Resources for IT and Telecommunications Development: Current Situation in Lebanon and Prospects for the Future within a Regional Framework

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This paper focuses on available and required human, infrastructure, and funding resources as well as government support and incentives for the information and communications technologies (ICT) sector in Lebanon. A depiction of the current situation in this country for each of these essential building blocks is first presented. The additional requirements that will allow this sector to grow and flourish in support of knowledge-based industries in the country are then discussed. Particular focus is placed on the policy and regulatory measures that need to be realized for sustainable development of such industries on a national level. From this perspective and within the same context, the paper then addresses the more encompassing regional issues, identifying in a holistic manner a policies framework and resource levels and networks needed for ESCWA member countries to successfully join the global knowledge-based economy. Scenarios for realizing such a framework and resource levels and networks are outlined with the objective to initiate dialogue that could ultimately lead to the realization of most of these regional framework requirements.

Introduction

In support of ICT development in any country, three main enabling pillars can be identified (see figure 1), namely:

- Hard Infrastructure, covering modern telecommunications infrastructure and facility offerings of technology parks or zones;
- Government Support and Incentives, including various ICT policies and legislation, relaxed and streamlined procedures, tax and labor incentives as well as investment and capital market allowances, and;
- Soft Infrastructure, encompassing skilled human resources, capacity building plans, entrepreneurship programs and local ICT industry direction.

Collectively, these enablers provide the appropriate environment for ICT development to flourish on a local level to allow a country to effectively join the so called 'knowledge-based economies' on regional and global levels, while preserving various nationally intrinsic and cultural characteristics. And as graphically depicted in the figure below, an unequilibrated support from any of these enabling pillars or blocks would utlimately lead to an unstable ICT development path.

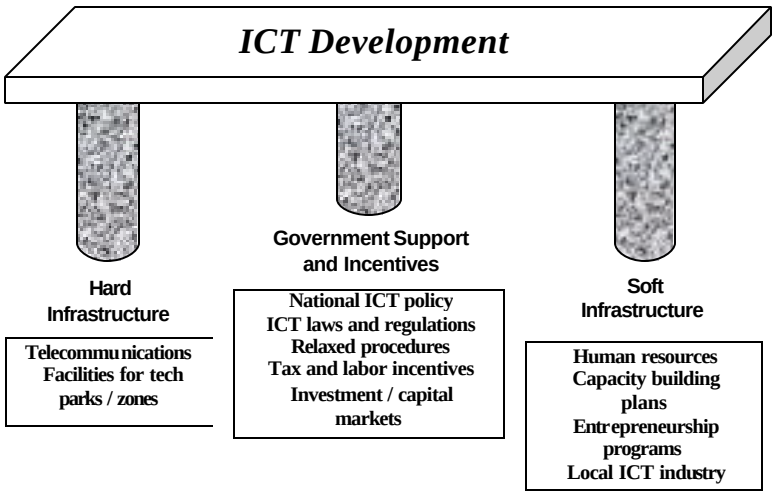

Figure 1: ICT Resources & Government Role in support of ICT development

National ICT Resources and Initiatives (Current Status)

Since the end of the civil strife in Lebanon in the early 1990s, a number of projects geared towards the realizing of some of the three enablers for ICT development have been launched. The results, which are viewed as the current status, can be summed up as follows.

Hard Infrastructure

Telecommunications Infrastructure

The current affairs of the telecommunications infrastructure in Lebanon is that it is modern in main cities, where the Ministry of Post and Telecom (MPT) is offering state-of-art connectivity and somewhat lacking in the rural areas of the country. The voice network is the most advanced throughout the country. Data connectivity, on the other hand, as offered by MPT requires customers to install and maintain their network equipment (routers, hubs, etc.) in the gateway premises of MPT. In other words, no data services are yet offered by MPT.

The GSM sector is very advanced, with 2 BOT GSM Cellular operators serving some 700,000 customers and with a 3rd GSM license ready for launch in the year 2003. The GSM operators are even facilitating wireless voice and data virtual private network services to business customers.

With such infrastructure, the Internet market is developing somewhat slowly, mainly due to the high tariff rates levied by MPT on dial-up and leased line connections – a dial-up call costs around $1.6 per hour. Unlimited Internet Access rates are very reasonable and equal to those offered in the most developed countries – some ISPs are offering unlimited dial-up services for less than $10 per month.

