

# Impact of **ICT on Arab youth** *Employment, Education and Social Change*



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# **IMPACT OF ICT ON ARAB YOUTH: EMPLOYMENT, EDUCATION AND SOCIAL CHANGE**



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## Abbreviations

ALMP	Active Labour Market Policies
AP	Advanced Placement
DSL	Digital Subscriber Line
EFE	Education for Employment
ESCWA	Economic and Social Commission for Western Asia
FDI	Foreign Direct Investment
GCC	Gulf cooperation Council
GDP	Gross Domestic Product
GSMA	GSM Association
ICT	Information and Communication Technologies
ILO	International Labour Office
IT	Information Technology
ITU	International Telecommunication Union
JEI	Jordan Education Initiative
KILM	Key Indicators on Labour Market
MENA	Middle East and North Africa
MFI	Micro Finance Institution
MSME	Micro, Small and Medium Enterprises
NGO	Non Government Organization
NRI	Networked Readiness Index
NWP	National Writing Project
OECD	Organization for Economic Co-operation and Development
OER	Open Education Resources
OLPC	One Laptop per Children
SMS	Short Message Service
TVET	Technical and Vocational Education and Training
UIS	UNESCO Institute of Statistics
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNESCO	United Nations Education Social and Cultural Organization
WBG	The World Bank Group
WEF	The World Economic Forum

## **EXECUTIVE SUMMARY**

The Arab world has been characterized by rapid changes in the last few years. From economics to social life, ICTs have featured prominently in these developments. This study examines the underlying changes which have contributed to these shifts, identifies the key pivot points, and provides recommendations for maximizing the positive effects of ICT on the lives of Arab Youth. Among the key findings of this study, the impact of ICT on the global competitive landscape and the attendant impact on the labour market for youth show that ICTs have reduced the number of middle-class jobs, while creating more jobs at both the high-skill and low-skill edges of the spectrum. Software engineering and hardware maintenance are examples of this effect. In addition, this study finds that ICTs have catalyzed beneficial social changes, particularly for marginalized groups, such as persons living with HIV/AIDS and the hearing impaired. The recommendations of this study also include focus on the potential for positive impact of ICT on the educational system in the Arab Region, particularly in the areas of cognitive skills and enhancing the partnership between students, educators and employers.

## INTRODUCTION

ICT have impacted many aspects of life in the Arab region, particularly among the youth. In this study, key areas are identified and explored to highlight the economic, educational and social impacts of these technologies. Notably, in the economic arena, many of the impacts of ICT in the region are reflections of global trends. For example, increases in manufacturing efficiencies in other areas of the world, which have been enabled by greater ICT use than in the Arab region, have resulted in structural economic shifts which have negatively affected the employment prospects for Arab youth. In this sense, not only must the direct impact of ICTs on the region be considered, but the indirect result of global changes as well.

These effects are also seen in other more qualitative questions, such as education. The transformative nature of ICTs has made innovation a more highly valued trait than memorization. Cognitive skills have become more important than acquisition of facts. Economies which have adapted to these factors are better positioned for success than their counterparts. In the Arab region, the educational system is facing adaptive challenges to foster the types of skills and knowledge which are necessary for competition on the global scale. In today's world, youth from the region are not competing with each other – they are competing with Southeast Asia, Europe and global market. The educational system must rise to the challenge of providing students with the building blocks they need to be successful in this environment.

Social change has been profoundly impacted, as Arab youth have embraced ICTs, social media, and interconnectedness. As part of this process, old norms have been challenged, and new opportunities have arisen. Gender roles have been challenged, and new opportunities for equity and equality have emerged. In addition, marginalized groups, such as persons living with HIV/AIDS and the hearing impaired have been able to utilize ICTs to better realize their human rights. While there have been positive, transformative steps, more remains to be done, with a large untapped potential for improvement.

These factors, taken together, represent the forefront of the socio-economic change facing Arab youth in the region today. Civil society, the private sector and government stakeholders should seize the opportunity to utilizing ICTs to address the long standing issues of youth unemployment, educational opportunities and realization of human rights. Making these possibilities a real part of the future for Arab youth is an important mandate which will yield benefits for all segments of society in the future.

This report analyzes the impact of ICT on Arab Youth by considering the economic, educational and social change dimensions. Chapter I discusses the current status of employment and education among youth in the region. In chapter II initiatives and policies implemented to address youth unemployment in the region are examined. Chapter III focus specifically on the role that ICT could play in curbing regional youth unemployment. Issues that impact the social development of the youth are discussed in chapter IV, with special focus on the impact of ICT in women's empowerment, domestic violence, HIV/AIDS, and for the hearing impaired. Chapter V provides concluding recommendations. Additional illustrative examples of the issues analyzed in this report can be found in the annexes provided.

## I. STATUS OF ARAB YOUTH EMPLOYMENT AND EDUCATION

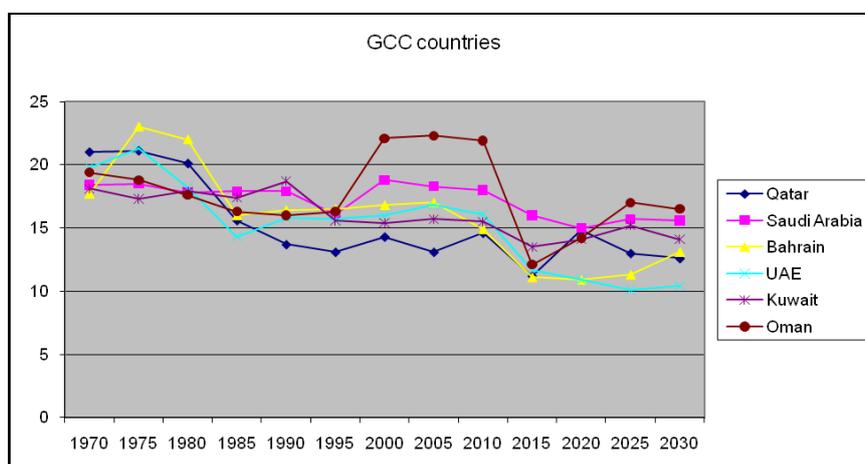
In order to understand the impact of ICT on important issues such as youth unemployment, it is first necessary to understand the dynamics of the labour market in the Arab region. According to the International Labour Office (ILO), the World is facing a "youth employment crisis of unprecedented proportions"; this situation prompted its governing body to put this issue on the agenda of the 101st Session of the International Labour Conference held in 2012. The report (ILO, 2012) prepared for the discussion of this issue at the conference outlines key trends and characteristics of the youth employment crisis and discusses key issues and lessons learnt from policies aimed at addressing decent work for youth.

As for the action needed to improve youth employment, the report mentions the framework set by the ILO's 2005 resolution on this issue<sup>1</sup> calling for "an integrated and coherent approach that combines macroeconomic and microeconomic interventions and addresses labour demand and supply and the quantity and quality of employment"<sup>2</sup>. Due to the "depth and breadth of the current youth employment crisis" it urges that it is now "time to translate the consensus of the conference's 2005 conclusions"<sup>3</sup>.

### A. THE DEMOGRAPHICS – THE YOUTH BULGE

Significant demographic changes have occurred in parallel with increased availability of ICTs. In 2010, the world accounted for 1.2 billion youth aged 15-24; 90 per cent of them living in developing countries. According to ILO (2009), there were a little more than 70 million youth in the Arab region in 2008 growing from nearly 57 million a decade before (1998). This represented a 23.6 per cent growth over a decade.<sup>4</sup> An impressive figure second only to Sub-Saharan Africa indicating that the region was – during this period – still at the peak of its youth bulge as illustrated by figure 1. By comparison, over the same period, the youth population of Sub-Saharan Africa grew by 31.4 per cent, South Asia's grew by 19.2 per cent, and developed countries' decreased by -0.8 per cent.

**Figure 1. Percentage of Population aged 15-24 in ESCWA Countries by Sub-Regional Groupings: GCC, North Africa, Levant and Yemen**

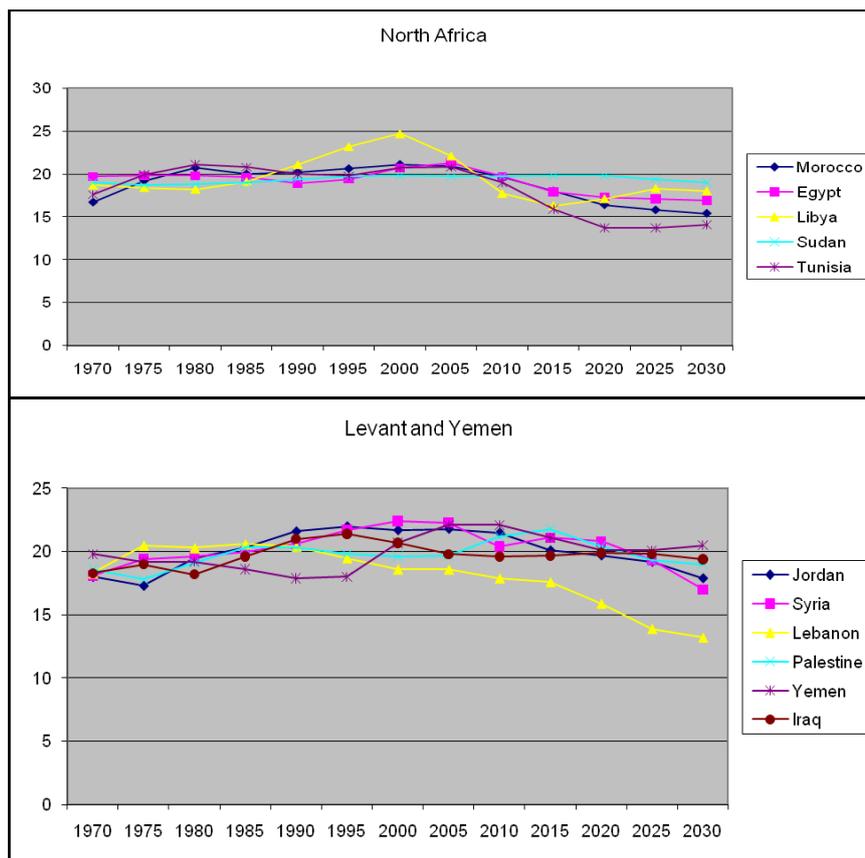


<sup>1</sup> <http://www.ilo.org/public/english/standards/relm/ilc/ilc93/pdf/resolutions.pdf>

<sup>2</sup> ILO, 2012, p. 8.

<sup>3</sup> ILO, 2012, p. 10.

<sup>4</sup> ILO, 2009, p. 23.



Source: United Nations World Population Prospects, the 2010 revision, Available: <http://esa.un.org/wpp/index.htm>.

Note: data refer to Medium variant.

As shown in figure 1, the region is not homogeneous. GCC countries are expected to be in the margins of 10-15 per cent of youth population by 2030 with UAE having the lowest percentage at 10.4 per cent and Oman and Saudi Arabia still above at 16.5 per cent and 15.6 per cent. North African ESCWA countries are expected to be higher in the margins of 15-20 per cent with Tunisia at only 14.1 per cent and Sudan still at 19 per cent. Finally, it is the Levant and Yemen countries (with the notable exception of Lebanon) that will have the highest percentages in 2030 with Yemen, Iraq and Palestine all near 20 per cent and Syria and Jordan closer at 17 per cent and 18 per cent.

Even if the peak in the population (and consequently youth population) growth, in the Arab region has passed, offering a decent work to the 70 million existing youth, as well as those who will continue to enter into the labour market, will be tremendous challenge facing the region during the next decade and, likely, beyond.

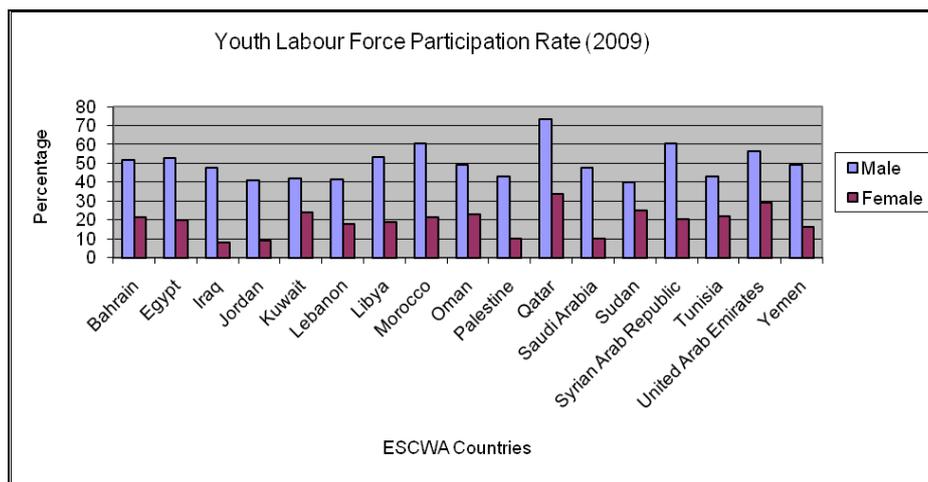
## B. LABOUR FORCE PARTICIPATION, UNEMPLOYMENT, AND DECENT WORK

In order to understand the proportion of the workforce focused on ICTs, the over-all context must be understood. The Arab region has the lowest labour force participation rate<sup>5</sup> in the world: in 2008 it stood at

<sup>5</sup> The labour force participation rate is a measure of the percentage of the active (employed and unemployed) population from the total working age (15-64) population; the rest is considered as inactive. This rate provides a first approximation of the human potential that is actually used. ILO recommends caution as there is no absolutely correct labour force participation rate; people who are enrolled in education and those who are voluntarily not engaged in labour markets are considered as inactive. Moreover, many developing countries, particularly among the poorest, are characterized by high participation rates as their people simply cannot

only 50.9 per cent. The most similar developing region is South Asia at 59.4 per cent whereas Sub-Saharan Africa and East Asia stay at respectively 70.8 per cent and 73.2 per cent. This is largely the result of low female workforce participation which, at only 26.4 per cent, is by far the lowest in the world although the male percentage at 74.5 per cent is equally among the lowest (though not by the same margins) of developing regions. However, the participation rate, in 2008, for Arab women was an increase from 23.1 per cent in 1998, whereas the male participation fell from 76 per cent.<sup>6</sup> While the participation rate of Arab youth is still among the lowest in the world at 46.9 per cent for young men and only 21.6 per cent for young women in 2008<sup>7</sup>, there are some notable differences among countries as shown on figure 2.

**Figure 2. Labour Force Participation Rate of Youth (aged 15-24) by Gender in ESCWA Countries (2009)**



Source: ILO, Key Indicators of the Labour Market. Available at: <http://kilm.ilo.org/KILMnet/>

Finally, comparing the youth participation rate among regions, (ILO, 2012) highlights that Arab youth (represented by Middle-East and North Africa regions) have the lowest rates for both males and females as well as the highest relative gender gap. Also worth noting that, over a decade (1990-2011), female participation marginally increased in the Middle-East and decreased in North Africa.<sup>8</sup>

### 1. Youth Unemployment

Prior to discussing youth unemployment, particularly in the Arab region, one has to recall that at 9.7 per cent in 2008 the Arab region has the highest global unemployment rate among the world's regions.<sup>9</sup> The women unemployment rate, at 13.8 per cent, is a heavy contributor to this high rate<sup>10</sup>. As stated by ESCWA (2011b), "youth unemployment in the region cannot be separated from general unemployment"<sup>11</sup>; the same source provides a useful comparison between the global and youth unemployment levels in a majority of ESCWA countries (see figure 3).

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afford to stay inactive (whatever dividends their activity might bring). It is therefore customary to take the developed country's rate as a reference which, in 2008, was at 57.7 per cent.

<sup>6</sup> ILO, 2009, pp. 17-18.

<sup>7</sup> ILO, 2009, p. 17.

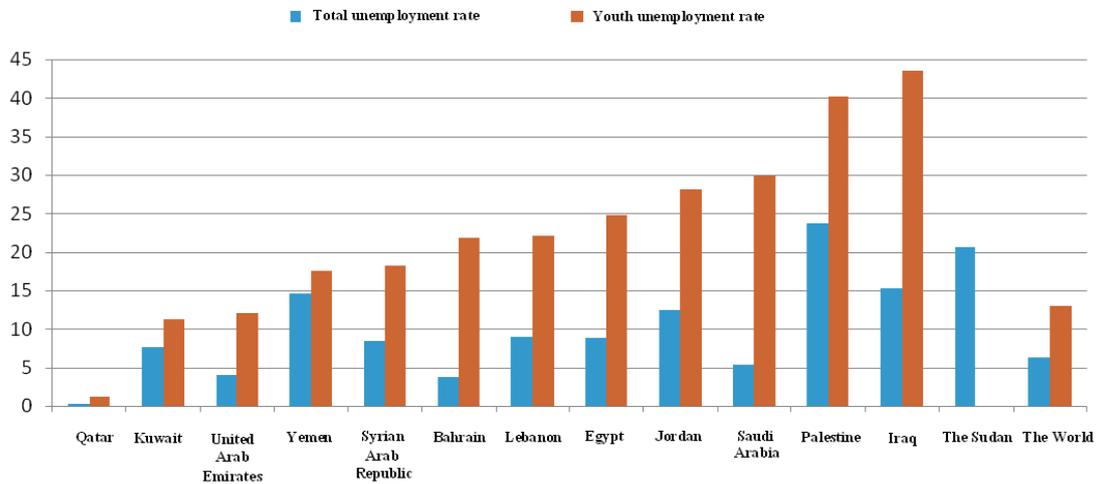
<sup>8</sup> ILO, 2012, p. 22.

<sup>9</sup> ILO, 2009, p. 21.

<sup>10</sup> ILO, 2009, p. 26.

<sup>11</sup> ESCWA, 2011b, p. 37.

**Figure 3. Youth Unemployment and Total Unemployment Rates in ESCWA Member Countries and the World (2010)**

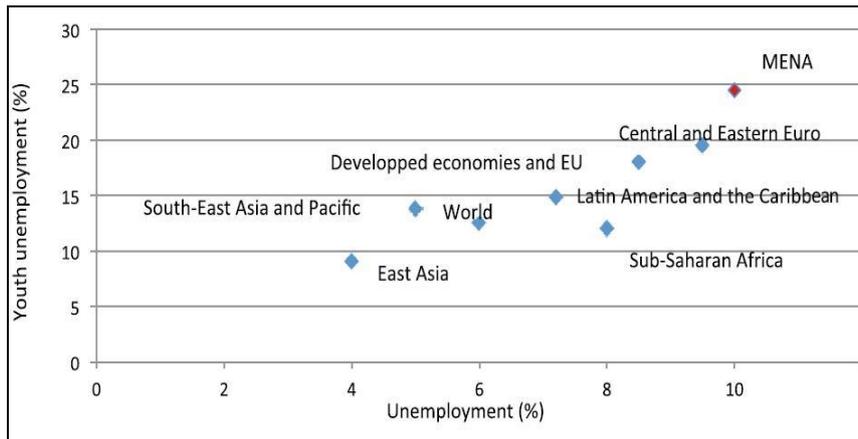


Source: ESCWA, 2011b, p. 38

Note: Bahrain (2001), Kuwait (2005), and Yemen (2003).

