

E-Commerce in Syria: Overall ICT Perspective

J. U. Ahmed

Professor & Head, Department of Management, North Eastern Hill University, Tura Campus, Chandmari, Tura-794002, Meghalaya, India.

&

Hassan Hasan

Research Scholar, Department of Management, North Eastern Hill University, Tura Campus, Chandmari, Tura-794002, Meghalaya, India.

Abstract:

Recognizing the potential of applying ICT to improve both social and economic development, Syria has taken steps to develop its digital economy. However, the volume of e-commerce in Syria's local markets is still low in comparison with worldwide online markets or even with the online regional and the Arab markets. In connection with Syria's profile, this paper provides a comprehensive overview of trends and developments in Syria's ICT market. The paper analyses the fixed-telephony services, mobile-cellular services, fixed Internet, mobile-broadband services, and wireless networks in Syria. In addition, this paper will measure the national ICT readiness in Syria. Out of this overall revision, some of the major ICT challenges for e-commerce growth in Syria are highlighted. Furthermore, recommendations for developing ICT and e-commerce in Syria are suggested.

Key Words: *Electronic commerce, Syria, ICT, ICT Readiness.*

1. Introduction

In the last decade, the growth and generalization of Internet use has made it possible to increase sales through e-commerce web sites. Nevertheless, although global e-commerce sales have been steadily increasing during the past years, total revenue has been lower than anticipated by forecast reports [33] [51] and some barriers for e-commerce have been identified [34]. Arguably, e-commerce has a potential to add a higher value to businesses and consumers in developing countries than in developed countries [47]. Yet most developing countries, including the Arab world, have failed to reap the benefits offered by modern information and communication technologies. In fact, the Arab world plays a relatively minor role in the rapidly changing geographies of global cyberspace. Furthermore, the Arab e-commerce is still in its infancy [82]. The Arab world is generally involved in the Internet economy as producers, rather than consumers [27]. Despite the fact that there is a rapid rise of electronic commerce in the Twenty- First Century, many developing countries including Syrian Arab Republic have not started yet to catch up with the tremendous benefits of e-commerce [76]. Although, the concept of e-commerce has become popular among Syrian sellers and buyers, e-commerce in Syria is still limited and not effective. The volume of e-commerce in Syria's local markets is still low in comparison with worldwide online markets or even with the online regional and the Arab markets. In fact, the traditional ways of selling and buying are still prevailing in the Syrian market [2].

In fact, the infrastructure is the back-bone or supporting complexes that are in place to promote implementation, communication, and usage of networks [3]. Also, the status of ICT

adoption of an economy is an indicator of its potential ability to exploit the economic opportunities afforded by the new technologies –or more generally, its prospects for transition to the “New economy” [57]. Telecommunications infrastructure (network), computers and a range of related Internet technologies are the key components of e-commerce infrastructure in the twenty-first century [45]. A resilient infrastructure is needed for e-commerce to flourish [3]. However, evidently, relatively low level of Internet penetration and related services in Syria led to backwardness in the sector of e-commerce. But, last initiatives have stipulated some success in this sector. Thus, ARCHIMEDES was one of the programmes launched as a tool to support the trade institutions in Syria. Mainly, the project focused on information technologies and e-commerce as tools for a modern development of the local Mediterranean companies’ business co-operation skills with companies from the European Union. The programme was designed by the European Union (EU) to strengthen the relations between the Chambers of Commerce and Industries (CCI) on all sides of the Mediterranean as an initiative under the EU’s financial instrument for the Euro-Mediterranean Partnership (MEDA) programme to contribute to EU-Med Free Trade Zone [61]. In addition, the E-commerce project was one of the suggested projects of EUMEDIS Programme [40]. In fact, the Euro-Mediterranean Information Society Initiative (EUMEDIS) project focuses on the modernisation of the most strategic sectors and reinforces support tools and methodologies. It aims at contributing towards the development and modernisation of the Euro-Mediterranean Information Society, and thus brings about economic development, improve quality of life and promote understanding of the benefits of e-commerce [15]. The project of e-commerce in Syria would help in extension of commercial traffic inside and outside the region and would help also in popularizing its products, marketing and developing the commercial style by using information technologies in addition to increase the telecommunication traffic and technology through the use of national internet network[40].

On the other hand, recognizing the potential of applying ICT to improve both social and economic development, Syria has taken steps to develop a digital economy. E-government services are available, with a national e-government policy which is in the place to guide developments. To support e-health development; public funding has been made available for ICT equipment, software, pilot projects, skills training and scholarships. E-health initiatives also have been extended to the mobile sector (m-health) [23]. In addition, the National ICT Strategy for Socio-Economic Development in Syria from 2004 contains a ten-year work program, two work plans for the Ministry of Communications and Technology (MOCT) and five initiatives shared with other ministries [4]. This includes the provision of computers for all institutions, high-quality communication services, such as fixed-line telephony, Internet, and mobile coverage, as well as the dissemination of ICT knowledge and literacy [20]. The Indicators of Information Society in Syria in the year 2004 showed clearly that the Syrian government has introduced many initiatives and projects such as: E-Signature-Legislation Project, Intellectual Property Protection Project and the National Programme for promoting information technology initiative [77]. Furthermore, in 2012, the Syrian government approved the setting up of a state-owned company for e-payment services in Syria [12]. Other important initiatives and plans have been taken with regard to the development of ICT sector in Syria. In terms of digital media, the Ministry of Information has plans to start the switch of terrestrial channels from analogue to digital by mid-2011. Also, in terms of Arabic digital content, the Ministry of Communications and Technology initiated the E-government Gate to help provide online services in cooperation with several state ministries and institutions. The project envisages to set up portals and public online services to serve as main access points for both citizens and government agencies. With regard to cyber security, the National Agency for Network Services (NANS)

founded the Information Security Center (ISC), which has the mission to build cyber security capabilities and increase the capacity of security incident detection and emergency responses to such incidents. Moreover, the agency is responsible for ensuring cyber security awareness in both private and public sectors. Finally, in terms of open source software, the Syrian Computer Society (SCS), established in 1989, has conducted training workshops and lectures to support the use of Free and Open -Source Software (FOSS) [37]. Although, there have been initiatives, projects and plans related to ICT sector introduced to the public in Syria, there is still a lack of conducting out financial transactions on the Internet by both consumers and companies[77].

Unfortunately, there is very little information available about the Internet, e-commerce and ICT in Syria and much of that is inaccurate and not reliable. This paper reviews the trends and developments in Syria's ICT market. In addition, this paper will measure the national ICT readiness in Syria. Out of this overall revision, some of the major ICT challenges for e-commerce growth in Syria are highlighted. Furthermore, recommendations for developing ICT and e-commerce in Syria are suggested.

