University Privatization and Information Technologies Major Drives For Services Quality and Delivery in Tunisia

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Introduction

The Tunisian state has been shedding off several of its major responsibilities as a business entrepreneur over the last fifteen years, although the change in attitude and policies toward the private sector goes back to the beginning of the 1970s. The continuing progress toward privatization and liberalization points up to policy flexibility in the system, but not without international nudging and compelling economic pressures. The turn to privatization is an unequivocal and an official admission by the state of its failure to play the role of an entrepreneur whose objective is the acceleration of economic growth through central planning and direct management of business. After years of patron state and a provider of such services as free education, subsidized transportation, housing, health care services and basic consumer goods, Tunisia engaged in a straightforward, though very progressive and careful process of privatization and liberalization: encouragement of the private sector, reducing the range of various control and denationalization, privatization of state owned hotels, privatization of state owned industrial firms. By 1989, the regime started to show a firmer commitment to liberalization, and it launched an impressive campaign to attract new foreign investments in Tunisia. At present, over 1,500 partnerships have been formed by Tunisian nationals and foreign investors, mostly Italian and French with growing British interest. Tunisia has also concluded with the European Union a Free Trade Association agreement, which has been already put in place. However, and despite the last decade privatization efforts, one of the key stakeholder, namely **the university**, has been left totally to the **public sector**. This is a Crucially vital sector without which partial privatization most of the other privatization efforts are fruitless, if not bringing adverse effects. The **public sector university** is overly crowded with bureaucracy, immobilization and indecision. A major reason for the slow pace is the fact that privatization has no coherent constituency to speak of, whereas the old order of state University Institutions is based on a tacit and mutual support between the national academic leadership and stakeholders. It results from this backward and hesitating situation an inadequacy between the services created and offered by the Adjustment Reforms and the Economic Globalization.

This paper will describe the major and swift steps taken in Tunisia over years 2000-2001 to help boost private initiatives taking place in the fields of Academia, Telecommunication and Information Technologies. We shall describe the immediate consequences of these privatization initiative: **distance learning,** which in their turn, have –as we will show– improved and generated **services** that become much more available, quicker to obtain and yet less costly.

Brief Background of Tunisia

It is an Afro-Mediterranean country with a multicultural background allowing for a historical openness and tolerance. Its strategic location in the upper north of Africa at less than 50 miles south of Italy has given the country over three millennium various opportunities in trade and commerce with all empires and powers, which ruled the area. Nowadays Tunisia covers an area of 163,610 sq. km, has 1,300 km coastline and shares 965 km border with Algeria and 459 km with Libya. Its natural resources comprise petroleum, phosphates, iron ore, lead, zinc and salt. It suffers from limited natural fresh water resources, deforestation, overgrazing, soil erosion and ramping desertification.

Tunisia has a diverse economy, with important agricultural, mining, energy, tourism, and manufacturing sectors. Detailed governmental control of economic affairs has gradually lessened over the past decade, including increasing privatization of trade and commerce, simplification of the tax structure, and a cautious approach to debt. Real growth has averaged 4.2% in 1991-95, and inflation has been moderate. Growth in tourism and the IMF support have been key elements in this solid record. Drought, especially in the south, held back GDP growth in 1995. Further privatization and further improvements in government administrative efficiency are among the challenges for the future. The GDP (in terms of purchasing power parity) has $from 37.1 billion in 1994 to 45 billion in 2000. The GDP composition by sector is more and more dominated by **Services: 55% in 1995 to 60% in 2000, Industry: 30% in 1995 to 33% in 2000.**

Current context

In the context of the **Information Technology Revolution, Structural Adjustment reforms and the Economic Globalization**, the issue of services delivery and quality are closely linked to education reforms (computer and Internet, IT tools, multidisciplinary approaches, English as a language of education and training) and are more and more trans-boundary and not local anymore. these issues have to be tackled at least at the regional if not at international level.

A pioneering privatization initiative in higher education and job creation

In 1996, a group of Non Profit Organizations **(NPOs)** established a **Partnership** with the **Private University of Applied Technologies and Computing Sciences' (UTECH)**. The main partnership objective: to promote all aspects of privatization and liberalization through their joint efforts.

The group of NPOs

For the last five years Tunisia has been through a **Transition** in the Government **Perception** of the role of **NPOs/Private Sectors.** They have been more and more recognized as the effective **implements** of Sustainable Development. Created between January 1980 and July 1994, this group of NPOs comprises over 12000 members (25% under 21, 35% over 40) and 17 regional offices 12 in rural and agricultural areas. **These NPOs engaged in** the **Advocacy** and the **Good Practice** of **Sustainable Development** with its social, ecological and economical **components**. The objective is to Emphasize Information Technologies and Computer Sciences in Supporting National and International Programs of Sustainable Development (SD) Implementation at National / Regional / Local Levels.

The partnership

We have finished an experience (June 1999) in training and marketing the recruitment of 30 graduates from management, law, sociology, economy, accounting and environmental sciences. These have been unemployed for the last three years. They received 960 hours of formal training: in Applied and Operations Research (250 hours) English Writing and Reporting (180 hours) Applied Computing (100 hours) INTERNET-Electronic Communications and Commerce (150 hours) Small and Medium Private Enterprise Management (130 hours) Non Profit Organization Management (150 hours). Arabic and English were the Training languages and they have spent over half of time using computers. After recruiting two IT engineers, two lawyers, an agronomist, a landscape engineer, a statistician, a social scientist and an economist we have established **the Tunisian Institute of Information Technologies and Sustainable Development**. It is multidisciplinary academic framework. It is an extent of **the Afro-Mediterranean Movement For Sustainable**