The correlation between youth and global unemployment rate is not a specificity of the Arab region. Youth unemployment is always higher than the global unemployment rate as already shown in figure 3. What is specific to the MENA<sup>12</sup> region though, as shown in figure 4, is the particularly high level of this correlation. At 2.5 the MENA youth/global unemployment ratio is the highest in the world resulting in the highest youth unemployment rates in the world. Unfortunately this is not a mere short-term event; the report compares the evolution of youth unemployment rates in the different regions since 1991 (see figure 5). The Middle-East and North Africa regions have always had the highest youth unemployment levels.

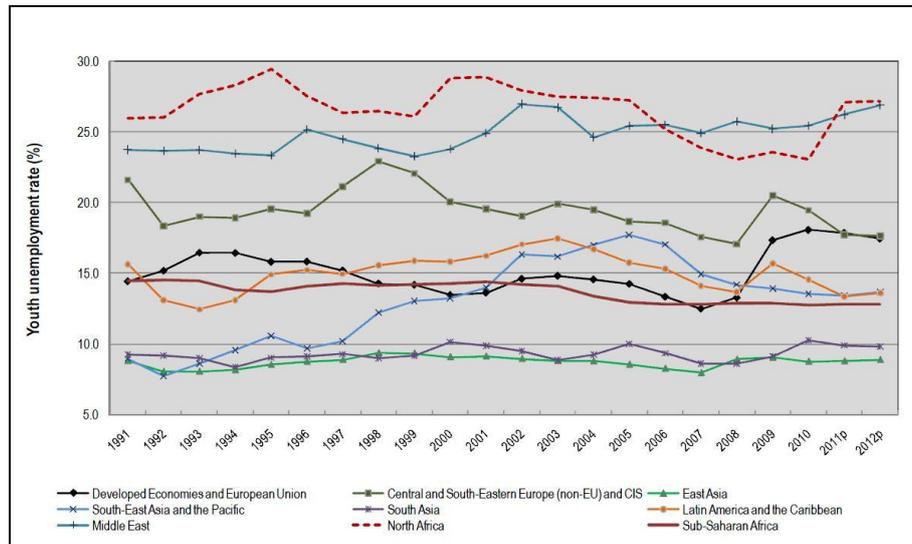
**Figure 4. Total and Youth Unemployment by Region**



Source: WEF, 2012a, p. 10.

<sup>12</sup>In the Bretton Woods institutions (World Bank and IMF), MENA refers to the region comprising of the following countries: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malta, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia, United Arab Emirates, West Bank and Gaza (Palestine), and Yemen. Despite the inclusion of Iran and Israel it is sometimes an acceptable approximation for Arab countries.

**Figure 5. Youth Unemployment Rate by Region, 1991-2012**



Source: ILO, 2012, p. 12.

Finally, the gender gap with regard to youth unemployment is again the highest with young female unemployment reaching levels up to 40 per cent in both the Middle-East and North Africa in 2011 (ILO, 2012) nearly double the young male rate and an absolute record among all regions (closest region for young females unemployment being at 18 per cent).<sup>13</sup>

ILO (2012) highlights labour market polarization as an important evolution which will dramatically impact youth employment; it is characterized by the development of low-skill (and low-pay) jobs as well as, at the other extreme, of high-skill, high-pay jobs at the expense of middle-skill jobs.<sup>14</sup>

The bottom line of the polarization theory is that, with respect to skill levels, both wage evolution and share in employment evolved as a U-shaped curve – over an observation period of 25 years between 1980 and 2005 in the United States- with both extremes (low-skills and high-skills) growing and middle-skills remaining stagnant if not decreasing.<sup>15</sup>

One explanation of polarization lies in it being the result of the introduction of information technologies which has caused a fall in the demand for middle-level jobs especially in manufacturing and clerical work. As pointed out by Autor, et al.(2012), technological progress “greatly reduces the cost of accomplishing routine, codifiable job tasks but has a comparatively minor impact on the cost of performing in-person service tasks.”<sup>16</sup>

The polarization theory has recently been a subject of heated debate where, some, challenged the assumption of technology-driven polarization<sup>17</sup> despite the fact that it was confirmed by other sources. Michaels et al.(2010), for instance, studying 11 OECD countries supports “the ICT-based polarization hypothesis as industries that experienced the fastest growth in ICT also experienced the fastest growth in the

<sup>13</sup> ILO, 2012, p. 22.

<sup>14</sup> ILO, 2012, p. 25.

<sup>15</sup> Autor et al., 2012, p. 5.

<sup>16</sup> Autor et al., 2012, p. 4.

<sup>17</sup> See <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/01/12/inequality-is-rising-should-we-blame-robots-or-the-government-or-both/>

demand for the most educated workers and the fastest falls in demand for workers with intermediate levels of education.”<sup>18</sup>

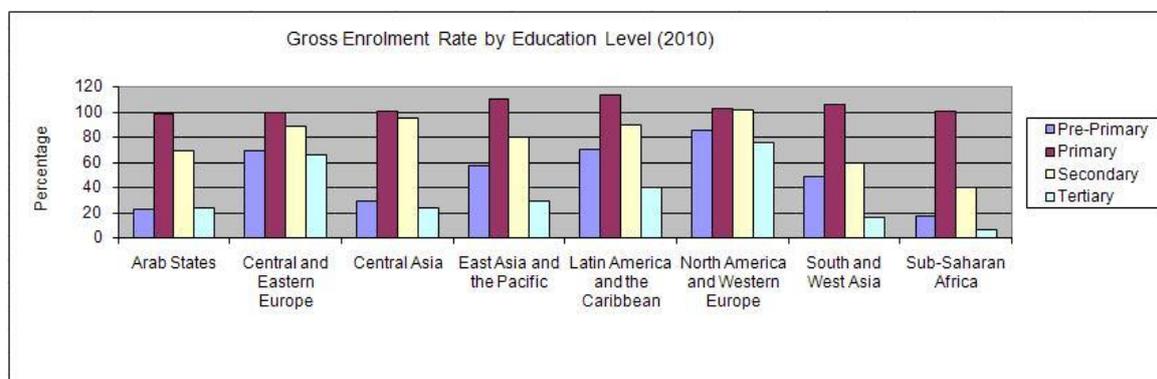
However, the above assumption of skill-biased technical change where, skilled workers displace less skilled workers, could be nuanced by the view that “up-skilling may be due to organisational changes that precede the introduction of new technologies. Such organisational changes may require greater decentralisation of responsibility, and greater ability to handle information, communicate and interact with other people. This is not so much skill-biased technical change as it is skill-biased organisational change”<sup>19</sup>. There is evidence in the region and in many developing countries that polarization is essentially materialized by high demand for low-skills which is essentially filled in many countries –not only GCC - by migrant labour. An increased in the demand for high-skills had not yet significantly materialized.

### C. MATCHING SKILLS AND EDUCATION WITH LABOUR MARKET’S NEEDS

Education expenditure – as a share of GDP - is high in the region compared with other developing regions. Part of this could certainly be explained by demographic factors and the need to offer education to a growing number of youth. However, demographics alone cannot explain the rise in expenditures. The number of students enrolled in all education levels evolved in ESCWA countries from 12-13million in 1980 to 56 million in 2009 (ESCWA, 2011b).Of the 56 million students enrolled in 2009, 34 million of them (or 63 per cent) were in the pre-primary and primary education levels with disparities among countries: Sudan (76 per cent), Yemen, Iraq and Qatar (70 per cent) in the upper group; remaining GCC countries and Lebanon at 60 per cent in a middle group; and Palestine (40 per cent), Syria, Egypt, and Kuwait (50 per cent) and Jordan (55 per cent) in the lowest group. The new ESCWA countries Tunisia and Morocco stand respectively at 40 per cent and 62 per cent.<sup>20</sup>

In 2010, the gross enrolment rate by education level stood for Arab States<sup>21</sup> at 22 per cent for pre-primary, 98 per cent for primary, 69 per cent for secondary and 24 per cent for tertiary levels as illustrated by figure 6 which compares the region’s enrolment rates with other regions in the world.

**Figure 6. Gross Enrolment Rate by Education Level (2010)**



Source: UIS Database.

Note: Percentages may be higher than 100 per cent for Gross Enrolment Rates if children or youth older or younger than the level’s defined age are enrolled.

Moving from 15 per cent to 22 per cent, the Arab region did not substantially improve its already low pre-primary enrolment rate which, with Sub-Saharan Africa (17 per cent) and Central Asia (30 per cent), is among the lowest in the world (all other regions being at nearly 50 per cent and above). The improvement of

<sup>18</sup> Michaels et al., 2010, p. 21.

<sup>19</sup> RAND, 2011, p. 41.

<sup>20</sup> UNESCO Institute of Statistics (UIS) database; <http://stats.uis.unesco.org/>; data for 2010.

<sup>21</sup> UIS database, Op. Cit. UIS considers only 20 of the 22 member countries of the LAS in its Arab States region not including Somalia and Comoros (included in Sub-Saharan Africa region).

10 points from 88 per cent to 98 per cent of the primary level is notable but the region is still an absolute laggard compared with all other regions which are now at above 100 per cent.

For secondary level the improvement of 12 percentage points from 57 per cent to 69 per cent is notable but, again, some developing regions which already had higher percentages in 1998 have done even better (in particular, East Asia and Pacific) resulting in the region being last third after Sub-Saharan Africa and South and West Asia. Finally, the tertiary level evolution from 18 to 24 per cent is still below some developing regions which were slightly above (20 per cent for Latin America and Caribbean) or below (13 per cent for East Asia and Pacific) the region in 1998 and now overstepped the region at respectively 41 per cent and 29 per cent resulting in the region being again last third after South and West Asia and Sub-Saharan Africa.

It is interesting to observe the evolution of gender parity index by education level in the Arab region which improves with increasing educational levels: In 2010 it stood at respectively 0.93, 0.94 and 1.02 for the primary, secondary and tertiary levels. This is a notable improvement which can be observed by comparing with 1998 when this index stood at 0.86 for both primary and secondary levels and only 0.75 for tertiary level.<sup>22</sup>

Despite notable progress in absolute quantitative terms as well as in enrolment rates and gender equality, the region is still facing many challenges in order to absorb and offer decent education to the increasing number of its youth population.

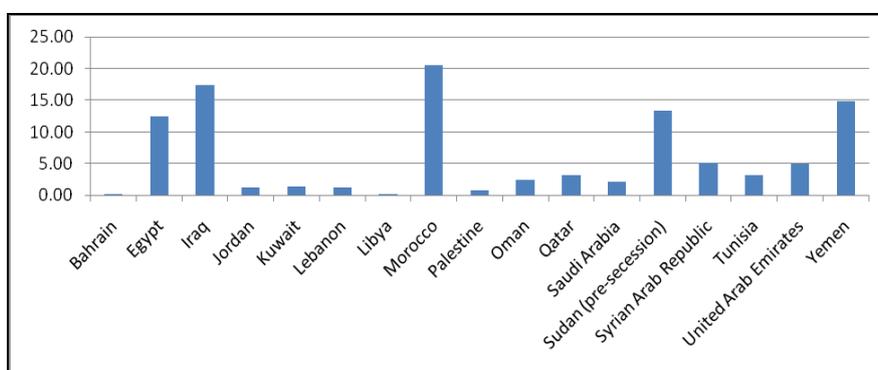
### 1. Illiteracy and Lack of Cognitive Skills

This section will analyse youth illiteracy and lack of cognitive skills, two factors – by no means exclusive – which illustrate qualitative shortcomings of the Arab education system and hamper Arab youth employment prospects.

Because basic literacy is needed as a foundation for participating in the knowledge economy, it is important to note that youth illiteracy in the Arab region is one of the highest in the world. At nearly 11 per cent with 6.5 million illiterate youth, nearly two third (64 per cent) of them are women. This clearly points to an issue as regards the efficiency of the Arab education systems notwithstanding the efforts spent.

A closer analysis of youth illiteracy levels of individual ESCWA countries (see Figure 7) reveals major disparities. It is noteworthy that 11 out of the 17 countries are at or below 5 per cent illiteracy levels (some nearing full literacy); yet, only five countries (Egypt, Morocco, The Sudan, Iraq, and Yemen) with elevated illiteracy rates account for the majority (6.3 million) of the number of youth illiterates in the region. This presents a challenge to utilizing the modern tools of the information society to promote employment of youth.

**Figure 7. Youth (15-24) Illiteracy Rates in ESCWA Countries (2010)**



Source: UIS database; Morocco (2009), Kuwait, Oman and Tunisia (2008), Lebanon (2007) and UAE (2005).

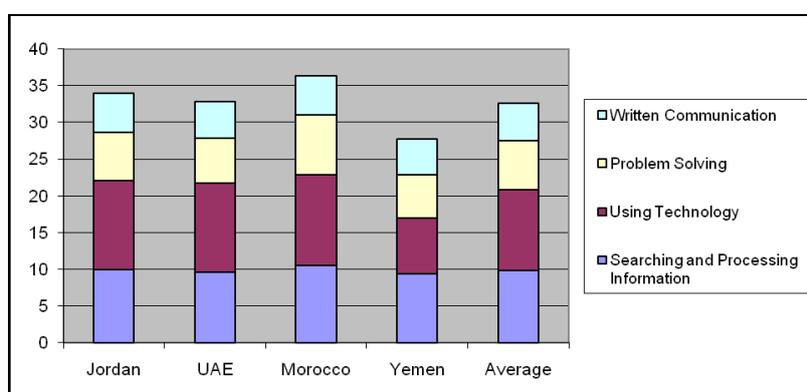
<sup>22</sup> All data of this paragraph are taken from UIS Database.

One may of course evoke the political and war situation in Iraq, The Sudan and Yemen but illiteracy is also “the outcome of differences in development between regions within a country, and the absence or insufficiency of basic educational institutions in rural and Bedouin areas, leading to paucity of educational opportunities, especially for girls”.<sup>23</sup>

In its last edition, the Arab Knowledge Report (UNDP/MBRF, 2011) treated the important issue of preparing future (Arab) generations for the knowledge society. For the purpose of this edition, a survey of nearly 6,500 students reaching the end of their secondary education (12th grade) in four countries (UAE, Jordan, Morocco, and Yemen) was conducted. One of the issues treated by this survey related to the measurement of cognitive skills; the survey shed light on important shortcoming of Arab students in all of the four surveyed countries.<sup>24</sup> These cognitive skills are highly relevant to competing successfully in the global knowledge economy (see Annex 3.1).

Figure 8 illustrates the global and detailed (for each cognitive skill) average scores obtained by students in each of the four countries as well as the global average.<sup>25</sup> For the average global score of 32.67 per cent in cognitive skills, 27.8 per cent and 64.1 per cent of surveyed students were respectively in the first and second low quartiles. This means that nearly 92 per cent were below the success threshold of 50 per cent whereas the remaining 8 per cent were in the third quartile and none (in all four countries) in the upper last. It is worth noting that female students had higher scores in three cognitive skills (in particular written communication) whereas male students fared better in using technological skills. There were particularly low scores in the written communication (5.12 per cent) and problem solving skills (6.66 per cent) in the global average whereas searching and processing information (9.88 per cent) and using technology (11 per cent) fared relatively better, but still at below the success threshold of 12.5 per cent.

**Figure 8. Cognitive Skills Scores in Four Arab Countries**



Source: UNDP/MBRF, 2011, p. 95

The Cognitive Skills survey methodology consisted in testing the students’ application of knowledge and skills in real life situations. Table A.1 in the annex defines the components of each of the four tested cognitive skills as well as its test item description. The survey, commenting on the low score in cognitive skills, pointed out that this “is a troubling result because the students’ non-acquisition at the end of secondary school of a minimum of cognitive skills necessary to continue learning is a shortcoming that threatens the ‘security of knowledge’ for these countries and prevents their youth from engaging and participating in the

<sup>23</sup>ESCWA, 2011b, p. 25.

<sup>24</sup>UNDP/MBRF, 2011,

<sup>25</sup>The study provides detailed data as regards standard deviations around each average value for each skill in each country as well as student’s score distribution among four quartile ranges, namely (0-25 per cent), (25-50 per cent), (50-75 per cent) and (75-100 per cent). The survey of both student and teacher was conducted in capital and major cities in the four countries, namely Sana’a, Rabat, Amman, Abu Dhabi and Dubai.

knowledge society” (UNDP/MBRF, 2011).<sup>26</sup> This result also points to the shortcomings of the learning methods applied in the Arab education systems as discussed below in the broader context of Skills acquisition by youth in the Arab region. This creates obstacles for young people in the Arab region to move beyond being consumers of information technology and becoming innovators and job creators.

## 2. Skills acquisition

This section discusses three issues which determine the Arab youth capabilities in getting skills matching the labour market’s needs. These are related to the learning methods and soft skills, specialities chosen at tertiary level and insufficient level of Technical and Vocational Education and Training (TVET).

The Arab Knowledge Report (UNDP/MBRF, 2011) also surveyed about 500 teachers. One of the questions assessed the ability of teachers to enable students to acquire various necessary skills.

It is striking to observe that the percentage of “strong” responses accounted for only 20.8 per cent of respondents for “apply critical thinking” skill, 26 per cent for “work independently”, 29.6 per cent for “conduct research” and 31.4 per cent for “using the learned knowledge in different situation”. On the opposite, the highest percentage of “strong” responses was 45.8 per cent for the ability to enable students to “memorize the rules and laws of scientific material”.

The Arab Knowledge Report criticizes “educational approaches based on encyclopaedic compartmentalisation, automatic memorisation, and superficial comprehension of content ... as they lead to the temporary achievement of collecting information which expires when the test is over”. Many other sources raise similar criticism of the Arab education system whose delivery method relies on rote memorization and is lecture-based.<sup>27</sup> Because of these dysfunctions, students in the Arab region are not being adequately prepared with the skills necessary to succeed in the knowledge economy.

As pointed out by a World Bank report on education in the MENA region: “*A recent comparison of exam questions on the French baccalaureate examination in mathematics and biology with similar exam questions in several MENA countries revealed that the MENA tests were devoted to recognition and repetition of definitions and theorems<sup>28</sup> and the performance of other routine procedures, whereas the baccalaureate exams assessed the ability to solve, predict, verify, generalize, and apply mathematical principals to real world problems* These are the very skills which are so necessary to success in ICT-related jobs.

Soft skills – as opposed to hard skills pertaining to the mastery of theory and application of a given discipline or scientific domain – refer to, among others, the ability to communicate clearly, have personal creativity, have problem-solving and interpersonal skills necessary to interact successfully in the workplace.

Soft skills are highly valued by employers and anecdotal evidence points to lack of soft skills among the majority of Arab youth particularly those with tertiary education. A quote from a Saudi managing director is worth mention: “*Students are graduating with severe deficits in soft skills such as leadership, critical thinking, initiative taking, independence, oral communication, and work ethics*” (IFC/IsDB, 2011).<sup>29</sup>

A survey conducted among Arab youth in five Arab countries,<sup>30</sup> by IFC/IsDB (2011), inquired about their perception of skills they believe most important to secure a job. English/French language (73 per cent) and Arabic language (71 per cent) came on top followed by computer literacy (64 per cent), time

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<sup>26</sup>UNDP/MBRF, 2011, p. 90.

