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## Economic Brief

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## Open, Smart and Inclusive Development: ICT for transforming North Africa<sup>1</sup>

North Africa is adjusting to forces of change, ranging from globalization to a technological revolution and fast growing young population. The global financial and economic crisis has undermined a blind faith in free markets, and revived interest in pursuing smart strategies by both the government and private sector in support of technological innovation and structural transformation (Lin, 2010). Rising unemployment and inequality, and the recent popular uprisings now lend more urgency to rethinking economic development for North Africa. The information and communication technology (ICT) revolution offers a historic opportunity to enable regional adjustment to a fast-changing and knowledge-driven global economy. It opens the opportunity for the region to transform to an open, smart and inclusive economy. It offers new tools and platforms to address the region's challenges: governance, employment, demands for public services, export diversification, structural transformation, and global competitiveness.

Broad changes are sweeping the world, and North African countries have to adjust to these drivers of change:

- Globalization, financial volatility, and the rise of emerging economies.
- Diffusion of ICT, and growing role of knowledge in global competition and local development.
- Growing economic inequality and discontent within countries—driven by globalization and technological change.
- Power shift between state and citizens, with the spread of democracy, and growth of civil society and non-state actors—enabling collaborative governance.

In this global context, North African countries face particularly severe development challenges<sup>2</sup>:

- Poor governance, political patronage, closed and rigid institutions, and rising demand for transparency and accountability.
- Low productivity and diversification;

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<sup>2</sup> These challenges are common to most Middle East and North African (MENA) countries.

low foreign and local private investment ; underdeveloped financial markets; slow technological upgrading; corruption ; and anti-competitive practices and repressed entrepreneurship (World Bank, 2009).

- Unemployment, particularly among the young, the educated and women<sup>3</sup>.
- Fragile social cohesion due to rising income inequality, weak social protection, low trust in government and private sector, low civic participation, yearning for “dignity”, and poor and inequitable public service delivery.
- Poor management of natural resources (water) and infrastructure (urban), and slow and inequitable dividends from oil and gas wealth.
- Educational systems that did not keep up with technological change and the imperatives of a knowledge economy and information society.

**Aim and Structure of paper:** The paper aims to provide a new way of looking at ICT as a central driver of economic transformation and global competition. It aims to raise awareness of the ICT revolution and its implications for development, and offers a menu of possibilities and applications.

It explores how ICT offers new approaches and platforms to the region’s development challenges—and how<sup>4</sup> ICT can be deployed to address the core challenges. In doing so, it aims to bridge the current divide between policy makers, development economists, and ICT specialists.

The paper starts by outlining the broad development challenges facing North African countries, which can be most effectively addressed by a development path. Then it briefly outlines the ICT landscape for North Africa and the Middle East (MENA). The paper then proposes and defines a paradigm for development, enabled by the ICT revolution: open, smart and inclusive (OSI) development. It briefly sets the broad context by drawing on the profound implications of ICT on growth and governance within a globalized economy. Next, three major sections of paper explore how ICT could be harnessed to pursue open government and smart decision making; smart and inclusive public service delivery; and smart enterprise development, human development, and inclusive growth. The paper concludes with defining four fundamental practices in pursuing OSI development.

<sup>3</sup> Youth unemployment (15-24 years) averages 25 percent across the region (compared to 17 percent in the OECD) and reaches 30 percent in Tunisia. Moreover, the most educated segments are not finding enough jobs: above 20 percent in Morocco. Women unemployment is high (up to 40 percent) and their labor force participation rates are very low (33 percent compared to 61 percent in OECD countries).

<sup>4</sup> The paper does not focus on the “how” of technical implementation, but on the “why” and “what” of ICT.

## I. North Africa's Development Challenges

The governance challenge of North Africa is particularly acute. In a number of states, the capacity of the public sector to deliver basic services is exceptionally weak. Citizens do not trust public institutions and service providers, as many of these institutions remain opaque and fail to deliver on basic services. Weak governance, low public sector capacity, and poor service delivery operate in a vicious cycle.

State performance is disappointingly weak, putting progress on development goals at risk. Results of interventions on the supply side alone (through e-government, for example) have been disappointing, and so scaling up demand for good governance (DFGG) is a logical and complementary next step<sup>5</sup>. Thanks to the ICT revolution, there are new opportunities for connecting and empowering citizens, especially through mobile phones. Capacity to use data through the application of social accountability and mobile communication tools is increasing. DFGG combined with mobile communications could be a game-changer in North Africa.

The stage of North Africa's socio-political evolution and economic development makes the rationale for DFGG even more compelling and promising than perhaps any other time or region. Political participation, citizen voice and social accountability remain weak. Service delivery and underlying institutions and processes are often weak, or corrupt and nontransparent. Fighting corruption remains a major challenge and source of citizen distrust and dissatisfaction. Most Middle East and North African countries grapple with bottom rankings in the Human Development Index (HDI) and Corruption Perception Index (CPI)<sup>6</sup>. Corruption levels are perceived as highest at key service ministries: health and education. Government information remains closed to most citizens, businesses and other stakeholders. With the exception of Tunisia, none of the countries

have initiated a "freedom of information act" or created the enabling processes and practices in support of open data and open government initiatives<sup>7</sup>.

Another overarching challenge for North African countries is creating jobs through inclusive and sustained private-led growth. The networks of privileges and barriers to new businesses discourage many would-be entrepreneurs (World Bank, 2009). Excessive licensing and unaccountable public agencies deter investment and are major source of corruption. Privileges, unequal playing fields, noncompetitive public procurement, and lack of information about the rules of the game undermine trust, hope, the credibility of reforms, and inclusive and sustained growth. Business-entry procedures are uncertain and time consuming. Small and medium enterprises face imperfect information about new technologies and export markets. Business development services are underdeveloped, particularly for SMEs.

The outcomes are devastating to jobs and future growth. The vast potential of the private sector, particularly SMEs, remains untapped. Private sector contribution to investment and employment (in non-oil countries) is far below the rates in high-growth countries of East Asia and Eastern Europe. Manufacturing and investment is declining, and the GDP is lower than that of all other developing regions, except sub-Saharan Africa (World Bank, 2009). Most of foreign direct investment (FDI) has been directed to nontradables, with little to export-oriented manufacturing or high-tech services<sup>8</sup>. The share of non-fuel exports from the Middle East and North Africa (MENA) region in the world is less than 1%. None of the countries in the region have experienced growth led by the structural transformation of the economy. The region is losing the race in technological upgrading which is the key for

<sup>5</sup> DFGG alone would also not lead to sustained improved performance in government. A virtuous circle is created when working on supply and demand measures to improve both governance and service delivery.

<sup>6</sup> The Human Development Index (HDI), developed by UNDP, is a composite statistic used to rank countries by level of "human development"—a comparative measure of life expectancy, literacy, education and standards of living. The Corruption Perceptions Index, developed by Transparency International, is an indicator that ranks countries and territories according to their perceived levels of public sector corruption.

<sup>7</sup> Tunisia has started to develop an open government platform: <http://www.opengov.tn/?lang=fr>.

<sup>8</sup> Except telecoms.

competitiveness, structural transformation, and sustained growth. With very few exceptions, the ICT revolution has yet to be leveraged to support export, diversification, knowledge diffusion, innovative entrepreneurs and SMEs<sup>9</sup>.

Yet, these challenges are not insurmountable, as the region has substantial endowments and opportunities:

- Oil and gas resources as well as rising energy prices can create a fiscal space and make it possible for several countries in the region to invest in modern infrastructure, human resources, innovation and ICT.
- The youthful population can contribute to the workforce, reduce the dependency rate, and master new technologies<sup>10</sup>.
- The region's substantial diaspora can mobilize global knowledge, capital, entrepreneurship and networks.
- Urbanized, service-based economies can benefit from an ongoing service revolution and global outsourcing.
- The region is strategically located to participate in a globally-connected economy.
- Potential cultural capacity to excel, as recently demonstrated by the daring entrepreneurship of Dubai and Qatar's services industry (airlines, broadcasting).
- The rise of civil society and a new sense of citizen empowerment, energized by social media, the global spread of democracy and civil society, creating a socio-political momentum for change within the region, and overcoming decades of resignation and helplessness.

<sup>9</sup> Exports of IT-enabled services from a few countries are an exception.

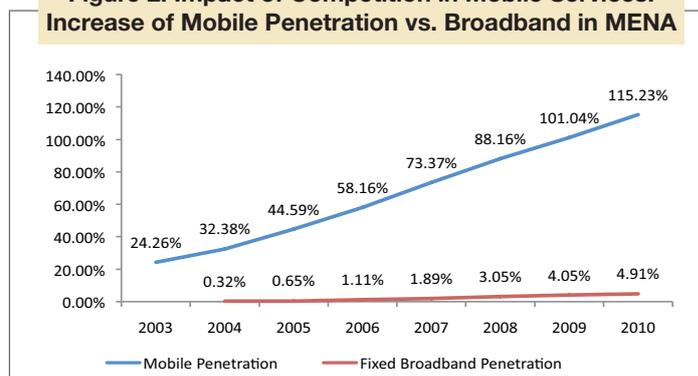
<sup>10</sup> While a "youth bulge" is a demographic challenge, it can be turned into a development dividend. But, this window of opportunity is short.

## II. The Status of the ICT Sector and Innovation in the MENA Region<sup>11</sup>

The ICT sector in the MENA region has extensive mobile telecommunications infrastructure, but lags behind in broadband infrastructure. MENA countries are close to or above 100 percent penetration in mobile services on par with other ICT-infrastructure in advanced regions, such as the OECD countries. However, broadband penetration is low (below 5 percent of the population) (Figure 1). This is a consequence of the lack of competition in the broadband market in the region (Figures 1 and 2). As broadband fixed infrastructure increases, particularly backbone networks, its ability to deliver ICT-enabled services will rise. The severe lack of broadband development will hinder the ICT market in the region, including delivery of ICT-enabled services.

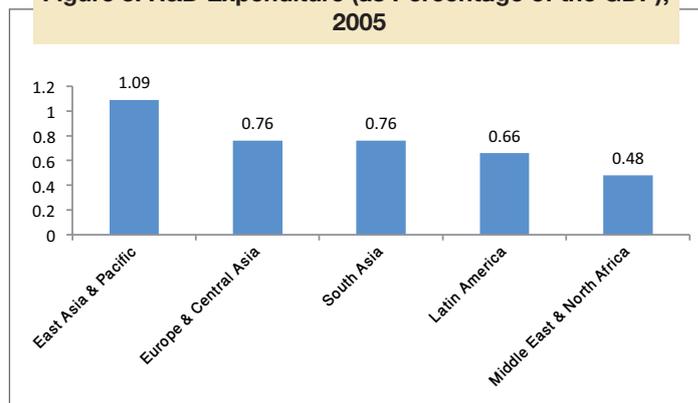
Another key area of relevance to the proposed OSI development is the current status of innovation in MENA. Innovation in MENA is low and there is a lack of high-technical skills. MENA is not characterized for having high innovation. In fact, the region has one of the lowest research and development (R&D) expenditures of the world (as percentage of GDP). It produces very low numbers of scientific and technical journal articles, and has a very low numbers of patent applications (Figures 3 to 6).

**Figure 2: Impact of Competition in Mobile Services: Increase of Mobile Penetration vs. Broadband in MENA**



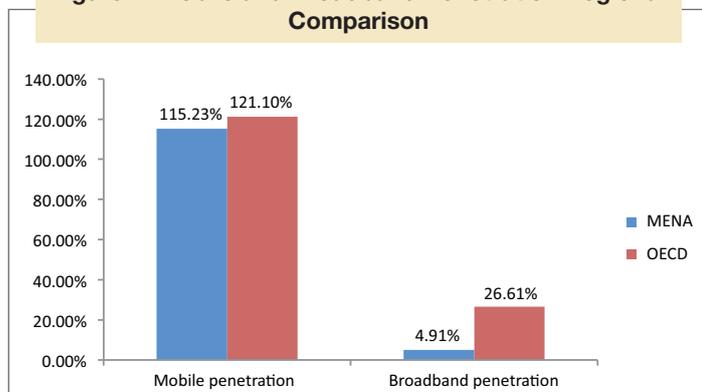
Source : Telegeography (2010) and World Bank Database (Population data, 2008)

**Figure 3: R&D Expenditure (as Percentage of the GDP), 2005**



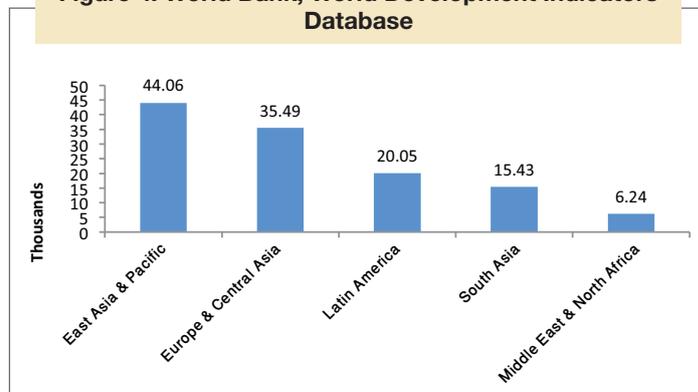
Source : Telegeography (2010) and World Bank Database (Population data, 2008)

**Figure 1: Mobile and Broadband Penetration Regional Comparison**



Source : Telegeography (2010) and World Bank Database (Population data, 2008)

**Figure 4: World Bank, World Development Indicators Database**

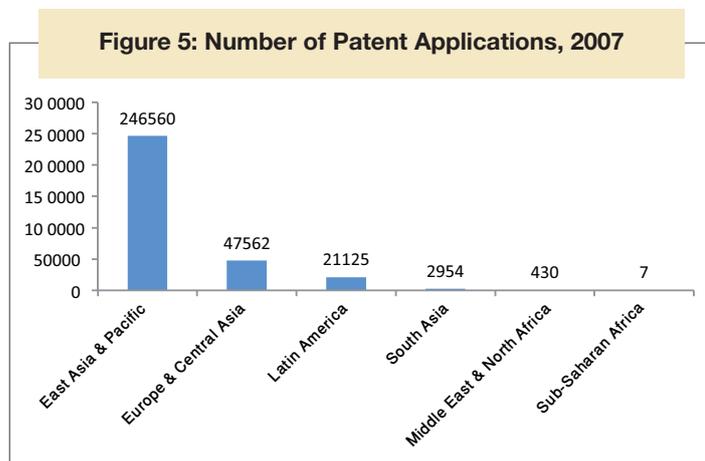


Source : World Bank, World Development Indicators Database

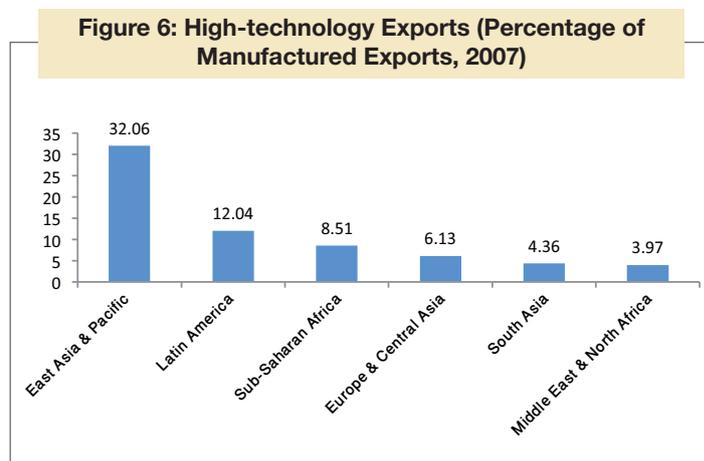
<sup>11</sup> ICT statistics are not available for North Africa separately from the rest of MENA region. But as most of these statistics and challenges are similar or common for ME and NA, the MENA statistics are used for the purpose of this paper. This is consistent with the aim of this paper to develop a vision of ICT role for development, and to recommend some fundamental principals for pursuing it, but not to devise specific ICT strategies based on each country condition.