2. Syria's Country Profile: An Overview

Syria was the centre of the Islamic Empire. It covers an area that has seen invasions and occupations over the ages, from Romans and Mongols to Crusaders and Turks. Syria, a country of fertile plains, high mountains and deserts, is also a home to diverse ethnic and religious groups, including Kurds, Armenians, Assyrians, Christians, Druze, Alawite Shias and Arab Sunnis, the last of who make up a majority of the Muslim population. Modern Syria gained its independence from France in 1946, but has lived through periods of political instability driven by the conflicting interests of these various groups [19]. Modern Syrian culture is based on the Islamic faith and civic Arab tradition. Strong moral and ethical values are placed on family, religion, education, self discipline and respect [44]. However, the political crisis has seen both the development and expansion of civil society as well as major disruptions to social relations and the spread of extremism and intolerance. Social norms and values have been negatively affected, and the country has seen divisions whereby different groups have hardened positions of hate and revenge towards the 'Other'. This represents a substantial loss to Syrian social and cultural capitals and increases the risks of the unity of the state and emerges pre-state ties, which will be eventually difficult to compensate [59].

Syria's total area is 185000.180 square kilometres [71]. The location of Syrian Arab Republic is in the Middle East [67]. Syria shares a northern border with Turkey, in the east and southeast with Iraq, in the south with Jordan and in the west with Lebanon and Israel. Syria's most contentious boundary is with Israel, where the latter has occupied Syrian territory, the Golan, since 1967. Israel formally annexed the Golan in 1981. Syria also has a short Mediterranean coastline of some 193 km between Lebanon and Turkey [70]. Arabic is the official language. Several modern Arabic dialects are used in everyday life, most notably Levantine in the west and Mesopotamian in the northeast. Kurdish (in its Kurmanji form) is widely spoken in the Kurdish regions of Syria. Armenian and Turkish (South Azeri dialect) are spoken among the Armenian and Turkmen minorities. Before the advent of Arabic, Aramaic was the lingua franca of the region and is still spoken among Assyrians and Classical Syriac is still used as the liturgical language of various Syriac Christian denominations. Most remarkably, Western Neo-Aramaic is still spoken in the village of Ma'loula as well as two neighbouring villages, 35 miles (56 km) northeast of Damascus[85], the capital of Syria, is believed to be the oldest continuously inhabited city in the world, and

the country's geographical location has historically made it a transit route between east and west [24]. However, many educated Syrians also speak English and French [85].

According to the official website of Syrian Central Bureau of Statistic, the population in Syria is currently around 22 million inhabitants spread into 14 different provinces [13]. The population density in 2010 is 110.2 persons per square kilometre [71]. Major populated provinces in Syria are Damascus (the capital), Aleppo, Rural Damascus, Homs, and Hama (Appendix 1) [30]. In 2010, urban population is 56% of total population (2010) and the rate of urbanization is 2.5% annual rate of change (2010-15 est.) [10]. The average growth rate of population in Syria is 2.45% yearly. This rapid growth rates generally meant relatively youthful population (Anon, 2005) [5]. Around 37.1 % of the population in Syria are less than 15 years old and only 4.1 % are 65 years and above [30]. However, the political unrest in Syria is expected to have affected the population growth rate and structure given the projected dramatic increase in mortality and voluntary migration. The report of Syrian Center for Policy Research (SCPR) estimates a decrease in the population growth rate from external refugees, internally displaced people and 2.45% in 2010 to minus 2.5% in 2012 [59].

Since March 2011, Syria has witnessed an unprecedented period of crisis and escalating violence. The regime's forceful crack-down on a popular protest in Dera'a in March 2011 which sparked a self-perpetuating cycle of protests met by increasingly violent government repression. The unrest quickly spread throughout Syria and the demands of the demonstrators escalated from a call for meaningful political reforms to an end to the Ba'ath party regime headed by President Bashar al-Assad. The bloody 17-month-old uprising de-facto evolved into a civil war with fierce fighting spreading to Aleppo and Damascus [62]. At least 93,000 people had been killed in Syria since the start of the conflict, according to the latest United Nations figures. This represents a rise of more than 30,000 since the United Nations (UN) last issued figures covering the period to November 2012. But it says; these statistics are underestimated as it is believed that many deaths have not been reported. Over 80% of those killed were men, but the UN's Office of the High Commissioner for Human Rights (OHCHR) says it has also documented the deaths of more than 1,700 children under the age of 10[18]. The ongoing conflict in Syria is undermining development, not only inside Syria, where the human consequences of the conflict are devastating - but also across the region -said the United Nations Development Programme (UNDP) at the launch of a US\$4.4 billion humanitarian appeal for the victims of the crisis presented today by the UN in Geneva. "Conflict-affected communities in Syria and those hosting Syrian refugees in Jordan and Lebanon are in desperate need," UNDP Administrator Helen Clark stated[73]. In the wake of the protracted internal armed conflict in Syria, growing numbers of refugees, predominantly women and children, have sought refuge in Lebanon, Jordan, Turkey, Iraq and Egypt. Reception conditions vary considerably and the unabated influx of refugees is putting tremendous strain on the socio-economic and political stability of Syria's neighbouring countries. Refugees increasingly compete with the local population for housing, scarce public goods like water and electricity, food, healthcare and education. They face considerable income-expenditure gaps resulting from high rental costs, the depletion of savings and limited job opportunities [25]. Amid worsening violence inside Syria, the number of refugees - currently more than 1.5 million - is expected to continue climbing steeply and put more pressure on host countries. The coordinated Syria Regional Response Plan (RRP) is appealing for US\$ 2.9 billion to cover the needs of 3.45 million Syrian refugees, 1.75 million host country nationals and 100,000 Palestine refugees from Syria in the region from 1 January to 31 December 2013 [79]. However, as the situation continues to deteriorate in Syria, the World Food Programme (WFP) is aiming to provide food, up to 7 million

Syrians in urgent need of food assistance. These include 4 million people inside Syria - on both sides of the front lines - and 2.7 million refugees in neighbouring countries [83].