<sup>27</sup>UNDP/MBRF, 2011, p. 129.

<sup>28</sup>Underlining from the original text.

<sup>29</sup>IFC/IsDB, 2011, p. 37.

<sup>30</sup>Egypt, Jordan, Morocco, Saudi Arabia, and Yemen (total of 1500 youth).

management (62 per cent), then discipline specific training (53 per cent) and theory (52 per cent). Soft skills, for instance leadership (45 per cent), motivation, people management, and written communication (43 per cent each), received the lowest ratings.<sup>31</sup> Because IT skills are so important, these educational deficiencies have high impact on the employability of graduates.

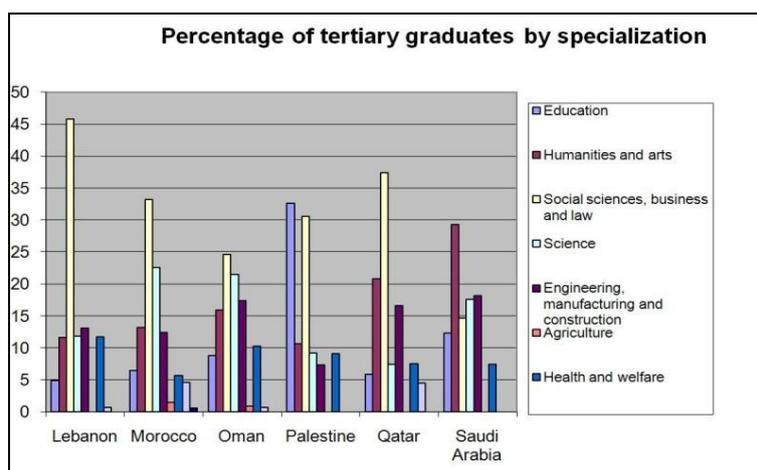
The survey illustrates how Arab youth have “little guidance on what skills employers are looking for, and where the employment opportunities will be once they graduate.” This often leads to choosing inappropriate specialities at tertiary level which eventually leads to limited employment prospects.<sup>32</sup> At the regional level, this trend results in a shortage of well-qualified graduates with the skills necessary to succeed in ICT-related fields.

Moreover, “Admission to disciplines based on grades reaffirms the social perception of ‘good and respected’ disciplines versus ‘bad and shameful’ disciplines. The survey shows that professions top-ranked by youth and qualified as “exciting and fulfilling” are engineer (46 per cent), doctor (43 per cent), accountant, financial analyst (41 per cent), and school teacher (33 per cent); on the opposite, professions having lower prestige and only requiring a TVET like Health Care technician (14 per cent), Social worker (14 per cent), Child Care worker (13 per cent) or Electrician (10 per cent) are relegated at the bottom of the list of preferred professions.<sup>33</sup>

Against this background, IFC/IsDB (2011) compares the distribution of university graduates between the Arab region, and Asian and Latin American regions using selected countries representative of each region. The Arab region was represented by Algeria, Egypt, Iraq, Morocco, Oman, Saudi Arabia, and Palestine. The comparison shows that the region has by far the highest rates in Education and Humanities (37 per cent) compared to 20 per cent and 17 per cent for Asian and Latin American countries and the lowest rate in Scientific, Technical, and Engineering (18 per cent) compared to 31 per cent and 24 per cent for Asian and Latin American countries.<sup>34</sup> This circumstance results in a labour pool with educational qualifications which are not necessarily suited to the needs of the market, ICT skills are a particular example of this effect.

Figure 9, showing percentages of graduates in different specialities at tertiary education levels in some ESCWA countries, confirms this statement, particularly for Saudi Arabia and Palestine. It also confirms the lower rate in science and engineering for Palestine and to a lesser extent Lebanon and Qatar.

**Figure 9. Percentage of Tertiary Graduates by Specialization in Selected ESCWA Countries (2010)**



Source: UIS database.

<sup>31</sup> IFC/IsDB, 2011, p. 33.

<sup>32</sup> IFC/IsDB, 2011, p. 32.

<sup>33</sup> IFS/IsDB, 2011, p. 35.

<sup>34</sup> IFS/IsDB, 2011, p. 39.

Choosing university disciplines that do not meeting the new requirements of local and regional labour markets is certainly an issue, but this is compounded by the fact that “national higher- education institutions persist in using traditional educational methods that create a disparity between the outcomes of the higher education system and labour market requirements” (ESCWA, 2011b)<sup>35</sup>. In addition, this diverts youth from competencies badly sought for by the labour market which, ironically, are scarce, as discussed below for TVET.

The lack of applicable ICT-related skills can also be seen in the TVET market. According to IFC/ISDB<sup>36</sup>, post-secondary education in the Arab region is still largely dominated by public sector institutions (80-85 per cent of enrolment); although the private sector is on the rise its role is still nascent. Universities account for 80 per cent of post-secondary enrolment with only the remaining 20 per cent for TVET. This results in “shortage of professionals in the trades” where it becomes harder to find a well-qualified technician than an engineer. Tertiary level admission systems “naturally” channels less performing students to TVET which, in addition, suffers from negative perception as essentially leading to socially under-valued professions. Most students surveyed claimed that “they would not consider TVET as a viable alternative to university education”.<sup>37</sup> Such attitudes have deep-rooted cultural grounds; as suggested by previous ESCWA analysis “shunning manual work is prevalent; young people believe that these manual occupations are inferior and will not qualify them for marriage and social integration”.<sup>38</sup>

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<sup>35</sup> ESCWA, 2011b, p. 27.

<sup>36</sup> IFC/ISDB, 2011/

<sup>37</sup> Ibid.

<sup>38</sup> ESCWA, 2011b

## **II. POLICIES AND INITIATIVES ADDRESSING ARAB YOUTH UNEMPLOYMENT**

The situation of Arab youth employment is already critical and needs to be addressed urgently. However, there is no quick and easy fix to the problem as the underlying determinants are structural and, by no means, accidental or temporary. There is immense potential for the region in transforming its youth bulge from problem to opportunity following in the footsteps of other developing regions which successfully leveraged their demographic dividend for accrued growth, prosperity, and human development.

This chapter outlines some policy initiatives addressing determinants of Arab youth's unemployment. These policies can be divided into two main categories: those related to the supply side determinants and suggest ways and means that improve the employability of Arab youth by providing them with skills matching the labour market's needs, and those related to the demand side determinants which address the scarcity employment opportunities available for Arab youth – particularly by the private sector - and suggest approaches aimed at developing entrepreneurship and supporting enterprises.

In this regard, the case of Jordan can be considered illustrative. For example, in 2008, the National Information Technology Centre in Jordan developed a study entitled "The status of labour in the ICT sector in Jordan". The study's main objective was to analyze the inputs and outputs of the Jordanian workforce in the ICT sector as well as the competitiveness of ICT graduates and the capability of the national economy to attract investments in this domain. The following points summarize some of the study's important results:

- The percentage of males employed in the ICT sector is 76 percent, 24 for females;
- The majority of the workforce in the ICT domain are specialized in computer science at 51 percent, computer programming comes second at 23 percent, computer information systems at 14 percent, and information technology at 9 percent;
- The majority of employees in the ICT domain work in computer applications at a percentage of 40 percent, followed by computer engineering at 20 percent and communications engineering at 16 percent;
- The total unemployment rate amongst those majoring in management information systems is 44 percent, followed by accounting information systems at an unemployment rate of 28 percent, computer information systems at 25 percent, and information technology at 24 percent;
- The unemployment rate among females in computer engineering is about 62 percent;
- The highest male unemployment rate of 50 percent was recorded in medical devices specializations.

The study ended with a set of recommendations targeting the government and academic institutions/universities. As an example, the study recommends building the capacities of educational staff, improving the equipment at universities and colleges in terms of laboratories, and providing specialized hands-on training to fresh graduates. Additionally, the study recommended focus on the need to improve employment processes adopted by public institutions, with greater emphasis on ICT graduates, and the need to better market and promote ICT graduates at the national and international levels. The study also noted the need for growth in the ICT sector at the national level in order to accommodate the employment needs, particularly that the unemployment rate in ICT specializations is around 6 per cent higher than the general unemployment rate in Jordan.

### **A. ADDRESSING THE SUPPLY SIDE**

Skills mismatch is a major issue hindering Arab youth employment. There is ample anecdotal evidence, for instance, of Arab private sector executives criticising the fact that they cannot fill positions due to absence of competent labour leading them in some cases to resort to migrant labour. Therefore, it is

necessary to act on the supply side by improving Arab youth employability with better education and skills training systems.

An in-depth reform of the Arab education system, as highlighted by the UNDP/MBRF survey (2011) and other sources, which fails to provide Arab youth with appropriate cognitive skills, needs to be addressed (see Annex 3.1). However, despite its fundamental importance, it is a long-term endeavour which will not bring tangible benefits in the short or medium term.

Addressing short term needs is therefore essential and the most sensible way is to focus on education for employment in order to immediately act on Arab youth's employability by providing them with the appropriate skills needed by the labour market.

### *1. Education for Employment: Addressing the Skills Mismatch*

The three main components of education for employment, namely TVET, university education, and work readiness programmes (see Annex 3.2), should be addressed through improved interaction and coordination with industry and active labour market policies in an effort to improve their effectiveness.

Civil society institutions, Media, and NGOs also have an important role to play in reforming Education for Employment<sup>39</sup>. Media can dispel the myth that some occupations are 'better' than others and live up to their responsibility as a constructive watchdog (for Media). NGOs can play a role as a match-maker between private sector skill demands—generally scarce or unavailable—and youth interested in following a training in skills leading to a likely employment (IFC/ISBD, 2011). This will help promote careers in the ICT sector and result in graduates who are better suited to the requirements of the labour market.

The report (ILO, 2012) highlights the importance of developing TVET as an effective policy action to combat youth unemployment. It recommends harnessing “the possibilities for efficient deployment of ICT to modernize TVET curricula, increase relevance of skills provision and expand enrolment capacity”. Of particular interest is the use of mobile phones enabling Internet access by youth (generally constituting the large majority of early adopters) and that policy-makers should strive “to create initiatives to harness the technological revolution for the benefit of education and training”.<sup>40</sup>

Finally, apprenticeship combined with part-time schooling has proved an effective tool in countries – generally developed countries – with particularly low youth (and, as important, ratio of youth/adult population) unemployment rates (see Annex 2.2). Despite the attractiveness of such schemes, their applicability in developing countries “where the formal wage sector is small and institutions are weak” is difficult. As a matter of fact it is informal apprenticeship that is the largest provider of skills for young people in many developing countries.<sup>41</sup>

The ILO (2012) report thus recommends a pragmatic approach whereby the usefulness of informal apprenticeship is duly recognized with efforts aimed at formalizing it along the following lines which might be considered by Arab countries, namely:

- complement learning at the workplace with more structured institutional learning;
- upgrade the skills of master crafts persons, e.g. by introducing modern technology and upgrading pedagogical skills;
- involve business associations and labour organizations, especially those representing the informal economy;
- introduce standardized contracts and certification;

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<sup>39</sup> IFS/IsDB, 2011, p. 102.

<sup>40</sup> ILO, 2012, p. 51.

<sup>41</sup> ILO, 2012, pp. 53-54

- include literacy/mathematics training and livelihoods skills; and
- strengthen community involvement, especially to open more occupations for young women.<sup>42</sup>

## 2. *The Enabling Environment for Education for Employment*

Initiatives aimed at education for employment generally suffer from scaling-up and sustainability issues; to overcome these hurdles, a proper enabling environment is needed. Suggested component of an education for employment enabling environment (IFC/IsDB, 2011) include:

- A standards framework and quality assurance;
- A sustainable funding mechanisms and cost-sharing paradigm, and;
- Information transparency and matchmaking.<sup>43</sup>

If it is assumed that education for employment necessitates the involvement of new private actors, standards –defined and enforced by government - are needed to ensure a successful and adequate education provision by public and private actors alike. This also provides insurance to employers who often experience difficulties in finding graduates with the right skills because their qualifications are often no real guide to what they know.

Students’ loans area well-known mechanism for funding in many countries but their uptake in the region is limited mainly for cultural reasons. Another approach consists in establishing not-for-profit foundations to channel funding like “Bab Rizk Jameel” in Saudi Arabia which claims to have helped 230,000 youth<sup>44</sup> get jobs because of its skill development support. Another interesting approach consists of the pooling of funds aimed at supporting students following education for employment (particularly a TVET) through an independent or government body as illustrated by Tamkeen in Bahrain.

Ensuring information transparency and matchmaking between the three stakeholders of education for employment, namely: employers, education/training providers, and potential employees and students is an essential component for success. The information flows that need to be exchanged between these stakeholders are illustrated in figure 10.

The first information flow between potential employees/students and private sector employers aims at providing those seeking employment with information on the full range of jobs open to them, and employers with information on the skills of those looking for work and how they might match the positions they are seeking to fill (see Annex 2.1).<sup>45</sup>

The second information channel, between education providers and employers, ensures that the former equip their students with the right skills and orient them to future employment. A good example in the region is the German Jordanian University (GJU) modelled on Germany’s universities of applied science. Among the good practices of this institution are “industry professors,” who divide their time between private sector employment and overseeing graduation projects, and readying students for future employment with industry experience wherever possible. As a result graduates of this young university (founded in 2005) have already gained the reputation of being very employable.<sup>46</sup> Improving such a linkage would increase the effectiveness of the educational institutions in providing graduates with appropriate skills, including ICT.

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<sup>42</sup> ILO, 2012, p. 54.

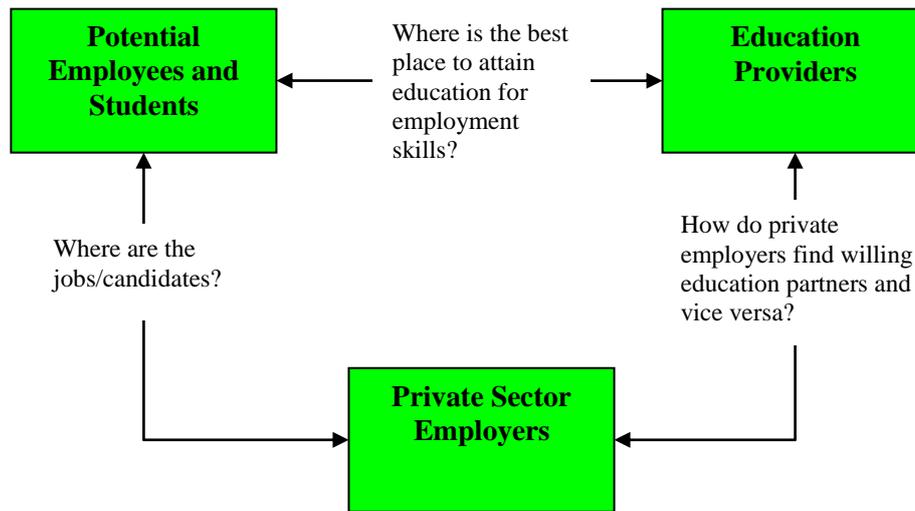
<sup>43</sup> IFC/IsDB, 2011, pp. 78-87

<sup>44</sup> A real time beneficiary’s counter is maintained on their web site, Op. Cit.

<sup>45</sup> IFC/IsDB, 2011, p. 87.

<sup>46</sup> IFC/IsDB, 2011, pp. 87-89.

**Figure 10. Information Transparency for Education for Employment**



Source: IFC/ISDB, 2011, p. 88. with modifications.

The last information flow between potential employees and students and education providers is essentially about information transparency whereby the education provider's performances with regards to the employability of their graduates are regularly monitored and published. This will enable students to make more informed decision in planning their education and careers, self-selecting educational paths which are more likely to lead them to productive careers in fields which presently experiencing an under-supply of qualified workers, such as science, technology and engineering.

### 3. Active Labour Market Policies (ALMP)

It is worth noting that programmes concentrating on supply-side measures, with skills development taking the most focus, have been a major policy trend in many countries (ILO, 2012). In OECD countries, for instance, the share of these so-called "active labour market policies" (ALMP) amounted to 1-2 per cent of GDP. The efficiency of ALMP is undeniable as it is estimated that "a modest increase in ALMPs (between 0.2 and 1 per cent of GDP) can boost employment by as much as 1.2 per cent over the medium term" (ILO, 2012).<sup>47</sup>

Some countries in the region – particularly among the richest GCC - have adopted a form of ALMP (Tamkeen in Bahrain is an example). The problem with ALMPs resides in their cost particularly in a context of massive unemployment and scarce financial resources as is the case in many Arab countries with large cohorts of unemployed youth. There is thus an urgent need to address the demand side with growth policies and measures aimed at stirring entrepreneurship and job creation.

## B. ADDRESSING THE DEMAND SIDE

On the demand side there are two issues that have high potential for improving youth employment demand, namely: access to credit for Micro, Small and Medium Enterprises (MSME), and promotion of entrepreneurship and self-employment among youth. ICT also offers solutions that could improve their efficiency and reach.

### 1. Access to credit by MSMEs

<sup>47</sup> ILO, 2012, pp. 55-56.

In many countries, the problem of access to finance is often quoted as a main issue for doing business. In the last issue of the WEF Global Competitiveness Report (WEF, 2012b), “ease of access to loans” has one of the lowest mean scores of only 2.9/7 among the executive opinion survey carried out in 144 countries (60 per cent of countries have below average scores). Five GCC countries are among the leaders (with Qatar and Bahrain occupying respectively the first and second positions) followed by Lebanon, Jordan, Kuwait and Morocco at average scores. However the remaining three Arab countries (Egypt, Libya and Yemen) occupy much lower positions with the latter only second to last.<sup>48</sup>

Access to finance has been a major factor particularly constraining the development of micro, small and medium-sized enterprises (MSMEs). According to a World Bank (IFC) estimate, quoted by (ILO, 2012), more than 2 million MSMEs around the world do not have access to finance; this figure is a conservative estimate discounting many informal businesses (See Annex 2.3).

Regarding the region in general, one assessment of Arab financial markets is that of “undiversified financial institutions, in a non-competitive environment, offering limited access to credit to a concentrated clientele due to incomplete and asymmetric information, insecure property rights, lack of creditor and borrower legal protection, and disorderly market exit” (Al-Ississ, in WEF, 2012A). The main consequence of this situation being that credit is pushed to the “entrenched” and pulled from the large majority of the “disenfranchised” who provide the bulk of employment opportunities particularly for youth.<sup>49</sup>

A reform of access to finance, primarily targeted towards small and micro enterprises, will help promote self-employment and youth entrepreneurship and encourage transition to formality. In this context, ICT can assist particularly when it comes to facilitation of lending operations (particularly micro-credit) and assessing the creditworthiness of potential borrowers.<sup>50</sup>

## 2. Promotion of entrepreneurship and self-employment

Promotion of youth entrepreneurship and self-employment consists of programmes and measures aimed at fostering the entrepreneurial activity of young people with the objective of encouraging them to start and develop a business, and at the same time improve their general employability.