The size of the high-technology sector in the economy is low. High-technology does not represent a large share of the economy in MENA. Exports of high-technology (as percentage

of manufacturing exports) are one of the lowest in the world (Figure 6). However, the region has potential to develop BPO and IT sectors and to integrate ICT in other sectors of the economy.



Source : World Bank, World Development Indicators Database



Source : World Bank, World Development Indicators Database

### III. Proposed Paradigm: Open, Smart, and Inclusive (OSI) Development

We propose a new paradigm for development that features open, smart and inclusive (OSI) development. This paradigm harnesses globalization and the ICT revolution for development. It can be tailored to address the specific challenges facing North African countries. Such tailoring will have to take into account the specific ICT, innovation, and socio-economic conditions in each country.

Through digitizing and sharing information, connecting citizens and enterprises, deploying social media, and transforming business processes, ICT can facilitate collaborative governance and collective action, unleash the power of public discourse, open government data, make government transparent and accountable, inform and empower citizens and social intermediaries, lower their transaction and coordination costs, and engage them meaningfully in development—practicing *open development*.

Through crowd-sourcing, open innovation, collaboration tools, knowledge networks, data capture and sharing, and sensors, data mining, and analytics, ICT can mobilize minds and local knowledge, access global knowledge and take advantage of multiple sources of development knowledge, network organizations and partners across sectors, co-create development solutions, and enable smart client-centric public service delivery, smart and sustainable management of cities and infrastructures, and smart monitoring and policy making—practicing *smart and sustainable development*.

Finally, through shared access, digital inclusion, open data and business portals, outsourcing and microwork<sup>12</sup> tools, online support to SMEs, mobile finance, and e-learning, ICT can generate new quality jobs for youth and women, enable multi-channel and lifelong learning, empower small business

and innovative entrepreneurs, create dynamic industries and services, promote social and grassroots innovation, extend educational and health services to the poor, and improve social protection and cohesion—practicing *inclusive development*.

ICT tools alone do not bring about OSI development. OSI development is about ICT-enabled possibilities, not inevitabilities or technological determinism. The political economy that prevails throughout most of the region limits the ability of these countries to implement reforms to secure open and inclusive development. Beneficiaries of the status quo are more vocal and better organized to protect their rents. But the widespread access and use of ICT as tools for empowerment, transparency, and mobilization can change power relations. As recently demonstrated throughout the region and beyond, ICT holds the promise of allowing new players and citizen voices to be heard. It opens up policy debates and broadens consultations beyond traditional channels and established firms. It also enables reformers and beneficiaries to monitor performance, corruption, policy implementation, and service delivery. It is most effective in countries ripe for participatory democracy.

A move towards OSI development may be viewed as a techno-economic paradigm<sup>13</sup> shift that emerges in response to a technological revolution brought about by a general-purpose technology<sup>14</sup>, that is, ICT. A techno-economic paradigm represents the guiding principles or most effective ways of applying a particular technological revolution and of using this revolution for transforming a whole economy. When broadly accepted and adopted, these principles become the logical basis for innovation and investment, for organizing activities and for structuring institutions. Technological revolutions are defined by powerful clusters of new dynamic technologies,

<sup>12</sup> Microwork is a series of small tasks that have been taken out of a larger project and can be completed via the Internet.

<sup>13</sup> A techno-economic paradigm is a best practice model made up of a set of all-pervasive generic technological and organizational principles (Perez, 2002, p.15).

<sup>14</sup> New growth theorists and economic historians have characterized General Purpose Technologies (GPTs) by: i) wide scope for improvement and elaboration; ii) applicability across a broad range of uses; iii) potential for use in a wide variety of products and processes; and, iv) strong complementarities with existing or potential new technologies. General-purpose technologies are engines of growth. They play the role of “enabling technologies”, opening up new opportunities rather than offering complete solutions. While the steam engine is widely accepted as the GPT of the first industrial revolution, the electric dynamo is viewed as the GPT for the second industrial revolution. ICT is the GPT of the ongoing industrial-services revolution.

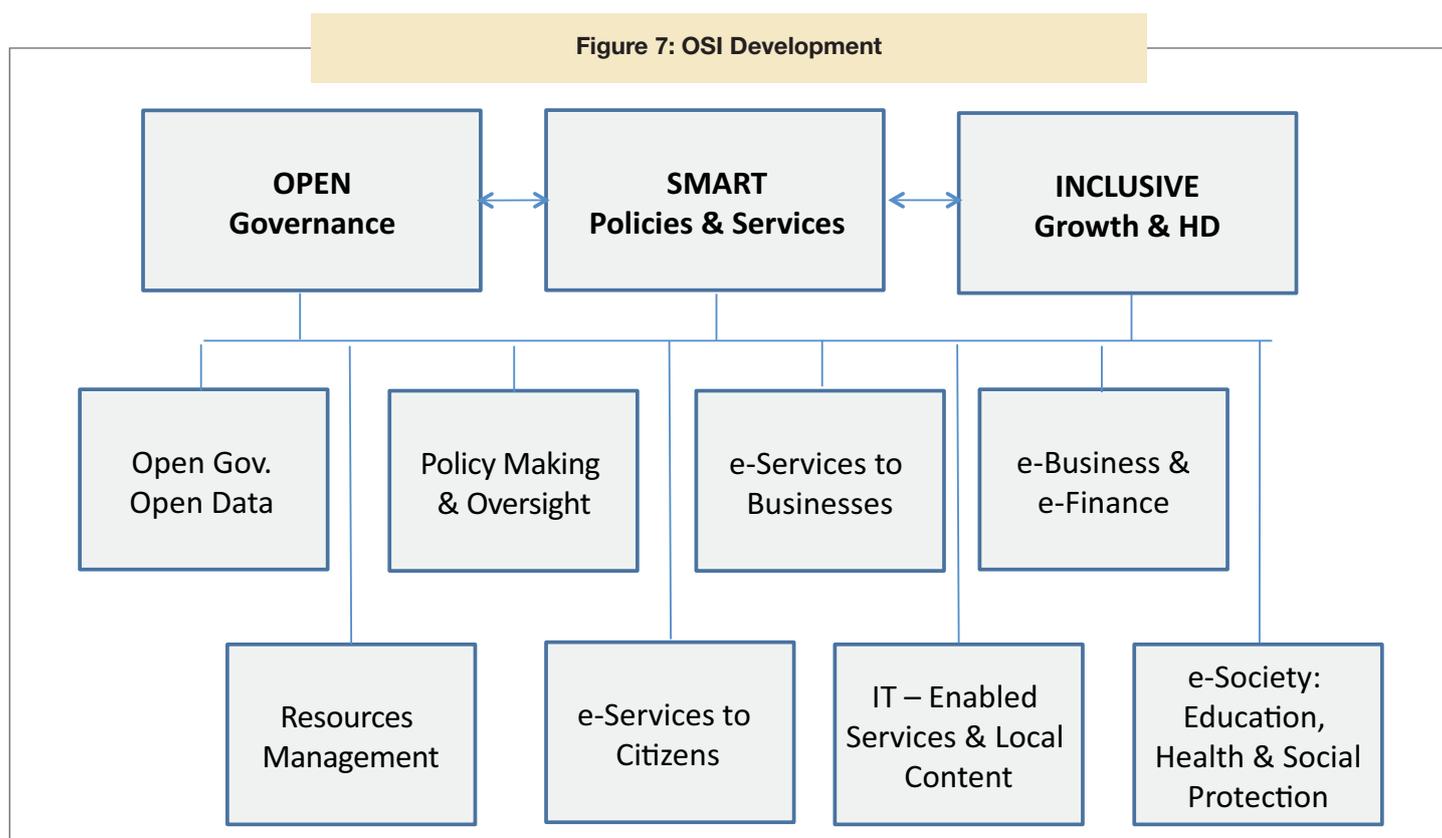
industries and products, and associated infrastructures. Together, they are capable of bringing about a long-term upsurge of productivity and development. Each set of technological breakthroughs or interrelated generic technologies spreads far beyond the sectors where they originally developed (Perez, 2002, Hanna, 2009). We are in the midst of a powerful techno-economic paradigm that has been advancing much faster than any other in human history. Those who manage this paradigm shift must undergo major economic and institutional transformations and adopt new organizational practices to take advantage of the new potential.

While the emerging techno-economic paradigm, driven by ICT, is open for all countries to master, it is particularly urgent for North African countries to adopt. These countries are at a crossroads. There are signs of promising practices emerging within the region but they need to be scaled up and sustained through national strategies that integrate ICT into national

development policies, sector strategies, and leadership practices in pursuit of OSI development. Pioneering countries elsewhere offer some lessons for the region<sup>15</sup>.

OSI development policies are interdependent and mutually reinforcing. Open, smart and inclusive processes interact, and should be jointly managed. For example, the openness of an economy to globalization must be smartly managed to move up the technological and innovation ladder, while maintaining inclusion and social cohesion, securing sustainable development, and avoiding a race to the bottom (Rodrik, 2011).

The next two sections provide an overview of the trends and interactions among ICT, globalization, and civil society, and the opportunities they open in terms of transparent and accountable governance, and smart and inclusive services and growth. The following sections show the range of ICT applications in pursuit of OSI development (Figure 7).



<sup>15</sup> Particularly from East Asia and Eastern Europe. Examples of model countries that have pursued e-transformation for 2-3 decades are Finland and Singapore (Hanna and Knight, 2011, 2012)

## IV. ICT for OSI Growth

The ICT revolution offers many routes to leapfrog traditional stages of development. These routes have been taken by inspiring examples like Korea, Finland, Malaysia, and Singapore, and even larger countries like India and China (Hanna and Knight, 2011, 2012). The ICT revolution is not the arena of the few or privileged sectors. It is not limited to ICT as an industry, or to high tech sectors—it is an enabler to all types of industries and services. Enabled by ICT, all sectors can realize considerable gains in Total Factor Productivity (TFP) through smart infrastructure, process change and business innovation. ICT increases the productivity and agility of enterprises, and reduces transaction costs throughout the economy. ICT also opens new opportunities to solve long-standing development problems through effective delivery of health and education services, new learning and training systems, and effective agricultural extension systems.

The globalization of the last three decades gathered momentum from trade and financial liberalization, and the diffusion of innovations sparked by a powerful new general-purpose technology, ICT. A steady decline in the costs of surface transportation reinforced the effects of lower tariff barriers; this reduction in costs arose from technological advances such as port modernization, smart logistics, and trade facilitation—all aided by ICT applications.

ICT lent impetus to the industrial miracles in East Asia (Yusuf, 2003; Hanna et al., 1996). It is by harnessing the potential of ICT that countries were able to maximize the returns from globalization. Countries that proved adept at exploiting such technological breakthroughs as the Internet and digital technologies, enlarged the gains from trade, attracted more capital and entered into virtuous spirals. Successful countries moved quickly to harness the powerful forces unleashed by ICT to take maximum advantage of globalization. They were able to transform their key industries and effectively insert

themselves into global supply chains, with the power of ICT. Other countries were equally well positioned to move forward, but did not. Singapore is an example of this ICT-enabled paradigm: open, smart, inclusive development (Box 1). Finland, a liberal democracy, is an alternative model (Hanna and Knight, 2011, 2012)<sup>16</sup>.

ICT is playing a similar role in enabling the globalization of services, as it did to manufacturing. ICT made possible the outsourcing and offshoring of services thereby enabling countries such as India and the Philippines to build entirely new and thriving services sectors specializing in Business-Process Outsourcing (BPO), software development, and IT-Enabled Services (ITES) within a decade or two. Other encouraging trends are the potential decrease in the transaction costs for remittances to developing countries (using mobile-phone-based electronic banking), and the aggregate effect of reducing the transaction costs of many other essential services.

ICT is providing the smart infrastructure of 21st century for both collaboration and delivery of all kinds of services, ranging from e-government and e-business, to e-health and e-learning. Using sensors, data mining and analytics, among others, ICT also promises to make other infrastructural services more client responsive and resource efficient as in smart grid, smart transport, smart use of water and other scarce resources, and smarter governance of city systems.