Syrian Arab Republic is classified as a lower middle-income country [64], with an economy based on agriculture, oil, industry, and tourism [85]. Syria's GDP had remained dependent on the oil and agriculture sectors, which are subject to fluctuating oil prices and rainfall. The oil sector provided approximately 20% of the government's revenues and around 35% of its export receipts in 2010. The agriculture sector contributed to 20% of the GDP but less than 20% to employment. Oil exports, exports of services and foreign transfers of income and remittances were the main sources of foreign earnings -- sources which are now being seriously curtailed by the crisis [62]. It is noted that the country had been experiencing modest economic growth and reform before the uprising. The government had attempted economic liberalization, with a surge in credit growth, private banking, and trendier retail and food businesses. However, the liberalization of the Syrian economy was always stopped by the mafias surrounding the ruling family. The family was never investing their revenues into the country, but mainly were investing in the telecom sector and 'Hit-and-run' sectors." [24]. The Corruption Perceptions Index (CPI), which is developed by the International Transparency, ranks countries/territories based on how corrupt a country's public sector is perceived to be. Scores range from 0 (highly corrupt) to 100 (very clean). However, Syria's Corruption Perception Index score for 2012 is 26- in the high level category of corruption- positioning the country at 144 out of 176 countries and territories [68]. Dreher and Herzfeld (2005), in their study, estimated that Syria loses an average of USD 34 of its per capita GDP as a result of corruption. In fact, fighting corruption is a very high priority on the development agenda of many developing countries and similarly Syria is no exception. Several initiatives have been launched in the country to increase the government's transparency towards its citizens. Syrian legislators have explicitly criminalised corruption. For example, Article 31 of the Economic Criminal Law states: "The initiation of an economic crime is as a full crime. Most of the acts of corruption are considered economic crimes, and punishable by economic criminal law." Clearly, more initiatives are still needed to fight corruption, and more effective tools must be utilised to support these initiatives [60]. In short, Syria's economy still faces serious problems and challenges and impediments to growth, including: a large and poorly performing public sector; declining rates of oil production; widening non-oil deficit; widespread corruption; weak financial and capital markets; and high rates of unemployment tied to a high population growth rate. For ideological reasons, privatization of government enterprises is explicitly rejected. Therefore major sectors of the economy including refining, ports operation, air transportation, power generation and water distribution, remain firmly controlled by the government [85].

Amid killings, international condemnation and aggressive politics, Syria's macro-economic concerns may not be at the forefront of people's minds. However, the country is facing harsh economic realities, despite the lack of official information [24]. Despite modest economic growth and reform prior to the outbreak of unrest, Syria's economy continues to suffer the effects of the ongoing conflict that began in 2011. The economy further contracted in 2012 because of international sanctions and reduced domestic consumption and production [17]. As a result of its political isolation which includes significant economic sanctions from the Arab League, EU and the US, Syria has low rates of investment and low levels of industrial and agricultural productivity [85]. Even with the oil peak witnessed at the start of 2013, this year's budget, unveiled by Finance Minister Mohammad Juleilati, in recent months, revealed a more-than-threelfold growth in the deficit amid falling revenue and rising expenditure. Sanctions are affecting the "State budget, exchange rates, foreign currency reserves, general debt, inflation, unemployment and cash reserves," the state-run Syrian Arab News Agency (SANA) quoted Juleilati as he stated in November [24]. According to, the official data of the

World Bank, Syria's GDP was \$73,672,408,036 in 2012[66]. However, Syria's real GDP growth and consumer inflation rates in 2012 were -5.5%, 28% respectively [32]. In the study entitled: Socio Roots and Impact of the Syrian Crisis, the Syrian Center for Policy Research (SCPR), stated that the current crisis which escalated to an internal armed conflict has resulted in a tragic impact on development performance in Syria through destroying economic, social, and human capitals, with unbearable losses for the current and future generations. From economic point of view, the total loss of the Syrian economy due to the crisis towards the end of 2012 has been estimated at 48.4 billion USD in current prices. This loss equals 81.7% of Syria's 2010 GDP in 2000 constant prices, a substantial loss even when compared to conflict losses in other countries. The GDP loss is only 50% of the total loss, whereas the damage in capital stock and the increase in military expenditure represent 43% and 7% of the total loss, respectively [21]. GDP contraction was uneven among sectors, and thus the crisis has brought an impact on the structure of the Syrian economy. Available data suggests that most of the GDP losses (83 %) were incurred by four sectors: internal trade, transportation and communications, manufacturing and mining [59]. The crisis has cost the telecommunication sector in Syria just over one and a half billion Syrian Pounds [26]. Since 2011, the Syrian economy has shrunk by 35-40 percent [24]. Unemployment has ballooned to 60% and government coffers are empty; oil production is down to 20,000 barrels per day, from 380,000. Oil sanctions and sabotage have cost the government at least \$13 billion by its own reckoning. Farming, trade and manufacturing are running at less than a third of pre-war levels. The Syrian pound has tumbled from 47 to the dollar when fighting broke out to around 250 today. In Beirut UN experts reckon that 19% of Syrians now live below the poverty line, compared with less than 1% before the war [22]. Repairing the damage caused by two years of fighting could cost up to \$80 billion, says Abdullah al-Dardari, former deputy premier for economic affairs under President Bashar al-Assad. This figure has caused shockwaves, amid warning signs in recent months of a looming fiscal collapse. While waging a military war against opposition fighters, resulting in tens of thousands of civilian casualties, the Syrian government is struggling to address evident economic decline. Dwindling foreign-exchange reserves, rising budget and trade deficits, and the plunging value of the Syrian pound, are the main financial issues. However, more important than the "Big figures of the macro-economy" is the "Collapse of the micro-economy," [24].

The United Nations Development Programme (UNDP) in its 2013 Human Development Report presented Human Development Index (HDI) values and ranks for 187 countries and UN-recognized territories, along with the Inequality-adjusted HDI for 132 countries, the Gender Inequality Index for 148 countries and the Multidimensional Poverty Index for 104 countries. The HDI is a summary measure for assessing long-term progress in three basic dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living [74]. In other words, HDI is one of the key indices which are used to statistically measure the human development. As outlined by Soeftestad and Sein (2003), HDI includes life expectancy at birth, level of education and gross national product (GNP) per capita [28]. However, the Syrian Arab Republic's HDI value for 2012 is 0.648—in the medium human development category—positioning the country at 116 out of 187 countries and territories. Between 1980 and 2012, Syrian Arab Republic's HDI value increased from 0.501 to 0.648, an increase of 29 percent or average annual increase of about 0.8 percent. These figures refer to Syrian Arab Republic's progress in each of the HDI indicators. Between 1980 and 2012, Syrian Arab Republic's life expectancy at birth increased by 9.8 years, mean years of schooling increased by 3.1 years and expected years of schooling increased by 2.4 years. Between 1980 and 2012, the Syrian Arab Republic's GNI per capita increased around 36 percent[75]. The Syrian Arab Republic has achieved considerable progress in social development. Infant and under-five mortality rates have declined. With high immunization coverage rates, the country is certified as polio-free: no polio cases have