As far as linking to the international network, there is one main international satellite gateway where a couple of earth stations are located and a number of sea line-based connections exist through Cyprus.

On the administrative and regulatory fronts, the Government of Lebanon recently approved plans for privatizing MPT to create Liban Telecom and to reduce MPT to a small regulatory body.

Facilities for Technology Parks and Zones

The Government of Lebanon is currently working on a feasibility study for creating a so called 'Beirut Emerging Technology Zone or BETZ'. This study was offered as a grant from the United States Trade and Development Agency (USTDA) and will provide the blueprint needed for the creation of such a zone

In addition to BETZ, there are currently two private sector efforts for the creation of such technology parks or zones. One is the planned Edde Global Village in Jbeil and the other is the Makse Industrial Park in the Bekaa valley.

Government Support and Incentives

National ICT Policy

In late 1998 a draft ICT policy and strategy document was prepared by OMSAR with the involvement of an international ICT expert. This document spells out the various areas of focus that should be addressed in support of ICT development and usage on a national level, involving all concerned sectors (public, private and academic). It also depicts three main roles for the government, that of a facilitator, regulator and main user of ICT.

As part of the recommendations of the ICT policy and strategy study, a National ICT committee was recently formed, comprised of a main steering committee and some seven advisory committees. The main task of this committee is strategic planning and coordination for all national ICT projects.

Also, work is underway to convert the ICT policy and strategy document to a national ICT business plan that can be disseminated to local, regional and global ICT firms to encourage further development of the ICT sector.

ICT laws and regulations

The Government of Lebanon was one of the first Arab Countries to pass an Intellectual Property Right (IPR) law in 1999. The law prohibits unauthorized copying and distribution of all multimedia assets as well as software

programs. The World Intellectual Property Organization (WIPO) is currently helping the government in conducting and monitoring the enforcement of the law.

The 'Media & ICT Free Zone' draft law was passed by the Council of Ministers early this year and subsequently approved and enacted by parliament. This law offers various tariff and tax incentives by the government to attract local, regional and international Media and ICT firms to open offices or facilities in the zone.

Another important law passed by parliament is the digital signature law, which legalizes electronic signatures for transactions and contracts. A law supporting online banking was also passed and draft laws are in the works for certificate authentication and privacy protection.

On the regulatory issues, and as stated before, the government through its endorsement of privatizing the MPT is pushing for the lowest level of regulation possible, reducing the role of MPT to a small regulatory unit to oversea Liban Telecom

Institutionalizing needed reforms

Introducing ICT in to the Lebanese Administrative can not have optimal results without streamlining government procedures. An example of such streamlining is in the area of trade facilitation where a number of outdated technical controls are being assessed for removal and a modern commercial code system is being designed.

Beyond trade, work on the simplification of all government procedures is well underway with the objective to render faster both intra-governmental services (between agencies) and extra-governmental services (to the general public).

Modernization of the national tax system is another important project currently being worked on. This new system will allow timely and more accurate collection of the various taxes.

Investment / Capital market

The need for continuing investment and prosperous capital markets for ICT cannot be overemphasized enough. Addressing this need are a number of local investment houses and banks headed by the Central Bank that are endorsing the idea of having SME ICT loan programs. A number of venture capital (VC) funds as well as ICT incubators have also been launched.

Soft Infrastructure

Human Resources

Throughout history, Lebanon's key asset has been that of human resources. From ancient tradesmen, to modern business people, the shift in country since the early 1990s has moved to skilled ICT experts and business developers. The national universities (public and private) graduate every year a sizeable number in the Computer and Communications fields. More advanced degrees such as Masters and PhDs are also being launched in these domains.

A number of expatriates with ICT education and specialization have returned home, however the brain drain is still a main factor effecting sustainable growth of the ICT industry.

Capacity building plans

Several universities have launched ICT Masters Degrees and are starting to offer COOP and Intern programs to insure proper transfer and application of educational know-how in the practical world. Also, numerous training institutions are operating in country with a diverse range of training courses

On the elementary and secondary education level, the national curriculum has been expanded to include computer courses and computer labs are starting to be deployed in private and public schools.