The most recent and significant long-run effect of ICT diffusion is to access and mobilize human talent locally and globally. The Internet has become a major force driving change by mobilizing and networking talents across the world. The defining features of the Internet are speed, interactivity, multimedia and asynchronous communication, and irrelevance of location. These features are enabling both insourcing and outsourcing a growing array of services:

<sup>16</sup> Singapore emphasized smart and inclusive growth. It pursued an open economy and clean and accountable civil service for the last three decades, but until recently, not open government or vibrant democracy. On the other hand, Finland pursued openness on all dimensions—politically, socially and economically. It created social and political institutions that generate national consensus on the future—an OSI development.

software development, business processes, customer support, medical diagnosis, lifelong learning, and so on. The volume of such activities has been growing—30 to 40 percent annually. This trend is opening up major opportunities for finding and utilizing highly skilled human resources all over

the world. This is not only beneficial for large recruiting countries like the USA, but also small countries like Singapore and Tunisia, and of course, many developing countries with large pools of human resources, like India and Egypt.

### Box 1: The e-Transformation Journey of Singapore

Singapore successfully and intelligently harnessed the ongoing information and communication technology revolution to accelerate development and transform a whole economy. Despite limited natural resources and unpromising initial economic conditions, Singapore compressed its development journey and moved quickly from a third world to a first world economy, and positioned itself effectively for a global, knowledge-based and innovation-driven economy. It has been consistently among the world fastest growing economies. ICT was central to Singapore's open, smart and inclusive development.

Among the most distinguishing features of Singapore e-transformation journey are: openness of the economy, openness to global knowledge, committed political and public service leadership, cumulative institutional learning, public-private collaboration, investment in a competitive information infrastructure, early attention to ICT literacy and user adoption capability, clear cyber policies, and dynamic governance based on results orientation and accountability. Singapore excelled in disciplined application of ICT, and is currently striving to excel in innovation. Despite of leapfrogging to the frontiers of international best practices, Singapore continues to learn from its shortfalls and adapt its ongoing plans accordingly.

Singapore adopted a holistic approach to developing and using ICT for its economic transformation. For example, ICT applications in the public sector have been planned and evolved, supported by complementary developments in: information infrastructure, IT literacy and capability development, ICT industry sector, and ICT governance and institutions. E-government programs have been also based on a common foundation of shared infrastructure and services, and deepened by sector-specific ICT-enabled transformations through e-logistics, e-business, e-education, and e-health. Similarly, Singapore's ICT industry development was based on a comprehensive program that included ICT education, ICT diffusion to SMEs, parks and incubators for ICT ecosystems, risk capital finance and incentives for early adopters of ICT, and partnership with business associations and multinationals, among others.

The Singaporean Government worked on successive ICT plans since 1980, in partnership with the private sector. Each plan built on lessons learned from previous implementations, while adopting the latest best practices and technologies. Intelligent Nation 2015, or iN2015, is Singapore's current strategy to prepare the nation for the future. The plan outlines its vision to turn the country into "An Intelligent Nation, a Global City, Powered by Infocomm." Innovation, integration and internationalization are the basic thrusts. With inspiring visions of smart and knowledge-driven economy, Singapore built its capacity to innovate and create new business models and services, and to integrate resources and capabilities across public and private institutions.

Singapore's experience offers important lessons. Political leadership and long-term commitment to e-transformation is one. Industry collaboration is another—getting the private sector to do more. The government created the opportunities and provided conducive working partnerships. It worked with industry on innovation, such as the Government Technology Experiments And Trials Program. Through constant dialogue and experimentation, new ICT solutions were developed and adapted for innovative use. After two decades of nurturing the ICT industry, it has evolved into an important engine of growth. The government gradually shifted from planner and implementer, to a strategist and facilitator, creating conducive environment for ICT to thrive, grow and diffuse. Other critical success factors are balancing investment in hard and soft infrastructure such as awareness and broad-based e-literacy, willingness to innovate to secure a first mover position, and investing early on in shared networks and data hubs.

Most critical to continued innovation and e-transformation has been the development of a governance system that can remain relevant and effective by smartly responding to emerging needs in a changing environment. This governance system includes:

- Having committed political and public service leaders with vision and high aspirations for the Singapore to set the tone for ICT strategies and institutions.
- Creating a learning environment, where people are consciously learning and seeking to apply new ideas and explore different ways of doing their work better.
- Creating innovative processes and agile structures by embedding change management practices, integrating change capabilities into management processes, and introducing process redesign, supported by effective participation and feedback mechanisms.

## V. ICT for OSI Governance

The new ICT tools have the potential to mobilize and strengthen the demand for good governance—liberating government information, building awareness and demystifying information on policies and rights, encouraging consultations, promoting collective action, monitoring performance, institutionalizing avenues for citizen feedback and grievance redress, etc. The mobile phone, Internet, user-generated content, social media, and the growing array of information and communication tools empower citizens to access unfiltered information, register their demands and shape public services to meet these demands. These tools enable more effective, customized feedback in real-time. They create platforms that allow people to self-organize and do things that are valuable for themselves and the world. Widely-diffused mobile communication devices and ubiquitous networks empower citizens to hold the state accountable through participatory budgeting and monitoring, monitoring public expenditures on schools, monitoring local implementation of various development programs, disseminating information on laws and regulations and who in government is responsible for what, and so on.

Countries are taking the initiative to open their public sector data in electronic form for others to use, manipulate and mesh with other sources for all kinds of application and users. The trend of open government initiatives is towards bringing higher value for citizens and businesses through partnerships in the delivery of e-services, towards treating citizens not as passive consumers but co-producers of such services, and towards involving citizens in shaping and monitoring public policies. Co-creation is a key part of Singapore's "Gov-with-You" strategy, which leverages collaborative technologies to facilitate a two-way communication between the government and its citizens with regards to service delivery and citizen engagement.

The new ICT platforms are facilitating a power shift in the way citizens engage with the state. The growing number and networking power of civil society organizations (CSOs), demographic changes (youth and urban population growth), decentralization reforms, and open government initiatives and laws—are all contributing to this power shift. ICT complements and reinforces this shift. It is strengthening the demand for

good governance and the capability of citizens to hold the state accountable. The spread of mobile, social media and satellite broadcasting is a powerful enabler of the process of strengthening demand for transparency, accountability, and good governance. The high costs of ignoring real-time dialogue with citizens are becoming increasingly evident to power holders.

### *A Media Revolution in North Africa*

We are still trying to absorb the implications of the recent explosion of political activism that started in Tunisia and Egypt, and since spread around the Arab world and beyond. A key feature of this activism is a social media revolution. This has spurred the rethinking of the traditional approach to development among aid agencies—calling for a new social contract, enhanced governance, and grassroots engagement. A new approach to development assistance would place governance, citizen empowerment, and institutional reform as central to development and development partnerships. It would catalyze the Demand for Good Governance (DFGG) and Social Accountability. If governments opened private sector opportunities, move beyond oligarchies and oligopolies, and tap the energies of their societies, and respect public choice, development would be much more effective.

Citizen and NGOs have begun to harness technology to drive change, as witnessed during the recent use of social media in the demand for good governance and democracy in the Arab world (Box 2). Mobile and social media are helping organize protests, give voice to youth and social intermediaries, create grassroots content, and instantly capture and broadcast events and abuses. They are transforming the traditional communications between government and citizens, and the content of mass media (including TV and the press). Main TV channels are devoting significant time communicating news and commentaries drawn from blogs and various social media and citizen-created content, reflecting the irresistible potency of connected and empowered citizens. Authoritarian regimes and lumbering administrative machineries are hard pressed to absorb the challenge presented by a newly empowered citizenry.

## Box 2: A Social Media Revolution in North Africa

The unprecedented popular uprisings in Tunisia, Egypt and other Arab countries were at least partially enabled by interactive communication and citizen mobilization via social media platforms—Facebook, Twitter, and YouTube—and mobile technology. These social networks inform citizens, create communities with shared interests, and seek to hold governments accountable. They are helping to break down the stranglehold of state-sponsored media and information monopolies. As early as 2009, 17 million people in the Arab region were using Facebook, available in Arabic, with 5 million in Egypt alone. This number has since exploded. The fast adoption of the new media is fuelled by the youth, who comprise about half of the regional population. Online news is gaining share from traditional news media and acting as a check on government press. Indigenous social media platforms are offering community-driven quality news, and online video and forums for greater interactivity around timely issues often overlooked by government-sponsored media outlets. Despite increasing efforts by some Arab governments to monitor, filter, and block websites, and to issue laws regulating the Internet and harass and arrest citizens and NGOs for their online writings, the power and reach of social media continue to spread.

New communications technologies, particularly mobile and social media, combined with satellite broadcasting channels, such as Al Jazeera, help empower citizens and expand freedom—political and economic. Social media—text messaging, e-mail, photo sharing, social networking, etc.—have become low-cost coordinating tools for nearly all of the world’s political movements. As the communications landscape gets denser and participatory, the networked population is gaining greater access to information, more opportunities to engage in public conversation and speech, and a vastly enhanced ability to organize and undertake public action. Demonstrations starting in early 2011 in Tunisia and Egypt, and since spread elsewhere in the Middle East, show the increasing role of new media and social networks in raising shared awareness, and enabling grassroots coordination in support of political freedom and economic justice.

Prior to the revolution in Tunisia, efforts to improve Internet connectivity had limited spill overs in the economy, except for some export of IT-enabled services. This was partly due to the censoring of some of key websites and mail traffic, and the blocking of facebook, Youtube, etc. Perhaps coincidentally, the revolution started a few months after authorizing access to facebook and twitter.

One promising development in the use of ICT by NGOs and CSOs is the training and sharing it enables among these nimble organizations. Democracy activists in Egypt got some of their early lessons in organizing via social networking from activists in Eastern Europe (e.g., Moldova’s “Twitter Revolution”). Social media capacity building is on the rise. While mainstream media has been dominated by the state and has ignored the youth, social media’s focus has been the youth. While these “tools of freedom” are likely to promote democracy and accountability, the outcome is not preordained.

Source: Jeffrey Ghannam, 2011. “Social Media in the Arab World: Leading up to the uprising of 2011”; Clay Shirky, 2011. “The Political Power of Social Media” in *Foreign Affairs*, Feb 2011; and Hanna (2012).

### **Demand for Good Governance (DFGG) Tools and Social Intermediaries**

The “DFGG”<sup>17</sup> is a key approach to guide governance reform and improve development effectiveness. Accordingly, empowering citizens to hold state service providers more accountable and responsive is a critical means of enhancing development efficiency, equity, and sustainability. This ‘client power’ and ‘voice’

would enable services to work for poor people by strengthening direct accountability<sup>18</sup>.

Most critical is an understanding of the role of social intermediaries (SIs)<sup>19</sup>, SIs can improve the workings of the service triangle of accountability between policy makers (the state), service providers, and citizens, by adding demand-side facilitators—social intermediaries who represent the

<sup>17</sup> The DFGG agenda has been pursued quite heavily under different names such as ‘social accountability’, ‘democratic governance’, ‘voice and accountability’, and ‘civic engagement’. See for instance, Bhargava, V., Cutler, K., and Ritchie, D.: Supporting the Demand Side of Good Governance: An Agenda for Enhancing the World Bank Role, Partnership for Transparency Fund, draft July 2010.

<sup>18</sup> World Development Report 2004: Making Services Work for Poor People

<sup>19</sup> Social intermediary institutions are both formal and informal civil society organizations (CSOs), community-based organizations (CBOs), unions, professional associations, Non-government organizations (NGOs), social and traditional media, independent think tanks, and connected activists.

interests of citizens in service delivery exchange and help correct for political market failures.

Recent advances in ICT can vastly improve the role and reach of SIs. Intermediary institutions are likely to have better access to ICT tools than poor citizens. ICT tools (such as geo-mapping and crowdsourcing applications, mobiles, Internet, portals, analytics) can amplify and aggregate voice, reduce access costs to information and media, help analyze information and detect patterns of poor service or corruption, facilitate mobilization and collaboration across communities and NGOs, and substantially reduce coordination and transaction costs. Recent ICT platforms enable broad participation by SIs, and the formation of multi-sector partnerships across public, business, and civil society organizations. SIs can be empowered by collaborative and networking technology tools, and in turn, these intermediaries can empower poor citizens and rural populations to lay their fair claims on government resources and services. By reducing coordination and transaction costs, these tools can also facilitate the formation of more social intermediaries, particularly agile and informed intermediaries. The combined strengths of a rising number and mandate of social intermediaries on the one hand, and the diffusion of Internet, mobile, social media platforms on the other can become a boon for open and inclusive development.

### **Potential Role of New ICT for Governance**

A number of new ICT tools are sweeping the planet, including mobile, social media, and electronic networks—posing profound implications for transparency and accountability to citizens. Mobile phones offer access, mobility, and a ubiquitous platform for easy-to-develop applications for collecting data and monitoring, and reporting of events. They enable citizens to adopt new strategies to communicate, coordinate, mobilize, and have their voices heard. Digital networks reduce the cost of information on government performance and empower citizens to register and augment their voice, through the ease,

range and reach of public speech by citizens. They have also magnified the speed and scale of group coordination and helped to synchronize the behavior of groups quickly, cheaply, and publicly in ways that were unavailable as recently as a decade or in some cases even five years ago<sup>20</sup>.

**Mobile Activism** is on the rise. The potential in using mobile technology is mainly due to the interplay of four elements that creates a virtuous circle: (i) Access – innovations in ICT are steadily expanding the mobile “footprint” to cover a larger percentage of the population; (ii) Affordability – due to the combination of prepaid service plans and cheaper mobile handsets; (iii) Appliance innovation – making these devices more adaptable to a growing range of needs and services relevant to all citizens; and iv) Applications – a vast increase in a few years in the development and roll-out of mobile applications, now numbering over a million. These virtuous circles can lead to increased participation where citizens will demand an improved, more transparent, accountable and responsive governance, and where they see public services as their right.

**Crowdsourcing**<sup>21</sup> is a technology platform that enables collaboration in real time and on a massive scale. Users—also known as the crowd—typically form into online communities, and the crowd submits solutions. The crowd sorts through the solutions, finding the best ones. The best solutions are then owned by the entity that broadcast the problem in the first place—the crowdsourcer—and the winning individuals in the crowd are sometimes rewarded. With the increase of web applications’ capabilities over the past two decades, the capabilities for crowdsourcing techniques have been greatly increased, and now the term often refers exclusively to web-based activity.