Development which is a consortium of NPOs, researcher, managers, scholars and businessmen advocacy for an active role in the field of development, conservation of environment, promotion of good governance, collaboration between private sector and universities and NPOs, and, the use of Information Technologies in all these fields (launched in May 1995). The Movement was initiated by a group of researchers, managers, scholars, and businessmen coming from NPOs and Universities of 9 Africans countries. As of August 2001, we count at least 100 coming from about 20 Africans and Mediterranean countries). The institute comprises 6 units:

> 1-Unit of NPO management
> 2- Unit of Integrated Urban Development
> 3-Unit of Integrated Rural Development
> 4- Unit of Statistics and Applied Information Technologies
> 5- Unit of Distance Learning
> 6-Unit of project studies and design

The Institute will has been running its **pilot project over 2000-2002: The UTECH Community Teleservices** (CT) **Campaign**. It will be concerned with the investigation, development, demonstration, and trailing of new telecommunication services for use in several local communities.

The Launching of the Private Virtual University in Tunisia

Best impetus to exploit the benefits of Privatization and Information Technologies and to help disseminating and promoting modern tools to increase Services Quality and Delivery in the North Africa and the Middle East region.

The Tunisian Private Virtual University (TPVU) will be an extension of the Tunisian Institute of Information Technologies and Sustainable Development. It will be owned and operated by a group of For-Profit Organizations from Tunisia, Algeria, Libya, Egypt and Morocco and it will be opened for shareholders from all the corporations and for profit organizations. It aims at establishing a national and regional private academic institution that promotes **Distance Learning in first place.** but the real purpose is to accelerate the adoption of Corporation Academia partnerships and to help disseminating and promoting modern tools to increase Services Quality and Delivery in the North Africa and the Middle East.

Distance Learning Literature Review : Pioneering US experiences

Distance learning (DL) refers to the application of electronic technology to teaching and learning. DL posed challenges to certain *values* of higher education with noticeable implications of these challenges for accreditation.
Whether the emergence of DL spells the end of traditional campuses, as some maintain, or whether DL instead represents a particularly powerful addition to a growing array of delivery options for higher education, the fact remains that DL is already having a very real impact on higher education operation. DL is creating alternative models of teaching and learning, new job descriptions for faculty, and new types of providers of higher education. Virtual programs are being offered on brick and mortar campuses, computer-mediated instruction is being provided in traditional lecture halls, and web-based catalogues and electronically delivered transcripts abound in counseling offices.
The first and most familiar impact is the growth of credit-bearing DL offerings and enrolments at accredited, degree-granting colleges and universities.

The second is the appearance of higher education **new providers**: freestanding online institutions, higher education online consortia (degree and non-degree granting), corporate universities, and unaffiliated online providers of courses and programs.

These new providers sometimes join forces with long-established, degree-granting colleges or universities and other organizations such as libraries and civic groups.

The third is the emergence of partnerships between institutions and the corporate sector for the provision of online services to support DL (for example, services that provide information to students, assist with registration or transfer and provide access to student support). Such partnerships turn familiar college and university functions into online transactions.

The growth of DL has an international dimension as well, since countries around the world are using DL technologies to enlarge their own course, program, and degree offerings and to import and export education programs and services. Countries such as India and South Africa are heavy importers of DL programs as they seek to expand educational opportunities for their own citizens. China, Thailand and Japan employ DL technologies to develop their own programs and degrees, bolstering their existing higher education systems. Western and Eastern European countries are struggling to determine what place, if any, DL providers have alongside their traditional education providers. The United States, Australia and the United Kingdom are major exporters of higher education through electronic technology.

Degree-granting Institutions and Distance Learning

During the academic year 1997–98, over 1.6 million students were enrolled in credit-bearing DL courses (whether electronic, television-based, or print-and-mail-based, and including both synchronous and asynchronous instruction) in degree-granting postsecondary colleges and universities in the United States.

During the academic year 1997–98, 54,000 college-level, credit-bearing DL courses were offered in 1,680 institutions (United States Department of Education, 1999). Thirty-five states currently operate virtual universities or participate in a regional virtual university, typically created by existing degree-granting colleges and universities (State Higher Education Executive Officers, 1998). It was estimated that institutions offering DL programs have doubled in the past year and that 87% of institutions offer Internet access and campus websites (University Continuing Education Association, 2000).

Large public universities such as the University of Maryland University College (UMUC) are especially active in DL, providing DL opportunities on a global scale. UMUC offered courses in 30 countries around the world; in 1999–2000, UMUC had more than 40,000 online student enrolments. Other universities are rapidly expanding online enrolments. The University of Wisconsin enrolled more than 5,000 students in online offerings in 1999–2000, up from just under 2,200 in 1998–99. The Pennsylvania State University World Campus enrolled 3,000 students online in 1999–2000, three times the enrolment of the prior year.

To encourage and accommodate these enrolments, established degree-granting institutions are creating electronic academic capacity with DL portals (broad Internet gateways) and platforms (software capacity to offer online courses, whether commercially prepared or developed by institutional faculty). Colleges and universities are entering into service agreements that enable faculty to deliver online courses and enable students to obtain access to those courses. Among the companies offering such services are **Blackboard.com**, a provider of web-based platforms for course development, and **HungryMinds.com**, an aggregator of online sites. A body of faculty development literature is emerging, in print and online, to help faculty learn how to create virtual classrooms and meet the challenges of quality online teaching and learning.

Finally, some degree-granting institutions have moved quickly to create for-profit subsidiaries in response to the interest in DL. Cornell, Columbia, New York University, Temple University and the UMUC are sustaining for-profit operations to offer online courses.