been reported since 1995. Primary education is compulsory and according to the multiple indicator cluster survey (MICS 2000), primary school net enrolment rates are high – 98 and 99 per cent for girls and boys respectively [81]. According to the UN-UNESCO Institute for Statistics (UIS), the literacy rate from 2007 to 2011 in Syria was 83%[72]. By definition: Adult literacy rate is the total percentage of the population age 15 and above who can, with understanding, read and write a short, simple statement on their everyday life[65]. With a growing population, Syria has a good basic education system. Since 2000, the government of Syria has significantly increased the expenditure on education from 1 to 6. In 2002, elementary and primary educations were combined into one basic education stage and education was made compulsory and free from grades 1 to 9. Arabic is the medium of instruction in the Syrian Arab Republic. English is taught from grade 1 in the basic learning stage as the primary second language, and French is taught in grades 7-12[84]. Before the conflict broke out, almost all primary school-aged children in Syria were attending classes, according to a recent Save the Children report. Three years later, in addition to the death toll of more than 100,000 and psychological trauma for those who survived, more than 1 million children were not attending school at all. Of Syria's five million displaced people, 2.5 million are children between 4-18 years of age, and half of those aren't in school. More than a fifth of Syria's schools have been destroyed or are no longer accessible for education. The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) estimates that it will require \$45 million to support the minimum education needs for Syrian refugees. As of June 2012, only \$9 million of this funding had been received [29]. The assessment findings indicate that access to education for the Syrian refugee children and youth in urban, peri-urban and rural areas is inadequate. Roughly 90% of school-aged refugee children and youth in non-camp settings are not participating in formal education. Of those, 76% were attending school in Syria. This gap mainly represents a reduction in the numbers of school-aged children attending primary education. According to this assessment, youth (aged to 24) were largely not engaged in formal education in Syria [55]. Schooling remains a priority that international organizations and aid groups, as well as Syrian expatriates, are trying to address both within Syria and in refugee camps along its borders, amidst the most challenging circumstances. Activists across Syria have started improvised, informal community schools and educational programs in mosques and homes across the country. There are dozen of unofficial schools set up along the Turkish border for Syrian refugees and thousands throughout refugee camps and populations across the region. These ad-hoc schools are often over-populated and lacking in funding for not only basic supplies but also for teachers salary. In countries neighbouring Syria such as Jordan, Turkey, and Lebanon, some Syrian refugee children have been able to enter local schools. But the numbers of children in need of education have increasingly created an unmanageable burden on host government and school systems. A few Syrian universities are still able to operate, primarily in regime-controlled areas where there tends to be more consistent electricity and stability. A 29-year old physics graduate student told Andrea Glioti, reporting for Al Monitor, "My brother is still attending university classes in Homs, where power supplies are almost continuous." But many universities have closed, and many students, professors, and scholars have fled due to violence, financial constraints, and corruption. Universities in the United States are working to provide Syrians with opportunities for higher education and scholarship even while the conflict prevails. Approximately, 40 universities have joined a consortium led by the Institute for International Education to provide emergency scholarships for students and host scholars who have fled from Syria[29]. In fact, Syria lost an important part of the existing infrastructure and human capital in education (teachers and supervisors). Moreover, the Syrian Center for Policy Research (SCPR) estimates that the decline in attendance rates 10.9%, and 22.8% in 2011, 2012 respectively, have decreased the mean years of schooling in Syria by about 1.74%. This will have a negative and a long term

impact on human capital and hence on economic growth, employment and productivity [59]. However, in response to the challenges posed by the escalating influx of Syrian refugees into the Hashemite Kingdom of Jordan, the UNESCO Amman Office is launching a €4.3 million project funded by the EU to sustain quality education and promote skills development opportunities for young Syrian refugees and young Jordanians impacted by the humanitarian crisis [78]. Furthermore, to help the children and families caught up in the horrific conflict in the Syrian Arab Republic, the United Nations International Children's Emergency Fund (UNICEF) worked with partners there and in nearby countries to supply vaccines to more than 1.4 million children against measles, to deliver winter provisions, medicines and non-food items to more than 263,000 people and to provide an uninterrupted education for some 79,000 affected children. This assistance included the growing number of refugees beyond the country's borders [80]. In short, the human development impact of Syrian crises is a catastrophic human and social loss [59].

3. Overall ICT Market Overview in Syria

Prior to the crisis in Syria, fair telecommunication system was undergoing significant improvement and digital upgrades, including fibre-optic technology and expansion of the network to rural areas [67]. However, like its inhabitants, Syria's telecom sector has been caught up in the ongoing civil war. Reports include instances of information warfare, proposed sanctions against telecom companies and damage to telecoms infrastructure [23]. The armed insurgency that began in 2011 has led to major disruptions to the network and has caused telephone and Internet outage [67]. Also, this dynamic worsened in 2011 and 2012, as inflation and electricity outages increased dramatically following public protests and the government's corresponding repression. The communications infrastructure was badly damaged, especially in cities like Homs those were subjected towards a particular severe shelling by the Syrian armed forces [8].

The deteriorating situation is having an impact on market development with regulatory developments delayed [23]. Prior to the Syrian civil war, telecommunications in Syria were slowly moving towards liberalization, with a number of licenses awarded and services launched in the Internet service provision market. The initiative reflected the government's change in attitude towards liberalization, following its promise to the European Union to liberalize markets by 2010[43]. However, all other forms of fixed-lined services are solely owned and provided by the state owned operator, Syrian Telecommunications Establishment (STE), which is currently upgrading and extending its network, aiming to achieve 100% coverage by the end of 2013. In fact, the telecommunications sector in the Syrian Arab Republic is the most regulated in the Middle East [11]. Appendix (2) shows an overview of the regulatory landscape of the key telecommunication services in Syria [37]. However, given the utility nature of telecoms, services are likely to be restored once fighting ceases [23]. In fact, the Syrian Telecommunications Establishment (STE) was responsible for regulating the telecommunication market and providing telecommunication services according to plans and policies approved by the Ministry of Communications and Technology [37], which its name recently has been amended into the Ministry of Communication and Information Technology Development. The new name has been approved by the Syrian Prime Ministry in connection with the strategy of restructuring the ICT sector in Syria [17]. According to the Syrian Telecommunication Law of 2010, a new regulatory authority named the Telecommunications Regulatory Authority will be established in the Syrian Arab Republic. Furthermore, the Syrian Telecommunications Establishment (STE) will be replaced by a joint stock company called the Syrian Telecommunications Company (SyTC) The telecommunications sector is considered a national resource and it shall be regulated under this new law for the purpose of: Firstly,

setting the rules for regulation and development of the telecommunications sector and the telecommunications services of all forms in Syria, to meet the needs of the society and the national economy. Secondly, restructuring the telecommunications sector and specifying the roles of the key stakeholders, particularly the Ministry of Communications and Technology and the Telecommunications Regulatory Authority established pursuant to this law. Thirdly, ensuring fair competition among operators and service providers, operating in the telecommunications sector and protecting the customers and users of telecommunications services [7].

