was soaring. The Ministry of Higher Education was not well-equipped to address the sector's needs as it lacked required capacity to conduct effective policy-making. Furthermore, rising demand and funding shortages led to lax admission policies and a decline in teaching quality.

	2006	2012	2017
Tertiary Education Gross Enrollment Ratio	35%	44%	50%
% Of University Grades employed within 12 months of graduation	N/A	85%	95%
% Of Students admitted under the Parallel Teaching Scheme	21%	0%	0%
% Of Universities where faculty trained by FDCs*exceeds 60%	0%	100%	100%
% Community College grades employed in specialization in 12 months	N/A	85%	95%
*FDC= faculty development center			
Source: Dept of Statistics Annual Statistical Report 2009, MOHESR statistical Report 2010			

To improve the sector's efficiency, the National Agenda prescribed the objectives below:

1. Establish a Higher Education Accreditation and Quality Assurance Council under the National Commission for Accreditation and Quality Assurance of Education Institutions.
2. Approve a comprehensive strategy for higher education.
3. Develop alternative funding strategies for universities.
4. Revise universities' admission policies.
5. Reform university curricula in line with requirements of the knowledge economy.
6. Upgrade skills of faculty and administration at universities.
7. Improve the governance and funding of community colleges.

In 2010, Jordan's Second Millennium Development Goals MDG Report: Keeping the Promise and Achieving Aspirations, demonstrated progress towards achieving the indicators and highlighted Jordan's future education challenges.

Of the eight MDG goals, education is the only one achieved by Jordan to date. Almost all pupils, who enroll in grade 1 complete grade 5. Illiteracy among the 15-24 year old age group has been almost eradicated with equal gender enrollment, retention, and literacy rates.

Indicator 1: Net Enrollment Ratio (NER) in basic education. NER is the number of children of official age (6-15 years) enrolled in basic education, as a percent of the number of children of official basic school age. Basic school NERs indicates substantial increases since 1990, from 86.7% to 97.6%. This demonstrates that Jordan made considerable progress in providing universal basic schooling and ensuring completion of full courses of basic education (Elarbi-Boudihir et al., 2011).

Indicator 2: Proportion of pupils starting grade 1 who reach last grade of basic education. This "Persistence rate" refers to the percent of students who enroll in grade 1 and successfully complete grade 5. There were remarkable improvements, from 92.2% in 1990/91 to 99% during 2007/08.

Indicator 3: Literacy rate among (15-24) year-olds. The report shows that Jordan reduced illiteracy with well-defined policies and effective literacy education, as well as enforcing compulsory education and reducing school dropouts. Despite its overall decline, overall illiteracy is more prevalent among females than males and more common in rural than urban areas (Ministry of education annual statistical Reports 1990-2009, 2010).

Jordan's education system is a key factor in building a knowledge-based society and Jordan made giant strides in literacy and primary enrollment ratio to university and vocational education, which makes

to Jordan great opportunity to compete with developed countries.

3. Access to Information and Communication technologies ICTs

ICT are backbones of knowledge economy and in recent years have been recognized as an effective tool for promoting economic growth with relative low usage costs, and ability to overcome distances. ICT also backbones for the one educational system which seeks to be knowledge based education. With ICT we can give up the traditional ways of gathering data and information to be processed (Graham, 2010; Saba et al., 2011).

Jordan is a developing country with highly educated human resources; it is improving in fields where there is a fast development in computerization, education, e-government, and the establishment of a legal environment sustaining this progress. The ICT field is an area that is seen as an opportunity in which Jordan can increase its competitive advantage over other countries in the region, consequently Jordan have taken very serious steps in order to launch its major ICT initiatives aiming at developing the ICT sector (Fairouz, 2009).