Such programmes try to overcome barriers that youth encounter in starting and developing a business, which typically consist of a lack of financial, social or physical capital. Youth entrepreneurship programmes also include entrepreneurship training and education, campaigns to change social and cultural attitude towards youth entrepreneurship, access to finance, mentoring, other business support services, and an improvement of the administrative and regulatory framework (ILO, 2012).<sup>51</sup>

Some observations can be raised as regards youth entrepreneurship promotion initiatives and programmes (ILO, 2012):

- Globally, they represent a significant instrument just behind skills training with 20 per cent of all programmes in 2011 (up from only 11 per cent in 2007); their share in the Middle East and North Africa reaches 26 per cent and is one of the highest percentages (just behind Africa at 31 per cent);<sup>52</sup>

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<sup>48</sup> The survey is more representative of large and medium-sized enterprises than micro and small enterprises particularly in the informal sector.

<sup>49</sup> WEF, 2012a, p. 18.

<sup>50</sup> Ibid, p. 6., The World Bank’s *Doing Business Report* states that Arab credit bureaux have information on only 9 per cent of the population, compared with 34 per cent for Latin America (Al-Ississ, *Op. Cit.*).

<sup>51</sup> ILO, 2012, p. 67.

<sup>52</sup> All data sourced from Global Entrepreneurship Monitor <http://www.gemconsortium.org/>

- Developing countries record the highest proportions of business start-ups and firms which are less than three years old. There is however a high percentage of necessity-driven entrepreneurs in countries at the lowest development level (as opposed to opportunity-driven entrepreneurs);
- On overall, women entrepreneurs are under-represented even in Europe and Latin America. The report recommends supporting women entrepreneurs through specific measures because women often experience more obstacles in starting and developing a business compared to men;
- And finally, the report mentions the paucity of evidence about the quality or impact of youth entrepreneurship programmes as very few projects have been carefully evaluated particularly in developing countries. Limited evidence points however that such programmes had the highest positive impact rating on employment creation among all programmes reviewed.<sup>53</sup>

Addressing the Arab youth unemployment issue is a complex and challenging endeavour that needs the contribution of a variety of approaches that address multiple determinants related to basic education, skills development, financing, and entrepreneurship development as well as others such as pro-growth economic policies and employment-generating infrastructure spending. Technology-driven approaches are not appropriate to tackle youth unemployment but rather mainstreaming ICT within efficient and well-thought initiatives is the answer. One recommendation of the Arab Knowledge Report (UNDP/RBMF, 2011) consists in evolving teacher training institutions into “a new culture that goes beyond the concept of ‘fully-prepared teacher’ to the concept of ‘continuously-prepared teacher’”.<sup>54</sup>

All too often, success of ICT mainstreaming depends on virtuous circles highlighting a complex two-way relationship that exists between any endeavour and its ICT component. The endeavour is necessary to pave the way for the mindset change that allows for a better use of ICT which, in turn, contributes to the endeavour's success (more teachers with the ‘continuously-prepared’ mindset). Even if ICT might appear to have taken hold in the region particularly due to the undeniable development of mobile telephony and, to a lesser extent, access to the Internet, its adoption in many domains of the economy, education and life is still nascent.

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<sup>53</sup> ILO, 2012, pp. 68-69.

<sup>54</sup> UNDP/MBRF, 2011, p. 130.

### III. ICTS IN THE ARAB REGION AND THEIR CONTRIBUTION TO ADDRESS ARAB YOUTH UNEMPLOYMENT DETERMINANTS

#### A. ICT INFRASTRUCTURE, NETWORKED READINESS, AND ICT APPLICATIONS

##### 1. Infrastructure

During the last two decades, the Arab region had witnessed an undeniable progress in telecom infrastructure mainly driven by the development of mobile telephony. Contrary to other developing regions many Arab countries benefit from a decent level of fixed telephony infrastructure even though mobile telephony is now dominant in the region (see Table 1).

Due to improved international connectivity through sub-marine cables, the region had witnessed the development of broadband Internet access through fixed infrastructure. This was initially possible because of the Digital Subscriber Line (DSL) technology over fixed telephony lines, but recently through mobile infrastructure due to the availability of third and fourth generation networks and generalization of mobile Smartphone devices.

**Table 1. Fixed and Mobile Telephony and Broadband Access Subscriptions in Arab States (2012 and 2013)**

	Subscribers (Millions) 2012	Percentage (per 100 inhabitants) 2012	Subscribers (Millions) 2013	Percentage (per 100 inhabitants) 2013
Fixed Telephony	35	9.4%	35	9.3%
Fixed Broadband	10	2.6%	12	3.3%
Mobile Telephony	374	101.6%	394	105.1%
Mobile Broadband	53	14.3%	71	18.9%

Source: ITU<sup>55</sup>

Note: Values are estimates.

As shown on Table 1, broadband access to the Internet is essentially driven by mobile broadband which has already and by large surpassed fixed broadband access. ITU (date) estimate that Internet users in the region at 124 Million (33.7 per cent) for 2012 and 141 million (37.6 per cent) for 2013. Although this is a good percentage with respect to other developing regions, it is still only at half of developing countries' percentages. It also conceals disparities among countries where many GCC are at double the average while The Sudan, Libya, Yemen and Iraq are much below it.

##### 2. Network Readiness

Beyond infrastructure, the socio-economic impact of ICT is enhanced by a proper enabling political and business environment, readiness of the economy, and effective use by different categories of users, such as individuals, businesses and government.<sup>56</sup> The Networked Readiness Index<sup>57</sup> (WEF, 2013) tries to capture the above elements through a comprehensive set of Indicators whose combination results in a global score established for each country. Table 2 summarizes the values obtained by selected ESCWA countries for this index in its last two editions.

<sup>55</sup> <http://www.itu.int/en/ITU-D/Statistics>

<sup>56</sup> WEF, 2013, p. 6.

<sup>57</sup> More information on the NRI and other measurement frameworks related to the information society and ICT impact on socio-economic development is available in ESCWA (2013a).

**Table 2. Network Readiness Index (NRI) Values and Rankings for ESCWA Member Countries (2013 and 2012)**

Country	NRI value and Global Ranking 2013 (144 countries)	NRI value and Global Ranking 2012 (142 countries)	Difference in ranking (2013- 2012)
Qatar	5.10 (23)	4.81 (28)	+5
UAE	5.07 (25)	4.77 (30)	+5
Bahrain	4.83 (29)	4.90 (27)	-2
Saudi Arabia	4.82 (31)	4.62 (34)	+3
Oman	4.48 (40)	4.35 (40)	0
Jordan	4.20 (47)	4.17 (47)	0
Tunisia	NA	4.12 (50)	NA
Kuwait	3.94 (62)	3.95 (62)	0
Egypt	3.78 (80)	3.77 (79)	-1
Morocco	3.64 (89)	3.56 (91)	+2
Lebanon	3.53 (94)	3.49 (95)	+1
Syria	NA	2.85 (129)	NA
Libya	2.77 (132)	NA	NA
Yemen	2.63 (139)	2.41 (141)	+2
<i>Average</i>	4.07	3.98	

Source: WEF, 2013, p. 11.

Note: Syria has been excluded in the 2013 survey due to the political situation as well as Tunisia because a structural break in the data made comparisons with past years difficult; Libya was re-included after a year of absence.

The NRI scores of the different ESCWA countries highlights four country groups in the region, namely upper-ranked countries, that include all countries from GCC except Kuwait, the upper-middle-ranked countries namely Jordan, Tunisia and Kuwait, the lower-middle-ranked countries Egypt, Morocco and Lebanon, and low-ranked countries Syria, Libya and Yemen. Compared to 2012 three countries among the upper-ranked group improved their global score and ranking. Only Bahrain among this group moved down by two positions and Oman, though with a slight advance in its score, kept the same global rank. The remaining countries kept, more or less, the same position between 2012 and 2013 with the exception of slight improvements for Morocco and Yemen.

Table 3 illustrates the relative ranking obtained for each pillar of the NRI with respect to each ESCWA country's overall NRI value<sup>58</sup>. Since the NRI is computed by successive arithmetic aggregation of the pillars values, one can thus easily identify the pillars pushing up the country's score and those pulling it down. Table 3 therefore, highlights the determinants that drive or hinders ICT use and impact on socio-economic outcomes in some Arab countries at the macroscopic level. This effect can also be seen in a classification which has drawn increasing attention from researchers – digital natives. This term is often applied to youth who have grown up surrounded by information, data and ICTs. While a clear definition of this term has not yet been universally adopted, the ITU has recently chosen to classify individuals who have been using the Internet for the last five years as digital natives. The topic is analyzed in their recent study on Measuring the Information Society 2013. For the Arab Region, available data indicates that issues associated with

<sup>58</sup> For the sake of consistency the exercise was carried out only for countries surveyed in the 2013 edition.

connectivity, Arabic language content, and affordability mean that it is extremely difficult for most local youth to qualify as digital natives. In this sense, the digital native classification is another example of the social evolution occurring on a global basis which is largely unavailable in the Arab Region.

**Table 3. Ranking of ESCWA Countries in Individual Pillars of the NRI Relative to their Global Ranking**

Country and Global NRI	Enabling Environment			Readiness		Usage			Impact	
	Political and regulatory environment	Business and Innovation Environment	Infrastructure	Affordability	Skills	Individual usage	Business usage	Gov't usage	Economic Impact	Social Impact
Qatar (23)	5	11	-12	-80	18	7	-4	18	-10	15
UAE (25)	-1	8	-5	-64	0	-11	-3	23	-3	18
Bahrain (29)	-11	15	-10	-17	-15	-1	-27	25	-23	13
Saudi Arabia (31)	2	6	-5	-34	-6	-16	1	25	-11	13
Oman (40)	6	7	-26	6	-28	-10	-12	19	-21	6
Jordan (47)	1	7	-34	20	13	-19	-8	-9	-2	-7
Kuwait (62)	-9	-9	17	-9	-9	22	-21	-43	-63	-23
Egypt (80)	-16	-18	-13	72	-35	11	-28	0	13	22
Morocco (89)	16	10	-6	59	-25	12	-10	8	-33	-16
Lebanon (94)	-39	59	6	-1	66	33	-22	-40	-8	-26
Libya (132)	2	12	52	-9	35	43	-4	-11	-5	-6
Yemen (139)	-1	6	16	51	1	4	2	-2	-3	-4

Source: ESCWA based on WEF, 2013, pp. 12-15.

Note: A positive value indicates an improving global ranking and a negative value signifies a drop in comparative standing.

### 3. ICT Applications

The Arab region has integrated ICT in many fields of social and economic life, such as e-government services and e-commerce. It also has enabled the use of ICT applications through mobile smartphones, particularly by youth (ESCWA, 2011c).

#### a. E-Government Services

GCC country governments have made great strides in the adoption of ICT. This is confirmed by the bi-annual survey on e-government carried out by the United Nations Department of Economic and Social Affairs in which GCC countries obtained high scores on the e-Government development Index (EDI)<sup>59</sup> as well as the E-participation Index (UNDESA, 2012)<sup>60</sup>.

Detailed discussion of e-government services in the region (ESCWA, 2013a) reveals a high-level of commitment and financial effort resulting in high quality and advanced interactive features allowing citizens access to nearly all government services online. However, anecdotal evidence shows that effective adoption and use by citizens of these e-government services might not match<sup>61</sup> the high level of service despite the

<sup>59</sup>UNDESA, 2012, pp. 126-127.

<sup>60</sup>UNDESA, 2012, p. 134.

<sup>61</sup>UNDESA acknowledges that «the E-government survey provides indication on the level of usage, though only from the perspective of potential not actual use by citizens» (UNDESA, 2012). In other terms this means that, if a given feature of E-

equally high E-participation Index rankings obtained by these countries.<sup>62</sup> DESA acknowledges that “the e-government survey provides indication on the level of usage, though only from the perspective of potential not actual use by citizens” (UNDESA, 2012). In other terms this means that, if a given feature of E-government services which allows for increased participation of citizens simply exists, then the country obtains points for it notwithstanding the degree of its effective use.

E-government services in the region highlight an over-reliance on top-down, government-led initiatives compared to a few bottom-up initiatives emanating from civil society and other private and business stakeholders. A bottom-up approach allows for a true participation by the society’s stakeholders in the definition of these services and guarantee effective use and increased impact.<sup>63</sup>

#### *b. E-Commerce*

E-commerce is still nascent in the region. Despite significant development of portals and associated services in the region, e-commerce still represents – even in GCC countries - a tiny proportion of global retail commerce.<sup>64</sup> Moreover, it is very difficult to measure the impact of e-commerce on the economy in the absence of reliable official statistics.

The main motivation for e-commerce in the region revolves around cheaper prices and good bargains. The nature of the purchased items through e-commerce still mainly concerns technology products, books, clothing and entertainment; this points to upper-middle class users even in lower-income, non-GCC countries.

Many local businesses in the region, particularly small and medium sized, have a low level of online presence and security concerns regarding e-commerce (and the Internet in general) are pervasive in all countries. The latter factor is compounded by lack of secure e-payment solutions (except in some GCC countries) as an alternative to credit cards or reliance on Cash on Delivery as well as lack of a comprehensive set of cyber legislations covering important issues like consumer protection and cyber security.<sup>65</sup>

#### *c. Mobile Applications*

The recent development of ICT applications through mobile phones owes as much to the development of mobile broadband access due to the so-called “third” and “fourth” generation mobile networks as to the development of powerful Smartphones and the ecosystem of applications (commonly called “apps” in this context) surrounding them.<sup>66</sup>

Smartphone sales worldwide are increasing consistently with two out of five mobile phones sold in 2012 being Smartphones.<sup>67, 68</sup> These devices are particularly attractive to and adopted by youth. The Arab region is no exception where, according to some recent estimates Smartphone penetration is forecasted to exceed 20 per cent in most Arab States by 2016, with rates as high as 70 per cent in Saudi Arabia.<sup>69</sup>

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government services which allows for increased participation of citizens simply exists (for instance possibility of interacting with a given administration through social networks), then the country obtains points for it notwithstanding the degree of its effective use.

<sup>62</sup> ESCWA, 2013a, p. 47.

<sup>63</sup> ESCWA, 2013a, p. 80.

<sup>64</sup> ESCWA, 2013a, p. 50

<sup>65</sup> ESCWA, 2013a, p. 54.

<sup>66</sup> ESCWA, 2013a, p. 60.

<sup>67</sup> Representing more than 700 million Smartphones according to Industry estimates quoted by ESCWA (2013a).

<sup>68</sup> ESCWA, 2013a, p. 61.

<sup>69</sup> GSMA, 2013, p. 20.

Application use in the region generally follows global trends with the most popular applications related to gaming, social networking, sports, and entertainment. However, there is a high potential for applications to be used as a gateway to access health, education, government and other social services. They also offer an opportunity for responding to local needs of a country, region, or town.

Another aspect of the mobile industry is lower development costs (with respect to classical software) of applications and their potential for being developed by small groups driven by young entrepreneurs. In this respect a closer analysis of the “app development eco-system” reported by ESCWA (ESCWA, 2013a) highlights the small role played by the Arab region. This is likely linked to the meagre support and financing of the nascent software industry in the region as discussed in the next section.

## B. ICT IN THE ECONOMY

### 1. ICT Sector in the Economy and Employment

The ICT sector can be divided into two main components, namely Information Technology (IT: Computer Software, Services and Hardware) and the Telecom sector including the transmission of voice and data (infrastructure spending and revenues). Global spending in the ICT sector reached nearly US\$ 4 trillion in 2011 with IT representing 41 per cent of this total and Telecom the remaining 59 per cent (UNCTAD, 2012). The combined share of the Middle East and Africa ICT spending amounts only to 2 per cent of this total.<sup>70</sup>

However, global averages always conceal disparities, such as the fact that the percentages of Telecom spending are higher in developing economies than in advanced economies. In North America and Europe Telecom weighs respectively at a little bit below and above 50 per cent whereas in Africa, Middle East and Latin America it hovers around 80 per cent. This is not due to lower values of the Telecom sector in these countries but essentially to the relative importance of the IT sector. Table 4 provides values of total ICT spending and share of computer software and service spending from this total for selected Arab countries. It clearly shows that the same global pattern is repeated at the regional level where more advanced GCC countries have a higher share of IT in their ICT spending.

**Table 4. Share of Software and Service of total ICT spending for selected Arab countries (2011)**

Country	Total ICT spending	Computer Software and Services spending (excluding Hardware)	Percentage of Software and Service from total ICT spending
Algeria	4,586	372	8.1%
Egypt	14,082	749	5.3%
Jordan	2,177	134	6.2%
Kuwait	5,770	710	12.3%
Saudi Arabia	34,409	4,175	11.5%
UAE	13,749	1,690	12.3%

*Source:* UNCTAD, 2012.

Note: Spending in millions of US\$

Note: Computer Hardware spending not included; represents about 10 per cent of ICT spending in the Middle East.

Telecom spending in the region is mainly driven by the mobile sector. Mobile witnessed an impressive average yearly growth of 32 per cent in the period 2002-2012 in the Arab region<sup>71</sup>. This is second only to sub-Saharan Africa (36 per cent) and far above North America (10 per cent) and Europe (6 per cent). The Arab region’s scope in the referenced study encompasses the 17 ESCWA members plus Algeria and South Sudan. The global mobile penetration at above 100 per cent in the Arab region (see table 2) hides differences, for example Saudi Arabia and Qatar that are closer to 200 per cent and Yemen at only 56 per

<sup>70</sup> UNCTAD, 2012, pp. 19-20.

<sup>71</sup> GSMA, 2013, p. 9.

cent. However, caution is recommended regarding the interpretation of the high penetration rates of above 100 per cent in some GCC and other countries as they hide the phenomenon of multi-SIM card owners. The penetration rate measured by the number of unique subscribers is only at above 60 per cent in the Middle East and 40 per cent in North Africa (GSMA, 2013).<sup>72</sup>

The total economic impact<sup>73</sup> of the mobile sector in 2011 represented US\$ 98.1 billion or 6.2 per cent of GDP in the Middle-East and US\$ 34.1 billion or 4.9 per cent of GDP in North Africa; an increase of 118 per cent and 61.4 per cent respectively since 2006. It is also claimed that the mobile sector has created 1.12 million (750,000 in North Africa and 470,000 in the Middle-East) related full-time equivalent jobs in the region.<sup>74</sup>

It is reported that 10 million people are employed in the computer software and service sector in the cohort of countries representing 95 per cent of the spending volume. The highest share of employment among the total workforce reaches 2.2 per cent in the Netherlands and in the leading developing countries 0.8 per cent as in Costa Rica or 0.6 per cent in India<sup>75</sup>. The percentage of employment in computer software and service within the ICT sector varies among countries. It is higher in developed and in computer software and service export-oriented countries and lower in others, particularly developing countries. Two Arab countries, Jordan and Oman, are reported as having a share of nearly 18 per cent and 3 per cent respectively of total ICT employment in this sector.