On March 11 1996, Syrian Telecommunications Establishment (STE) signed a collaboration agreement with the Syrian Computer Society (SCS) after getting the approval from the Syrian government and authorities to set a pilot project to get internet services to government organizations and institutions for initial assessment of all aspects including utility, suitability to Syrian culture and possible security problems. Apart from the obstacles that was faced by the pilot project, this project formed the cornerstone for Syrian Telecom in order to modernize the internet backbone and telecom infrastructure later [27]. (However, there were 5,069,418 Internet users in Syria as of June 2012 for a 22.5 % Internet penetration rate of the Syrian population. Syria ranks 12th out of 14 countries in the Middle East region, just behind Jordan (38.1%) and ahead of Yemen (14.9%) and Iraq (7.1%) (Appendix 3)[42]. This puts Syria on the list of the less developed Arab states in terms of Internet service provision [4]. However, growth in the number of Internet users in Syria has been fairly steady since 2005 (Appendix 4) [86], following the concerted efforts of the National ICT Strategy for Socio-Economic Development in Syria [4]. In reference to, broadband Internet market in Syria, broadband subscriber levels are on the rise, with fixed broadband growth in the short medium term assured given by fixed broadband which makes up approximately a quarter of all fixed Internet subscriptions. The growing appetite for data coincides with Syria's involvement with two relatively new terrestrial cables[23]. By December 2011, there were 13 operational Internet Service Providers (ISPs): Syrian Telecom (190.sy and Tarassul), Aya, SCS, Sawa, INTE, Rannet, Tarnet, Elecom, Syriatel, Zaad, MTN Syria and Best Italia (satellite Internet provider). It is noteworthy that all fixed-line ISPs are reselling services offered through the network of the incumbent fixed operator, STE. By the end of 2010, fixed (wired)-broadband Internet subscriptions reached 67'600, corresponding to a fixed (wired)-broadband Internet penetration rate of only 0.3 per cent. During the first six months of 2011, the fixed (wired)-broadband market grew by 60.7 per cent, adding 40'800 subscriptions. Despite the rise in broadband accounts, Syria remains a primarily dial-up market [37]. In fact, affordable broadband Internet (ADSL) service in Syria has been available since 2007[6]. However, the Asymmetric Digital Subscriber Line (ADSL) service is not available in all locations and, where it is available, the local Public Switched Telephone Network (PSTN) may not have enough ports for immediate activation. Through 2009, broadband Internet access had reached less than 0.2% of the Syrian population [86]. However, any house with a landline can access the net using a dial-up modem and pay-as-you-go cards, a much more affordable solution although computers are still a rarity in most Syrian homes [58]. According to the indicators of the World Bank, in 2008, there were 1800000 personal computers in Syria [16]. In other words, only 8.8 % of the Syrian population was having personal computers in 2008[33]. However, 43% of households in Syria were having computers in 2012 [39].

In reference to Internet host, there were 416 Syrian Internet hosts in 2012, placing Syria 188th out of 231 in the world [67]. With a measured download speed that averages 1.10 Mbps, the speed of the Internet in Syria is relatively very slow compared to the world-wide average of 14.20 Mbps. The data comes from Ookla, a broadband research company that "Crowd sourced" research and download and upload speeds through its website SpeedTest.net, where people can test the speed of their internet connection. The Syrian Arab

Republic ranks behind 181 other countries on a list of the world's fastest download speeds. Results were obtained by analyzing test data between July 29, 2013 and August 27, 2013. Tests from 117,844 unique Internet Protocols (IPs) have been taken in this country and of 336,310 total tests, 5,430 are being used for the current Index [54]. In fact, Internet cafes are now popular in Damascus [55], where high-speed Internet is available. Internet cafes, which are wide spread and accessible to the public for a fee, can be used to access blocked sites [39]. However, more restrictions have been placed on Internet cafes. All public Internet centres, including Internet cafes, need operating approval from the security services and are required to keep detailed records of their customers' surfing habits, and people have been arrested after accessing blocked content [55]. Moreover, broadband services are expensive and difficult for a residential user to subscribe to, with ADSL in Syria reported to be the least affordable in the Middle East [9]. Syria's telecommunications infrastructure is one of the least developed in the Middle East, with broadband connections being among the most difficult and expensive to acquire [8]. In fact, besides understanding ICT trends in terms of such factors as infrastructure access and ICT skills, it is also important to analyze and track prices of ICT services. The cost and affordability of ICT services will influence and in some cases determine whether or not people will be able to subscribe to certain services and use ICTs. The ICT Price Basket (IPB) is composed of three distinct prices – for fixed-telephone, mobile-cellular and fixed-broadband services – and computed as a percentage of countries' average gross national income (GNI) per capita [38]. However, an analysis of the three sub-baskets (fixed-telephony, mobile-cellular-telephony, and fixed-broadband Internet) suggests that prices in Syria as a whole are relatively expensive in comparison with the rest of the Arab countries (Appendix 5). This finding suggests that more must be done to make ICT services and fixed-broadband services in particular, more affordable in the region, especially if the region is to achieve the target set by the Broadband Commission for Development, which is "To make sure that by 2015, entry-level broadband services should amount to less than five per cent of average monthly income" [37].