How can we put the growth of DL in perspective?
It is true that, with more than 5,000 postsecondary institutions in the United States, the 1.6 million students taking DL credit-bearing courses amount to just a few students per institution. Even 54,000 DL courses may not represent a major shift when spread over thousands of institutions. Nonetheless, the speed with which the growth in DL has taken place suggests that the technology is very seductive and on its way to becoming more pervasive. And as important as enrolments and numbers of courses may be in gauging the impact of DL, it is also significant that so many of the institutions and programs that are adopting DL practices are among the most well-established and highly regarded in the USA.

New Providers and DL
The "new providers" of DL represent a diverse assortment of higher education options. They include new stand-alone, degree-granting online institutions; degree-granting online consortia (groups of degree-granting institutions that offer courses online, with degrees granted by the consortium itself rather than any of the participating colleges and universities); non degree-granting online consortia (where degree authority is retained at the institutional level); corporate universities; and online programs and courses that are not affiliated with institutions and may or may not offer degrees or other credentials. This sometimes bewildering array of providers is complicated by the aggressive and growing presence of the for-profit sector in its midst.

New Stand-alone, Degree-granting Online Institutions
During the last eight years, a small number of high-profile new providers of distance learning—sometimes called "virtual universities"—have emerged: degree-granting non profit institutions such as Western Governors University and the United States Open University.
These institutions are joined by new for-profit degree-granting DL providers such as Jones International University and the University of Phoenix Online Campus—also high-profile institutions.
The for-profit institutions, in particular, reflect the investment community's growing interest in higher education and its increased willingness to channel venture capital into higher education enterprises. Other examples of for-profit distance learning providers include Michael Milken's and Larry Ellison's Knowledge Universe, a conglomerate of education and training initiatives that also provides support for new ventures, and Harcourt Learning Direct, a for-profit university established by Harcourt General, a division of Harcourt Brace, that is offering courses and degrees online as of fall 2000.

Degree-granting Online Consortia
Degree-granting consortia may be for-profit or not-for-profit. UNext Cardean, a for-profit degree-granting consortium, brings together the University of Chicago School of Business, Carnegie Mellon University, the London School of Economics and Political Science, Stanford University and Columbia Business School. Faculty from these institutions provide course content for Cardean offerings, and Cardean will award degrees. *The focus is business education at the graduate level*, using problem-based learning as a primary strategy. The initial target audience is employees of global corporations.
National Technological University (NTU), established in 1984, is a non profit consortium, degree-granting engineering school that is made up of an alliance of more than 50 universities. NTU is a private graduate institution enrolling approximately 1,400 students.

Non degree-granting Online Consortia

Networks of degree-granting institutions from which students may select a range of courses and programs are yet another kind of new provider. The Southern Regional Education Board's (SREB's) Electronic Campus, created in 1998, offers a directory of 3,200 online courses and 102 degree programs offered through 262 institutions from 16 states. SREB itself does not offer degrees; these remain the province of participating institutions. SREB is a model for many other cooperative arrangements to provide access to education online. JesuitNET, a distance education network of 24 Jesuit colleges and universities, is one example. It has been offering online courses from its institutions since fall 2000. The network will act as a web portal as well, and member institutions will also pursue cooperative course development.

Fathom, an example of a for-profit, non degree-granting consortium, is emerging from a partnership among Columbia University, the British Library, the Cambridge University Press, the London School of Economics and Political Science, the New York Public Library and the Smithsonian Institution's National Museum of Natural History. By the end of 2000, Fathom has offered 7,000 online undergraduate and graduate courses.

Corporate Universities

There are at least 1,000 and perhaps as many as 1,600 companies that maintain private teaching and training enterprises. Many of these corporate universities are still site-based but are moving quickly to online modes of operation. They include, for example, Dow Jones University, Hamburger University and Cox University. Companies such as Microsoft, Novell, Oracle and Cisco also have emerged as primary providers of online information technology training and certification. An estimated 2.4 million individuals worldwide have earned such certificates in 2000.

Unaffiliated Online Programs and Courses

The number of online courses and programs that are not affiliated with any institution is estimated at anywhere from 100,000 to 1 million, depending on whether we are talking about credit-bearing educational activities or single-instance non credit offerings (e.g., a four-hour seminar online). Kaplan Inc., for example, has launched **KaplanCollege.com**, a collection of 500 online courses across nine professions. Merrill-Lynch estimates that the online higher education market will grow to $7 billion by 2003. Virtual institutions, new for-profit providers fuelled by venture capital, degree-granting and non degree-granting online consortia of degree-granting institutions, corporate universities, unaffiliated online courses and programs—the speed at which these new providers are proliferating is genuinely startling.

Entrepreneurial providers can launch degree programs in a matter of weeks, not years: Partnerships for Online Services and DL

A diverse array of partnerships between degree-granting institutions and corporations is emerging to provide online services in support of DL. The emergence of these partnerships is a product of the availability of electronic distribution services, the growth in the number of content providers, and the relentless expansion of communications capacity. Typically, they involve degree-granting institutions turning to corporations for technology that adapts existing and familiar institutional support operations to an online environment. Here are but a few examples.

• Oklahoma Christian University and Netplex have signed an agreement for "e-Campus," technology which will handle electronic transactions and develop personalized websites for students, parents, faculty, staff, alumni and donors. Texas A&M and MessagingDirect are

working together to provide students with financial information online (such as electronic statements for debit cards) and, ultimately, to permit electronic billing of tuition.

• Regents College in New York and Johns Hopkins University are creating the Regents College Virtual Library—an online service to students. Bowdoin College and Harris Internet Service are working together to develop online communities for college alumni. Other examples include web-based interactive foreign language education provided by California State University and Teleste Education Ltd. AT&T and five universities have created the Education Alliance, a project designed to build student skills at networking and using information technologies.