An important property of IT's software and services is that they can easily be traded due to modern Telecom infrastructure. Therefore, the outcome of software projects worth millions of dollars can be transmitted in matters of minutes from one end of the globe to another, thus leveraging talent and manpower anywhere in the world, particularly those in developing economies. This is commonly known as IT off-shoring. The global off-shoring market has reached US\$70 billion to US\$72 billion in 2011 with India having the largest share (59 per cent). Among Arab countries, only Egypt is mentioned as having a part of this market.<sup>76</sup>

Finally, IT Software and Services industry is becoming internationalized and prone to Foreign Direct Investment (FDI) projects. While few data are available<sup>77</sup> regarding the amounts of these projects, it is reported that, among the 7,553 FDI projects initiated between 2007 and 2011, only 254 (3.4 per cent) of them were destined for four Arab countries (UNCTAD, 2012).<sup>78</sup>

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<sup>72</sup> GSMA, 2013, p. 11.

<sup>73</sup> It is defined as the total contribution made to economic output in terms value added by an activity at each stage of production and is analogous to Gross Domestic Product (GDP) contribution.

<sup>74</sup> GSMA, 2013, pp. 21-22.

<sup>75</sup> UNCTAD, 2012, p. 21.

<sup>76</sup> UNCTAD, 2012, p. 24.

<sup>77</sup> UAE 172, Egypt 29, Morocco 27, and Tunisia 26.

<sup>78</sup> UNCTAD, 2012, p. 24.

## 2. *ICT use in the Business sector*

Table 4 illustrates that business usage and economic impact of ICT are not among the region's best developed areas. With few exceptions (Saudi Arabia and Yemen for business usage, and Egypt for economic impact) countries under-perform in their global ranking for these two pillars. The amount of this under-performance sometimes assumes significant amounts for Kuwait, Bahrain, Oman, Lebanon, and Morocco.

The specific case of Egypt is particularly interesting where under-performance in business usage is driven by "business-to-business Internet use" and particularly "extent of staff training". Out-performance in the economic impact is driven by "knowledge-intensive jobs as a percentage of total workforce" and a good standing in "ICT Patents applications". UAE, with its elevated global ranking and relatively low under-performance for these pillars (only three ranks for each), appears as the best in the region closely followed by Qatar with a lower economic impact.

Although data was available only for six countries, (Egypt, Jordan, Palestine, Qatar, Tunisia, and UAE) these examples clearly illustrate the breadth of diversity found in the region.

### C. ICT IN THE EDUCATION SYSTEM

Efforts have been made by Arab countries to provide access to computers and to connect schools to the Internet at all education levels. The ratios of students-to-computers in schools are relatively low ranging from 6 to 17 students per computer. These comparisons suffer from limited availability of updated data for years 2008 and 2010. Most schools connected to the Internet are located GCC countries and Jordan, while the other countries in the region lag behind, sometimes significantly. This is confirmed by the NRI's survey on the opinion of the business community with regards to Internet access in schools.<sup>79</sup> Some governments like Jordan created public-private-partnerships with Industry to improve education outcomes using ICT (Box 9). At higher education levels such as university and adult education, many countries like Saudi Arabia, Bahrain, Egypt and Jordan implemented e-learning initiatives with Saudi Arabia emerging as a leader in the region. Virtual universities were also established in the region in countries such as Kuwait, UAE, Egypt, Jordan, Syria and Palestine; some, such as the Kuwait-based Arab Open University, have a regional scope.<sup>80</sup>

#### **Box 1. Jordan's education initiative (JEI)**

The JEI was the first instantiation of the World Economic Forum's (WEF) Global Education Initiative (GEI) conceived and launched at the WEF Annual Meeting 2003. The JEI had four initial objectives:

- Help the Government of Jordan achieve its vision for education as a catalyst for social and economic development;
- Encourage the development of an efficient public-private model for the acceleration of educational reforms based on unleashing the innovation of teachers and students through the effective use of ICT;
- Build the capacity of the local information technology industry for the development of innovative learning solutions in partnership with world-class firms, and;
- Leverage an environment of national government commitment and corporate citizenship to build a model of reform that can be exported to and replicated in other countries.

In practice, the JEI developed content in core subject areas of mathematics, science, Arabic, English and ICT, and implemented this through 100 Discovery Schools that were provided with relevant ICT, and where teachers and technicians were trained in how best to deliver the content.

A review of the JEI in 2008 stated: "The JEI has helped stimulate the establishment of a Jordanian education software and e-content media development capacity, has developed a first generation of e-

<sup>79</sup> ESCWA, 2011c, p. 93.

<sup>80</sup> ESCWA, 2011c, pp. 94-96.

content in six content areas, has begun the process of training teachers, principal and other school personnel in the use of ICT to support e-learning, and has accelerated the investments in connectivity.”

However, it also clearly indicated that the JEI had not yet led to systemic change in the delivery of education, mainly because many teachers had not incorporated the interactive and problem based learning approaches into their teaching. The report stated that JEI’s influence had not spread much beyond the 100 Discovery Schools (whose students however reported better results in PISA evaluations).<sup>a</sup>

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<sup>a</sup> PISA stands for Program for International Student Assessment. A program initiated by OECD in 2000 with assessment rounds carried out every three years. Some non-OECD countries are PISA partners and participate to the program. Four Arab countries (Qatar, Jordan, Tunisia, and UAE) and the emirate of Dubai are PISA partners. See <http://www.oecd.org/pisa> for more information

Source: WEF, 2012c, pp. 13-15.

As highlighted by the Broadband Commission report on education, technology has not always been utilized in an effective manner to improve learning. This applies equally to developed economies where the latest PISA “digital reading” additional assessment carried out in 2009 (OECD, 2011) suggests that both the intensity of usage (i.e. the amount of time technology is used) and the quality of usage (i.e. the variety and relevance of the technology used) are still low.

### 1. *Mobile Technology: a game changer in ICT for Education?*

Many question if the classical wisdom of ICT for education based on computers connected to the Internet in schools is becoming outdated. This is mainly driven by recent technological evolutions that blurred the boundaries between what is commonly known as a classical desktop or laptop computer and a mobile device such as a Smartphone or a Tablet.<sup>81</sup> The latter are now heavily adopted by youth (and even younger pre-teens) and have more than sufficient computing capability to run educational applications. In some cases, educational applications are released exclusively for mobile platforms (See Annex 3.4).

As stated above, a common metric used to measure ICT in education is the number of students per computer in schools. The new wisdom consists in adopting a “1:1 model” whereby each student will have his/her own device. The concept is not particularly new and has been around for almost a decade when the One Laptop per Child (OLPC) concept was introduced by Nicolas Negroponte of MIT. The attractiveness of the “1:1 model” is that all students have a device at their disposal both inside and outside the classroom, which allows them to access school resources, communicate with teachers and classmates, and of course, connect to the Internet (See Annex 3.5).<sup>82</sup>

However, the availability of the new mobile devices and associated development of mobile broadband have the potential to enable the large-scale generalization of the “1:1 model” which one could more simply name: mobile learning or m-learning. There is a general misconception – fuelled by price levels applied by a leading manufacturer - that Smartphones and Tablets should be expensive. Broadband (2013) reports, for instance, that a well-equipped tablet computer like Aakash 2, currently available in India, now sells for under US\$ 50.

UNESCO has explored this question in depth and articulated some of the unique ways mobile technology (and mobile phones and tablets in particular) can benefit education and recommended guidelines for policies aimed at leveraging these unique advantages for mobile learning as summarized in Annex 2, Box 11. Mobile learning is still in its early steps as a transformative technology for learning. Some countries are adopting a model whereby children bring their own technologies and public money is essentially spent on developing online content, in contrast to other approaches whereby all school children in the country are provided with a specific device – generally purchased by governments and freely distributed or resold at a

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<sup>81</sup> ESCWA, 2013a, p. 13.

<sup>82</sup> Broadband, 2013, pp. 18-20.

subsidized price - as happened in many national implementations of the OLPC concept. Of course such an approach, though offering undeniable benefits (not least, flexibility, guarantee against device obsolescence, and dedicating public money on issues where it is most efficient), might not be applicable in all countries (for instance in Arab countries it might be applicable only in GCC and some few other countries) and policy measures should, in any case, be taken to ensure equitable access for all students. The Republic of Korea, Thailand and Turkey have all announced large-scale programmes to gradually replace physical textbooks with digital textbooks, generally accessed from a tablet computer.<sup>83</sup>

ICT in education also needs a particular focus on teacher's training: UNESCO's ICT Competency Framework for Teachers (CFT) is intended to inform educational policymakers, teacher educators, providers of professional development and working teachers on how to help students and teachers utilize technology effectively and develop ICT skills (UNESCO, 2011a); the training suggested by this framework is based on three modules namely technology literacy, knowledge deepening and knowledge creation.<sup>84</sup> Syllabus and assessment models are suggested for countries wishing to adopt this framework.

Lastly, the development of Open Education Resources (OER) is an essential element. Of particular interest is a survey of OER's activities carried out jointly by UNESCO and the Commonwealth of Learning that sheds light on government's policies in this respect. Annex 3.6 summarizes this survey's findings related for Arab states.

#### **D. LEVERAGING ICT TO ADDRESS ARAB YOUTH UNEMPLOYMENT DETERMINANTS**

It is now appropriate, in light of the previous discussion to re-visit the determinants discussed in chapter II to suggest some concrete approaches where ICT improve education outcomes through better integration and use within the education system, contribute to skills development and matchmaking with labour market needs by improving skills training and facilitating communication between job seekers and employers, facilitate financing of young entrepreneurs and micro-enterprises through Microfinance and Mobile Banking, and foster job creation leveraging ICT-driven organizational transformation in public and private sectors alike and generate more demand for skilled labour.<sup>85</sup>

##### *1. Enhancing the Role of ICT in the Education System*

This section studies the role of ICT in education and the potential of (i) generalization of the 1:1 model where each children brings his/her own device for better interaction with teachers inside and outside the classroom, have access to school resources, communicate with teachers and classmates, and of course connect to the internet. It also discussed (ii) the critical role of proper teachers' training on ICT, (iii) development of OER, and the (iv) introduction of digital textbooks which could complement and eventually replace paper textbooks. Arab countries might consider adopting initiatives in the above mentioned areas within their education system and in line with their national priorities. While it is a difficult challenge, it is clear that the potential benefits of such ICT initiatives, alone, cannot bring tangible benefits. They should be part of a global reform of Arab education systems as discussed by the Arab Knowledge Report (UNDP/MBRF, 2011).

Moreover, even in developed countries the benefit of access to ICT at schools and the use pattern of ICT by teachers and students alike provide useful lessons that Arab countries may want to consider when introducing ICT within their respective education system.

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<sup>83</sup> Broadband, 2013, p. 20.

<sup>84</sup> UNESCO, 2011a, p. 9.

<sup>85</sup> This list is by no means exhaustive and is meant to focus on selected critical issues where ICT could help alleviate Arab youth unemployment. For instance, issues related to the financing and development of the Arab ICT sector - with undeniable impact on job creation particularly in the medium to high-skills technology segment - can be found in ESCWA (2013b).

## 2. Skills Development and Matchmaking with Labour Market Needs

ICT, through information exchange and coordination, makes it possible to match job seekers with employers. Examples include Souktel and Glowork as well as more classical job search web-based platforms that exist in the Arab region.<sup>86</sup>

### Box 2. Matching employees and potential employers

#### 1- Souktel

Souktel is a platform that connects job-seekers with employers – and communities with aid agencies via mobile phones. Started in 2006 in Palestine, it has connected close to 20,000 workers and hundreds of companies through its JobMatch services. Souktel reports that more than 20 aid agencies (from Red Cross to UNICEF) actively use its mobile Aid Link services to get key information to/from communities in crisis. Souktel's technology is used in over 15 countries across the world and other Arab countries.

The JobMatch service uses a simple SMS interface allowing young people to register and update their mini CV through a question/answer dialogue (age, skills, education level, preference for job location; and availability for work). At any time a person can send a “match me” message to the platform and get a list of jobs matching his/her mini-CV.

#### 2-Glowork

In Saudi Arabia, Glowork matches talented women with companies willing to employ them. Glowork found that larger companies were not hiring women because they didn't know how to find them and were worried about incurring additional costs due to segregation laws in the workplace. Glowork bridged both these gaps, first, by offering an online platform for female job seekers to connect with employers, and second, by providing an IT solution that enabled businesses to employ and monitor female employees working from their homes. Glowork has successfully placed about 6,000 women and is working with the Ministry of Labour to provide support to the 1.2 million female unemployment benefits recipients.

*Source:* <http://www.souktel.org> and McKinsey, 2012, p. 79.

These are smaller bits of what could become an integrated education for employment information platform – which could be per-industry and country specific. Other options could include different combinations of the following three critical components:

- Key information and statistics on employment (where are the jobs and in which specialities), graduation trends, and career paths (mainly as regards education offers);
- Education and employment experience-sharing by youth; and
- Match-making across all three stakeholders.<sup>87</sup>

Such a platform could be seen as a possible implementation of the information flows illustrated in figure 12. This, in addition to the possibility of accessing to the Internet from mobile phones, by using dedicated applications, could be a tremendous tool that provides guidance to youth in their choice of the most appropriate education path leading to an employment.

Countries may consider encouraging their national stakeholders to initiate such platforms. Governments can play a central role to guarantee the correctness and transparency of the exchanged information in their capacity as the main education provider. Yet, it is advisable that governments adopt a “light touch” approach

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<sup>86</sup> A list of such platforms operating at the regional, sub-regional (GCC) and individual countries levels is provided by (ESCWA, 2011c).

<sup>87</sup> IFC/IsBD, 2011, p. 90.

and let such initiatives be primarily driven and implemented by the stakeholders themselves even if some education providers are public institutions.

The second advantage of ICT lies in its ability to lower education and training costs. Costs are generally one of the essential barriers to up-scaling. The first obvious and classical avenue is to allow knowledge diffusion through distance learning especially to remote areas provided that a trainer is present to answer questions and monitor practical work. Another less classical approach is to “bring the workplace to the classroom” which immerse users in a virtual world to enable the application of knowledge and skills, from marine navigation to business-process optimization.<sup>88</sup>

Such solutions are generally designed by individual private industry actors or by skills development initiatives created by industry to train readily employable staff. An example of the latter model in a developing country is “IL&FS Skills” in India,<sup>89</sup> initiated in 2007 as a for-profit venture in skill development but now supported by the government-funded National Skill Development Corporation.<sup>90</sup>

Beyond the use of ICT, the model of IL&FS Skills is worth consideration by industries in Arab countries as well as industry associations to create similar structures and eventually obtain the backing and support of their government.

#### a) *Financing Young Entrepreneurs and Micro-enterprises: the role of Microfinance*

The Arab region is characterized by financial exclusion. According to the World Bank’s global financial inclusion index of 2011,<sup>91</sup> in MENA region only 18 per cent of the population aged 15+ have an account with a formal financial institution compared to a global average of 50 per cent (41 per cent in developing countries) and only 5 per cent of the population aged 15+ have borrowed during 2011 from a formal financial institution. Among non-GCC Arab countries, Morocco has the highest percentage at 39 per cent followed by Lebanon, Algeria, and Tunisia (all above 30 per cent); then follows Jordan 25 per cent, Syria 23 per cent, Palestine 19 per cent, Iraq and Egypt, near 10 per cent and Yemen 3.7 per cent. GCC countries have higher values: 46 per cent in Saudi Arabia, 60 per cent in the UAE, 74 per cent for Oman, and 87 per cent in Kuwait.

In contrast, however, GCC are not systematically leading loans. Although Kuwait with 21 per cent has the highest percentage among Arab countries, two of its GCC peers, UAE (11 per cent) and Oman (9 per cent) are narrowly distanced by Syria (13 per cent) and Lebanon (11 per cent). Next follows Iraq (9 per cent) and Jordan (8 per cent) and all remaining Arab countries are at below 5 per cent including Saudi Arabia (2 per cent) which has one of the lowest percentages only slightly above the lowest rates of Algeria (1.5 per cent) and Yemen (1 per cent).

Microfinance has been considered a key tool for financial inclusion especially for addressing the unbanked poor and marginalized social categories like rural populations, women, and youth. Still, microfinance is not only about very small loans or charity and assistance to the poor;<sup>92</sup> its added value essentially lies in accompanying and supporting people to carry-out concrete micro-projects that help them to rise above poverty (See Annex 2.3).<sup>93</sup>

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<sup>88</sup> McKinsey, 2012, p. 70.

<sup>89</sup> <http://www.ilfsets.com/skilldevelopment/> see also (McKinsey, 2012); one should note that a sister organization to IL&FS Skills, IL&FS Education (<http://www.ilfsets.com/educationservices/>) provides a quite interesting example of leveraging ICT for Education in India.

<sup>90</sup> McKinsey, 2012, p. 74.

<sup>91</sup> <http://www.worldbank.org/globalindex>

<sup>92</sup> According to (Abdel-Baki, 2012), the large majority (95%) of Arab MFI has an NGO status.

<sup>93</sup> Actually MFI intervention could extend to health insurance and house loans.

By year 2010, Microfinance Institutions (MFI) in Arab countries were serving 3.1 million borrowers with a gross loan portfolio of US\$ 1.9 billion (approximately US\$ 602 per borrower).<sup>94</sup>The main outreach of Microfinance was in Egypt (47 per cent of total borrowers) and Morocco (25 per cent). However, the penetration rate measured by number of borrowers served to number of potential borrowers among poor population was the highest in Jordan (54 per cent) and Tunisia (46 per cent) followed by Morocco (36 per cent), Mauritania (25 per cent), Egypt (24 per cent), Lebanon (12 per cent), and Palestine (10 per cent); other Arab countries were significantly lower at 3 per cent or below<sup>95</sup>.

### **Box 3. Microfinance and Mobile Banking: The Story of M-Pesa in Kenya**

Although everyone interested in m-banking has heard of M-PESA, many don't know that M-PESA actually started as a pilot to facilitate microfinance loan repayments with the MFI Faulu Kenya. Originally, Safaricom (the Mobile Operator) wanted to combine its connectivity, brand, and distribution network of airtime resellers with Faulu's low-income customer base to enable customers to receive loan disbursements and make loan repayments using mobile phones. The two organizations ran a pilot for six months in 2005 during which time Faulu customers used the service to repay loans. While the intent of the pilot was loan repayment, customers used the service in all sorts of creative ways that were very interesting to Safaricom. They used it to pay for goods and services between pilot participants and to convert the e-money to airtime that could be sent to relatives in other parts of the country. As a result of this pilot, Safaricom altered its strategy and developed the key marketing message of M-PESA, "Send Money Home," and went on to launch the most successful m-payments service in the world.

In May 2009, Faulu became the first deposit-taking MFI in Kenya. Faulu saw little risk in allowing its new deposit customers to deposit via M-PESA. In December 2009, Faulu launched a service to link M-PESA with Faulu savings accounts. Being able to move their money from M-PESA into Faulu accounts offers customers the added benefit of being able to earn interest and develop a good savings record that can lead to eligibility for loans. Four months after the launch, about \$60,000 is transferred between the two institutions each week, and 30,000 customers are using the service. Kenya Women's Finance Trust (KWFT) is doing something very similar. With more than 300,000 active borrowers and a loan portfolio of nearly \$140 million outstanding, KWFT is probably the largest MFI using M-PESA for loan repayments today.