In reference to fixed-telephone market in Syria, STE is the sole fixed-service provider, providing mainline services over its own network. It is a state owned. By the end of 2010, there were 4.069 million fixed-telephone subscriptions, translating into a penetration rate of 19.9 per cent. During the first six months of 2011, fixed-telephone subscriptions increased by 3.1 per cent, as 128'000 subscriptions were added. By the end of June 2011, Syria's total fixed-telephone subscriptions stood at 4.197 million, corresponding to a penetration rate of 20.4 per cent [37]. The number of fixed-line connections has increased markedly since 2000 [67], and although penetration rates are low, they are higher than in many more wealthy Middle Eastern countries [9]. STE is investing in upgrading and extending its network and aims to gain 100% coverage by the end of 2013 [44]. On the other hand, Syria's mobile market is served by a duopoly comprised of two operators Syriatel and MTN Syria [23]. Both companies obtained a Build Operator Transfer (BOT) agreement from STE to establish a network covering the country. Syriatel is locally owned and MTN is a subsidiary of MTN of South Africa, which gained ownership through its purchase of Invest COM [44]. However, there has been a talk of a third operator, with keen investors likely given mobile penetration in Syria is the second lowest in the Middle East [23]. In other words, mobile penetration rates are relatively low - Syria is one of the few markets in the region with room for expansion [9]. In September 2010, the Ministry of Communications and Technology announced the tender for the third mobile license. From a short list of five operators, Saudi Telecom Company (STC) and Qatar Telecom (QSC) submitted bids for the tender. The process has been postponed due to political unrest in the country. By the end of 2010, total mobile-cellular subscriptions amounted to 11.8 million, translating into a penetration rate of 57.8 per cent. During the first six months of 2011, 521'000 mobile-cellular subscriptions were cancelled. By the end of June 2011, Syria's total mobile-cellular subscriptions stood at 11'278

subscriptions, corresponding to a penetration rate of 54.8 per cent [37]. However, call quality ranges from acceptable to poor. Many international calls fail or are less clear over the mobile network compared to the landline network [86]. Mobile data services are becoming an increasingly important source of new revenue as the mobile voice market begins to mature. With 3G/HSPA networks in place, the focus for mobile data is beginning to shift to mobile broadband offerings; already mobile broadband subscriptions exceed those of fixed broadband [23]. Syriatel and MTN are the only mobile-cellular operators; they have deployed 3G mobile-broadband technology. STE announced in May 2011 that it will be working with the mobile-cellular operators to expand 3G networks. Moreover, in April 2011, Syriatel held a trial of HSPA+ technology. The new technology enables Internet speeds up to 20 Mbps, compared with the current Syriatel 3G service speed of up to 7.2 Mbps. As for the mobile-broadband market, by end of 2010, active mobile-broadband Internet subscriptions amounted to 256'242, corresponding to a mobile-broadband penetration rate of 1.3 per cent [37]. The 3G wireless Internet is available in all major cities as well as cities with significant tourism. 3.5G EDGE wireless Internet is available through mobile network operators, Syriatel and MTN. Wireless Internet is accessed using a USB stick purchased from the mobile operators. In addition, 3G SIM cards for use on mobile phones may be purchased with a data plan. However, only W-CDMA phones support data at the moment [86]. As for other wireless-broadband technologies, VSAT services are provided by the ISP Best Italia. In March 2011, STE announced that it aims to employ technologies such as W-CDMA and that it will prepare for LTE trials according to contracts with mobile-cellular operators. Concerning fixed (wired)-broadband projects, STE is working to complete the requirements needed for FTTB technology [37]. To sum up, the Little Data Book on Information and Communication Technology 2012, is a joint publication between the World Bank and the International Telecommunication Union (ITU), summarized the key telecom parameters in Syria (Appendix6) [63].

4. Measuring National ICT readiness in Syria

Over the last decade, several attempts have been made to assess ICT developments [87]. In his study to analyze and measure the diffusion of ICT in developing countries, [49] used four ICT indicators. These indicators are cellular mobile subscribers per 100 inhabitants, personal computers per 100 inhabitants, Internet host per 10,000 inhabitants and Internet users per 10,000 inhabitants. The first three variables may be viewed as indicators of the state of ICT infrastructure, while the fourth indicator-Internet users-measures access to the Internet. In addition, previous research has associated the level of a country's basic telecommunications infrastructure with its teledensity [51]. Teledensity is defined as the number of telephone lines (land lines) for every one hundred inhabitants [50]. However, one of the most authoritative exercises has been the Networked Readiness Index (NRI), which has been adopted by several governments as a valuable tool for assessing and leveraging technology for competitiveness and development. Its success emphasizes the importance of continuing to adapt its framework in alignment with the changing landscape of technology and its new opportunities. The networked readiness framework translates into the NRI, comprising four sub indexes that measure the environment for ICT; the readiness of a society to use ICT; the actual usage of all main stakeholders; and, finally, the impacts that ICT generates in the economy and society. The three first sub indexes can be regarded as the drivers that condition the results of the fourth sub index—that is, ICT impacts. These four sub indexes are divided into 10 pillars and 53 variables (Appendix 7) [87]. However, according to the Global Information Technology Report 2012 which resulted from the collaboration between the World Economic Forum and INSEAD, Syria occupied low positions in the regional as well as in the global Networked Readiness Index (NRI) rankings. In 2012, Syria's NRI score is 2.9, positioning the country at 129 out of 142 countries and

territories. Between 2010 and 2012, Syria's NRI score decreased from 3.06 to 2.9. This means that Syria fell five ranks, from 129 to 124, in the total Networked Readiness Index (NRI) [53]. Furthermore, the ICT Development Index (IDI) is a composite index combining 11 indicators into one benchmark measure that serves to monitor and compare developments in information and communication technology (ICT) across countries. Appendix (8) summarizes the indicators of the IDI and their weights. In fact, the IDI was developed by International Telecommunication Union (ITU) in 2008 and presented in the 2009 edition of Measuring the Information Society [36]. However, there are three stages in the evolution towards the information society. These three stages are ICT Readiness (infrastructure, use), ICT Use (intensity) and ICT Capability (skills) [38]. The latest IDI, which is based on the end of 2010 data, shows that ICT uptake continues to accelerate worldwide, with all countries, including those in the Arab region, improving their IDI scores. Within the Arab States region, however, Syria occupied low positions in the regional as well as in the global IDI rankings. According to IDI 2010, Syria ranked 96th globally and 11th regionally (Appendix 9) [37]. However, Syria remains a market with great potential for expansion for ICT services but requires much market liberalization to achieve that potential [9].

5. Conclusion:

In its ambitious plans for economic and administrative role, the Syrian government highlighted the essential role of the ICT sector and its potential in opening new opportunities for the Syrian market [4]. However, it is clear that Syria has not been successful in adopting technologies. The findings indicate that Syria on the list of the less developed Arab states in terms of ICT uptake. In fact, the lack of basic telecommunications infrastructure is a severe hindrance to the growth of the Internet in any country [46] and hence to the adoption and diffusion of e-commerce in developing countries [48] [56] [69]. From ICT perspective, the findings indicate that e-commerce in Syria is still in its infancy. In fact, Syria's current ICT infrastructure is a major barrier to the adoption and diffusion of e-commerce there. However, Syria remains a market with great potential for future expansion of ICT services but requires much market liberalization to achieve that potential. Also, our paper shows that, like its inhabitants, Syria's telecom sector has been caught up in the ongoing civil war. The ICT infrastructure was badly damaged. However given the utility nature of telecoms, services are likely to be restored once fighting ceases [23].