These partnerships for online services are another feature of the changing landscape of higher education. They reflect an expanding and diversifying relationship between the non-profit education community and the for-profit business world.

Higher education and business are sharing resources and pursuing common goals in the area of online service provision as well as in offering online courses, programs and degrees. These partnerships are viewed by some with consternation and concern. The subject is part of a larger debate all over the world about whether there is an unbridgeable gap between the values of for-profit enterprises and those of non-profit institutions when it comes to providing education. Will the keen interest in revenues demanded by for-profit activities undermine the commitment to public service and public good that is considered an important aspect of non-profit higher education (and elementary and secondary education too, for that matter)? Is the profit motive compatible with higher education's traditional commitment to general education and independent intellectual inquiry? Because the rapid expansion of DL has often entailed cooperative initiatives with technology companies and venture capitalists, such questions—while not the primary subject of this presentation—are never far removed from discussions of the impact of DL.

In summary, we know a good deal about the impact of DL on higher education. The accrediting community, like the colleges, universities and educational programs it sanctions, must scrutinize and evaluate these alterations in the higher education landscape and the new challenges they entail, which are described in the sections that follow. Our ability to design a thoughtful response to these challenges will dictate the future quality of higher education. Whether pervasive or limited, offered in familiar or new provider settings, non-profit or for-profit, DL is challenging the traditional academic work of colleges and universities. Through electronic communication, remote access and virtual faculty-student relationships, DL goes to the heart of the higher education enterprise—teaching and learning and the classroom. Consider these key features of DL:

• Computer-mediated classrooms: faculty and students engage with each other through keyboards and monitors, relying heavily on the written word rather than face-to-face exchange;

• Separation in time between communications: teachers and students depend on asynchronous modes of communication, rather like e-mail exchanges; and

• Availability of services online: student services such as advising, counseling, mentoring and library services are integrated with the online teaching and learning environment.

DL alters the traditional faculty role in higher education, diminishing face-to-face contact with students. It may also alter the fundamental intellectual tasks with which faculty members are traditionally charged.

The Tunisian Private Virtual University

The TPVU project was instigated after a thorough and meticulous study of the Tunisian private sector environment, judged by the TPVU constitutional members as highly favorable. Following we present some features of this environment, especially with reference to telecommunication and IT:

General Telecom Policy

The business environment in Tunisia is improving from year to year. The reforms implemented during the last decade allow the country to:
- Reach investment grade since 1994.
- ranked second most competitive country in Africa in 1998.

This positioning has been achieved, because the economic fundamentals have improved with:
- 4.5% GDP growth in real terms during the last ten years.
- 6.7% exports growth of goods and services for the same period, supported by noticeable diversification of the exported products.
- A budget deficit continuously being monitored, hence contributing to the reinforcement of national savings.
- An inflation under control, which favors moderate wage increases.
- An external debt generating a bearable debt service not exceeding 17% of exports receipts.
- A stabilised employment rate since 1994.

The above mentioned conditions resulted from the legal and institutional framework being favorable towards businesses; however, the private initiative requires more efforts to be made.

A significant growth has been observed during the last few years, favoring the manufacturing sector. In particular work requiring personnel, capable of producing quality products and complying with production and delivery time constraint benefits from the advantage of proximity and free access to the EU market Tunisia is enjoying. More specifically, this is the case for the telecommunications and computer sectors.

The information highway is seen by Tunisian President Zine El Abidine Ben Ali as one of the main roads that could lead Tunisia's economy to greater efficiency and better prepare the country's children to meet tomorrow's challenges using the advantages offered by new information technologies. The President also wants Tunisia's business community to aggressively seek the benefits of electronic commerce.

The development of communications and information infrastructure in Tunisia has been seen at the highest political level as a current main priority.

Investments in the telecommunications sector have almost tripled since 1987 when the amount of government expenditures totaled 400 million US$ versus US$ 1.1 billion dinars in 2000.

Frequencies allocation authorities

The "*Office National de la Telediffusion*" assures the correct creation, exploitation, maintenance and extension of all the means concerning radio and television transmissions. Other responsibilities include:
- Control of the reception quality for the radio & television programs
- Provide guidance for the studies and research relative with the radio and television transmissions
- Promotion of the cooperation between national institutes and international and foreign technical organizations
- Promotion of the Value Added Service for television transmissions

Key legislative measures

Key measure	Objective	Date
Law 88-145	Creation of Telecommunications Studies & Research Center	31 Dec 1988
Law 93-8	Creation of National Office of Telediffusion (ONT)	1 Feb 1993
Law 95-36	Creation of National Office of Telecommunications Tunisie Telecom	17 April 1995
Law 95-2033	Administrative and financial organisation of the Telecommunications Studies and Research Centre	16 Oct 1995
-	Creation of Tunisian Agency for Internet (ATI)	April 1996

Liberalization

The telecommunications market in Tunisia has been liberalized substantially since 1987. During the 1992-96 Plan period, public telephone service was opened up to the private sector. The number of public telephones managed by private company's rose rapidly from 1,097 in 1992 to 4,730 in 1994. Facsimile and paging services were also privatized.

Internet Services

Tunisia is an Internet host site registered with the top-level domain name system (Internet's Domain Name System). The Institute Regional Des Sciences Informatiques et Technologiques (IRSIT) located in Tunis, Tunisia, has offered full Internet Protocol (IP) Internet connectivity since 1991, over the X.25 packet switched network Tunipac to EUnet in Europe based in Amsterdam. On December 1993, the connection to Amsterdam was established via a 19.2 Kilobits per second (Kbps) leased line. Bitnet is accessible through EARN (European Academic Research Network, the European Bitnet Network).