An abundance of national ICT seminars, conferences and exhibitions are held annually with areas of focus covering ICT domains such as the Internet, E-commerce, Telecommunications, Software Development, etc.

Entrepreneurship Program

In follow-up to a visit to Lebanon by members of the MIT Entrepreneurship Center, a local university has decided to launch a similar Entrepreneurship Center with the aim to encourage students to develop entrepreneurship skills and to foster collaboration between business-focused and technical ICT-oriented students.

Local ICT Industry

Over recent years, the local ICT industry has expanded with representation of most global ICT products and services. Internationally acclaimed firms such as Microsoft, ERICSSON, and Nortel Networks have opened offices in Beirut, adding to the direct level of support needed for the local firms.

Various firms and associations from the local ICT industry are working with local universities to setup COOP and internship programs to allow for a more seamless integration of the educationally prepared student body in to the practical workforce.

National ICT Resources and Initiatives (Future Requirements)

Given the above-mentioned current status of ICT resources and initiatives, there is a need to put into place more measures that will allow for sustainable ICT development and proper migration to future global technological advancements. These measures are listed under future requirements and are provided in this section.

Hard Infrastructure

Telecommunications

There is a need to expand coverage of the modern telecommunications infrastructure to all of Lebanon so that all society can have an equal stake in accessing the online economy and contributing to its growth. MPT and the future Liban Telecom should work on offering a hybrid array of services (line, microwave, satellite, ..etc.), pro-rated as per the Level of Quality desired, to suit different market needs. The telecommunications operator also needs to constantly stay in tune with international developments and offer comparable services so as not to alienate the local industry and businesses from their international counterparts.

Telecommunications tariffs in all need to be re-assessed and levied as per a more mass population and business oriented formula. Encouraging the masses to get connected can only be realized through such strategic pricing. Voice service fees should be charged on a flat monthly basis within the same dial area code and all between area code dialing should be scaled down in price. Service for data communications as well as other multimedia based communications should also be offered by the telecommunications operator and pro-rated based on the Quality of Service (QoS) required by the customer.

On the Internet front, the Service Providers need to be better classified as per their diverse offerings. The telecom operator needs also to hook-up to a regional Internet hub or better yet to host one (most appropriately in the 'Media and ICT Free Zone') to facilitate more expeditious online communications on all levels (local, regional and global)

A careful assessment of available telecommunications (wireless) frequencies needs to be made and the proper distribution criteria selected and enforced. This will eliminate various frequency interferences on the local level and allow for better allocations along the borders with neighboring countries.

Facilities for Tech Parks and Zones

The timely realization of a BETZ and other ICT technology parks / zones under the umbrella of the Media and ICT Free Zone law is a must. The ICT sector is eager to benefit from the tariff and tax incentives of this unique law so as to work on expanding the ICT offerings for local, regional and global consumption.

Government Support and Incentives

National ICT Policy

Using the ICT business plan as a basis, and with partnership of the public, private and academic sectors, work on fulfilling the recommendations of the ICT policy and strategy document is essential for any sustainability to be realized in the ICT sector. Also, the ICT business plan needs to be revisited on a periodic basis to keep current with global trends. The involvement of expatriates (ICT experts) in various advisory functions for timely transfer of knowledge is yet another critical requirement.

ICT laws and regulations

The more monitored enforcement of the IPR law is a must for the local ICT industry, particularly as relates to software development services, to flourish. Gathering statistics on the results of this enforcement and the fines / punishments levied will certainly send a swift message to those who think of violating this law.

As pertains to the various ICT laws that still needed to enacted (such certificate authentication, privacy protection, ..etc.), it is best that they all be compiled in one group and forwarded for approval and enactment by the parliament in one shot so as to save time and be legally E-ready quickly.

On the regulation's front, there is a need to loosen regulation that hinders ICT growth and online access by the masses. Import tariffs on ICT products (hardware and software) need to be reduced drastically, if not eliminated, for a long period of time. Offering telecom licenses for businesses to connect internationally directly using their individual earth stations is an example of loosened telecom regulation that should be considered.