To bridge the digital divide, the Broadband Commission for Digital Development endorsed four ambitious but achievable targets for 2015. The targets cover broadband policy, affordability and uptake. First, by 2015, all countries should have a national broadband plan or strategy or include broadband in their universal access/service (UAS) definitions. Second, by 2015, entry level broadband services should be made affordable in developing countries through adequate regulation and market forces (e.g. be priced at less than 5 per cent of average monthly GNI per capita). Third, by 2015, 40 per cent of households in developing countries should have Internet access. Fourth, by 2015, Internet user penetration should reach 60 per cent worldwide, 50 per cent in developing countries and 15 per cent in LDCs [38]. On the other hand, smart phones are booming in the Arab world as % of the total handsets [1]. Therefore, any successful mobile infrastructure must be supported by massive IP infrastructure; there will also continue to be growth opportunities for fixed services. Communications operators in the Middle-East countries including the Syrian Arab Republic must be serious about investing in high-speed mobile LTE networks, including next-generation mobile broadband. In other words, the Arab countries including Syria must invest in communications connectivity, especially high-speed broadband and wireless access [87].

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Appendix 1

Estimates of Population Actually Living in Syria in Mid Year 2011 by Province

Province	Total Population
Damascus (the capital)	1745000
Aleppo	4806000
Rural Damascus	2790000
Homs	1783000
Hama	1611000
Lattakia	999000
Idlep	1482000
Al-Hasakeh	1495000
Deir-ez-Zor	1221000
Tartous	792000
Al-Rakka	933000
Daraa	1012000
Al-Sweida	367000
Al-Quneitra	88000
Total	21124000*

*The number does not include Syrian population abroad

Source: Central Bureau of Statistics-2011.

Appendix 2

Regulatory Landscape of telecommunication services in Syria

Fixed Telephony		Fixed Internet			Mobile-cellular services		Mobile-broadband services		Local Loop Unbundling (LLU)	voice over IP (VoIP)		Launch dates of wireless networks		
Regulatory Landscape	Number of Service Providers	Regulatory Landscape	Number of Service Providers	Number of infrastructure providers (excluding LLU)	Regulatory landscape	Number of service providers	Regulatory landscape	Number of service providers	LLU Regulation	VoIP Regulation	VoIP provider(s)	Date of 3G (UMTS, HSPA) launch	Date of WIMAX launch	Date of LTE launch
Monopoly	1	Competitive	12	1	BOT duopoly	2	Duopoly	2	Operational	Illegal	-	January 2009	Not launched yet	Not launched yet

Source: http://www.itu.int/dms_pub/itu-d/opb/ind/D-IND-AR-2012-PDF-E.pdf

Appendix 8

ICT Development Index: Indicators and Weights

ICT access (Indicators)	Ref. value	(%)	Weight of ICT access as of IDI
1. Fixed-telephone lines per 100 inhabitants	60	20	40
2. Mobile-cellular telephone subscriptions per 100 inhabitants	180	20	
3. International Internet bandwidth (bit/s) per Internet user	408'813*	20	
4. Percentage of households with a computer	100	20	
5. Percentage of households with Internet access	100	20	

ICT use (Indicators)	Ref. value	(%)	Weight of ICT use as of IDI
6. Percentage of individuals using the Internet	100	33	40
7. Fixed (wired)-broadband Internet subscriptions per 100 inhab.	60	33	
8. Active mobile-broadband subscriptions per 100 inhab.	100	33	

ICT skills	Ref. value	(%)	Weight of ICT skills as of IDI
9. Adult literacy rate	100	33	20
10. Secondary gross enrolment ratio	100	33	
11. Tertiary gross enrolment ratio	100	33	

Source: <http://www.itu.int/en/ITU->

[D/Statistics/Documents/publications/mis2012/MIS2012_without_Annex_4.pdf](http://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2012/MIS2012_without_Annex_4.pdf).

Appendix 4

Internet Growth and Population Statistics-Syria

Year	Internet Users	Population	% Population
2000	30,000	17,868,100	0.2 %
2002	220,000	18,586,743	1.2 %
2005	800,000	19,046,520	4.2 %
2009	3,565,000	21,762,978	16.4 %
2010	3,935,000	22,198,110	17.7 %
2011	4,469,000	22,198,110	19.8%

Source: http://en.wikipedia.org/wiki/Telecommunications_in_Syria.

Appendix 5

ICT Price Basket and sub-baskets, Arab countries, 2010 and 2008

Global IPB rank	Regional IPB rank	Country	ICT Price Basket		Fixed telephone sub-basket as a % of GNI per capita		Mobile cellular sub-basket as a % of GNI per capita		Fixed broadband sub-basket as a % of GNI per capita		GNI per capita, USD, 2009 (or latest available year)
			2010	2008	2010	2008	2010	2008	2010	2008	
5	1	United Arab Emirates	0.4	0.4	0.1	0.1	0.2	0.2	0.8	0.8	57'340
18	2	Bahrain	0.7	0.7	0.2	0.2	0.7	0.7	1.3	1.3	25'420
36	3	Saudi Arabia	1.1	1.5	0.6	0.6	1.0	1.1	1.8	2.7	17'700
39	4	Oman	1.2	1.1	0.9	0.7	0.6	0.7	2.1	2.1	17'890
65	5	Tunisia	2.5	3.1	0.8	1.0	3.2	4.3	3.4	4.1	3'720
70	6	Qatar	2.7	2.7	0.9	0.9	1.8	1.7	5.5	5.5	12'000
71	7	Algeria	3.0	3.5	1.5	1.3	3.4	4.4	4.0	4.8	4'420
72	8	Lebanon	3.0	3.8	1.5	1.8	4.1	5.7	3.4	4.0	8'060
78	9	Egypt	3.5	4.4	1.7	2.0	4.1	5.6	4.6	5.5	2'070
84	10	Jordan	3.9	4.4	2.9	3.1	3.2	3.4	5.7	6.7	3'980
107	11	Syria	7.1	N/A	0.6	N/A	9.9	N/A	10.8	N/A	2'410
117	12	Morocco	9.6	12.5	9.2	11.1	14.3	17.2	5.1	9.2	2'770
129	13	Mauritania	23.4	38.0	22.5	18.2	18.3	18.6	29.4	77.1	960
130	14	Djibouti	24.7	40.4	7.7	8.1	14.0	13.1	52.3	111.6	1'280
144	15	Yemen	24.7	37.4	1.2	1.0	9.2	11.0	134.9	281.6	1'060
158	16	Comoros	49.1	53.7	13.8	17.9	33.5	43.2	534.5	690.8	870