There is one Bitnet node in Tunisia, also operated by IRSIT. IRSIT also offers access via Unix-to-Unix Copy Protocol (UUCP) and dial-up IP to users with no IP connectivity. In December 1994, there were 16 full IP sites in Tunisia and about 1000 electronic mail users (UUCP and dialup IP). Of the 16 IP sites, 4 were commercial, 4 academic and 8 non-academic sites. Internet users in Tunisia had access to E-mail, Telnet, FTP, and Gopher, but not to the World Wide Web, as it required more bandwidth than what was available then. In 1993, IRSIT was awarded a contract from the Secretary of State for Scientific Research and Technology in the Prime Minister's Office to build a national research network for Tunisia ("Reseau National de Recherche de Tunisie" or RNRT). The project resulted in interconnection of more than 50 educational institutes around Tunisia. In addition, IRSIT was contracted by the United Nations Development Program (UNDP) in October 1994 to provide Internet access for non-governmental organizations (NGOs), and thereby to most of the cities in Tunisia. IRSIT was the only agency in charge of Internet activities in Tunisia till 1996 when the National Office of Telecommunications took over this service offering from IRSIT.

Tunisian Agency for Internet (ATI) was established in April 1996 as a public company with Tunisie Telecom owning 51 percent of its shares and private investors owning the rest. ATI is a service provider for value-added services in telecommunications and it plays the role of the national operator for the Internet backbone in Tunisia and manager of the .tn domain. ATI provides Internet services for governmental agencies and NGOs in Tunisia in addition to 2 commercial providers (Global Net and Planet Tunisie) and some focal points to provide Internet services to others. IRSIT is connected to ATI and provides direct connectivity for research institutes and for the computation center of the Tunisia University, El Khawarizemi. El Khawarizemi provides Internet access to higher education institutes in Tunisia in addition to acting as an access point for the university campus in Tunis. Commercial providers serve the individuals in addition to private organizations including private universities.

ATI is connected to the Internet via 2 fiber links. The first link goes to Telecom Italia via 6 Mbps, 3 E1 links that is upgraded by a new E1 every 3 months according to the contractual agreement between ATI and Telecom Italia. Telecom Italia in turn is connected to the Internet backbone via 78 Mbps link from Teleglobe of Canada. The other link is a 1Mbps link leased from Global One to the US backbone. Although ATI is not over committed in bandwidth, access is somehow slow due to the over-commitment of Telecom Italia. Internet access is available via a local call across the whole country with a monthly subscription rate of around 30 DT (Current exchange rate for DT Vs $US is about 0.7DT) for residential use and 50 DT for business use. There was 150,000 Internet users in mid 2001: 80,000 of these are Private companies.

Quality of Service

At the end of 1996, Tunisia had an estimated installed base of 560,000 main lines, giving it a telephone density of approximately 6%. As part of Tunisia's 8th Development Plan, which covered the 1992-96 time frame, Tunisia Telecom expanded the telecom network to the eastern half of the country and began upgrading existing switches and exchanges to digital technology. In the 9th Development Plan (1997-2001), Tunisia Telecom is undertaking a variety of projects to further upgrade and expand its telecommunications infrastructure that could total upwards of US$1 billion. Currently there are around 720,000 main lines in Tunisia, with projects in the 9th Development Plan to add one million new lines, and installation of new telephone exchanges to serve additional 450,000 subscribers. By the year 2001, Tunisia Telecom hopes to increase Tunisia's overall telephone density to 10%.

Information Society Policies

Education. Education, especially higher education, is a hot topic in Tunisia as the case with most of the developing countries. Tunisian officials perceive higher education as an asset for Tunisia and one of the means for catching up with the developed world. According to a 1995 UNDP report, Tunisia has one scientific technician per 2,000 inhabitants, a figure equal to that of Argentina and Mexico, and which represents one half that of Portugal or Spain. This number is expected to grow as Tunisia is planning during its IXth Economic Development Plan to increase the number of technological university graduates by 300% to reach 4,050 by 2001/2002 from a modest 1,600 in 1996/1997.

Thus, a particular attention is given to scientific and technical courses of study and to vocational training. Alternate work training and self-designed training programs are available, to enable Tunisia to offer the skills businesses are looking for semiskilled and skilled technicians who can adapt easily to technological change. A vast program intended to quadruple training capacity over 7 years should raise the trainee graduation rate from 15,000 to 60,000.

Private Universities. Thirty Private universities have been operating in Tunisia since mid 80's but till August 2001 only Six have been accredited by the Ministry of Higher Education. Nevertheless, there is a large portion of students who go to private education due to the limited number of seats in the public schools. Students need to finish their study abroad or else get employed by private institutes. Following are the two oldest Private universities out the six that have been accredited:

- *The Arab University of Sciences (UAS)*: A private university composed of 6 colleges: languages and translation, tourism, engineering, commerce and management, journalism and mass communication, and law. Linked with universities in France and Canada, Quebec, where professors are brought in for short periods to give lectures in various topics or students go to finish their graduate studies. The university already investigated the possibility of the use of video conferencing but did not carry on with the project due to the large capital required. Also their information infrastructure is not the most up-to-date and their connectivity to the Internet depends on a single dialup account.

- *The Universite Libre de Tunis (INTAC)*: Another private university though much bigger in scale than UAS. Students are estimated to be around 1900, about 200 of them are studying informatics. Again INTAC is linked with Franco-phone universities in France and Quebec. Although INTAC has investigated the possibility of the use of the remote education to enable their students to get their lectures without the need to host the professors, lack of infrastructure at affordable prices makes it more economic to invite the professors than using conferencing. The university is interested in presenting courses for professional development as it was the primary activity of the founder and the dean, specially that for IT developers.