Accordingly, in response to a challenge put forward by his Majesty King Abdullah II in 1999, the efforts were directed at devising a comprehensive framework for Jordan's ICT sector, which resulted in the REACH initiative. REACH (1999-2005) is Jordan's national blueprint for nurturing a vibrant, export-oriented, and internationally competitive ICT sector. The strategy involved developing a regulatory framework, providing an enabling infrastructural environment, offering advancement programs, and human resource development and capital and finance. In 2007, the National ICT Strategy (2007-2011) was launched as a continuation of the REACH initiative and encompasses a number of revised policies and directions that are aimed at taking advantage of new markets, enhancing business maturity, investing in research & development, capitalizing on regional demand, cultivating foreign investment, and improving the ICT labor market.

The National ICT Strategy defines three high-level strategic objectives to be achieved by end of 2011; which involve increasing internet penetration from the current increasing rate of 11% to 50%, raising the number of workers in the ICT industry from 16,000 to 35,000, and increasing the ICT sector's revenue to \$3 billion. The Strategy also focuses on eliminating regulatory challenges to business and advocating the interest of ICT companies to ensure continued sector growth.

The cumulative effect of these policies has positioned Jordan as one of the region's most open economies to trade and foreign participation, and

taxation has become relatively liberal. The government has shown further support for the ICT industry by easing investment requirements, enhancing ICT education, and passing legislation to protect intellectual property rights. As a result, annual sector growth has increased on average of 25%, and the ICT Sector constitutes approximately 14% of the country's GDP. Jordan's determination to establish itself as a major ICT provider regionally and globally pushed it to create a flourishing, supportive business environment, making it an ideal destination for investors (Intaj, 2012).

In the following, I will stop at three of the indicators used to measure the accessibility of the population of Jordan to ICTs: the endowment of households with computers, the Internet access and the access to networks of fixed and mobile phones. The data presented are provided by the Department of Statistics, The Ministry of Communications and Information Technology, Telecommunication Regulatory Commission, literature review, and survey conducted to gather some data About ICT access.

3.1: The endowment of households with computer

According to a neutral (impartial) study, covered the period till late 2010, it had shown the prevalence percentage of domestic usage of computers (desktop and laptop) among Jordanians has reached 58.2%. This device is getting more attentions from Jordanians as there is an increment in the demand of its services specially surfing through the internet (Selama et al., 2010).

The above study done by "Ipsos-Stat for Research" has shown that 58.2% of Jordanian homes, at least one piece of desktop or laptop computers is being available at home. Governmental (Official) estimates show that number of homes at Jordan is about 1.2 million homes (Ipsos, 2012).

As per this study, based on national level the percentage of using the desktop was 49.5%, while the percentage of using the laptop was 18.3%. The sum of the above percentages 67.8% is not matching the overall percentage of 58.2% shown early in this study. This can be explained that most of people having desktop and laptop computers at the same time. A couple years ago, the market of both desktop and laptop computers has shown a strong demand by Jordanians. The people become aware of the fact that the computer is not just an entertainment tool, it can be used as an educational tool and source of information, and recently it becomes a way of social networking in conjunction with internet services has shown unprecedented interest since there is a stiff competition in the internet market leads to reduction in the prices and numerous service providers.

The user's base of World Wide Web has been expanded massively across Jordan. The ratio of

people using the World Wide Web has been increased by 35% and the number of users has become more than 2.5 million users across Jordan.

"Ipsos-Stat" Study has shown a distinction in computer's accessibility (availability) among Jordan's different governorates. Figure 6 shows computer accessibility among Jordan's different governorates.