Crowdsourcing has the potential to be a problem-solving mechanism for government, private sector, and non-profit organizations. Public agencies have begun to use crowdsourcing platforms to seek solutions to both major and minor public

<sup>20</sup> Countries must also manage the transitional risks associated with ICT. Policy makers and civil society should be aware of the dark side of ICT and the digital divide. Some repressive regimes are honing their tools to monitor dissidents, disseminate cutting-edge propaganda, and pacify their populations with digital entertainment. Managing such risks requires appropriate safeguards and policies to secure privacy and Internet and media freedom. It requires vigilance, citizen engagement, and collective action.

<sup>21</sup> Crowdsourcing is a distributed problem-solving and co-production model. Problems are broadcast to an unknown group of solvers in the form of an open call for solutions. The difference between crowdsourcing and ordinary outsourcing is that a task or problem is outsourced to an undefined public rather than a specific other body. In some cases, this labor is well compensated, either monetarily, with prizes, or with recognition. In other cases, the only rewards may be recognition or intellectual satisfaction. Crowdsourcing may produce solutions from volunteers working in their spare time, or from experts or small businesses, which were unknown to the initiating organization. Crowdsourcing is a collaborative or co-operative effort to solve problems and innovate solutions that use competition as a motivator for participation or performance.

challenges, and to draw lessons for best practices in using crowdsourcing as a tool for improving services and co-innovating with the public.<sup>22</sup> Governments are beginning to use crowdsourcing to organize contests for citizens and small businesses to develop innovative solutions to public services and public goods, with encouraging results. In principle, the use of crowdsourcing for innovation by governments in collaboration with their citizens or clients can be a major source for service improvements and

citizen engagement in North Africa. Ushahidi enables a whole emergency ecosystem to operate like a coherent entity<sup>23</sup>. Crowdsourcing is also used in business for open innovation and collaborative problem-solving.

In the following two sections the broad range of ICT applications in the pursuit of OSI governance, OSI services, and OSI growth (as shown earlier in Figure 7) is illustrated.

<sup>22</sup> The World Bank also used crowdsourcing or organized internet-based contests to induce application developers to create “apps for development” that take advantage of mobile phone networks, social media, and geo-spatial technologies.

<sup>23</sup> A new paradigm for humanitarian effort is emerging where victims and social intermediaries supply on-the-ground data (during and immediately in follow-up to a crisis) using cell phones or whatever channels available to them. Self-organized volunteers and intermediaries triage this data, authenticate text messages, and plot incidents on interactive mapping displays that help aid workers target their response. Crisis-mapping communities have emerged and rallied to pull together in a matter of days to respond to crisis ranging from the earthquake in Haiti, to wild fires in Russia, exposure to radiation in Japan, medicine shortages in Africa, elections in Kenya and India, and violence in Gaza. Using crowdsourcing has proven to be particularly useful in volatile situations where citizens may be able to provide quick information, which can then be verified, and used to mobilize help.

## VI. OSI Governance

Advances in databases, broadband, and cloud computing are enabling data sharing and opening up massive data stores of governments to citizens and businesses—with major implications for open government, collaborative governance, and co-production and co-innovation of services. With the increasing digitization of government processes, and capturing information arising from transactions with citizens and businesses, the amount of rich and valuable data has increased not only for officials, but also for the public as a whole. If made available in an operable user-friendly format, government data can unlock a wealth of insight, promote industry and social innovation, and engage citizens in governance and socio-economic development. Analytics can turn masses of data into decision- and policy-making models. Government thus becomes a platform for open development and smart policy making.

### *Open Government*

The hypothesis of open data is that by improving citizen's access to public data, citizen-led government accountability will increase. Data empowers. Metrics matter. However, open data does not guarantee open government. Open government requires changes in the culture of government and how it relates to citizens as clients. In turn, this change requires pressures from civil society, cooperation from civil servants, and commitment from political leaders and policy makers. Government agencies need to learn to listen more effectively to their citizens, and citizens and SIs need to learn to use data more effectively.

Putting the data out for the public is not enough, particularly in developing countries and in poor communities. Processes and intermediaries must be in place to expand people's information capabilities and make use of such data for participation, innovation and accountability. Fluency with data would become a form of basic literacy. A more likely scenario for developing countries would be for local social intermediaries to play a key role in interpreting data, applying analytics and geo-mapping, and using the data to press for more openness, transparency, accountability. This would initiate and sustain a virtuous cycle or an open governance ecosystem. Empowered citizens would lead to more open government, and vice versa. Accordingly, open government would provide a platform or process for co-creation of services, co-mining of data, and mutual transformation of government, business, and social intermediaries.

Governments around the world are asking: how to leverage the data revolution to spur participation, transparency and innovation with business and citizens? The US Government, for example, started an Open Government Initiative in late 2009. It outlined major steps: publishing government information online, improving the quality of information, institutionalizing a culture of openness, and creating an enabling policy framework. Since then, the sheer volume of data now available to citizens is unprecedented. It also provided analytical tools to set the data free and help users make data valuable for their needs. Since, many countries have initiated their journey to open government. Within North Africa, Tunisia has made a promising start (box 3).

### Box 3: Open Government for Tunisia (“Open Tunisia”)

#### *Demand for Open Government in Tunisia*

In the aftermath of Jasmine Revolution in Tunisia there has been a strong citizen demand for improved government accountability and transparency. Open Government enables citizens to access government documents and data, and can enhance public participation in the political decision-making process, helping raise the collective political awareness of Tunisian society.

#### *Current Efforts to Introduce Open Government in Tunisia*

There is already a burgeoning open government movement in Tunisia. The eGovernment unit of the Prime Minister’s Office has been strong advocate of open government, including open data and eParticipation. The Ministry of Communication Technology also underscored the importance of open data and public participatory tools in the context of governance and employment in the post-revolution Tunisia.

Concurrently, civil society – in particular civic technologists such as OpenGovTN<sup>24</sup>, Association Tunisienne de Liberte Numerique (ATLN)<sup>25</sup> - has been actively creating tools for open data and collaborating with the Constituent Assembly to support the introduction of a more open form of Tunisian government. Around 10 members of the Constituent Assembly proposed a law implementing Open Government in the Constituent Assembly, and held a demonstration advocating for open government in December 2011<sup>26</sup>.

#### *Developing and Scaling up Open Government in Tunisia*

Aid agencies can support these Tunisian initiatives for open government through the development of an open government framework and related capacity building, based on good practices and lessons learnt from similar projects in other countries such as Kenya, Moldova and Brazil. They would assist Tunisia to become and excel as a member of the Open Government Partnership and better meet the demand from its citizen for a more transparent and participatory governance. Such an activity would comprise several components based on an assessment of current capacity and demand in Tunisia:

- Policy framework for open government - including the supply and demand side of open data and public participatory tools;
- Legal framework - including a Freedom of Information law and Data Protection law;
- Governance and implementation plan for the introduction and scaling of an Open Government Platform and interagency coordination - including the mode and sequencing of data release, the integration of participatory mechanisms and public-private partnerships;
- ICT infrastructure and tools to enable effective introduction of open government, open data and citizen engagement in public decision-making;
- Capacity building - including knowledge transfer from other countries that introduced an open government platform - on design and implementation of open government platforms and statistical capabilities for data collection and evaluation;
- Communications and outreach for civil society and media to raise awareness and build capacity on the application and implications of open data and open. <http://opengovtn>.

Open government means increasing transparency and access to information in every public institution that interacts with business. For North Africa, that would mean opening access to business information from various institutional databases, publishing information on transactions and beneficiaries

involving public procurement and public land transactions, making available performance measurement of public agencies involved with the private sector, and linking firm-level databases of all public institutions and making most of the data open and accessible<sup>27</sup>.

<sup>24</sup> <http://www.atln.info/open-tunisia/74>

<sup>25</sup> A proposed “E-Gov” solution for Tunisia aims to (i) create a Parliamentary Channel to broadcast the sessions and help raise public awareness of the Constituent Assembly’s work, (ii) publish the minutes of Constituent Assembly meetings within a maximum of 24 hours, (iii) track the Constitutional Assembly members’ votes, (iv) track the Constituent Assembly members’ attendance, and (v) record the Constitutional Assembly’s sessions and release them within a maximum of four days <http://www.tunisia-live.net/2011/12/21/constituent-assembly-members-lobby-for-open-government-in-tunisia/>

<sup>26</sup> <http://www.opengovpartnership.org/>

<sup>27</sup> This is done by creating a unified interagency enterprise identification number. No MENA country has implemented such an identification number so far (World Bank, 2009).

Open government can be a tool for promoting competition, developing smart and dynamic enterprises, and promoting accountability for equitable and effective service to business. For the North Africa region, this will mean the use of ICT in the context of public sector reform to secure open and fair competition in public procurement, reduce entry barriers, and systematically re-engineer and reduce the complexity of administrative transactions between businesses and public agencies. Portals and various transparent channels of communications can be used to ensure that laws and regulations and how they are being enforced are clear and publically available.

Open government initiatives can open up employment opportunities for the youth of North Africa. Many government documents and processes in the region will have to be digitized, from archives, to land records to birth and death certificates. A major effort in digitizing public records would be to generate jobs for the large pool of educated but unemployed youth. Making government data and statistics available in digital format to the private sector can also create jobs in developing local content, developing applications that utilize open data, and research in universities and business.

### ***OSI Resource Management***

Managing public resources (financial, human, natural, informational) is a core function of government and at the forefront of the development and competitiveness agenda of many countries. Pressed by increasing budgetary constraints, rising demands for services and accountability, and the imperatives of global competition, governments are seeking to become agile, promote managerial flexibility, and harness their financial and human resources. At the same time, taxpayers and businesses have a major stake in ensuring accountability, transparency, and effectiveness in managing scarce public resources—to reduce tax burdens, and the cost of doing business with government. Resource management is an area where ICT has made substantial contributions in the finance and private sectors, and where the potential is vast and relatively untapped for the public sector. Several North African countries have initiated reforms in this area—hopefully as an entry point to a wide-ranging public sector reform agenda.

Reform objectives of improving public sector efficiency and resource management can be enabled by ICT uses and applications that improve: 1) public resource mobilization and expenditure management through tax modernization, integrated financial management systems (IFMS), and budget tracking and expenditure monitoring; 2) human resource management, civil service reforms and performance management; 3) competitiveness, efficiency, and transparency of public procurement; 4) employee productivity; 5) transparency of contracting, outsourcing, and partnership with private sector and civil society; and 6) program management and business processes to make them more responsive and transparent, enable oversight, reduce fraud, and bypass corrupt intermediaries.

The most common of ICT applications in support of resource management are those concerning financial resource mobilization and expenditure management, including treasury systems, tax and customs administration, and Integrated Financial Management Systems (IFMS). Integrated treasury systems, for example, offer significant benefits in managing public resources, including real-time information on the funds available to the state, greater financial control, improved financial transparency and accountability, better reporting at various levels of budget execution, sound planning for future requirements, and better data for budget formulation. Introduction of IFMS can provide the backbone to broad government transformation.

Attention to citizen engagement and domestic accountability mechanisms tends to be ignored or come late to e-government initiatives<sup>28</sup>. This is most common in North Africa, where social accountability and open government practices are particularly weak. Pressures from the global financial system, aid agencies and ministries of finance often make IFMS applications an attractive entry point for ICT-enabled policy and institutional reform<sup>29</sup>. However, stronger emphasis on transparency measures, local accountability institutions, and the engagement of civil society could enhance state legitimacy and help sustain the demand for deeper public financial management reforms.

Online budget tracking can be harnessed to improve community engagement in local development planning and

<sup>28</sup> “Strengthening Public Financial Management in Post Conflict Countries”, Economic Promise, April 2011, Number 54, World Bank.

<sup>29</sup> Including meeting standards prescribed under various international standards and codes, such as the IMF code of Good Practice on Fiscal Transparency-Declaration on Principles and the fiduciary standards of the World Bank. Of course, these systems are only enablers and not a substitute for the necessary and accompanying policy and institutional reforms.

public resource management. If the government is not transparent enough, social intermediaries and community organizations can step in and begin to publish government data themselves. They can do this by attending parliament sessions, reporting and making the content public, or by browsing and scanning government web sites for information and presenting them in an understandable, visual way. Social intermediaries can further help augment demand for budget accountability, by analyzing budget allocations in terms of target groups and locations, using analytics and geo-mapping tools, and by visualizing and presenting information in terms accessible to communities and beneficiaries<sup>30</sup>.

Another area is mapping and monitoring the needs and resources of poor communities. Collaborative and geo-mapping technologies and the mashing of data from various sources can now help governments, citizens, and social intermediaries to overlay socio-economic information with geospatial ones—pinpointing distribution of projects and their impact, enabling active citizen participation in solving local problems, and an expanding array of applications. This evidence-based monitoring, combined with the communication power of maps and the web, serves as a powerful advocacy tool for improved accountability of development funds targeted for poor communities.

**Electronic Government procurement** (e-GP) is an area of resource management that could potentially promise vast gains for transparency and efficiency. This is a proven ICT application that has been successfully implemented in several developing countries, with a wide range of benefits. It is a key area of transparency reform with low financial cost and high benefits. According to the 2009 Global Corruption Report published by Transparency International, corruption in public procurement raised project costs by approximately 10%, resulting in a loss of \$300 billion to \$500 billion dollars around the world. Experience suggests that electronic procurement

can increase competition and reduce prices, corruption, and transaction processing costs, while enabling the practice of smart procurement, and supporting public policy analysis and financial management (using analytics tools).

Although many of the benefits from e-procurement can be clearly measurable and even dramatic, and thus attractive to private investment or public-private partnership (PPP), these benefits are not automatic. Realizing the payoffs depends on complementary infrastructures, supplier incentives, user capacity building, coalition building, change management, and demand-driven measures for transparency, among others<sup>31</sup>.