Now we turn to the real major experiences in the fields of Distance Learning and Virtual Universities.

USA Virtual Universities

Virtual universities where first launched by the Delaware Open University that obtained degree-granting authority in in May 1998 and achieved candidacy status from the Middle States Association of Colleges and Schools in February 1999. The U.S.-based institution used the Open University in the United Kingdom as a model for developing course materials in conjunction with a variety of different delivery methods, including textbooks, video, and computer-mediated instruction. The U.S. Open University introduced its masters in business administration program in May 2000. In Fall 2000, more than fifteen courses were offered in computing, English, information technology, humanities, and management. The Open University website is http://www.open.ed

Western Governors University (WGU) was reviewed for accreditation candidacy by the Inter-Regional Accrediting Committee (IRAC) in February 2000. IRAC, which was formed in 1997 to consider WGU's application for accreditation, consists of representatives from four regional accrediting commissions: the North Central Association of Colleges and Schools (Commission on Institutions of Higher Education); the Northwest Association of Schools and Colleges (Commission on Colleges); and both the Western Association of Schools and Colleges (WASC) Accrediting Commission for Senior Colleges and Universities and the WASC Accrediting Commission for Community and Junior Colleges. Eligibility status was granted in May 1998. The Western Governors University website is http://www.westgov.org

Kentucky Commonwealth Virtual University. In May 1999, Kentucky joined other states with virtual institutions in the introduction of Kentucky Commonwealth Virtual University (KCVU). KCVU does not offer courses, but emphasizes the delivery of broad student support services through the Internet. This will include access to university representatives anytime from anywhere. Other services are an online library, career advising, online registration, and financial aid information. With this array of support services, KCVU not only hopes to attract students, but to keep students enrolled until they complete their degree as well. In addition, the virtual university will feature a directory of the distance learning courses offered by all of the public and private institutions within the state. The Kentucky Commonwealth Virtual University website is http://www.kcvu.org

Many Distance Learning Resources exist now on internet
ADEC Distance Learning Consortium http://www.adec.edu/
Applied Rural Telecom Resource Guide http://www.yampa.com/aerie/resource/resource.html
Distance Learning URLs http://www.bcbr.com/aug96/disturl2.htm
Planning Considerations and Options http://dmi.oit.itd.umich.edu/reports/DistanceLearn/index.html
Distance Learning Resources http://www.lib.montana.edu/~alivy/dist.html
Distance Learning Resources on the Internet http://www.itstime.com/cpu/resource.htm
Examples of Distance Learning in Medicine http://wwwetb.nlm.nih.gov/workshop/internet/distlrn/projects.html
Federal Government Distance Learning Association http://www.fgdla.org/
Information on Distance Learning on the WWW http://www-ts.cs.oberlin.edu/dk/dist.html
Internet Resources on Distance Learning http://wwwetb.nlm.nih.gov/workshop/internet/distlrn/
United States Distance Learning Association http://www.usdla.org/
Western Governors' Virtual University http://www.westgov.org/smart/vu/vu.html
Working List of State-Related Ed. Tech. Resources http://www.qvctc.commnet.edu/QVCTC/brian/edutech.html

Conclusions - Source of Success for TPVU:
Training and Promoting the Globalization of Services

The TPVU will take advantage in all these experiences. It will be established in Sfax, the most prestigious banking center and industrialized city of Tunisia, at 300 km north of Libya. It will try to reach North Africa then Middle East countries. Through Distance Learning it will contribute to accelerate the adoption of Corporation Academia partnership and to help disseminating and promoting modern tools to increase Services Quality and Delivery in the.

Services encompass a vast and disparate array of economic activity, and imply a similarly wide scope of issues, institutions, and interests. Much as the first round of multilateral negotiations in the area attracted relatively little attention and public scrutiny beyond the academic, governmental and private sector circles, it should come as no surprise that proposals to build upon the achievements of the Uruguay Round and subsequent negotiations in the World Trade Organization (WTO) should today command considerable attention.

As the GATS services negotiations have progressed, civil society groups representing a wide range of interests -environmentalists, anti-free traders, those who oppose globalization, trade unions – are finding a common target in the GATS. However, many of the arguments being put forward today against trade and investment liberalization in services are based on misinformation and a lack of understanding of the GATS. At the same time, the significant economy-wide benefits deriving from services trade and investment liberalization are not getting sufficient promotion and dissemination.

The most recent phase of economic globalization is characterized by revolutionary advances in telecommunications and information technology, and complemented by far-reaching changes in approaches to domestic regulation and sweeping (and often unilateral) liberalization of trade and Foreign Domestic Investment regimes, has to a significant degree been driven by the internationalization of services. In the process, many of the boundaries that used to distinguish tradable from non-tradable products - and indeed goods from services - have become blurred.

Services in the Global Economy

Services, which include activities as diverse as the transportation of goods and people, financial intermediation, communications, distribution, accountancy, hotels and restaurants, education, health care, and construction, account for a substantial and rising share of output in every economy. Even in the lowest-income countries, services account for more than a third of GDP. In middle-income countries, services generally account for more than 50% of output and a similar if not greater share of employment.