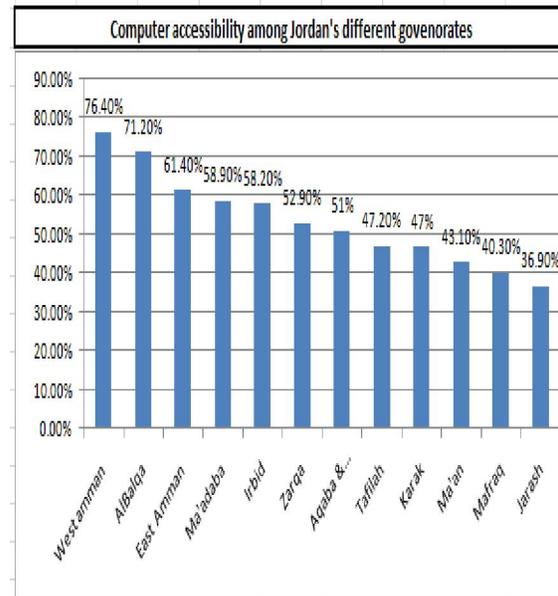


Fig 6: computer accessibility among Jordan's governorates.

3.2: Internet access.

The Number of internet users in Jordan has overridden half of population of Jordan by the end of fourth quarter of last year recording 3.13 million users. Statistics published by Telecommunication Regulatory Commission on its website has showed that 812,000.500 users joined the internet service during the last year. The number of internet users has reached 3.13 million users by the end of year 2011 compared to 2.32 million users in year 2010. The growth in number of internet users has been reflected in percentage of computer usage among Jordan which have raised from 38% in year 2010 to 50.5% in year 2011 covering half of population for the first time since the world wide web has been introduced into Jordan at the Nineteen's of last century (TRC, 2012).

The number of internet subscribers has reached 616980 (Six Hundred Sixteen Thousand and Nine Hundred Eighty) subscribers by end of last year with a prevalence percentage of 10%.

Types of main internet subscriptions have been distributed as follows:

- Dial Up
- ASDL
- Leased Line
- Wi-Max

The number of Dial-up subscribers has been reduced from 52540 (Fifty Two Thousand and Five Hundred Forty) by end of year 2010 to 8160 (Eight Thousand and One Hundred Sixty) by end of last year, and the drop in number of ASDL subscribers from 97490 (Ninety Seven Thousand and Four Hundred Ninety) by end of year 2010 to 96720 (Ninety Six Thousand and Seven Hundred Twenty) by end of last year.

In spite of the above, the increment in numbers of other types of internet subscribers has contributed in the increment of prevalence percentage of the internet services from 6% to 10% in the same period (TRC, 2012).

In order to determine the type of Internet usage and the relationship between the usage of the Internet and educational level, a survey was conducted on a sample of 1440 aged from 18-34 years old in September 2012. The results of the survey were as follow:

- ✓ The highest rate is for school and universities students; which means they use the Internet for the purposes of education in most of their time, which confirms that Jordan moves toward knowledge-based society.
- ✓ The percentage of Internet usage is related to educational level. It is also found that there is no significant difference between urban areas and main cities and the nomadic and rural areas in terms of Internet access.
- ✓ The main purpose for accessing the Internet from home or work is browsing electronic mail, social websites, searching products information and services, as well as downloading games, music and movies.
- ✓ Was a surprise that there is a direct correlation between the degree of education level and professional methods in using the Internet and computers; lower-level degrees are highly use topical phone services, BB, iPhones ...etc, another unexpected result that these secondary ICT tools are highly used in rural area more than in urban area, this makes attention that more efforts are spent on the education system in the main cities rather than rural one. These results are shown in Figure 7.

3.3: Access to networks of mobile and fixed phones

With the development of mobile phone devices, it becomes more than just means of voice calling and can be used as a computer, scheduling of appointments, receiving the voice mail and surfing the Internet. The new devices can capture photos with high resolution in the same way the digital cameras can do. Moreover, mobile phones become a means of advertising (Kechice, 2009).