**Modernizing tax systems and revenue administration** is key to improved resource management. The challenges and benefits of the use of ICT in tax modernization do not start or end with tax reporting and payment. Many of the benefits come from the quantum leap in administrative reforms and productivity increases that result from transforming business processes to enable both within government productivity increases in administering and processing taxes as well as improvements in services and reduction in transaction costs to businesses and citizens. It also has the potential to improve tax policy analysis, compliance, and detection of tax fraud.

A final critical area of resource management is civil service or human resource management systems (HRMS)—essential to realize gains in productivity, upgrade civil servant skills, align incentives and reward performance, increase accountability, and facilitate change in government. The integration of human resource management functions (such as competency-based training and promotion system) is enabled by interlinked ICT modules. Given the poor state of information on the civil service of North African countries, HRMS applications could offer powerful tools and a quantum leap in government capacity to upgrade and manage a modern civil service.

<sup>30</sup> One example is the use of an ICT-enabled collaborative platform for tracking and knowledge sharing the use of funds at the local level in Kenya. It monitors the performance of central and local authorities and parliamentarians with respect to budget expenditure, disbursement and service delivery to their local communities or target groups. It also offers feedback by citizens to local and central authorities and parliamentarians of their performance via SMS. The tool enables citizens to search for project funds, information on schools and hospitals, and types of funds and allocation summaries, and to do benefit mapping. It enables citizens to anonymously report problems about project implementation and incidences of corruption. It enables civil society to network and leaders to dialogue with citizens and lobby groups.

<sup>31</sup> In the Philippines, a coalition of civil society organizations was essential to enact a new procurement law embodying key reforms, and to continue to provide oversight over implementation, using e-procurement to make the process transparent and amenable to monitoring. Currently, all bids and awards committees must have at least an observer from a certified CSO, and to enable the CSO to fulfill their role, CSO observers have received extensive training.

## OSI Policy Making

Policy-making institutions in North Africa remain constrained by lack of access to timely information, and limited capabilities for policy analysis, data mining, information sharing, and knowledge management. They suffer from cumbersome data collection and fragmented reporting systems combined with overload of unprocessed data and “information poverty” (Hanna, 1991). Information in support of oversight and policy making in developing countries is scarce, dated, and unreliable, with serious consequences (Hanna, 2010). Many e-government applications can help improve public strategic management, policy making and the management of knowledge resources and complex systems. Areas of applications range from e-cabinet and e-parliament document management and decision support systems, to systematically and continuously assess the effectiveness of public policies and programs, to modernizing national statistical systems, to using mobiles to survey and collect data relatively quickly, to applying ICT for smart industrial policy, and smart management of infrastructure and complex urban systems.

Recent advances in analytics or business intelligence tools provide a quantum leap in capturing and analyzing masses of information for policy making and strategic management<sup>32</sup>. The potential is huge and largely untapped for applying analytics to all kinds of government interactions and transactions with clients. Analytics can be deployed in government call centers and to citizens’ complaints, for example, to detect patterns of service delivery problems, performances, and trends. Used in combinations with sensors (and the Internet of things), analytics can monitor and model complex systems and help decision makers to understand, control and smartly manage transport, energy, water, and urban systems.

Analytics can be also applied to industrial policies. Several North African countries are adopting new industrial policies to diversify their economies, pursue industrial upgrading, and target those sectors with promising and fast growing export markets such as ICT. While industrial policies and selective interventions have proven to be effective in accelerating growth and technological upgrading in many East Asian countries,

among others, they have had a poor record in many other developing countries, including North African countries. Lacking adequate monitoring and learning systems, the risks of reproducing past failures in industrial strategy remains high.

Effective industrial strategies and interventions must rely on transparent and smart industrial policies. Adopting smart industrial policies demand an institutionalized and inclusive process of consultations with the private sector and other stakeholders in designing, monitoring and evaluating interventions. They also demand transparent intervention subsidies and clear identification of beneficiary firms, and measurable and transparent indicators of progress and success. Practicing such policies requires open and accountable government, that is, a public governance setup that binds the government to adequate accountability to prevent capture and to shut down failing interventions. Much of these processes and practices are information intensive and demand effective knowledge management and learning systems. ICT application can serve to hardwire and institutionalize these systems.

## OSI Oversight Institutions

North African parliaments and oversight institutions are opaque. They have yet to leverage ICT to improve their transparency and interactions with citizens. Traditional practices of parliaments in North Africa, including deliberations and document processing, are highly inefficient and slow and can be significantly enhanced with modern communications and the intelligent use of ICT. There is increasing pressure on parliaments to be transparent to ensure that their activities are recorded and accessible to civil society and citizens. The crisis of legitimacy of parliaments is ascribed to their inability to safeguard the diversity of the interests of the communities they represent. The recent uprisings in North Africa represent an opportunity to transform parliaments into forces for transformation and OSI development.

ICT raises the prospects of citizen re-engagement in the democratic process. It can be used by citizens and SIs to monitor and enhance the transparency of elections, parliaments, and oversight institutions across emerging democracies. ICT may be used to monitor the behavior of officials and improve

<sup>32</sup> Analytics is the use of data capturing and mining, modeling, operational research, and statistics, enabled by ICT, to solve problems in business, industry, and government.

<sup>33</sup> Ushahidi (witness or testimony in Swahili) developed a crowdsourcing information and internet-based mapping site that allows users to submit eyewitness accounts of election fraud and riots via e-mail, text or Twitter. It is used by many civil society groups around the world. Crowdsourcing has particularly proven to be useful in volatile situations where citizens may be able to provide quick information, which can then be verified and used to mobilize help. Mapping has provided historical records of citizens’ experiences over a crisis.

parliamentary processes in many ways—improving transparency and openness; providing universal access to citizens; improving the mechanisms of accountability of legislators to their electorates; enabling dialogue between the parliament, its members and the citizenry; and facilitating deliberation and legislative decision making. Some parliamentary websites are intended to inform and engage the public, while others are intended to facilitate the internal decision-making processes of the parliaments<sup>34</sup>.

ICT offers opportunities for parliaments to reach out to the public. It can provide an accounting of parliament and legislators' actions—attendance, voting records, codes of conduct, performance and integrity. Progressive legislators can use social networking tools like blogs and wikis to force the executive branch to account for various expenditures and to engage their constituents in timely consultations and feedback. It can also help citizens and SIs keep an eye on the functioning of parliament<sup>35</sup>.

<sup>34</sup> The former type include projects that disseminate information on proposed legislation and the legislative process, committees and members, parliamentary calendars, and transcripts and other materials from hearings or debates. Systems aimed at parliamentarians themselves may include online notices and voting. An example of a website that contains both features is the site of India's Council of States. The website for South Africa's Parliament also includes a range of information for both the public and Members of Parliament.

<sup>35</sup> The Mzalendo (patriot) application provides an "eye on parliament" in Kenya, and offers an example of using ICT to promote social accountability of parliament.

## VII. OSI Services

Improving access and quality of public services is a political, social, and economic imperative for developing countries. This is understandable in view of rising expectations for better public services, large deficits in access and quality of such services, and the high transaction costs of dealing with unwieldy bureaucracies. Governments face the difficult trade off between improving service quality to those who are better off, mainly in the urban areas, and extending access to those with limited or no access, particularly the poor and those in rural areas who often have no voice. E-government applications can deliver on both quality and access to services, while enhancing transparency, accountability and participation. Intensive citizen and business engagement can also lead to sustained improvement and service innovation.

### *Services to Citizens*

ICT-enabled service delivery to citizens is a rich category with many examples of innovative applications to:

- 1) Improve the availability, quality, and responsiveness of public services, including the supply of licenses, permits, certificates, and land titles;
- 2) Provide choice and competition in service delivery through information brokerage and the use of public-private partnerships; and
- 3) Reduce transaction costs to citizens by providing one-stop service centers, user-friendly mobile applications, single-window service centers, and citizen-centric portals, among others.
- 4) Augment citizen monitoring and feedback for policy makers and service providers to improve the availability and quality, and the responsiveness of public services.

In North African countries, a wide range of basic services to citizens is in strong demand. Examples include: land and property registration, birth registration, driver licensing, automobile registration, employment, education, professional

training, pensions, health services, tax reporting and payment, and visa services. Popular services include school and exam results, health services appointments, and information on women's health. Public safety is an emerging issue in urban centers. Some of the possible uses of ICT include online crime reporting, police electronic records, and crime mapping. Many such services can be delivered through mobile phones, kiosks, or community information centers.

Many of these services will require significant improvements in backend processes to provide reliable service and completed transactions, particularly in the context of many developing countries where the first wave of computerization and process reengineering have not advanced. The challenge in developing countries is not only to put services online or make information available on mobile phones, but also to carry out the internal process transformation and integration necessary to enable complete transactions of such services. This calls for prioritization and sequencing of e-services to ensure that the transformation process is not aborted by limiting e-government to web presence or window dressing.

However, applying ICT to improve processes for service delivery does not go far enough in improving service delivery unless it is also used to build demand for improved transparency and accountability and thus overcome mistrust in government decision making and service delivery. Innovations in citizen-led monitoring helps visualize information about government services, programs, and results, e.g., the lack of skilled birth attendants at a clinic. It could provide a user friendly, geo-mapped dashboard that can integrate information provided by government agencies, service providers, and users. Once this information is geo-mapped to specific locations and themes, local government and ministry of health officials, for example, receive a report, and when the problem is fixed, an automatic message is sent indicating the resolution, and confirmation is requested<sup>36</sup>. Citizens' monitoring of service

<sup>36</sup> One example is HUDUMA (meaning service in Swahili), a multimedia tool that channels and amplifies citizens' concerns, complaints and suggestions directly to service providers, policy makers and budget holders.

delivery can also deploy a combination of communication tools for maximum results<sup>37</sup>.

Around the world, government portals are providing points of entry for reshaping, reorganizing and recreating governments—virtually. Appropriately organized around citizens needs, and increasingly made amenable to citizen-driven personalization of services, these portals usher the era of seamless government, or “government without walls”. Accordingly, citizens and business can transact with multiple agencies and multiple levels of government in a single place or portal. Web presence of government is organized around terms familiar to citizens, like life events or target groups, thus eliminating the need for citizens to decipher the increasingly complex and incomprehensible organization of government or paying bribes for such access.

Government portals can help citizens make informed decisions by sharing and widely distributing the information they collect about the public and private sector. Governments act as information brokers. Using the Internet and information kiosks, government portals aggregate and distribute information about access, quality, and price of any service, public or private, for example, school and hospital scorecards. Other ways to facilitate markets and improve service choice for citizens is to deploy eBay-like feedback mechanisms to allow consumers of public services to rate various services and providers<sup>39</sup>.

In North Africa, information on quality and cost for many services is not available or costly to obtain. The poor suffer the most from such information poverty, both as producers and consumers. Making such information available through mobile phones, the Internet, kiosks, and information intermediaries could help citizens weigh choices and allow better matching and flexibility to meet diverse needs and preferences. In some service areas and for some special populations, navigators or special guidance systems may be needed, and electronic matching systems may provide such guidance to efficiently address needs. Publishing public data, transactions and

services on the web could enable other government agencies, the private sectors, and Information intermediaries to integrate, package or customize the information and services into their own service offerings, thereby providing additional choices and pathways into services.

## **Services to Business**

Businesses and investors in North Africa are often frustrated by inefficient and bureaucratic public sector, by high barriers to entry because of cumbersome, costly and lengthy start-up process, and by corruption and red tape. High transaction costs are particularly detrimental to small businesses and small investors with limited resources to pay such costs or to avoid them. Common ICT applications to improve business environment and development would include: e-registration, e-reporting, online investment promotion, business support services, e-tax, e-procurement, and e-customs.

OSI development should aim to enhance transparency, reduce transaction costs to business, support entrepreneurship and SME development, facilitate trade, and instill a culture of equitable and effective public service to business. These reform objectives are significantly enabled by e-government applications. This is a crucial area for the Region’s future with its potential for employment generation, competitiveness, and inclusive growth. It is also critical to strengthening government capacity and accountability for effective and transparent resource management, and for engaging communities to ensure that environmental safeguards and benefits are responsive to their needs. The imperatives of competing in a global economy are driving governments to improve their business climate and provide effective support services to their SMEs.

An **interactive online business registration** system greatly simplifies the application processing and increases the speed of the business registration, which currently can take more than 100 days in many developing countries. The key is to

<sup>37</sup> In Uganda, a multimedia platform combines popular media such as radio talk shows with data visualization and geo-coding, which allows for a new and efficient form of citizen monitoring. It identifies common problems such as teacher absenteeism, drug stock outs, potholes, etc., and the public interacts via radio and mobile to analyze and debate service delivery problems and solutions.

<sup>38</sup> Some state governments in the USA have compiled online report cards on schools to enable parents to make informed choices about their children’s educational options, and at the same time, to expose schools to public pressure for improved performance.

<sup>39</sup> NGOs developed similar online information (also shared via kiosks) for a few Indian cities that rate the services of local public agencies, with a perceptible impact on performance and accountability in these localities.

provide a single platform allowing businesses to retrieve information and/or register with all the relevant public agencies, such as the State Statistical Office, Agency for Payments, the Tax Authorities, Customs Authorities, etc. The Cairo One-Stop Shop is a good example: it reduced business registration time from an average of 34 days to 3 (World Bank, 2009).

ICT can promote investment by providing clear and organized access to information on policies and regulations for investors. Government can facilitate access to finance key applications such as providing online legal and regulatory information services, improving SME's access to information on administrative requirements and business-related legal and regulatory frameworks, and simplifying initial search on issues such as trademarks and patents.

Online support services to business provide firm-level support to local SMEs and compensate for the limited business and management skills among entrepreneurs. Government's business support agencies can host online business advisory services provided by various private sector experts<sup>40</sup>. With the

involvement of business and professional associations, DFGG measures can be strengthened and integrated into these ICT-enabled government-to-business transactions and support systems.

**Electronic government procurement** (e-GP) is an area where results can be demonstrated early and clearly in terms of efficiency. E-GP can be designed to promote competition among a larger pool of suppliers and broaden the participation of SMEs in public procurement, and increase agility, transparency and accountability<sup>41</sup>.