Gain from open services markets

Benefits for Consumers

When markets are open to both domestic and foreign providers, consumers will ordinarily enjoy the results of price and quality competition. Telecommunications offer the most prominent example of declining costs for both consumers and firms. There is a vast reduction in the real costs of international telephone services, using the examples of calls from the United States to Japan and the United Kingdom. The real cost of placing a seven-minute call to Japan in 1982 was $23.64 (denominated in 1999 dollars), but a consumer using the cheapest AT&T rate paid just $3.36 in 1999 — an 85.8% reduction. The cost of a U.S.-U.K. call fell by an astonishing 95.0% during the same period. The steepest reductions came in 1997, the year that the WTO successfully concluded the extended negotiations on market access for basic telecommunications services. Increased competition in the telecommunications field brings more benefits than mere rate cuts, important though those cuts may be. Telephone monopolies were once the most notoriously unresponsive service providers, with customers having to wait months or (in some developing countries) years for the installation of new lines. Through a combination of new technologies (especially cellular telephony) and new competition, telephone services are in most countries today vastly improved. This development is incalculably valuable for businesses, and adds significantly to consumers' quality of life. Those commercial and personal benefits are even greater when one considers the multiplier effect of the telephone as gateway to the Internet.

Benefits for Employees

Employees in the services sector generally enjoy higher pay and better working conditions than do their counterparts elsewhere in the economy. Their bargaining power *vis à vis* employers, as well as their ability to find new employment when they change locations, are also enhanced by the interchangeable nature of many positions in the field. Several service industries are often characterized by an above average level of skills convergence among those who are adept in the new technologies. An employee who is skilled in the requisite arts of one service sector, such as computer literacy and the manipulation of digitized data, may enjoy both upward and lateral mobility in the new economy.

Benefits for Firms

The most obvious beneficiaries of more open markets for services are those competitive, export-capable firms that hope to compete in overseas markets. Less apparent but no less significant are the benefits that extend to the firms that purchase these services. One of the key ingredients to the successful development of an industry, whether in the goods or services sectors, is the availability of business services that are affordable and of high quality. Countries that open their markets to competition by foreign providers – and become more efficient importers of these services - can reduce the costs and enhance the competitiveness of their producers across an array of goods- and services-producing industries.

Gains from services liberalization and evidence of the economy-wide importance of services

Deregulation combined with infrastructure upgrading and increases of FDI have resulted in the cost of international telephone calls falling by 66 per cent in the last four years in Tunisia. The Internet is making contact within Africa and between Africa and the outside world significantly more affordable. E-mailing a 40-page document from Tunis to anywhere costs 50 cents and faxing it about $100.

The overall contribution of international education to New Zealand's economy is estimated at $545m, representing some 0.5 per cent of GDP. In comparison, the fishing industry accounts for 0.3 per cent of GDP, oil and gas exploration for 0.7 per cent and horticulture for 0.9 per cent. Employment directly attributable to foreign student expenditure in the country is about 4,500 full time positions. The economic flow-on effects raise this total to over 10,000 jobs.

Many observers have recently drawn attention to the new economy's potential to narrow the gap between countries and regions, pointing in particular to the capacity afforded by ICT applications to open the way to free and equal access to information and knowledge. The last few years has indeed seen a number of developing countries leap-frog costly (and potentially environmentally taxing) phases of industrial and technological development – for example in mobile telephony, with potentially significant implications for the efficiency of activities as diverse as small-scale farming, health care delivery or handicraft exports.

There can be little doubt that the ongoing revolution in information and computer technologies (ICT) offers significant promise for addressing some of the most pressing challenges of development. It can, for starters, contribute to good governance and greatly improve the quality, timeliness and cost-effectiveness of delivering government services. Networking allows greater access to decision-making, and through automation and software applications, ICTs reduce administration costs, lower the cost of service provision and open the working of the government to public oversight and greater accountability. ICTs have provided opportunities for government to redefine its relationship with citizens by encouraging:

  (i) economies resulting in efficient government;
  (ii) personalized service;
  (iii) equal access to government for all;
  (iv) speed and responsiveness; and
  (v) responsible and measurable government.

Another high profile IT initiative is designed to provide citizens of a developing country with access to computerized, one-stop Integrated Citizen Services Centres (ICSCs) to handle a variety of services, including (a) payment of utility bills (electricity, water, and sewerage) and property taxes; (b) issuing certificates (birth, death, caste, and income); (c) issuing permits and licenses (trade, driver's, vehicle registration); (d) providing information (building permits, transport procedures, property registration); and (e) facilitating common transactions (change of addresses, transfer of vehicle ownership).

ICTs also hold out strong promise in helping developing country governments meet basic human needs such as health or education, which are not only essential to the well being of citizens but also a prerequisite to any economic development effort. In the field of healthcare delivery, recent developments in telemedicine show how the Internet can assist with remote diagnoses, dissemination of medical knowledge and tracking of epidemics. Electronically based support systems are now being deployed to support health care workers, providing tools that allow them to reduce time spent doing paperwork, and increase the accuracy of the data flowing up and down through the healthcare reporting structure. These ICT tools also provide a means for getting healthcare data at the village level in an electronic form, and can provide healthcare workers with information to help them to provide more-effective service to the villages within their responsibility. In India, for example, an innovative ICT pilot application substituted manual registers with client data stored on hand-held computers accessible through a variety of icons. The pilot reduced the paperwork burden of the village health care workers, empowering them to provide more timely care and information. Similarly, community-based health information and planning in Kenya is being enabled by decentralized geographical information systems to track health and environmental issues.

Such experiments draw attention to the critical need for ensuring broad access to modern telecommunication infrastructures. Absent such access, the risks of exclusion in terms of empowerment and access to quality government service provision can be real. For example, if the rural poor are discriminated against having access to online government services online, they will likely fall yet further behind in relative terms. Already, remote hospitals and schools with limited access to telephones face significant disadvantages. If the majority of the population remains offline, the potential savings and development benefits of "e-government" can be significantly curtailed, as a dual-structure for government services is required to reach those online and those not connected.