In May 2010, M-PESA and Equity Bank in Kenya announced the most integrated product offering so far—a low-cost, low-entry micro savings account called M-Kesho.<sup>20</sup> With this account, Equity Bank hopes to convert the majority of M-PESA's 9.4 million users into account holders at the bank and plans to offer micro insurance and microloans in addition to savings accounts. This joint venture has the potential to extend access to formal financial services to millions of currently unbanked individuals.

*Source:* Kumar et al., 2010, pp. 7-8.

Following the recent Arab uprisings, the situation of Microfinance in the region evolved with countries starting to adopt new legislation frameworks for MFI.<sup>96</sup> Eventually this will help transform MFI into for-profit institutions and attract investor financing as, so far, Arab MFIs have had a high return on assets by global standards<sup>97</sup>. On the other hand, the potential of Islamic Sharia compliant Microfinance – though still nascent but nonetheless present essentially in Sudan and Lebanon<sup>98</sup>—could help overcoming cultural barriers that hinder adoption of financial services. Of particular interest for this report is the leveraging of ICT

<sup>94</sup> Abbel-Baki, 2012, p. 10.

<sup>95</sup> Abbel-Baki, 2012, p. 12

<sup>96</sup> <http://www.cgap.org/blog/arab-spring-opportunity-financial-inclusion>

<sup>97</sup> Abbel-Baki, 2012, p. 20.

<sup>98</sup> El-Zoghbi et al, 2013, p. 7.

technologies like Mobile Banking as a conduit to offer Microfinance services and improve their outreach as highlighted by, the now famous, example of M-PESA.

Although each country or region has specific constraints and models that proved successful elsewhere cannot be copied directly, Arab Mobile Operators should consider the example of M-PESA and the developing of M-payment platforms, teaming (possibly upfront) with MFI and other classical financial institutions in the region. It is possible that for cultural and other reasons M-payment per se as a service might not be accepted in the Arab region; but the example of M-PESA has shown that M-payment, seen as a technology, facilitated micro-finance loans disbursement and repayment (and in passing reduced the MFI operating costs) and eventually led to financial inclusion.

Finally, Mobile operators should be in the driving seat to develop the technology of M-payment as it is too complex for an MFI to embark on such a complex endeavour.<sup>99</sup>

In addition to significant impacts in economic fundamentals, employment and education, ICTs have also had significant impact on the social dimensions of life for Arab Youth. Stemming from the sharply increasing use rates for tools such as satellite television, the Internet and mobile phones, societies in the Arab region have witnessed significant change. A selection of these factors is analyzed in the following chapters.

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<sup>99</sup>(Kumar et al, 2010) highlights the case of one MFI in Africa that has set such a platform but recommends that only MFIs with significant managerial, technical, and financial capacity should consider this option.

## IV. ICT AND SOCIAL CHANGE

Previous chapters of this document have focused on economic and educational impacts of ICT on the lives of Arab youth. In subsequent sections, this analysis will shift focus to examine changes in entirely different spheres of social change. Because of the cross-cutting nature of ICTs, the scope of this research will be limited to only a few of the many areas of change. In selecting the research themes careful consideration was given to prioritizing these topics. Factors such as prevalence, significance of impact, and degree of marginalization were ranked. As such, the remaining sections of this chapter will focus on the impact of ICTs in women's empowerment, domestic violence, HIV/AIDS and disability (specifically the hearing impaired).

### A. WOMEN'S EMPOWERMENT THROUGH ICT

The use of innovative new technologies has expanded worldwide for social, economic and political use and contributed to the development of modern society. As the importance and use of new ICT tools is increasing, the digital divide between those who can benefit from these tools and those who do not, such as the poor and women in the developing countries, is also enlarging. Regarding the gender perspective the management, control and access to ICT is not equal between men and women.<sup>100</sup> Research has shown that when controlling for criteria such as employment, education and income, women tend to be more active users of ICTs. As such, ICTs have the capacity to positively empower some women while negatively reinforcing the disadvantages of others. In the Middle East and North Africa (MENA) region, United Arab Emirates holds the top position in minimizing the over-all gender gap, followed by Kuwait and Bahrain, while Saudi Arabia, Syria and Yemen have the highest gender gap in the Arab region. The Middle East and North Africa region has reached 59 per cent in closing the overall gender gap.<sup>101</sup> These rates are roughly correlated to the use and ownership of ICTs in these countries.

In order to prevent the gender disparity from becoming larger, it is crucial to take actions towards increasing women's access to and changing the perception of ICT use. This chapter will discuss the reasons for the digital divide between men and women, what can be done to close the gap and what actions have been taken globally but mainly in the Middle East region.

#### 1. *Why is there a gender digital divide?*

The use of Information and Communication Technologies (ICT) has increased rapidly since the early 90's in the Arab countries.<sup>102</sup> Notwithstanding this increase, there is a large gender gap in using ICT. Women have benefited much less from the development of the modern technology society than men. The social and economic status of women in the Arab society had made the progress of ICT use among women difficult.<sup>103</sup> Therefore there are several reasons why women in the region suffer from low rates of digital inclusion.

In some cases, high adult illiteracy rates are a major constraint. Research by ITU estimates a regional average adult illiteracy rate of 65 per cent<sup>104</sup>. Modern technology such as the Internet is mainly dominated by foreign languages, creating a linguistic barrier for women who are illiterate or do not speak a second language. In addition, cost of access and connectivity is also a barrier to women living in poverty. Because it is widely acknowledged that women are disproportionately impacted by poverty, these access barriers should be understood as a gender sensitive issue. In addition, women often have limited or no control over their financial resources, making them dependent on a male family member. In addition, the expectation that

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<sup>100</sup> ESCWA, 2009, Gender and ICT, p. 1.

<sup>101</sup> WEF, 2012, The Global Gender Gap Report, pp. 25-26.

<sup>102</sup> ITU, 2011, ITU Regional Workshop on ICTs for Women's Empowerment in the Arab Region, p. 1.

<sup>103</sup> Badran, 2010, The Role of ICT in Empowering Women in Arab Countries, pp. 3-4.

<sup>104</sup> ITU, ITU Regional Workshop on ICTs for Women's Empowerment in the Arab Region, 2011, p. 8.

women will undertake a disproportionate amount of time in household maintenance can result in less time available to use ICT tools, even in cases where the household may have access.

In some cases, cultural barriers make it problematic for women to access shared ICT resources. Internet cafes are an example of this type of effect. Because these spaces are often male-dominated, women may experience social exclusion even in cases where physical access to shared ICT resources is present. Another limitation which affects this dynamic is the conflicts and uncertainty in the region, which can create social pressure for women to remain at home, when public spaces are perceived as being increasingly violent and unsafe.<sup>105</sup> In addition, girls and women also experience negative social attitudes and lack of family support if they take interest in technology, as explored in the sections of this study devoted to higher education.

From a broader perspective, another obstacle is that national ICT strategies often do not take gender perspectives into consideration, which is a hindrance for women in the region to fully experience the benefits of ICT development. The lack of analytical research and statistics regarding the Arab women in the ICT sector indicates that there is a need for increasing the awareness of ICT-related issues in measurement activities to provide the data necessary to deliver effective sustainable development for changing the perception of women and expanding their capability.<sup>106</sup>

## 2. *How are ICTs used to empower women?*

Empowering women through ICTs can be linked to the Millennium Development Goals (MDGs) which are aiming towards reducing world's main development challenges. Objectives such as developing the capacity of women in rural areas, education, distance learning, reducing poverty, providing economic activities and improving women's health could be achieved through the increased use of ICT.<sup>107</sup>

MDG objectives and outcomes of empowering women through ICT, is a cross-cutting issue. More explicitly, women will achieve new business opportunities and the market access will be improved, especially for the craftswomen who will be able to access larger markets by using ICT. It will also enhance the potential for women to interact with other women at the national and international level, facilitating the process of exchanging ideas, perspectives and also expertise in different fields. Due to information access online, such as e-learning, their education opportunities will increase, which will improve their skills and open up new doors for employment or entrepreneurship.<sup>108</sup> The ICT sector has opened up new job opportunities overall during the past decades, but women are mostly assigned into the low-skilled, low-valued jobs such as call centres, data entry and processing positions. While participating in high-skilled and high-value added decision-making or entrepreneurial activities within the ICT sector, roles which typically have low female participation rates.<sup>109</sup>

Women's empowerment is also enhanced through the use of ICT in daily life. Issues related to themselves and their families will be more easily tackled if they have access to information through ICT. In this way women will be able to improve their knowledge and awareness in topics related to health, domestic violence, child raising and civil rights to mention few.<sup>110</sup> Therefore it is important that women's needs be taken into consideration and validated through ICT. This will give them opportunity to participate and benefit from issues in social and economic spheres.<sup>111</sup>

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<sup>105</sup> ESCWA, 2009, Gender and ICT, p. 1.

<sup>106</sup> ITU, ITU Regional Workshop on ICTs for Women's Empowerment in the Arab Region, 2011, p. 9.

<sup>107</sup> ITU, ITU Regional Workshop on ICTs for Women's Empowerment in the Arab Region, 2011, pp. 15-16.

<sup>108</sup> ITU, 2011, ITU Regional Workshop on ICTs for Women's Empowerment in the Arab Region, pp. 13-14.

<sup>109</sup> ESCWA, 2009, Gender and ICT, p. 2.

<sup>110</sup> ITU, 2011, ITU Regional Workshop on ICTs for Women's Empowerment in the Arab Region, p. 14.

<sup>111</sup> ESCWA, 2009, Gender and ICT, p. 2.

### 3. *What has been done to increase the awareness of women empowerment through ICT?*

The International Telecommunication Union (ITU) has among others, initiated a program entitled “Connect Arab States”. During the Connect Arab Summit 2012, the following three main points were discussed: build, innovate and empower. The initiative aims to achieve empowerment of all citizens in the Arab region by education, knowledge and access to information.<sup>112</sup> ITU has been taking steps to help empower disadvantaged women to improve their lives by accessing information, facilitating choices and opening new opportunities through the use of new technologies. Among other projects, ITU has financed a feasibility study on how the use of ICTs can eradicate illiteracy for women in the Arab region.<sup>113</sup>

Accordingly, there have been many attempts to empower women through ICT in the Middle East. In a partnership between the Asala, the Palestinian Businesswomen’s Association, and Souktel SMS alerts are sent directly to local businesswomen about service and support information. Asala has a long track-record of giving micro-loans to local businesswomen but it was difficult to keep contact with the borrowers since most of them live in the rural areas. Distributing informing about different training sessions or payment reminders was very inefficient. Together with Souktel they found a way for this problem and have now SMS service to reach out to hundreds of women by just sending a text message to their cell phones. By doing this, it has helped female entrepreneurs to stay connected and experience enhanced socio-economic development.<sup>114</sup>

In Northern Iraq, Souktel together with aid agency Mercy Corps have launched a new mobile phone information service to support local women leaders. This service facilitates leaders of women’s groups to send each other key news and information by SMS. While the spread of information was limited before, it has now become easier to send information, to network with each other, develop joint projects and get access to leadership training, all of which improves their communities by promoting tolerance, reconciliation and exchanging knowledge. This facilitates the women to reach their dream of peace by being connected through technology.<sup>115</sup>

Qatar has also taken steps to spread knowledge and awareness about ICT among young women. The Supreme Council of Information and Communication Technology (ictQATAR) participated in ITU’s Information Society Day (WTISD) of “Women and Girls in ICT” which aims to provide women with equal opportunities by making them aware of the importance of utilizing ICT for women. The activities of this initiative also included mentoring sessions with leading women in ICT, tours to Qatar’s Assistive Technology Center and ictQATAR’s Q-CERT program. To encourage the young women to blog, a blogging workshop was provided, showing how to set up and create content. There were estimated to be around 6,586 active blogs in Qatar during May 2012, reflecting growing interest among young women. The aim is also to empower women to be fully capable members of a knowledge-based society and draw more young women into careers in ICT and bridge the digital divide.<sup>116</sup>

A variety of portals have been set up for the empowerment of women in the Arab region. In 2012, a Saudi e-portal for the empowerment of women, won a United Nations contest organized together with the International Labor Organization (ILO) through the Youth Employment Network. This e-portal, Glowork.net was selected because it had helped promote the employment of women in the Saudi labour force. The portal had helped to publicize 2,500 job vacancies for women. This also helps organizations to hire women from home for jobs such as call centres and telesales. A virtual office creates more culturally-sensitive opportunities and can even be a solution for many women, such as those in the rural areas. Glowork

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<sup>112</sup> Connect Arab Summit, 2012, Summit Programme, Build. Innovate. Empower., p. 1.

<sup>113</sup> ITU, 2011, ITU Regional Workshop on ICTs for Women’s Empowerment in the Arab Region, pp. 12-14.

<sup>114</sup> Souktel 1, <http://www.souktel.org/aidlink-other/413-palestinian-businesswomen-get-loan-information-via-sms.html>

<sup>115</sup> Souktel 2, <http://www.souktel.org/aidlink-democracygovernance/115-iraqi-womens-groups-use-sms-alerts-and-surveys-to-strengthen-communities-promote-peace.html>

<sup>116</sup> Digital Qatar, 2012, <http://www.digitalqatar.qa/en/2012/05/20/ict-to-empower-women-and-girls-in-qatar/>

partnered with universities in order to educate women about the job market, how to prepare a CV and how to prepare for an interview.<sup>117</sup>

Another initiative of note is a platform in Lebanon, called Women Economic Empowerment which works towards creation, harvesting, sharing and dissemination of resources, information, analysis, materials and links that is related to women’s economic rights, participation and empowerment. Through this website, women can find job opportunities and different events such as seminars, trainings, publication launches, workshops, roundtables and many more. The portal aims to make women aware of their economic rights and entitlements as well as their right to economic participation. Therefore, ensure that they know of their right to have a voice, participate, organize, decide and be recognized as an economic actor and decision maker.<sup>118</sup>

These are examples of what has been done in the region, even though there are more success stories to tell from the Arab region, there is a long way to go before women empowerment through ICT will become a true success. In the next section, prevention and reduction of domestic violence through ICT is discussed, together with selected success stories.

## B. ICT AND DOMESTIC VIOLENCE

Domestic violence is estimated to have reached 1 billion women worldwide and is a serious issue in the region. As illustrated by table 5, attitudes towards domestic violence vary widely throughout the region. This variance suggests that an approach to this problem should be customized to the ends of the particular country, while moving the region as a whole towards healthier behaviour. In addition, the sanctity of home life is an important aspect of regional culture. Intrusions by policy makers, social services, or law enforcement into the realm of the home are very sensitive issues. This principle makes the types of approaches which are common in other areas of the world, such as Europe, less welcomed in the Arab region. In this regard, the capacity of ICTs to broaden exposure to other ways of thinking, particularly among and between countries which share membership in the Arab region, could play a very valuable role in helping raise awareness of approaches to preventing domestic violence which are effective and consistent with regional culture and values.

**Table 5. Percentage of women aged 15–49 who think that a husband/partner is justified in hitting or beating his wife/partner under certain circumstances**

Country	Percent
Jordan	90%
South Sudan	79%
Algeria	68%
Sudan	47%
Egypt	39%
Lebanon	10%

Source: [http://www.childinfo.org/attitudes\\_data.php](http://www.childinfo.org/attitudes_data.php), 2013

During the past few years, major emphasis has been placed on identify different ways that technology can be used to empower individuals and communities towards preventing and disrupting violence by providing services to victims. For example, the use of ICTs to highlight domestic violence issues on the Internet has generally been created by, and targeted at, women in the 18-25 year old demographic. This effect is influenced by the generally higher use of ICTs among Arab youth, as well as the perspective that the capacity to change attitudes of social behaviour is highest among the youth. However, these programmes and

<sup>117</sup> Arab News, 2012, <http://www.arabnews.com/saudi-e-portal-empowerment-women-gets-global-recognition>

<sup>118</sup> Women Economic Empowerment Portal, <http://www.weeportal-lb.org/about-us>

projects do have the capacity to benefit a wide variety of users. “Hackathon Against Domestic Violence” is an example of such an event, where 350 web developers collaborated in order to come up with innovative ways to help raising awareness about domestic violence by developing new applications. There were several useful outcomes of this event, where the winning team developed an anonymous forum where victims could share experiences and learn from one another without giving up their privacy. SMS and web-integrated hotlines have been used to provide information on gender-related violence and how to report an incident. Also, in other cultural contexts, the USA government launched an initiative entitled “Apps Against Abuse” which challenged developers to innovate ideas for ways mobile phones could help young women and men to take a proactive role in preventing violence and sexual assault. An iPhone app was developed where a person could quickly reach their circle of supporters and make them aware of their location and need.<sup>119</sup> These examples illustrate the types of programmes which could be usefully applied in the region, and should be carefully considered by government and private sector stakeholders.

Because of their value in disseminating information in a confidential way, ICTs are very helpful in addressing development challenges which are social stigmatized. In recent years, activists, service providers and governments have increasingly utilized ICTs to raise awareness of the resources and options available to combat domestic violence. These efforts have rightfully included outreach efforts with men as part of a concerted campaign to address all facets of the problem. Examples of this type of outreach activity include such efforts as One Billion Rising, which makes extensive use of social media to raise awareness of domestic violence issues. In addition, increasing information is being made available to women on human rights, legal protections, and assistance options available to them.

In addition to these positive steps, there remains much to be done on this topic. For example, in Egypt, 83 per cent of the women have reported being victims of sexual harassment. In order to address this, a tool called HarassMap has been developed. This tool receives reports of sexual harassment through SMS, which can in a real time show on a map where the sexual harassment is taking place in Cairo. Identifying the place helps the local authorities to see where the harassment is going on and then intervene. Similar applications are also being used in Palestine, entitled Street Watch Palestine to track violence against women and aid interventions. Not only can these kinds of visible public forum help with reporting and intervention, it also helps in raising awareness of domestic violence.

Although mobile services exist against domestic violence, women in Middle East and Africa are 25 per cent less likely to have a mobile phone than the men. Therefore it is not easy to reach to all the women who are domestic violated, especially not in the rural areas, where there is less likely to own a mobile phone. Also, while new technologies such as the GPS tracking system has a great advantage in women’s safety, it also gives the opportunity to cyber stalking and digital abuse, since the abusers can achieve more control over their victims.<sup>120</sup>

Even though there are setbacks, such as availability of mobile phones and the opposite effect of having a tracking system, there are several new actions towards raising awareness of domestic violence through other technology rather than applications and SMS. One example is in Saudi Arabia, they launched a campaign against domestic violence, where they are working towards minimizing the four World Economic Forum pillars, economic participation and opportunity, educational attainment, health and survival and political empowerment. To enhance the educational attainment, the goal of Saudi Arabia is to opening up some educational institutions for both men and women and to provide online education opportunities for Saudi women.<sup>121</sup>

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<sup>119</sup> Science progress, 2013, <http://scienceprogress.org/2013/03/eliminate-violence-against-women-and-girls-worldwide-there’s-an-app-for-that/>

<sup>120</sup> Science progress, 2013, <http://scienceprogress.org/2013/03/eliminate-violence-against-women-and-girls-worldwide-there’s-an-app-for-that/>

<sup>121</sup> <http://www.kkf.org.sa/ar/Pages/nomoreabuse.aspx>

In addition to this example, radio is also being used to address this problem. Beginning in the second half of 2013, a radio drama will be launched which will focus on a fictional young Arab radio journalist called Noha. The purpose of the programme is to constructively debate and promote women’s empowerment in Arab-speaking countries. This programme will be launched in Palestine territories and Egypt and will be available with exclusive rights to broadcast in other Arab-speaking countries such as Morocco, Libya, Tunisia, Lebanon, Jordan, United Arab Emirates, Saudi Arabia, Qatar, Oman, Kuwait and Bahrain. The objective of this project is to provide, in an entertaining and non-threatening way, a programme which can spread information, raise awareness and engage a wide range of actors in a public debate that might stimulate changes and progress women’s empowerment.