**Customs** transactions between government and business can be a major source for costs, corruption, uncertainties and delays in clearance, and erosion in international competitiveness. ICT-enabled customs modernization can raise revenues and enhance trade facilitation, while improving governance and reducing corruption. ICT impact is significantly enhanced by incorporating incentives and accountability measures for customs officers and administration. Tunisia, among others, made significant ICT-enabled reforms in this area (Box 4).

<sup>40</sup> Clients can choose an adviser from among a number of business consultants and other advisers registered with the center. Clients would be able to get a response from the selected expert within a short period of time. Conceivably, the delivery of such services can be made through mobile platforms.

<sup>41</sup> Whenever a public agency needs to purchase goods or contract a service, the system can automatically send an e-mail to all the private companies registered in that selected area, thus minimizing response time and providing an equal opportunity for all the firms.

## Box 4: Tunisia Trade Net System

Tunisia Trade Net System (TTN) provides a good example of stakeholders coming together to simplify procedures and automate trade documentation and customs requirements with the use of ICT. TTN shareholders include 10 government agencies, among which are the national port authority and Tunis Air, and 18 private sector units, among which are several banks and the Tunisian Internet Agency. The system interfaces with all agencies involved in international trade procedures, including the Tunisian Customs, Ministry of Commerce, technical control agencies, Central Bank, ports, as well as the private sector traders, agents, freight forwarders, customs brokers and banks. On-line tariff payments are processed through the TTN system.

Investments made in trade facilitation are dramatically reducing import and export processing times. For example, the imported goods can now be cleared in an average of 2 days, compared to an average of 7 days a few years ago. Manifest processing after the completion of vessel operations used to take up to 4 days; electronic processing has cut that time to one day. The time needed to prepare and process customs declarations has dropped to 15 minutes, down from as long as 3 days. Trade document processing using the Tunisia Trade Net has also generated savings for the maritime cargo-handling operator and demonstrated the payoffs of adopting other e-government and e-business applications in the country.

A key success factor was commitment at the highest levels of government—essential to coordinating reforms and process reengineering across a large number of government ministries and agencies involved in trade transactions and clearance. Another factor was the involvement of private sector at all stages of the reform process. International trade standards were adopted to enable easy exchange of required information with trading partners and authorities. Implementation was guided by user feedback to fine tune systems and ensure the emerging net would be responsive to private sector needs. A final factor is extending electronic processing to all transacting agencies, not only customs, and reengineering their back office systems to seamlessly handle these transactions electronically.

Source: Alavi, 2008

Legal and regulatory information can be made accessible to business and to citizens and NGOs through web-based service and mobile-based applications—improving the business environment while protecting the public good. For example, a web-based information service can be designed to cover issues of administrative requirements and business-related legal and regulatory frameworks, judicial opinions in business-related cases, draft laws and regulations, adopted laws and regulations, government directory and organization, and frequently asked questions. The site could have information in easily accessible form with a problem-solving, “how-to”

focus. For example, it could explain legal requirements on how to start a business, initiate export/import operations, etc. Access to this information can be made available on the ubiquitous platform of mobile phones.

Citizen monitoring of government enforcement of regulations can be done through mobile-based applications. Citizens and SIs can bolster the monitoring and enforcement capabilities of weak or overstretched agencies<sup>42</sup>. They can also promulgate bottom-up regulatory systems to address issues ranging from climate change to corruption<sup>43</sup>.

<sup>42</sup> For example, in Manila, individuals are using cell phones and mobile text messaging to report vehicles they see emitting excessive pollution to a central database called Smoke-belchers Watchdog. An environmental group leading the effort compiles a list of vehicles with 5 or more complaints against them and sends it to the Land Transportation Office.

<sup>43</sup> CorpWatch.org, a San Francisco-based non-profit, established an array of analytic tools that empowers amateur corporate investigators (and social intermediaries) to monitor corporate abuses. The Cocoa Initiative, a multi-stakeholder effort to eradicate child slavery from the cocoa supply chain, helped initiate dialogue to establish mutually agreed standards for corporate conduct. Now, NGOs, labor unions, cocoa processors and major chocolate brands are developing a transparent certification process for cocoa suppliers that do not rely on forced labor.

## VIII. OSI Growth

How can ICT become a force for inclusive growth in North Africa? How can we avert the increasing inequality arising from globalization and fast technological change?

We focus here on the ICT industry and services segments most relevant to North Africa: IT-enabled services, and local content. These segments are labor-intensive, fast growing, and can be linked closely to support inclusive growth. They also hold special promise for educated youth and women. An OSI development would also argue for rebalancing or extending policy makers' attention to the use of ICT for other sectors of the economy, and particularly to diffuse e-business and e-finance among SMEs.

### *ICT as a sector for smart and inclusive development*

**IT-enabled services:** The potential of the ITES sector is simply huge, driven by a global service revolution. Pressure from global competition is the major driver for outsourcing services, while advances in communications, digitization and IT-based collaboration, and the growing pool of young and educated labor in developing countries, are the enablers. By some estimates, about 65% of the global GDP is in services and potentially, between 10-15% of such services can be offshored, and only 10% of this estimated global offshore market is being met by current ITES suppliers. IT-based services represent an \$800 billion addressable market<sup>44</sup>.

Although India has established a dominant position in this relatively new global service industry, other countries, large and small, are pursuing the substantial and fast growing opportunities for exporting ITES. Because of language and cultural connections, French-speaking North African countries could become the Francophone India, providing ITES to the

francophone world. Egypt, with a large pool of low-wage, technically-educated youth, has moved up in a few years to become the sixth most attractive location for ITES for the Anglophone world (Box 5)<sup>45</sup>.

### **Box 5: The Promise of ITES for Egypt**

Egypt is a promising example of how an emerging economy can mobilize its young educated population to capture opportunities opened up by the outsourcing revolution. Egypt's relatively-recent IT strategy has been to leverage its natural strength of a large pool of young and highly educated population and to combine this with a series of targeted government measures to improve and tailor the regulations, incentives, and training to attract international and local players in business-process outsourcing. With the selective use of external expertise and global business partnerships it has built trust and sourced best practices. As a result, Egypt moved up quickly in its Global Services Index, ranking ahead of delivery locations in Europe, and North and South Africa. Also, from 2004 to 2008, the volume of its offshore industry grew from US\$100 million to US\$700 million (El Shenawi and Lanvin, 2009).

MENA has potential to develop BPO and IT industries. AT Kearney's Global Services Location Index ranked five MENA countries (i.e., Egypt, Jordan, United Arab Emirates, Tunisia and Morocco) within the 40 best locations to locate the BPO industry. In particular, targeted policies and reforms in Egypt and Jordan positioned these countries within the 15 best locations in the world (Table 7). In addition, the region ranks well in the World's Economic Forum (WEF) firm-level technology absorption, a measure of how ready are local companies to absorb new technologies in their business processes (Table 8). Six countries ranked within the 50 highest scores, suggesting that ICT-led innovation could be spread throughout the economy.

<sup>44</sup> Globally the industry will create an estimated 4 million additional direct jobs by 2016, while indirectly creating as many as 12 million to 16 million more jobs in other sectors. In addition, the industry can have major spillover effects on related services, manufacturing, and technical education.

<sup>45</sup> Small countries have as much potential to succeed as large ones in ITES. Relative to total exports, Mauritius exported a higher proportion of IT-based services than India in 2008.

**Table 7: MENA Countries Rank in AT Kearney’s Global Services Location Index, 2007**

Country	Rank
Egypt	13
Jordan	14
United Arab Emirates	20
Tunisia	26
Morocco	36

Source: At Kearney, 2007

**Table 8: MENA Countries Rank in WEF’s Firm-level Technology Absorption Indicator, 2009**

Country	Rank
Kuwait	28
Tunisia	34
Jordan	35
Bahrain	36
Qatar	40
Saudi Arabia	44
Egypt	63
Morocco	70

Source: World Economic Forum, 2009  
 Note: WEF’s indicators measure 134 selected countries

Much of the attention of policy makers has been focused on the potential of IT/ITES offshoring from developing to developed countries. But IT sector development would be more resilient

and broad-based if it were to rely on both the export and domestic markets, and to exploit potential synergies among the two. Such balanced development of the sector would also contribute to the competitiveness of the whole economy. The potential of growth in domestic outsourcing in large emerging economies is substantial, and relatively untapped, as in Egypt. ITES first emerged in specialized IT parks and incubators. However, ITES holds the potential of diffusion to the poorer and rural areas in North Africa, beyond the IT parks, through various instruments like micro-work and telecenters. Telecenters with advanced connectivity can become the hubs for outsourced ITES<sup>46</sup>.

**Content Industry:** An OSI development would emphasize the creation of a vibrant local content and media industry. It has been long recognized that media and communications play a key role in development—social, cultural and economic. The media is critical for the development of relevant and compelling local digital content in local languages, the promotion of educational software, the wide adoption of IT, and the diffusion of digital literacy. A vibrant local media is also important to educate, inform and entertain, and to preserve a national culture, enhance governance and democracy, promote inclusive information society and transition to the digital world. The development impact of media content is related to the relevance and accessibility of this content to the society at large, in formats and languages that diverse groups can understand and use.

The media is undergoing massive transformation, as a result of digitalization of content, platforms and devices and their convergence to deliver all forms of digital content to any device, anytime, anywhere. This digital transformation is significantly enhancing the fluidity of media content, producing an abundance of sharable content, and introducing two-way, bottom-up and lateral content production, distribution and services. The top-down nature of traditional mass media is being challenged by the changing nature of choice from “on offer” to “on demand”, from mass to individually tailored, and from corporate-created to user-created. User-created content, enabled by widespread access to broadband Internet and

<sup>46</sup> One interesting example of the potential of ITES to generate growth and employment in rural areas is IIT Medras’s company called DesiCrew, whose aim is to enable employment creation through rural BPO throughout India. It started in Tamil Nadu by converting 20 rural kiosks into BPO-ITES centers. Services offered include data entry, computer-aided design, desktop publishing, multimedia works and localization. The DesiCrew head office is the connecting point between the BPO centers and the world. It procures orders and passes them on to this network of kiosks.

social networking tools, is emerging as a major force in shaping media, communication and culture (Vincent and Vickery, 2008)<sup>47</sup>. Media content is increasingly produced in digital form and becoming the basic creative infrastructure for the knowledge economy.

Some North African countries are attempting to extend the success of exporting ITES to the media industries. Global trade in media (mainly audio-visual products) is substantial but asymmetric, mainly from developed to developing countries. The regional market for local content in Arabic is underdeveloped and underserved. French-speaking North African countries can also promote multi-media content for export to Europe and francophone African countries. A coherent investment and promotion strategy for the development of an export-oriented multimedia industry holds much promise for some countries aspiring for high-value exports and employment.

In addition to potential exports, the media industry is critical to the domestic market, to developing local content, preserving local culture, and supporting a market economy. India's animation sector alone has a turnover of more than \$550 million (in 2009). Nigeria's film industry is the second largest employer after agriculture. Much of the producers of content are small and medium enterprises, contributing to employment generation<sup>48</sup>. With a young age structure, North African countries may be able to fast adopt the new collaborative technologies and co-create Arabic local content, locally-relevant applications and grassroots innovations.

**Mobilizing Youth and Women:** Demographics present unprecedented opportunities and challenges that must be integrated into strategic thinking about ICT for inclusive growth<sup>49</sup>. The youth bulge can be a fiscal and economic risk—exerting unprecedented burdens on education and health systems and can be a constraint on growth—or an opportunity as they will constitute fast growth in working-age population and contribute to falling dependency rates in North African countries. Investing

in this “youth bulge” now is essential to succeed in an increasingly competitive and skill-intensive global economy. Investing in youth's e-literacy and knowledge economy skills should build the foundational human capital for an inclusive information society.

Young people are the early adopters and main users of the new ICTs, especially the Internet and more advanced features of mobile phones and social networking<sup>50</sup>. The cost of investing in the skills required to learn how to use ICT are less for youth, and the long working lives mean that young people have more time to reap the benefits from such investment. Youth use of ICT will have wide-ranging effects on youth transitions. ICT offers unprecedented opportunities to youth: harvesting worldwide knowledge, informing and educating inside and outside schools, changing the environment for learning, encouraging peer-to-peer learning, and offering new employment opportunities and second chances<sup>51</sup>. Offshore outsourcing employment acts as an alternative to migration. New ICTs, including mobile phones, also provide information about non-ICT openings to youth. Many ICT jobs do not require mobility, and coupled with possibilities for telecommuting, this opens options for young people with disabilities.

A human resource strategy for OSI development would adopt specific policies to enhance the development impact of youth use of ICT. Priority may be given to ICT education in schools as well as the promotion and use of multipurpose telecenters for promoting e-literacy. Governments can reach youth through the media they use, and stimulate demand for e-literacy by supporting local content development and providing youth-centered content online. E-literacy skills are not only for using ICT, but also for leadership and technopreneurship for telecenters, SMEs, and ICT-enabled grassroots organizations. Young people are the primary source of future e-leaders at all levels and should be prepared accordingly.

Opening opportunities for employment and entrepreneurship for women is a major issue in creating inclusive development in

<sup>47</sup> The Internet has altered the economics of content production and information sharing. With lower access barriers, increased demand for content, lower entry barriers in upstream supply, and advances in collaboratively-developed platforms and news aggregators, media and cultural content are advanced and increasingly shaped by broad user participation. The Internet is increasingly influenced by intelligent Web services with technologies enabling users to be growing contributors to developing, collaborating, and distributing Internet content and developing and customizing Internet applications.

<sup>48</sup> In the EU, the content sector—media, publishing, marketing and advertising—accounts for 5% of GDP, or 433 billion euros, making it larger than the telecommunications sector and the hardware and software industries (Locksley, 2009).

<sup>49</sup> As of 2007, about 1.5 billion people are ages 12-24 worldwide, 1.3 billion of them in developing countries, the most ever in history (World Bank, 2007).

<sup>50</sup> Youth account for 43% of all Internet users ages 15 and older in China, 60% in Egypt, and 70% in Indonesia (World Bank, 2007).