Institutionalizing needed reforms

As with the needed ICT laws, there is a need here to lump sum as much as possible the needed reforms and have them realized in one effort so as to allow for the simplification of all government procedures to support online services to the citizens to reach an e-government status (one-stop-shops, portals, online application and tax filings are some examples).

Investment / Capital market

Added promotion for ICT investment and loan provisions is always a plus so as to allow the largest number of ICT emerging entrepreneurs to try to realize their ambitions. The idea of ICT incubators is gaining lots of momentum also and soon several will have showcasing projects to present.

The floating of ICT stocks (IPOs) in the local market is another objective that should be realized to encourage involvement in the ICT sector on all levels and by all classes of professionals (investors, bankers, business consultants, and of course ICT concerned).

Soft Infrastructure

Human Resources / Capacity building plans

Establishing and promoting continuing education or retraining at universities, institutes and businesses is a must for all concerned to remain in tune with global ICT developments and trends. Evening programs and frequent training sessions are some options. Various ICT documentaries in the media (TV, radio or print) are also essential to further the ICT knowledge or aptitude of the masses.

With the growth in the ICT sector and to carry down the government incentives (as offered in the 'Media and ICT Free Zone law) to the employee level, there is a need to increase compensation and offer diverse employment packages to retain national ICT expertise.

The creation and promotion of ICT professional associations in country is critical for the proper development of key ICT specializations. Association accreditation as per ICT area of expertise will encourage personal development and facilitate sharing of knowledge.

Entrepreneurship Program

With the direction of setting up an entrepreneurship center at one of the local universities, the private and public sectors alike need to encourage national entrepreneurship competition with cash rewards as seed funding for new ICT business ideas. This model has been followed successfully in a number of developed countries and has resulted in an expanded ICT sector with state-of-the-art establishments.

Local ICT Industry

In line with the realization of ICT professional associations, there is a need to classify and qualify ICT companies as per their particular offerings in line with best-practiced international standards. Also, ICT businesses should be encouraged to coexist with university facilities in technology parks so as to foster timely transfer of knowledge from the ICT research environment to the production arena. Such coexistence will help in realizing local ICT industry sponsored research projects in national universities.

Establishing local and international partnerships amongst ICT firms is yet another important building block for the advancement of the ICT industry.

Regional Framework for ICT Development

Having addressed available and needed ICT resources on a national level, there is a need to realize a regional framework to allow for proper mobilization and sharing of available ICT resources between ESCWA member countries. This framework will allow member countries to join the global 'knowledge-based' society in a more prepared manner and in coordination with fellow member states.

Why a regional framework?

The need for a regional framework stems from the multiplicity of ICT resources required to sustain an ICT industry and enable stable future development. Given that each country is required to have such resources to be a player in the new economy, coordinating efforts on a regional basis will hasten the effective attainment of these resources. To be more explicit, a regional framework is needed to:

- Address and preserve certain cultural aspects, mainly related to the Arabic language - multimedia content, localized ICT system applications (Internet, E-commerce, etc).
- Share experiences and best practices on various ICT building blocks or resources for faster national ICT development.
- Establish common standards or principles for ICT-enabled interactions or transactions between regional countries.
- Collectively reduce regional tariffs between countries (telecom, online trade,..) to globally competitive levels.
- Help one another and succeed in joining the 'Global Knowledge-Based Society' as a percentage of a sizeable population (nearing 200 million in the Arab countries).

These interactions and sharing of information and knowledge are depicted in figure 2 using Lebanon as a member country example.

Scenarios for realizing this Framework

To reach the targeted regional framework on ICT resources, one of two scenarios are possible. The first is to scope and implement a regional program that addresses all ICT resources for all regional countries starting with in-country assessments and ending after several iterations, presentations, and workshops with a regional framework document. The second is to form a number of so called 'Communities of Practice' between regional countries so that all pertinent information and knowledge is shared amongst the right peers at the right time to achieve the right regional outcomes. Examples of such Communities include:

- 'ICT Awareness / Training' Community of Practice
- 'ICT Hard Infrastructure / Security' Community of Practice
- 'Technology Parks / Zones' Community of Practice
- 'ICT Legislation and Standards' Community of Practice
- 'Entrepreneurship / Investment Funding' Community of Practice