The radio drama will be followed by a live show that will debate the situations presented on air as well as the characters lives, choices and behaviours. There will also be an open online space moderated by the programme manager where experts in the field will comment and debate with the audience. The radio drama emphasizes women’s social and economic empowerment, participation in public life, emancipation and social rights and violence against women. There will be arranged collective listening followed by debates in cooperation with women’s groups, schools, universities and non-government organizations (NGOs). The listeners will have the ability to share their own experiences, stories, opinions and solutions to different matters.<sup>122</sup>

### C. ICT AND HIV/AIDS

Of the health matters relevant to Arab region youth, HIV/AIDS is among the most important. As is widely acknowledged, cultural sensitivities make frank discussion of this issue difficult. Particularly because HIV transmission can often involve stigmatized behaviours, it is common to find that people do not believe it is important to be aware of the risks or treatments available. This has led to remarkably low scores on HIV/AIDS awareness studies. For example, the Demographic and Health Surveys project provides transnational comparable data on a variety of issues of relevance in the developing world. As such, attitudes about HIV/AIDS are measured. One such indicator, the percentage of women with comprehensive knowledge about HIV/AIDS is particularly illustrative.

**Table 6. Percentage of women with a comprehensive knowledge of aids**

Country	Percentage (%)
Jordan	14.4
Syrian Arab Republic	7.9
Egypt	7.1
Iraq	2.7
Yemen	1.3

*Source:* Compiled by ESCWA from the Multiple Indicator Cluster Surveys

As shown in table 6, the knowledge necessary to understand HIV/AIDS is distressingly limited. Further data available for some countries shows a trend of high reliance (>~90 per cent) on television for information on HIV/AIDS. While this type of mass media is no doubt effective, it does highlight the opportunity to utilize other ICTs to address this serious problem facing Arab youth. In this regard, the use of the Internet to access information about HIV/AIDS is much lower than might be expected. For example, as of October 2013, Google reports approximately 590 searches per month for the term “AIDS” (and related terms) for the entire country of Egypt. Considering that for the same month, there were approximately 18,000 searches for the same term in the United Kingdom it is clear that the existing disparities are so large as to suggest that the Internet is not being effectively utilized to locate information on HIV/AIDS in Egypt.

<sup>122</sup> The Communication Initiative Network, 2013, <http://www.comminet.com/global/content/arabic-language-radio-fiction-womens-empowerment>

In order to address this issue, governments, NGOs and other stakeholders have sought to provide enhanced content online. By creating online information repositories, using new media, and integrating social media tools, it is hoped that these technologies can better help youth in the Arab region acquire the information they need. To meet this need, the UNFPA has promoted a youth peer education network, known as Y-Peer in approximately 15 Arab region countries. With a presence in Oman, Egypt, and Lebanon this project connects youth with the information they need on HIV/AIDS and other related topics.

Other examples can be seen at the national level. As an NGO, l'Association de Lutte Contre le Sida (ALCS) has been advocating for HIV/AIDS related issues in Morocco. Combining Internet content with mainstream mass media campaigns, ALCS provides timely information in a variety of languages to groups which might otherwise not have access. Because high-quality content has the capacity to drive traffic and interest in a topic, this organization is helping to close the knowledge gap on HIV/AIDS in the region. In addition to web-based content, the organization also provides hot-line call-in counselling.

In order to effectively counter the spread of HIV in the region, it is necessary to understand the infection vectors. Existing research has estimated that while HIV rates are low in the over-all population, specific groups are considered at high risk. These groups include street children, intravenous drug users and men who have sex with men (MSM). While targeting these groups through mass media campaigns is unlikely to be effective, utilizing ICTs to specifically address some of these risks is more realistic. In this regard, research undertaken among MSM in Beirut, Lebanon has suggested that ICTs can play an important role.

In a qualitative study published in 2012, research indicated that ICTs played a dual role in disclosure of HIV status among MSM. The comparative anonymity of Internet contact made it easier to approach issues of HIV status, and to discuss condom use. However, among MSM who also have female partners, this effect was not observed, leading to a scenario in which ICTs were helpful in addressing risk factors in one community, but notably absent in behaviour which could affect partners who were unaware of the risks they were exposed to. This risk is particularly problematic as some women have limited control over their reproductive rights, including decisions on condom use. In this regard, risk of exposure was higher in scenarios of this nature where ICTs were not used, than in cases where ICTs played an enable role.

These examples illustrate that a variety of ICTs uses can help address the significant knowledge gap which exists on HIV/AIDS issues. At this stage, efforts to implement these applications are primarily being undertaken by NGOs, International Organizations, and users themselves. Government actors are notably absent on this issue, because of the high potential impact of these solutions, particularly in dealing with issues which are normally considered culturally sensitive. Governments should carefully consider more active involvement, particularly among high risk groups. Specific interventions could include the use of online awareness raising campaigns, and the use of smartphone applications to utilize the capacity of mobile technology to effectively reach Arab youth.

#### **D. ICT AND THE HEARING IMPAIRED**

Among the marginalized groups in society globally, persons with physical disabilities are often seriously disadvantaged. In particular, life-long disabilities which interfere with a person's capability to participate in society deserve special attention and support. As an example of this issue, hearing impaired persons struggle to integrate into hearing society, participate in meaningful employment and enjoy their human rights. 82 governments around the world have acknowledged the need for action to address this problem by signing The Convention on the Rights of Persons with Disabilities. In order to translate this political will into tangible results, ICTs have a significant role to play.

This contribution is particularly clear in the area of services for the estimated 18 million hearing impaired individuals in the Arab region. Several factors contribute to this reality. First, with the greatly increased adoption of mobile technology among the youth, it has become significantly easier for the hearing impaired to effectively communicate with their hearing counterparts. Second, the use of social media tools has made ICT-enabled communication more normative. In fact, youth in the general public are using text

messages to communicate to such an extent that many complain that youth overuse these technologies. Third, the greatly reduced cost of communication, including video calls, makes it vastly more cost effective for the hearing impaired to communicate with one another. Because this readiness to adopt ICTs for communication is demonstrably more prevalent among youth in the Arab region than among older generational cohorts, the impact of these factors are increased for young hearing impaired persons. Making use of these technologies during the formative, high-risk periods of life provides additional value for the individuals, communities and society.

Together with these beneficial advantages, there are key obstacles which affect the adoption of ICTs by disabled Arab youth who may suffer from marginalization. From a linguistic perspective, spoken Arabic presents several challenges for the hearing impaired. Principally, spoken Arabic is characterized by diglossia, a term defined by Charles Ferguson as: “A relatively stable language situation in which, in addition to the primary dialects of the language (which may include a standard or regional standards), there is a very divergent, highly codified (often grammatically more complex) superposed variety. The vehicle of a large and respected body of written literature, either of an earlier period or in another speech community, which is learned largely by formal education and is used for most written and formal spoken purposes, but is not used by any sector of the community for ordinary conversation.”<sup>123</sup> Because of this feature, it is more difficult for hearing impaired persons to use standard written Arabic to communicate with hearing Arab speakers than in other examples, such as European languages, in which there is much less variability between the written and spoken forms of the language. In essence, hearing impaired individuals in the Arab region must learn three languages in order to function in society, sign language, spoken Arabic and written Arabic.

While it is a commonly held misconception that sign language is universal among hearing impaired individuals, this is not the case. In fact, there are many varieties of sign language, with little overlap, including among cases where spoken languages are highly similar, such as the case with American Sign Language and British Sign Language, which are not interchangeable despite the use of English in both hearing communities. Similarly, varieties of Arabic Sign Language demonstrate a high degree of differentiation, making it very difficult for hearing impaired individuals in the Arab region to communicate between countries. Because of these characteristics the linguistic communities are smaller than might be anticipated, making it less cost effective to deliver services, adding to the sense of social isolation and making it more difficult to productively integrate these individuals into the workforce. Youth are particularly impacted by these issues, because of the time and resources which must be dedicated to language education, at the cost of other fundamentals such as science and math. Therefore, even if a hearing impaired youth in the Arab region successfully overcomes the language barriers, it is likely that they will be less competitive in the job market because their hearing peers will have been able to invest in other skills. In this sense, the resources needed to accommodate these structural linguistic issues become a kind of tax on the educational process.

A variety of specialized technological tools have been developed in an attempt to address these issues. In 2012, an application developed by the Electrical and Computer Engineering Department at the Khalifa University of Science in the United Arab Emirates, attempted to address these issues. This application used a multi-tier, client-server, java based approach to facilitating the translation of written Arabic text and Sign Language. In this approach, text was transmitted to a central server, which then made a video of the applicable sign language word available for download. Chat services, where small videos were exchanged between users were also part of the functionality. Advantages of this approach include the capacity to run on a platform independent architecture, and transfer of difficult software engineering challenges from the mobile device to the remote server. This type of structure works well in environments with plentiful bandwidth and reliable infrastructure.

In addition, an application developed by the Taibah University in Saudi Arabia should be carefully considered. This application uses a desktop software model, in which user accounts and chat technologies are facilitated through an intermediate server. The system is not designed for mobile use. By taking advantage of

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<sup>123</sup> Ferguson, C. (1959). Diglossia. *Word*, 15, 325–340

the presence of a keyboard, together with the larger screen sizes and computation resources, this approach has greater flexibility linguistically than other options. This comes at the cost of portability and convenience as a system to enable communication between hearing impaired individuals and the general public. This system functions primarily as a mechanism for teaching Arabic language literacy, and enabling direct communication between hearing-impaired people using both sign language and written Arabic.

In addition to these two options, there are many other attempts to develop ICT-based solutions to the challenges facing hearing impaired individually and as a community. However, none of these options are widely used by the hearing impaired. In fact, there is much more evidence that the technologies developed to facilitate social networking among hearing individuals, such as FaceTime, Skype, SMS and Facebook have had a significantly higher uptake rate among hearing impaired individuals than any custom developed applications. Given the maturity of these existing dual-use technologies, governments in the region should carefully consider the use of specialized ICT tools in early literacy interventions in the classroom, while leveraging existing technology for social outreach and empowerment programmes.

## V. CONCLUSION AND RECOMMENDATIONS

Addressing the complex determinants that are hampering Arab youth employment is a problem beyond any technology-driven approach. ICT use per se, will not necessarily favour better education or create jobs; ICT's role, however, could be immensely beneficial when properly mainstreamed into well-thought initiatives, particularly in education.

However, as the ICT sector continues to grow through initiatives and new developments, the number and variety of professions that are considered ICT professions also continues to grow. The vastness and variety of core and related ICT professions can be seen in the "International Standard and Industrial Classification of All Economic Activities" (ST/ESA/STAT/SER.M/4/Rev.4), published by the United Nations Statistics Division.<sup>124</sup> Job categories that are considered as part of the ICT Sector can range from those that deal with the transmission or distribution of information and communication products to the production of multi-media, broadcasting, telecommunication, computer programming and the dissemination of information. The skills required for these professions are as varied as the professions themselves and can range from those requiring a high school level education coupled with on-the-job-training to those requiring advance university degrees. The job categories continue to grow as the ICT Sector does, which can have a positive effect on employment creation. However, education systems that can ensure that the skills needed in the workforce are available should be developed and implemented.

As in many other regions, Arab countries started introducing mobile and Internet technologies (albeit at different paces) since the 1990's. These new technologies changed the landscape of traditional telecom infrastructure and offered new prospects for socio-economic development. Driven by the World Summit on Information Society (2003 and 2005) recommendations, many Arab countries elaborated so-called national ICT strategies, or e-strategies, aimed at leveraging the potential of ICT for social benefits and economic growth<sup>125</sup>.

The problem of lack of sufficient support and financing of young entrepreneurs and small enterprises in the ICT sector persists, despite the strategies and serious efforts by some countries in the region to provide an enabling environment for the development of the ICT sector (ESCWA, 2011a).

Many countries in the region have created incubation structures to support ICT entrepreneurship. These initiatives have had success in helping to create jobs and, more important, offering opportunities for talented youth lessening the brain drain. However, ICT entrepreneurship incubation in the region is limited both in terms of number of structures and sizeable impact on the economy in terms of GDP and jobs creation. For example, Berytech, quite a successful Lebanese Incubator contributed to the creation of only 258 jobs in a seven-year period between 2005 and 2011.<sup>126</sup>

More efforts are needed to upscale these initiatives both in terms of number and impact by creating an entrepreneurship eco-system where incubators are part of a meshed network involving all enablers of entrepreneurship and sustainable business creation, namely: personal enablers (mentors/advisors, formal and informal education), business enablers (professional services, incubators, business advisors), financial enablers (equity investors, banks, micro-financing, government programs), and environmental enablers (regulatory framework, infrastructure, entrepreneurial organizations, media and culture)<sup>127</sup>.

When discussing jobs polarization in chapter I, this study highlighted how ICT reduced demand for middle-level jobs especially in manufacturing and clerical work and increased demand for low-skills service and high-skills jobs alike; there was a consensus however that polarization has not significantly increased

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<sup>124</sup> United Nations, 2008, pp. 205-215

<sup>125</sup> ESCWA, 2011c, p. 3.

<sup>126</sup> ESCWA, 2011c, p. 71.

<sup>127</sup> WEF, 2011, p. 12.

demand for high-skills jobs in developing countries – and Arab countries are no particular exception. One main reason evoked for this low demand for high skill jobs is that the necessary organizational transformations, whereby increased autonomy is given to employees and reliance on their ability to handle information and interact with other people, have not taken place.

It is therefore appropriate for private sector and governments alike to recognize this needed change and carry out the necessary organizational transformation both internally within their respective domains and also towards their end-users/customers.

Some of the region's governments – particularly those who implemented quality e-government and some other social e-services - have begun this transformation process even though they essentially implemented the technical part of this transformation and, to a lesser extent, the more difficult organizational one. Internally the main issue is to have autonomous people who could leverage the new ICT tools to better interact with end-users and improve government and other public service offers like local authorities, municipalities and the important health sector.

There is high potential for governments and public service authorities in the Arab region to hire skilled youth to become the main actors of their organization's transformation and implement e-services if this has not yet taken place or is only partially complete. As important to the internal change, the attitude regarding e-services by end-users (the demand side) must evolve. There is no evidence that public e-services are massively adopted in the region even in countries where they are widely available; evolving the attitude of end-users entails an active role of youth to become early adopters, and also offer them the opportunity to exercise their talent and technical competencies – through local start-ups - to invent new interfaces for public services that are adopted and properly tailored to local needs. As for the private sector, and with the exception of some leading telecom and IT companies, the process of change has not yet significantly taken place.

At a recent regional gathering of leaders from Arab ICT private sector, there was a consensus that the “pace of digitization” in the region has slowed down and that, should the region's countries accelerate their pace of digitization (based on historical growth trends achieved in benchmark countries), the impact of digitization in the region between 2012 and 2020 could be US\$ 820 billion in additional nominal GDP and 4.4 million extra jobs.<sup>128</sup>

All initiatives identified at this gathering to drive the pace of digitization in the region whether involving the development of a proper enabling environment or driving supply and demand of digital services, if implemented, could result in massive opportunities for job creation among the region's youth. Some examples are: implementation of payment systems, including mobile payment; defining national cyber security frameworks and associated public and private structures to deal with cyber-threats; development of digital services by regional mobile operators; stimulating digital entrepreneurship through a holistic approach, including talent, financing, and legal frameworks; and, driving demand for digital services by government's incentives to use e-services and development of Digital Arabic content.

Therefore, there is ample room through properly implemented ICT-driven transformation, and in association with the needed reform of the education system, to significantly increase demand for skills and reduce unemployment particularly among the youth. This also allows youth to become drivers of the much needed organizational change in the region and bring the values of autonomy and capacity to handle information and interact with people - beyond the streets- into economic life, administrations, and all public services.

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<sup>128</sup> <http://www.booz.com/global/home/what-we-think/reports-white-papers/article-display/2012-ict-leaders-event>

Prior to the recent Arab uprising, a study evaluated the costs of youth exclusion in two countries of the region, Jordan and Egypt.<sup>129</sup> The study found that the countries lost respectively 7.3 per cent and a staggering 17.5 per cent of their GDP<sup>130</sup>. The author highlighted that “this points to inefficiencies inherent in the programs addressing youth development in the region since employment, educational, and health policies are not really addressing the concerns of the younger generations.” The author’s conclusion that “real costs extend beyond economic costs to include psychological and mental costs that are difficult to measure” is particularly prescient knowing the particular event that eventually sparked the recent political events.

The challenge of providing employment opportunities and decent jobs to Arab youth is quantitatively and qualitatively tremendous. The first because the so-called youth bulge in the region will still take time to recede and the second because the determinants of Arab youth unemployment are structural in nature and deeply seated in the shortcomings of the Arab education and skills development systems as well as insufficiently labour generating growth patterns.

In such a context any technology-driven approach would likely be inappropriate. However, when discussing some proposed approaches addressing the structural determinants of Arab youth unemployment, ICT has been shown to be a useful tool particularly to improve access to information and knowledge and quality and speed of information exchange among actors.

In comparison with other developing regions, and with quite a few exceptions, ICT infrastructure in the region is generally from decent to excellent quality, the latter particularly in rich GCC countries. However, on the important issue of use of ICT services, successful e-services in the region are primarily driven by some government’s action and initiatives (the main example are e-government services in the majority of GCC countries); on the opposite side, there is significant under-performance in the adoption of ICT in the economy, development of e-commerce, and in education; all very important domains impacting youth education and employment. Moreover, the region does not offer appropriate support for ICT innovation and financing of young entrepreneurs.

This study reviewed some important determinants of Arab youth unemployment and suggested ways to leverage ICT in addressing them. ICT can undoubtedly improve the situation in education, skills development and job matchmaking, financing of youth and micro-entrepreneurs, and ICT- driven transformation of organizations. However, the efficiency of using ICT could be leveraged to the extent that actors adopt it with a new mindset and a resulting attitude characterized by autonomy, capability to handle information and interaction with others.

Arab governments and economic decision-makers should act promptly to leverage the transformative potential of ICT with youth and, beyond offering a perspective for economic and social inclusion, at long last, offer an opportunity to transform the region’s youth bulge from the problem that it is today into an opportunity.