<sup>51</sup> ICT diversifies the opportunities and channels of learning through distance education. Close to one million students in higher education are studying online in China. Mexico's Telesecundaria program gives those finishing primary schools in rural areas a way to continue schooling without long travels.

North Africa. ICT can support women's employment and entrepreneurship both directly through engagement in the fast growing ICT services sector, and indirectly, through ICT-enabled SMEs, and enhanced access to information, education and health services. While ICT may not directly redress underlying societal barriers to women entrepreneurs, ICT use can overcome some of the key challenges, including access to finance, skills and training, limited physical mobility, and lack of time due to family commitment (UN, 2011).

### ***ICT as an Enabler for Smart and Innovative Enterprises***

ICT in business can be a powerful enabler for innovation, entrepreneurship, and smart and inclusive growth. ICT as enabler can improve competitiveness across the economy and create products and services relevant to the poor. Enterprises are being transformed through connectivity and a vast array of e-business applications: financial management, human resources management, logistics and supply chain management, integrated enterprise resources planning, customer relationship management, and e-learning and knowledge management systems, among others. The increased access and connectivity to ICT is also changing the ways knowledge partnerships and innovation activities are carried out within and across enterprises. Some developing countries are also becoming new hotbeds of ICT-enabled open and collaborative innovation, leading to the introduction of new products and services that are locally relevant and can have a wider outreach to the poorest consumers.

***E-Business diffusion programs***<sup>52</sup>: Adoption of e-business practices is a first step towards smart and innovative enterprises. Most enterprises that have adopted e-business are still at early stages of integrating e-business into their business system, and have to climb the learning ladder<sup>53</sup>. The majority of SMEs in North Africa have not moved beyond

having a website (without integration to their business processes), if any.

The drivers and barriers to e-business adoption—particularly among SMEs—need to be understood in the context of North African economies, in order to guide the design of public policies and technical assistance programs for the adoption of effective e-business practices. The experience of OECD countries and a few developing countries indicate that policies and programs can make a significant difference in accelerating the diffusion and deepening the transformational impact of e-business (Hanna, 2011). A variety of approaches have been adopted to promote e-business diffusion including: provision of information, training and consultancy services for adoption; support to e-business adoption and affordable connectivity for selected sectors where potential impact on innovation and effectiveness can be substantial; promoting shared, low-cost, on-demand e-business solutions; and providing matching grants for e-business adoption at enterprise, network or cluster level<sup>54</sup>.

The Governments of North Africa can induce ICT adoption through enabling environment, infrastructure, and business support services—using a combination of measures<sup>55</sup>. They can work with business associations and academia to apply ICT to make private sector development interventions more effective and inclusive—both in reforming the business environment, and in providing business development, business information, and financial services. Promoting ICT solutions for business should be guided by user needs (information, business challenges) and constraints (skills, unaffordable user charges, etc.). Involving and partnering with the private sector in designing and providing training and advisory services can help ensure that services offered are demand driven and tailored to local conditions. Meantime, like in other industrial policy interventions, systematic monitoring and evaluation of various programs can help identify promising practices and continuously improve on these practices<sup>56</sup>.

<sup>52</sup> For extensive treatment of these programs and lessons learned, see Hanna, 2011.

<sup>53</sup> Some of the largest and progressive enterprises like Petrobras and Embraer in Brazil have transformed their business practices and extended their linkages to thousands of suppliers with the help of e-business.

<sup>54</sup> Underlying all programs is the importance of building the necessary leadership and managerial skills to manage innovation and change within and among enterprises, and developing the human resources to effectively implement e-business applications and realize the potential benefits. Lessons of experience are accumulating and developing countries can draw on these experiences as well as start to climb their own learning ladder.

<sup>55</sup> Measures may promote investment in advanced communications infrastructures (including broadband, and affordable and shared access to relevant ICT tools), provide legal and regulatory frameworks that support the adoption and mastery of e-business tools, promote trust in the use of ICT (such as electronic transaction, privacy, and security laws), and nurture ICT enterprises that support ICT solutions to SMEs and priority user sectors (through incubation, R&D incentives, and public procurement), include ICT modules in business and entrepreneurship training programs, make ICT use integral part of business environment and private sector development, and create inclusive financial markets via mobile money services.

<sup>56</sup> Many OECD countries have been pursuing ICT (and other new technologies) diffusion programs and much can be learned from their accumulated experience and assessments in this area (Hanna, 2010).

## Mobile Money for Inclusive Financial Services

The financial sector is a leading adopter and enabler of e-business. It is a leading and intensive user in its own right—reaping major productivity gains and service improvements. Yet, micro and small enterprises (MSEs) in North Africa are still largely excluded from formal financial intermediation—a long-standing development problem. Elsewhere, mobile money systems have provided increased access to finance for MSEs—allowing for real-time transfer and receipt of small amounts of funds at low cost, and reducing the costs of processing and administering small loans<sup>57</sup>. The uptake will accelerate—as more enterprises become active users of these systems (due to network effects), as services are increasingly adapted to their needs, and as policies and regulations improve security and reliability of these systems<sup>58</sup>.

There is growing evidence that mobile money transfers are effective in “ameliorating vulnerability and chronic poverty” and could also have wider positive impacts within recipient households and communities (Freeland and Vincent 2009). Governments in Africa have pioneered and since spread the use of the mobile platform for paying salaries, and for citizens to pay bills for various services like water or electricity. A new role for e-payment (increasingly relying on online mobile money transfer systems) is the small-scale financial transfer of migrant remittances.

## ICT for Inclusive Human Development

ICT offers innovative solutions to enhance the reach and quality of health, education, lifelong learning, and social protection.

ICT can be an important driver for educational reform, organizational change, and innovative teaching and learning practices. ICT can help in social accountability, transparency, and anti-corruption in the education sector. Education systems

can be made open and responsive by empowering stakeholders with information and monitoring tools, for example, by monitoring teacher and pupil attendance and absenteeism in primary schools using information based on a short message system (SMS)<sup>59</sup>. ICT can be employed to deliver smarter educational services: create attractive digital content; extend access through distance education opportunities; support ongoing professional development of teachers; and facilitate research and evidence-based educational policy and administration. Emerging ICT tools offer new ways to secure an inclusive education system: develop early literacy skills, address special needs students, and reach learners in remote areas and students from historically marginalized linguistic, cultural or ethnic groups, and low-income communities.

Similarly, ICT use in **health service delivery** is expanding exponentially. E-health includes health information systems, telemedicine, surveillance, mobile health, and emergency medical services. ICT can be used to strengthen systems for health, nutrition and family planning, and to improve their accountability, transparency and governance. Take the case of the supply of drugs to public health facilities. Weak information on the supply side constrains planning and engenders wastage and drug stock outages. At the warehousing and distribution stage, inadequate information on the supply and distribution of drugs, compounded by poor stock management systems in the health facilities, creates loopholes for pilferage. On the demand side, perpetual drug outages erode citizens’ confidence in public health facilities. The lack of information about drug supply and availability at health facilities results in their low use. Without adequate information, citizens cannot demand their rights to health care. ICT can bridge the information gaps on both the supply and demand sides of health services<sup>60</sup>.

Social protection programs are data intensive since they cater to millions of end customers and run a large volume of transactions. They deliver important safety net services, pension

<sup>57</sup> In the broadest sense, mobile money does two things: it vastly reduces the costs of the transfer of funds, particularly across distances, and also reduces the cost of the storage of funds. Like the ICT revolution as a whole, mobile money reduces the importance of physical distance, thus integrating millions of the poor and small businesses into the modern economy. Kenya’s M-Pesa, with 40% penetration among the poorest 20% of Kenyans, is a major success story of using mobile money transfer for all kinds of banking services (and payments for all kinds of public and private services) for the currently “unbankable”. This application is now being deployed throughout Africa, and other regions.

<sup>58</sup> Relatively new players such as mobile phone operators, e-payment technology vendors and non-bank transfer operators are developing value-added operations via cooperative arrangements with the main players.

<sup>59</sup> Research indicates that primary school teachers in a number of developing countries are absent from school 15-25 percent of the time, and that many of those in school are not found teaching (World Bank 2010).

<sup>60</sup> To close the information gap and improve the supply of drugs, Kenya, for example, initiated a process to replace the push system with a pull system and to improve the distribution of drugs to better match regional morbidity patterns and demand specificity, and to reduce wastage and pilferage of drugs. It computerized the warehouse inventory systems and the health facilities’ stock management and tracking systems for better management and oversight of the drug supply system. Measures on the demand side are also being introduced to improve information to citizens, on available drugs and their cost.

benefits, unemployment insurance, and active labor market programs, amongst others. ICT serves as a critical tool to manage data, execute process, and deliver benefits to poor citizens. DFGG tools ensure adequate information on and feedback from beneficiaries and improve the quality, efficiency and transparency in service delivery.

### ***Higher Education for OSI Development***

Tertiary education institutions<sup>61</sup> play increasingly broader and critical roles in development—building a strong human capital base, generating new knowledge, accessing and adapting global knowledge and technology, preparing future leaders, sourcing global talent and diaspora, supporting the national innovation system, spreading new ideas, and promoting openness and social and economic mobility. They are also increasingly critical to an innovative and dynamic service economy. OSI development lends special urgency to creating and reforming these institutions. Yet, higher education systems of North African countries are fragmented and deteriorating. They do not possess a single world-class university<sup>62</sup>. Many lack an ambitious vision for a better future.

Upgrading these systems requires leadership, commitment, vision, resources and governance. Paths to transformation may involve creating new centers of excellence to serve the region and beyond. They may also involve partnerships with world-class universities, and collaboration among universities within the region. OSI development will also involve connecting all educational and research institutions with each other, and with society at large—to enable access to content and collaboration anytime, any where. It will emphasize lifelong learning. ICT may be harnessed to accelerate this transformation through: access to learning content, student-centric teaching and learning, distance learning, smart and connected campus, national research and education networks (NRENs), participating in global innovation and experimentation (global labs), and transparent and performance-based resource allocation within and across institutions, among others.

One promising aspect of OSI development is the virtuous circle between exporting ITES (and related high-value, human-capital intensive services), increasing returns to investment in higher education, and increasing demand for high quality technical and university education. This virtuous circle has become prominent in India.

<sup>61</sup> A higher education system would include liberal arts colleges, research universities, polytechnics, technical institutes, community colleges, etc. A balanced development among its components is needed.

<sup>62</sup> Not a single university of N. African or MENA country appeared on the 500 SJTU world ranking (2008).

## IX. Five Fundamentals for OSI Development

Specific OSI development strategies will vary by country, reflecting income and literacy levels, size of population, status of ICT infrastructure, and urbanization, among other initial conditions. For example, countries with high levels of inequality, illiteracy, and unemployment will need to put more emphasis on ICT for inclusive growth, education, and SME development. The intent of this last section is not to recommend a one-size-fits-all strategy for all North African countries. Neither is it to propose specific ICT strategies for each country

that would be tailored to current ICT sector indicators for each. Rather, we suggest four fundamental practices in pursuing OSI development.

We propose five fundamentals for pursuing OSI development: a vibrant ICT ecosystem; holistic and long-term strategy; OSI leadership, partnership, and institutions; grassroots innovation and learning; and effective ICT diffusion and inclusion programs. (Box 6) summarizes these fundamentals as recommendations.

### Box 6: Fundamentals for Pursuing OSI Development

#### 1. Promote ICT Ecosystems

- Liberalize ICT infrastructure, networks, media. Strengthen regulatory agencies.
- ICT literacy skills, starting at early age.
- Building capacity for mission-oriented ICT use in government & civil society.
- Promoting partnerships for ICT innovation, ITES, and e-business diffusion.

#### 2. Commit to a holistic and long-term strategy

- OSI a strategic response to globalization & technology revolution.
- ICT integrated throughout development strategy. Interactive.
- Long-term perspective. Balance with Quick wins to sustain journey.
- Link open government to e-government. Phase & Synchronize.
- Adopt a holistic approach and attend to soft infrastructure.

#### 3. Promote leadership, institutions and partnerships

- Develop leaders to mobilize and understand stakeholders and build coalitions.
- Build institutions to coordinate policies and investments.
- Promote partnerships among government, business, academia, and civil society.
- Nurture grassroots leadership, institutions, and capabilities for learning.
- Develop CIOs as change agents and innovation officers.

#### 4. Nurture local initiative, innovation, and learning

- Promote co-creation of local content, user-driven innovation, and mobile apps.
- Institutionalize learning and experimentation at all levels.
- Foster systematic learning in priority sectors
- Create innovation funds for collaborative innovation among local government, civil society and application developers.
- Practice continuous benchmarking for e-service, e-skills, e-readiness

#### 5. Pursue diffusion and inclusion

- Address digital divides, early on.
- Search for context-sensitive local solutions.
- Co-create with civil society. Livelihood e-strategies. E-innovate for e-rural
- Integrate ICT into pro-poor programs to make them open, smart and inclusive.

Guided by these fundamentals, North African countries can design and adapt their own unique OSI development. For example, an emphasis on a holistic approach that promotes and links ICT to economic policies and strategies across all sectors should lead to an OSI and ICT strategies that fit with the country’s comparative advantage and sectoral priorities. Similarly, emphasis on innovation and learning practices should tailor OSI development to initial and changing local conditions.