Care must however be taken not to succumb too readily to irrational new economy exuberance by viewing ICTs as a kind of magic bullet for developing countries to use to advance their social and economic development. An important challenge for policy, including trade policy, is thus to determine in an objective and rigorous manner whether such developments can be replicated across countries and
various cultures and to adjust development assistance and technical co-operation efforts accordingly.

As one informed observer candidly pointed out in a recent paper:
"Unfortunately, translation of a utopian vision of the positive impact of ICTs on the developing world into reality is not so simple. In practice, whether or not a developing country can build an ICT-based economic or social sector depends on overcoming many of the same microeconomic and macroeconomic barriers that have long contributed to its underdevelopment: what is the state of its educational system? How are telecommunications costs regulated? Is there a reliable transportation network? Are there limits on foreign direct investment? What sources of investment capital are there for small or medium sized businesses? Is there a tradition of capitalist entrepreneurship in place? Plus a number of newer concerns: what kind of intellectual property rights protection is in place? What sorts of data networks are present? Is there competition in the provision of internet services? The list goes on and on. Is this a realistic vision? The short answer to these questions is Maybe. The slightly longer answer is We Are Trying to Figure This Out. And the most insightful answer from the people who devote their lives to these questions is We Really Hope So!"
(Kirkman, 1999).

Research suggests that the digital divide between the "connected" and the "unconnected" is being driven by a number of factors that include first and foremost poverty itself, which in turn translates into a lack of understanding about the uses of technology. Public policies that hinder the spread of ICTs can also pose important new economy roadblocks. While such observations speak to realities that may be observed within OECD countries, they are even more germane and relevant to developing country settings. Trade and investment liberalization can play a useful complementary role in addressing some of the root causes of the digital divide.

ICTs for development: policy requirements
While many factors contribute to the successful introduction and use of ICTs in developing countries, one of the key ingredients is the availability of information and communication hardware. Without basic infrastructure, none of the best case scenarios for ICT usage – telemedicine, educational technology, electronic commerce, etc. – can take off and prosper. The key to coordinating efforts to make the global information infrastructure truly global and push national information infrastructures into rural areas, is to determine how far market forces will carry the process, and fill the gap with concerted action by government and other non-private actors, with the support of the international development community.

This is not just a theoretical question from an economics text on market failure, but a real question about the respective roles of private and non-private actors in the provision of new technologies in the developing world, about the willingness of governments to make difficult budget tradeoffs and about the most effective use of international financial and intellectual resources.

One of the most promising areas of electronic commerce that is especially suited for developing nations with high educational levels and reliable physical and telecommunications infrastructure is technology-mediated information service processing. There has been a global boom in international trade in such services, part of which has manifested itself in forms ranging from software engineering in India to claims processing in Jamaica or remote bookkeeping in Zimbabwe, all of which are performed at a considerable distance from the business source. There are two main drivers for the success of this kind of model. On one hand, the rising quality and declining cost of technology (particularly the advent of more advanced data compression technologies) allows services to be carried out over global networks. On the other hand, the continuing discrepancy in wage rates between developing and developed nations allows firms to use a labor arbitrage model to contract out services to low cost service providers. Secondary drivers are factors such as language, time zone differential, training, and data security, all of which assure the competitiveness of offshore outsourcing models with local counterparts.

The major bottlenecks already existent in international trade such as customs handling, shipping issues, transportation logistics, and poor physical infrastructure will continue to plague many forms of electronic commerce-facilitated transactions. For this reason, trade and investment liberalization in services and in digital products will continue to drive most electronic commerce in developing countries.

Policy-makers must attend to a number of areas of concern to create a regulatory, educational and overall policy environment in which connectivity can be encouraged and more importantly, in which fruitful applications of that connectivity can flourish. The following rules of thumb, which flow from the "Networked World Readiness Project" developed by researchers at the Information Technologies Group at Harvard University's Center for International Development include a number of policy parameters that are amenable to trade, investment and competition policy contributions:

Competition is Good.

The greater the competition, the more vibrant the growth of the IT sector, and the more economic growth. Monopolies in the telecommunications sector, especially in the markets for cellular telephony and Internet service provision, stifle growth. Indigenous competition in internet service providers (ISPs) should especially be encouraged to create strong local content.

Encourage Market Forces.

Let the private sector take the lead in extending services. If the right incentives cannot be put in place for private firms to provide the services, then identify the sources of market failure – the Canadian model of the information superhighway is one that focused on connectivity of rural northern communities education (encouragement and incorporation of technological platforms for education). Is connectivity a fundamental human right? The Government of Spain recently declared that it believes that it is.

Protect Intellectual Property Rights.

If developing countries wish to join the growing global information economy, then it is essential to guarantee IPRs. Given the ever-expanding international data backbones, it is all too easy to divert data flows and digital products away from countries that do not ensure their protection.

Focus on Education.

The future of information and communication technologies in developing countries is dependent upon the educational system of a nation. The sophistication of any IT infrastructure that is introduced into any environment is meaningless if people don't have the skills to (1) know what to do with it and (2) be able to use to their best advantage. The successes of Bangalore and Madras, as well as the recent economic booms within Ireland and Finland can be directly correlated to their highly educated labor forces and high degree of IT skills.

Connectivity Doesn't Matter if No One Can Afford to Pay for It.

As long as the cost of telecommunications service remains high, the impact of ICTs within developing nations will be extremely limited. Pricing plans that charge high per minute or hour of use charges are a major obstacle to widespread use of the Internet and other communications devices. Most governments, however, are unwilling to relinquish control over one of their few "cash cows." Even when governments commit themselves to the path of privatization or increased competition, they often postpone the actual arrival of these events for a number of years, citing the need to "prepare" themselves. Such a tendency can only set countries back even more in terms of reaping the benefits that ICTs can bring to their societies.

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