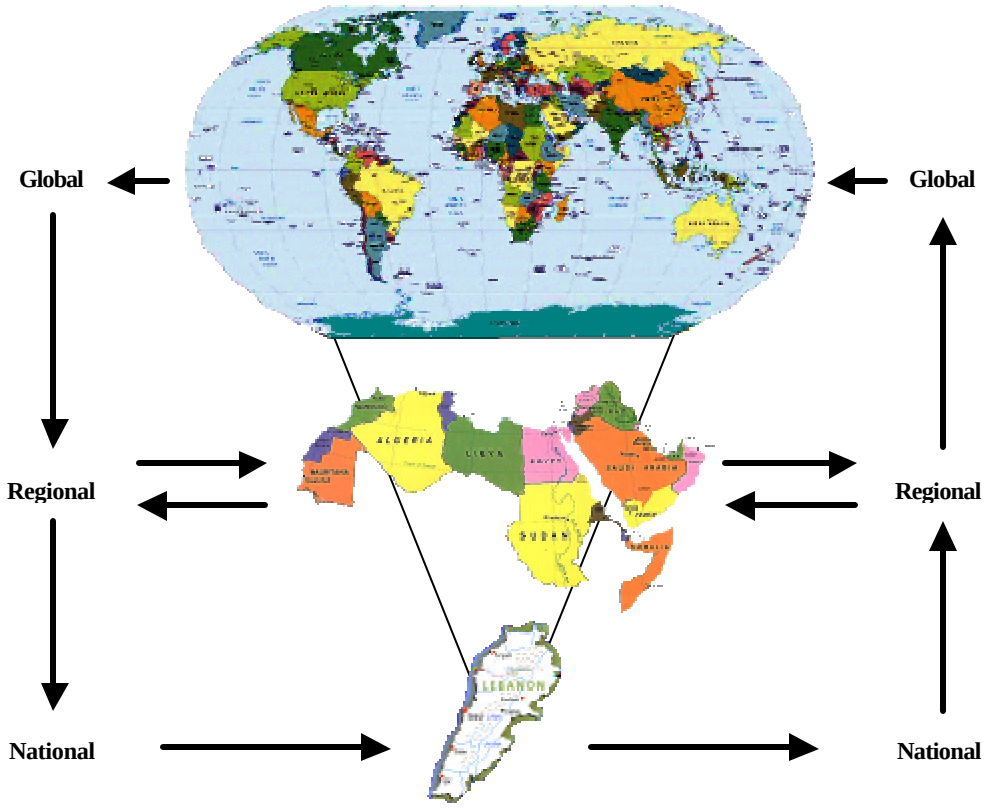

Figure 2: Joining the Global K-Based Society

These 'Communities of Practice' can function in parallel and lead to common subject area understandings and agreements in the shortest time possible. The subject area agreements can then be grouped to form a regional framework document that is as comprehensive as can be given the diverse levels of input and detail provided by the Communities.

Given its structured subject area focus, the second scenario is the most appropriate to pursue for the timely realization of a regional framework document. As a matter of fact, it is the scenario used today even by developed countries and leading corporations to enable sustainable knowledge management and usage.

Mode of Operation

Under this preferred scenario, the following sequence of events should take place to effectively realize the sought after regional framework in a timely manner:

- ?? Hold inaugural and periodic community meetings as frequent as need be
- ?? Set up mail lists for each identified Community of Practice
- ?? Frequently share information and knowledge online with each community member (through a community web site or portal)
- ?? Involve subject area international organizations when need be (as mentors) and establish ties with similar subject area 'Communities of Practice' from other regions of the globe.
- ?? Formulate some consensus before each meeting so that certain agreements could be announced at each meeting
- ?? Publicize the work of each community to draw in additional regional and international support and cooperation

?? Hold regional conferences / seminars for all identified communities to attend and cross-share various knowledge and results so that an overall regional KB society framework can be reached as quickly as possible.

Regional partners for this Framework

Among the many potential partners for realizing such a regional framework are (1) Government-supported regional organizations such as the Arab League, GCC, Various National Funds, Regional Funds and Development Banks; (2) National universities, colleges and institutes from the various ESCWA member countries; (3) Non-government and Non-UN regional organizations and policy centers; (4) Regional Offices of International ICT Companies to act as mentors; and (5) All UN agencies to share their global experience in this regard.