Arab youth’s inclusion represents thus both an imperative and an opportunity. If ICTs can – and, most likely, they will – contribute to this inclusion it is essentially because of a new mindset, triggered by technology adoption. This will contribute to the advent of an open and inclusive knowledge society where youth thrive and find their legitimate place in society.

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<sup>129</sup> Measured by adding costs of youth unemployment, joblessness, early school leaving, adolescent pregnancy and young mothers, and brain drain. Due to data unavailability for *all* of the above elements, only the cases of Jordan and Egypt were completely worked out.

<sup>130</sup> Shaaban, 2008, p. 17.

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## Annex I

**TABLE A.1. TESTING COGNITIVE SKILLS**

Skill	Definition of Skill and its Components	Test Item Description
Searching and Processing Information	All knowledge, competencies and attitudes recalled by a learner in a situation of searching for and processing information (e.g. searching for relevant information, analysing and linking it, expressing an opinion on it, etc.)	Starting position 1: A drug brochure Starting position 2: A text tackling youth unemployment in Arab countries (written paragraph with a graph and table)
Written Communication	All knowledge, competencies and attitudes recalled by a learner to produce a written message in a functional communication position (e.g. understanding of communication topic, choice of words and appropriate style, language integrity, clarity of meaning, etc.)	Starting position: Presentation of a group of environmental scenes Task: Writing banners highlighting threats facing the environment, and people's roles in reducing them.
Problem Solving	All knowledge, competencies and attitudes recalled by a learner to solve a problem relating to reality (e.g. interpreting the problem, analysing its elements and the relationship between them, identifying solution hypotheses, etc.)	Starting position: Presentation of a logical problem Task: Extracting the problem at hand and searching for an appropriate solution by adopting a thinking and searching methodology based on logical assumptions
Meaningful and Effective use of Modern technologies	All knowledge, competencies and attitudes recalled by a learner to use modern technologies and employ them to serve useful objectives (e.g. identify tools and their functions, determine the goal of using these means, know the ethics of using technologies, etc.)	Starting position: Variety of exercises on the numerous uses of computers and the internet in daily Life

*Source:* UNDP/MBRF, 2011.

## Annex 2

### **ADDITIONAL EXAMPLES RELATED TO ICT AND EMPLOYMENT**

The following paragraphs provide illustrative examples of initiatives that have been implemented in the region and elsewhere to address the issues related to the employment of youth and the role played by ICT.

#### **A2.1 THE EDUCATION FOR EMPLOYMENT FOUNDATION<sup>131</sup>**

EFE (efe.org) is an affiliated network of locally-run non-profit organizations that creates economic opportunities for youth in the Middle-East and North Africa region. Affiliated organizations in EFE network are located in six countries: Egypt, Jordan, Morocco, Palestine, Tunisia and Yemen.

EFE is focused on youth employment in the MENA region with each affiliate locally-run and partially locally-funded, ensuring that all affiliates are efficient and sustainable. Affiliates leverage resources and know-how through the EFE global network (EuropEFE and EFE-Global).

It engages young women and men, local business leaders, educators, civil society and governments in partnerships that produce job placements and entrepreneurship support; it identifies areas of the economy that offer strong growth potential and opportunities for new jobs, but currently lack suitably-qualified personnel.

The network has successfully placed nearly 80 per cent of its graduates in jobs. It claims that affiliates in the six countries have trained and placed more than 3,000 students to date.

EFE's intervention profile typically works as follows:

- It partners with local employers who have vacancies and identifies the skills and tasks required for the job. Employers pay for a portion of the training;
- It partners with global educators to develop training curricula, and adapts it to local needs;
- Courses range from two to six months and focus on both hard skills as well as soft skills with a strong emphasis on confidence building;
- In many cases, employers guarantee employment prior to training. This helps in recruiting youth and lowering job search costs.

#### **A2.2 DUAL SYSTEM APPRENTICESHIP: A PANACEA TO COMBAT YOUTH UNEMPLOYMENT?<sup>132</sup>**

The “dual system” – which combines school-based education with in-company training – is typical of Austria, Denmark, Germany and Switzerland, and more recently Norway. Apprenticeships are part of the formal educational structure, and are usually entered into after completion of compulsory education. They involve an employment relationship plus formal schooling over a period of three or four years. At the end of the programme, apprentices graduate through a final examination in which they have to prove their theoretical and practical understanding of the occupation.

Dual systems have proved successful in giving young people a good start in the labour market. Denmark, and Switzerland are among the OECD countries with the lowest unemployment rates for youth, and Austria is well below the OECD average. In addition, Austria, Denmark and Germany are among the countries with the lowest share of youth experiencing repeated spells of unemployment.

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<sup>131</sup> <http://www.efe.org>

<sup>132</sup> ILO, 2012, p. 52.

### A2.3 ACCESS TO CREDIT BY MSMEs IN EGYPT<sup>133</sup>

Egypt provides a good illustration of the skewed imbalance in the availability of finance for the needs of the real economy, especially the MSMEs. MSMEs make up over 99 per cent of private enterprises in Egypt and account for 85 per cent of total employment. They have been the primary absorber of labour force entrants in the recent years and contribute significantly to employment generation, although mostly of an informal nature. These enterprises are also the major providers of products and services for local markets. The stock of MSMEs has grown at an average annual rate of over 4 per cent during the past ten years, and their employment has increased at an annual rate of over 5 per cent. However, MSMEs are highly vulnerable. The average Egyptian MSME has only 2.3 workers and almost 75 per cent of all private enterprises have fewer than three employees.

The problems that limit the access of MSMEs to formal credit include their lack of capacity to prepare a business plan and loan application, opaque or non-existent financial statements, and insufficient collateral. Furthermore, there are the high administrative costs of small-scale lending, inadequate banking skills for dealing with MSMEs, as well as a lack of business development services. MSMEs are also subject to a legal and regulatory framework that is cumbersome and bureaucratic. The benefits of trade liberalization and increased foreign direct investment are not trickling down to these enterprises.

While Egypt has a large banking system, credit to the private sector remains very much confined to the largest and best established enterprises. According to the Central Bank of Egypt, only 1 per cent of total bank credit goes to MSMEs. Banks that have microfinance units operate within defined loan brackets catering to specific segments, largely through conventional products. Compounding this dearth of MSME finance, banks are increasingly investing in treasury bills and government bonds, reflecting their inefficacy in identifying profitable private projects<sup>134</sup> and their highly risk-averse lending policies.

### A2.4 SILATECH

Silatech (<http://www.silatech.com>) presents itself as a social initiative to create jobs and expand economic opportunities for young people throughout the Arab world. Founded in 2008 in Qatar, it has the vision of connecting young people with improved opportunities for employment, enterprise and civic engagement through mobilization of knowledge, investment, technology and networks, and by influencing mindsets and policies. Beyond Qatar, Silatech has programs in 10 Arab countries and region-wide.

Silatech is involved in a wide range of activities related to: connecting beginning entrepreneurs with financing and assistance, spur investment in job-creating small and medium-sized businesses (SME), help job seekers choose the right career, boost employability skills among young people, advocate job-creating governmental policies, advise corporation on youth-friendly CSR practice, and change regional mindsets on youth and work.

The above activities are implemented through programs; of particular interest for this discussion are the programs related to Microenterprise and SME development.

The Microenterprise program's support strategy is articulated around three pillars of seed investments funds, technical assistance, and ecosystem support. The first two aim to encourage and assist financial institutions to introduce financial products and services for young micro-entrepreneurs. The third pillar supports young entrepreneurs with services such as financial literacy, enterprise training, pre-finance incubation, post-finance business support, and market access opportunities.

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<sup>133</sup> ILO, 2012, p. 41

<sup>134</sup> Egypt's loan-to deposit ratio was at only 58 per cent in 2006 compared with a world average of 86 per cent (Al-Ississ, *in* WEF, 2012a).

Young people are early adopters of technology and Silatech recognizes the importance of leveraging ICT for Microenterprise support. It is currently collaborating with technology partners for the introduction of mobile money services in the microfinance sector, client management through short message services (SMS) allowing financial institutions to easily access young clients, and use of Web- and mobile-based platforms to facilitate the provision of both financial- and non-financial-based support services to microenterprises.

In a similar manner to the previous program, the SME development program is articulated around access to finance through partnership with country-level SME equity funds, Business Development Services through a comprehensive 10-point Innovation Management via Monitoring and Advisory (IMMA) system, and access to regional markets.

## Annex 3

### **ADDITIONAL EXAMPLES RELATED TO ICT AND EDUCATION**

Annex 3 offers further information and explanations on the situation of education in the region. It also provides additional illustrative examples of initiatives that have been implemented that aim to make broader use of ICT in education.

#### **A3.1 REFORMING THE ARAB EDUCATION SYSTEM<sup>135</sup>**

The Arab knowledge report suggests *five axes* for preparing the young Arab generation for the knowledge society: *Information and Communication Technologies, systems of innovation and renovation, education and preparation of human labour, business environment and investment climate, and social, political, and cultural environments.*

On the third axis related to education and preparation of human labour, the following priorities are enumerated: elimination of illiteracy, dissemination and instilling of ICT, investment and early childhood care, enabling of Arabic language, focus on learning the most wide spread world languages (especially English), development of teaching and learning methods, and student and curricula assessment, adoption of individual and collective initiatives, expansion and enhancement of secondary education, building national qualification frameworks, re-structuring educational institutions, and positive interaction with the international assessment.

The priorities list is quite long and illustrates, if any, the high number of shortcomings that needs to be addressed by the Arab education system. In a more incisive way, the report points out that “the study of perceptions of both students and teachers revealed the ‘collapse of confidence in the school’, in the content it provides, and in its ability to prepare the young for tomorrow’s world.

The report highlights “the tangible lack of technological skills among students and teachers alike would pose an important question about the prospects for integrating ICT in education, and the ways to rationalise their use in order to play a real role in knowledge acquisition by new generations”. More specifically, it identifies the lack of “adequate education-learning software responsive to students’ needs and mental and class levels” as well as absence the needed linguistic capabilities by students and teachers to benefit from these new technologies as concrete shortcomings hindering an effective use of ICT in education.

#### **A3.2 BETTER EDUCATION FOR EMPLOYMENT FOR ARAB YOUTH<sup>136</sup>**

Three domains of Education for Employment should be addressed and success conditions for each depend on:

*TVET:*(i) a close involvement with the industry in areas such as curriculum content, training, and internship opportunities, to ensure up-to-date curricula in line with industry requirements; (ii) wide recognition of VET qualifications (e.g. diplomas), a condition that is easier to achieve in the presence of a national qualifications framework; (iii) assurance of employment with attractive wage level, and;(iv) a business model with robust and diversified revenue streams.

*University Education:*(i) university leadership should actively seek industry involvement in shaping the practicum elements of degree programs; (ii) the faculty needs to have an appropriate mix of academic theory and practitioner skills; (iii) students should experience full-time work placements and internships during their

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<sup>135</sup> The Arab Knowledge Report (UNDP/MBRF, 2011, pp. 144-148, p. 130)

<sup>136</sup> IFS/IsDB, 2011

studies, facilitated by their universities, and; (iv) university should consider offering programs to part-time students through evenings/week-ends.

*Work-readiness training:*(i) close relationship with business to enable a good understanding of the private sector’s expectations for curriculum, delivery, cost, and evolving business needs; (ii) modular and flexible learning options that allow for an integration of the learning experience in their work, and; (iii) assurance of employment if unemployed, or direct relevance to improved job prospects if employed

### **A3.3 HOW TEENS DO RESEARCH IN THE DIGITAL WORLD<sup>137</sup>**

This study was based on a survey (carried out in March-April 2012) of more than 2,000 middle and high-school teachers drawn from the Advanced Placement (AP) and National Writing Project (NWP) communities in the United States as well as a series of online and offline focus groups with middle and high school teachers and some of their students. The AP Programme offers college level courses at high schools across the United States and Canada. AP examinations, which are linked to the level of first-year US university courses, are designed to test a student's discipline-specific knowledge, skills, and proficiencies.

Teachers who participated in this study characterize the impact of today’s digital environment on their students’ research habits and skills as mostly positive, yet multi-faceted and not without drawbacks. Among the more positive impacts they see: the best students access a greater depth and breadth of information on topics that interest them; students can take advantage of the availability of educational material in engaging multimedia formats; and many become more self-reliant researchers.

At the same time, these teachers juxtapose these benefits against some emerging concerns. Specifically, some teachers worry about students’ overdependence on search engines; the difficulty many students have judging the quality of online information; the general level of literacy of today’s students; increasing distractions pulling at students and poor time management skills; students’ potentially diminished critical thinking capacity; and the ease with which today’s students can borrow from the work of others.

Overall, the vast majority of these teachers say a top priority in today’s classrooms should be teaching students how to “judge the quality of online information.”

### **A3.4 MOBILE LEARNING UNIQUE BENEFITS AND POLICY GUIDELINE<sup>138</sup>**

#### *Unique Benefits*

- Expand the reach and equity of education;
- Facilitate personalized learning;
- Expand the reach and equity of education;
- Provide immediate feedback and assessment;
- Enable anytime, anywhere learning;
- Ensure the productive use of time spent in classrooms;
- Build new communities of learners;
- Support situated learning;
- Enhance seamless learning;
- Bridge formal and informal learning;
- Minimize educational disruption in conflict and disaster areas;
- Assist learners with disabilities;
- Improve communication and administration;
- Maximize cost-efficiency.

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<sup>137</sup> Pew, 2012, p. 2.

<sup>138</sup> UNESCO, 2013, pp. 10-26, pp. 30-39

## *Policy Guidelines*

- Create or update policies related to mobile learning;
- Train teachers to advance learning through mobile technologies;
- Provide support and training to teachers through mobile technologies;
- Create and optimize educational content for use on mobile devices;
- Ensure gender equality for mobile students;
- Expand and improve connectivity options while ensuring equity;
- Develop strategies to provide equal access for all;
- Promote the safe, responsible and healthy use of mobile technologies;
- Use mobile technology to improve communication and education management;
- Raise awareness of mobile learning through advocacy, leadership and dialogue.

### **A3.5 ICT IN EDUCATION: LESSONS LEARNED FROM THE REPUBLIC OF KOREA AND THE UNITED STATES<sup>139</sup>**

The **Republic of Korea** is among the leading countries in the NRI occupying the 12th position in the global ranking for the 2012 survey<sup>140</sup>; Korea outperform in Internet access in schools (7th) and has the number one ranking in tertiary education enrolment rate and households with Internet access.<sup>141</sup> In 2009, Korea's students came second after Shanghai-China (and first among OECD countries) in the PISA reading, science and math evaluation<sup>142,143</sup> and first in the Digital reading evaluation<sup>144</sup>. It is relevant to highlight the observation of the OECD report that when "examining the relationship between performance in digital reading and access to computers at home or at school, access to computers at home relates positively to performance in digital reading while access to computers at school does not". The fact that the Republic of Korea came first in digital reading and has the highest ranking in households with Internet access perfectly fits with this statement. Nonetheless, the same report points out that "Strategies that promote wider access to ICT at school can help to minimise the extent to which socio-economic differences between students are translated into digital competency gaps, with possible consequences for future employment opportunities"<sup>145</sup>.

Selected findings of a survey of 2,462 Advanced Placement (AP) and National Writing Project (NWP) teachers carried out in March-April 2012 (PEW, 2013) in the United States revealed that:

- 73 per cent of teachers say that they and/or their students use their mobile phones in the classroom or to complete assignments and 45 per cent report they or their students use e-readers and 43 per cent use tablet computers in the classroom or to complete assignments;
- Teachers see disparities in access to digital tools having at least some impact on their students and a large majority (84 per cent) agree to some extent with the statement that "Today's digital technologies are leading to greater disparities between affluent and disadvantaged schools and school districts." Teachers' experiences with using digital tools in their teaching vary in some notable ways depending on the socioeconomic status of the students they teach;

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<sup>139</sup> ESCWA

<sup>140</sup> WEF, 2013, p. 9.

<sup>141</sup> WEF, 2013, p. 209.

<sup>142</sup> It is worth recalling the scores of four Arab countries who participated to the 2009 evaluation in respectively reading, math and science: UAE (Dubai) (459, 453, 466), Jordan (405, 387, 415), Tunisia (404,371, 401), and Qatar (372, 368, 379).

<sup>143</sup> OECD, 2010a, p. 14.

<sup>144</sup> OECD, 2011, p. 19.

<sup>145</sup> OECD, 2011, p. 210.

- There are notable generational differences in how teachers experience the impact of digital technologies in their professional lives; teachers under age 35 are more likely than teachers aged 55 and older to say that they feel “very confident” when using digital technologies, develop or share work on a website, wiki or blog, have students participate in online discussions, and “very often” draw on colleagues for ideas about how to use new technologies in the classroom;
- As shown by an earlier survey (see Box 10) teachers, despite criticizing the fact that their students increasingly “equate research with Googling,” nonetheless, virtually all (99 per cent) use search engines to find information online and the internet “to do work or research for their job”, 90 per cent name Google as the search tool they use most often, and 73 per cent of them are “very confident” in their online search abilities. In a nutshell, while teachers are concerned about how their students use the internet in general—and search engines in particular—to find information, they are confident in their own ability to use these tools effectively.

### A3.6 OPEN EDUCATION RESOURCES (OER) IN ARAB STATES<sup>146</sup>

Of the Arab States that responded to the questionnaire, Morocco appears to be most active in the OER movement. The Ministry of National Education created the National Laboratory of Digital Resources, which produces and collates digital educational resources, some of which are OER. There are also several other projects in this field in Morocco. For example, the Korea International Cooperation Industry project produces digital resources that are free to access and use for scientific disciplines at the secondary education level in partnership with Al Akhawayn University in Morocco. There is also a Unit for the Promotion of Software and Open Educational Resources at the Moroccan-Korean Centre of ICT Training, which was created with the main objective of promoting the use of software and OER to support the national policy of widespread use of these technologies through the GENeralization of Information Technologies and Communication in Education (GENIE) programme by offering very low-cost, and often free, ICT solutions. The Kingdom of Bahrain also has a digital learning repository hosting OER that encourages content-sharing and collaboration and reports on using CC licences. Lebanon is developing a strategy called One Tablet per Child that could be extended to include OER.

Countries appear active in the OER movement mainly through initiatives by institutions and engaged individuals and through specific projects or programmes with public funding. This appears to be consistent across all regions, with the exception of the Arab States where government initiatives appear to be more of a driving force. Respondents from three Arab states (not specified by the source) reported that their country has no OER initiatives. Only three Arab states reported reference to OER in other public policies: Algeria in e-Education strategy, Qatar in Education and Training Sector Strategy (ETSS) and Morocco in the above-mentioned GENIE programme. It is relevant to note that the Arab states’ respondents had the highest percentages among all regions to mention obstacles to OER adoption raising issues related to language and cultural diversity, copyright and publishers (3 respondents for each), Sustainability, and Quality (2 respondents); only one respondent reported the connectivity issue.

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<sup>146</sup> UNESCO, 2011b



## ESCWA

United Nations House, Riad El Solh Square  
P.O. Box: 11-8575, Beirut, LEBANON  
Tel.: +961 1 981301; Fax: +961 1 981510  
[www.escwa.un.org](http://www.escwa.un.org)

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