Source: http://www.itu.int/dms_pub/itu-d/opb/ind/D-IND-AR-2012-PDF-E.pdf

Appendix 6

Key Telecom Parameters in the Syrian Arab Republic

Middle East & North Africa		Lower middle income	
	Country data		lower middle-income group
	2005	2011	2011
Sector structure			
Separate telecommunications/ICT regulator.	No	No	
Status of main fixed-line operator.	Public	Public	
Level of competition (competition, partial comp., monopoly).			
International gateway(s).	..	..	
Mobile telephone service.	P	P	
Internet service.	P	P	
Foreign ownership (not allowed, restricted, allowed).	A	No	
Reg. treatment of VoIP (banned, closed, no framework, allowed)	B	B	
Sector efficiency and capacity			
Telecommunications revenue (% of GDP).	2.6	2.9	2.5
Telecommunications investment (% of revenue).	7.5	15.4	29.0
Sector performance			
Access			
Fixed-telephone subscriptions (per 100 people).	15.7	20.9	5.6
Mobile-cellular telephone subscriptions (per 100 people).	16.0	63.2	80.1
Fixed (wired)-broadband subscriptions (per 100 people).	0.01a	0.58	1.25
Households with a computer (%).	28.0	40.4a	10.7
Households with Internet access at home (%).	26.0	35.2a	7.7
Usage			
nt'l voice traffic, total (minutes/subscriber/month).	13.6	11.7	6.5
Domestic mobile traffic (minutes/subscriber/month).	130.2	0.1	..
Individuals using the Internet (%)	5.6	22.5	16.2
Quality			

Population covered by a mobile-cellular network (%).	92	98	86
Fixed (wired)-broadband subscriptions (% of total Internet).	1.3	7.1	58.8
International Internet bandwidth (bit/s per Internet user).	328a	3,489	6,560
Affordability			
Fixed-telephone sub-basket (\$ a month).	..	1.3	5.1
Mobile-cellular sub-basket (\$ a month).	..	21.3	11.3
Fixed-broadband sub-basket (\$ a month).	..	21.6	21.6
Trade			
ICT goods exports (% of total goods exports).	0.0	0.0	5.7
ICT goods imports (% of total goods imports).	3.3	2.2	6.7
ICT service exports (% of total service exports).	9.3	2.5	43.4
Applications			
Online service index (0-1, 1=highest presence).	0.36	0.23	0.32
Secure Internet servers (per million people).	0.1	0.3	3.5

Source: <https://openknowledge.worldbank.org/bitstream/handle/10986/14453/978082139166.pdf?sequence=2>.

Appendix 7

ELEMENTS OF THE NETWORKED READINESS INDEX (NRI)

Sub Indexes	Pillars
Environment	1. Political and regulatory environment. 2. Business and innovation environment.
Readiness	3. Infrastructure and digital content 4. Affordability. 5. Skills
Usage	6. Individual usage. 7. Business usage. 8. Government usage.
Impact	9. Economic impacts. 10. Social impacts.

Source: http://www3.weforum.org/docs/Global_IT_Report_2012.pdf.

Appendix 8

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6. Percentage of individuals using the Internet	100	33	40
7. Fixed (wired)- broadband Internet subscriptions per 100 inhab.	60	33	
8. Active mobile- broadband subscriptions per 100 inhab.	100	33	

ICT skills	Ref. value	(%)	Weight of ICT skills as of IDI
9. Adult literacy rate	100	33	20
10. Secondary	100	33	

Appendix 9

ICT Development Index (IDI) 2010 and 2008, Arab countries

	Regional rank 2010	Global rank 2010	IDI 2010	Global rank 2008	IDI 2008	Global rank change 2008- 2010
United Arab Emirates	1	32	6.19	32	5.63	0
Qatar	2	44	5.60	48	4.50	4
Bahrain	3	45	5.57	42	5.16	-3
Saudi Arabia	4	46	5.42	55	4.13	9
Oman	5	60	4.38	68	3.45	8
Jordan	6	73	3.83	73	3.29	0
Lebanon	7	79	3.57	77	3.12	-2
Tunisia	8	84	3.43	82	2.98	-2
Morocco	9	90	3.29	100	2.60	10
Egypt	10	91	3.28	92	2.73	1
Syria	11	96	3.05	96	2.66	0
Algeria	12	103	2.82	105	2.41	2
Yemen	13	127	1.72	127	1.49	0
Comoros	14	128	1.67	130	1.44	2
Djibouti	15	129	1.66	124	1.56	-5
Mauritania	16	131	1.66	126	1.50	-5
Regional average (simple)			3.57		3.04	

Source: http://www.itu.int/dms_pub/itu-d/opb/ind/D-IND-AR-2012-PDF-E.pdf.

List of abbreviations

E-Commerce	Electronic-Commerce
ICT	Information and Communication Technology
UNDP	United Nations Development Programme
EU	European Union
CCI	Chambers of Commerce and Industries
EUMEDIS	Euro-Mediterranean Information Society Initiative
ITU	International Telecommunication Union
MEDA	Euro-Mediterranean Partnership
E-Government	Electronic-Government
MOCT	Ministry of Communication and Technology (Syria)
E-Health	Electronic -Health
m-health	Mobile-Health
E-Signature-Legislation	Electronic-Signature-Legislation
E-Payment	Electronic-Payment
NANS	National Agency for Network Services (Syria)
ISC	Information Security Center (Syria)
SCPR	Syrian Center for Policy Research
OHCHR	The United Nations Office of the High Commissioner for Human Rights
WFP	The World Food Programme
GDP	Gross Domestic Product
CPI	The Corruption Perceptions Index
GNI	Gross National Income
SANA	The Syrian Arab News Agency
HDI	Human Development Index
GNP	The Gross National Product per Capita
UNESCO	United Nations Educational, Scientific, and Cultural Organization
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UNICEF	United Nations International Children's Emergency Fund
STE	Syrian Telecommunications Establishment
SyTC	Syrian Telecommunications Company
SCS	Syrian Computer Society
ISP	Internet Service Provider
ADSL	Asymmetric digital subscriber line
PSTN	local Public Switched Telephone Network
IPs	Internet Protocols
IPB	ICT Price Basket
BOT	Build operate transfer
STC	Saudi Telecom Company
QSC	Qatar Telecom
3G	Third-generation (mobile technology)
HSPA	High speed packet access
HSPA+	Evolved high speed packet access
3.5G	Enhanced third-generation (mobile technology)
W-CDMA	Wideband code division multiple access
VSAT	Very small aperture terminal
LTE	Long term evolution
NRI	Networked Readiness Index
IDI	the ICT Development Index