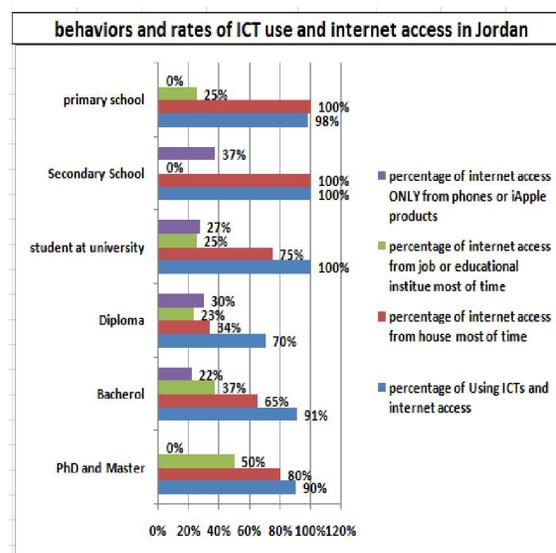


Figure 7. Behavior and rates of ICT use and internet access in Jordan

Since there is a stiff competition among the service providers of mobile phones, voice calling and data exchange become less expensive and available for most community categories. The numbers of mobile phone users is increasing on daily basis in the Arab world and the world in general, replacing the fixed calling devices.

The mobile phone becomes superior to other available means of communications at the local market - a permanent guest at 94% of Jordanian houses, while the percentage of owning fixed calling devices and computers has retreated to 31% and 39% respectively as shown in the results of the survey conducted by department of statistics in the year 2008 (DoS,2012).

In light of the above mentioned results, Ministry of Information and Communication Technology has set forward a new general policy for purpose of increasing the prevalence of internet surfing and increasing competition in the market of fixed line communications. This policy has assured developing the information technology sector and increasing its competitive, and giving more attention to the overlapping and merger between both information technology and communication sectors.

According to data published at the website of Telecommunication Regulatory Authority, the mobile communications had topped the list of services provided at the local market. As per the survey about uses of information technology at Jordanian houses for the current year done by department of statistics, it has been evident the significant increment in the availability of mobile phones for Jordanian families from 86% in year 2007 to 94% in year 2008. At the same time survey has shown noticeable retreat in the

availability of having landline from 42% in year 2007 dropped to 31% in year 2008.

In 2001 the number of mobile phone subscribers has reached 866,000 subscriber (Eight Hundred Sixty Six Thousand), and in 2006 the number of subscribers has increased hugely and reached up to 4.7 million subscribers (Four million and Seven Hundred Only), taking into consideration the population of Jordan is almost around 5.7 million (Five Million Seven Hundred Thousand Only), while the gross domestic product of Jordanian's economy exceeds 11 billion J.D "US Dollar is equivalent to 70.8% of Jordanian Dinar J.D"

On the other side, the number of mobile phone service providers has increased to four providers. On October 1994, the first operating license for mobile phone services has been granted to FAST LINK "The Jordanian Company for mobile phone services", and its ownership has been transferred to "ZAIN". In 1999, another license for mobile phone services has been granted to "The Jordanian Company of Petra for mobile phone services" and changed its name later to "ORANGE"

In April 2003, the first license for mobile radio services has been granted to "The New Generation Company" known as "EXPRESS", and in August 2004, the fourth license for mobile phone services has been given to "UMNIAH". As the number of mobile phone service providers has been increased, the competition also increased leading into noticeable reduction in the prices along with a wide variety of promotions. This makes it is easy to have the service, it is quite normal to own more one line by a subscriber and to subscribe with more than one mobile phone company for the same subscriber.

This competition can be explained by the governmental strategy set for worth by communications and information technology sector aiming to increase the competition among different sectors related to this technology like Internet and landline, and trying to lower the taxes on fixed line communications and its devices (Adel, 2008).

4. Conclusion

Within many education systems there is evidence of change. Both schools and higher levels of public educational systems, as well as private providers have made efforts to make use of technology to become more flexible in meeting student demands. ICT has implication beyond teaching and learning, ICT must be supported by an appropriate and enabling policy environment.

Analyzing these trends well help us to discover weak points and strength points of our evaluation toward Jordan knowledge based society and to redirect resources for a sustainable development. I
10/8/2012

hope that my paper will continue in the coming years to see the place which Jordan will get as a knowledge-based society and whether Jordan is able to continue faster?

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