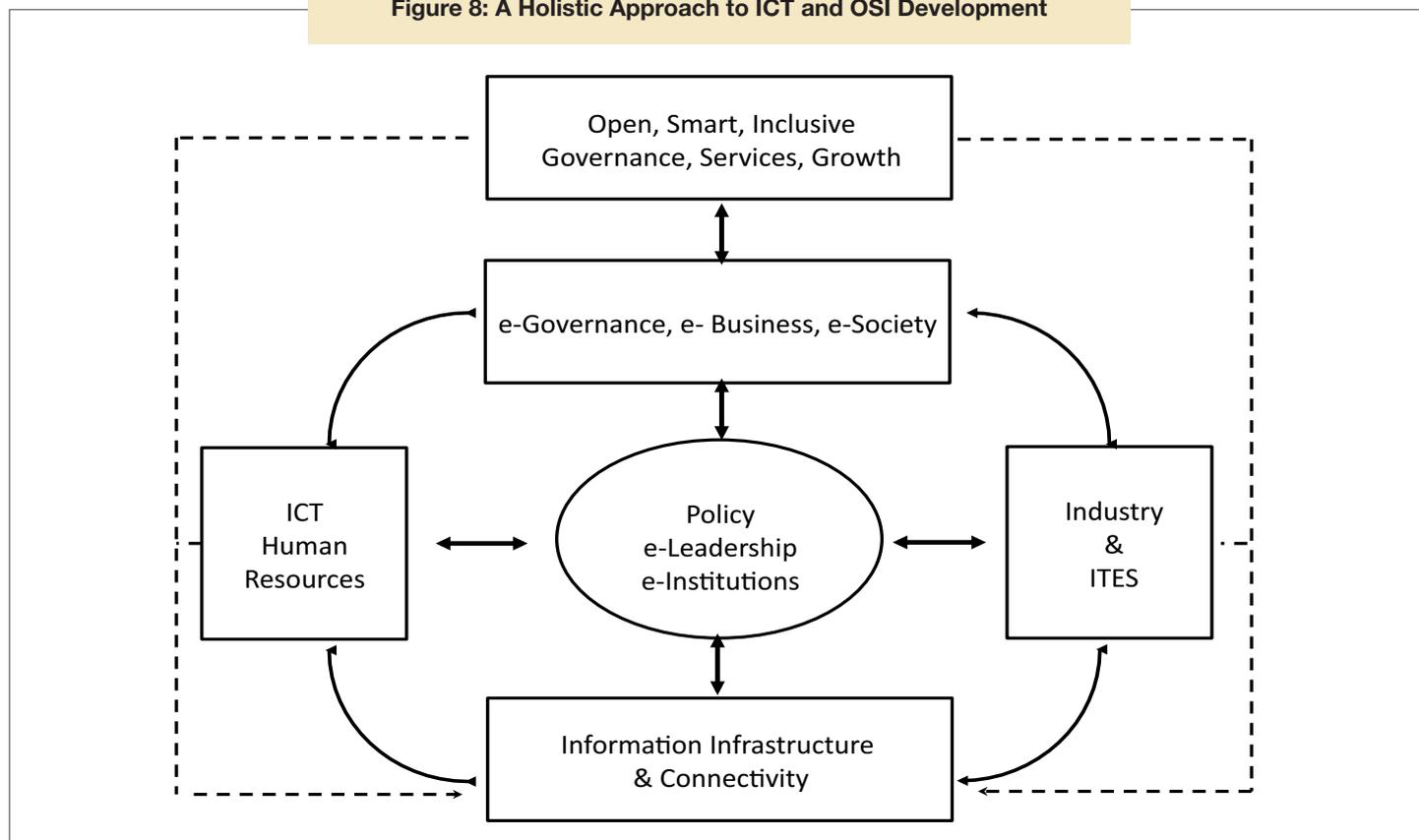
### Creating a Vibrant and Inclusive ICT Ecosystem

The first fundamental is to promote a competitive and innovative ICT ecosystem that is fully integrated into an open, smart and inclusive development<sup>63</sup>. The key elements of such an ecosystem are human resources, information infrastructure, ICT services sector, the applications platforms for government, business, and civil society institutions, and the enabling policies

and institutions. Figure 8 shows the key elements of the ICT ecosystem, and the central role of policies, institutions, and leadership in governing the interactions among these elements in support of OSI development.

To catch up with best international practices in creating modern ICT infrastructure and platforms, MENA countries should fully liberalize their ICT networks. They may implement the same reform path followed by Eastern European countries and Turkey, setting a date for full liberalization as a short-term objective, and issue as many telecom licenses as the market demands, eliminating all restrictions to entry. Liberalization should be accompanied by the development of forward-looking strategies to extensively roll out Ultra Fast Broadband through Public Private Partnerships<sup>64</sup> in a competitive environment. Countries should also strengthen competition on backbone networks and international connectivity, and actively promote the entry of competing operators at backbone level.

**Figure 8: A Holistic Approach to ICT and OSI Development**



<sup>63</sup> This ecosystem would cover four pillars: ICT infrastructure, ICT industry, ICT skills, and ICT policies and institutions.

<sup>64</sup> Coordination between infrastructure development and broadband deployment should be encouraged, both on a national and on a regional scale.

In order to ensure that North African countries can reap the benefits of fair competition, the independence and capacity of these regulatory agencies must be developed. Anti-trust authorities need to be considerably strengthened. Control of monopoly power and of economic cartels needs to be considered as a top priority. Telecommunications and media are usually priority sectors for anti-trust monitoring and action.

Countries may also reform the ICT legal and regulatory enabling environment to effect the shift from the old state-centric landscape to a new, more open one that appropriately balances security and privacy interests, supports transparency and user privacy and maintains a more resilient network infrastructure.

Countries may also broaden the traditional approach to regulatory reform in ICT, to include freedom of information and expression legislation. Support media plurality and independence. Promote government open data access initiatives through legal and regulatory reform and link these initiatives to measures to strengthen governance and anti-corruption activities.

Education in ICT is a key element of a vibrant ICT ecosystem where North African countries can accelerate current efforts, and even leapfrog others. This would include strengthening access to ICT as early as possible, at primary education. Children can develop superb IT-literacy skills at a very early age, facilitating subsequent efforts to develop IT skills later on in life. This is a case where the youth bulge can become a dividend for OSI development.

### ***Committing to a Holistic and Long-term Strategy***

OSI development process is a holistic and coherent response to the changes and opportunities arising from globalization and the ongoing technological revolution.

A long-term perspective facilitates the adoption of a holistic and coherent approach to national ICT strategies. A long-term perspective means anticipating, recognizing, and managing systemic interdependencies that can lead to significant

changes over time. Without taking account of key synergies and interactions in a timely manner, true transformation is unlikely to occur, be sustainable, or diffuse on a large scale.

Sustained development requires a strong future orientation, trading short-term pain for long-term gain. Pursuing OSI development is not a quick technological fix or a single event. It is a long-term journey<sup>65</sup>. It involves open, smart and inclusive development processes—enabled, fueled, and accelerated by ICT. For example, open government is not just about opening the digital data stores of government, once and for all. It demands the development of open government policies, laws, skills, leadership, and culture, and citizen engagement through various forums, national councils, and social intermediaries. It calls for supply-side as well as demand-side measures: promoting citizen engagement without associated ICT-enabled reforms and change management within governments runs the risks of raising unrealistic expectations and fanning discontent. Open government can thrive only through partnerships between public agencies, application and content developers, and civil society organizations—creating a vibrant open-data ecosystem.

### ***Promoting Leadership, Institutions, Partnerships, and Soft Infrastructure***

Mobilizing stakeholders around a clear vision of OSI development is essential. It takes local political leadership, business initiative, and citizen activism to shape a shared vision and harness the new technologies and build institutional foundations for a development paradigm shift. Effective leaders articulate an inclusive vision, linking interdependent actions to co-produce sectoral as well as cross-sectoral outcomes<sup>66</sup>. Transformative leaders seek to understand stakeholders and engage them as enablers, partners, and implementers. Highly participatory national economic policy management seminars involving policy makers can play an important role in building national consensus and preparing transformative leaders<sup>67</sup>.

The interdependencies among elements of an ICT-enabled OSI development call for institutional arrangements that ensure the coherence of policies and investments to build common

<sup>65</sup> Exemplified by the transformative journeys of Singapore and Finland (Hanna and Knight, 2012).

<sup>66</sup> They present e-transformation programs as enablers of other sectors and programs, such as rural and inclusive development, to gain the support of key partners and ministries—political leaders, Ministers of Finance and Economy, etc. They appeal to broad and diverse groups of stakeholders, not just ICT champions and specialists, telecom operators, IT entrepreneurs and service providers, or owners of single issues or applications. See Hanna, 2007.

<sup>67</sup> Such as those conducted by Sitra in Finland (Hanna and Knight, 2012).

infrastructures, shared platforms, core capabilities and vibrant ICT ecosystems. For example, ICT use for open government should be sequenced with the development of connectivity, relevant content, local ICT industry development, and enabling policies concerning regulation, data security, and privacy. Such an integrated approach is important for developing countries where financial resources and skills are scarce, and prioritizing and sequencing are essential. It requires empowering existing or new public and public-private entities to provide leadership, strategy, policy and advisory functions, and to implement, monitor and evaluate programs on a continuous basis. Countries are innovating and building the capacity of such institutions<sup>68</sup>. Developing these institutions is essential to sustain the transformation process over time<sup>69</sup>.

An OSI strategy clarifies the comparative advantages of all potential actors: government, private sector, civil society, and academia, and defines what roles each can best play in designing and implementing OSI development programs. In doing so, it helps build partnerships and coordinate agendas among these stakeholders. By building these partnerships, it provides an enabling policy environment for implementation and a healthy ecosystem for the information society.

OSI development requires partnerships across key actors—including those representing SMEs and poor communities. Effective adopters build effective networks of leaders and leadership institutions<sup>70</sup>. ICT tools and electronic networks can mobilize and extend these partnerships, and inform and empower the weaker partners. In the context of high inequalities, leadership and institutions must be developed at several levels, including the grassroots. Special attention and resources should be devoted to develop local capabilities and to establish the incentives and authorizing environment for local institutions to function and become self-sustaining. Innovations in institutions and in participatory processes are often necessary

under these conditions. Using ICT to induce equitable structural transformation of the economy will require continuous innovation and leadership to devise channels and approaches to reach youth, women, micro and small enterprises, and disempowered segments of the society.

Adopters of OSI development attend first and foremost to the “soft infrastructure” of transformation: leadership, shared vision, enabling policies and institutions, change management capabilities, upgraded human resources, and national consensus and culture. They secure policy fundamentals as well as pursue smart and proactive policies that are tailored to the human, institutional, and innovation-intensive nature of the ICT industry and ITES. They co-invest in the hard (ICT) and soft infrastructures. They focus on human resources first, and technology second. They invest in massive training for citizens as ICT users. Successful governments and businesses seek to understand the needs of their clients and to engage them in the design and implementation of the transformation process.

Given the promise of the new technologies (and the overpromise of ICT suppliers), countries are tempted to bypass the demanding development of the soft infrastructure<sup>71</sup>. But no off-the-shelf or “plug and play” technical solutions can substitute for institutional learning and in-house capacity to define institutional visions and requirements, manage for results, and hold vendors accountable for service-level agreements. New waves of technologies continue to accelerate the pace of e-transformation in the public, business, and civil society sectors. However, taking full advantage of these technologies and integrating and institutionalizing them on a large scale will require new leadership and institutional competencies to motivate knowledge workers, engage with citizens, collaborate with partners, and manage “institutional openness” and social change. New technologies open up new opportunities, but they also demand more transformative leaders, not less.

<sup>68</sup> For examples of such institutions and their roles in coordinating economy-wide e-development, see Hanna, 2007.

<sup>69</sup> Leading nations built e-leadership institutions to promote, govern, coordinate, monitor, and evaluate the e-transformation process. They experimented with institutional options to lead this process across all key economic sectors, and in the process pursued systematic institutional innovation and learning (Hanna, 2007, 2009). E-leadership institutions were able to progressively identify synergies across e-government, e-learning, e-business, and e-society, and to capture opportunities to tap potential synergies, realize returns to scale, build cross-sectoral links, and leverage entry points.

<sup>70</sup> An early study of this phenomenon is best illustrated in Wilson, 2004.

<sup>71</sup> The gap between the potential of ICT innovations and their widespread diffusion and economy-wide impact is significant, similar to earlier GPTs. The rapid diffusion of mobile phones may be the exception in view of the dramatic decline in costs and the low barriers and skill requirements for users. Yet, realizing the full potential of using mobiles for affordable Internet access and for development-oriented applications may take more time.

## ***Pursuing Local Initiative, Innovation, Learning and Evaluation***

OSI—as a techno-economic paradigm—involves major innovations, transformations, and even crises and creative destruction—demanding local learning, initiative, experimentation, and change management. An OSI development strategy encourages learning from local initiative, experiments, and innovation. It is not a detailed blueprint. It seeks to discover complementarities and synergies over time, not just at the design stage. This cannot be done only from the center, top down, or as a one-time event<sup>72</sup>. It emerges from institutionalized learning, user-driven innovation, multiple feedback mechanisms, shared knowledge platforms, learning communities, and participatory monitoring and evaluation. A central task would be learning at all levels<sup>73</sup>.

To accelerate this learning process, countries may attract leading ICT multinationals, invite the diaspora or international talent to participate in their learning, review external experience and benchmark themselves against the best, and build forums for sharing and blending external and local learning<sup>74</sup>. But this learning must be also grounded in local realities and linked to the needs of stakeholders, including the poor. Social intermediaries can play this bridging role, mobilize local knowledge and local capacity to innovate, co-create development, and co-produce services for the poor.

This learning may focus on priority sectors where sector transformation is essential to accelerated OSI development of the whole economy. For example, some countries have targeted the education sector for such accelerated process. This sector is viewed as a pillar of the open knowledge economy and inclusive information society. Transformation of this sector will require the highest commitment to socio-technical innovation, shared learning, and change management.

OSI involves a large number of participants, substantial opportunities and uncertainties, and potential for significant

performance improvement, and thus could be ripe for open and inclusive innovation strategies. Decentralization and support to bottom-up initiatives can spur open innovation and learning. Several mechanisms may be used to institutionalize and support bottom-up initiatives, such as innovation funds using matching grants<sup>75</sup>. These mechanisms can unleash a flood of ideas and energy. They encourage small enterprises, business associations, and grassroots- and community-based organizations to engage with national agencies in creating and linking to various parts of an OSI development program. When appropriately targeted and smartly monitored, they help the central agencies understand their most vulnerable clients—rural communities and the poor—and empower their clients to co-innovate appropriate OSI solutions.

Open government can also spur innovation and transformation towards OSI development. Continuous improvements in services and innovation in government processes require accountability for performance and demand for good governance. This demand can be strengthened by meaningful efforts to capture citizen feedback on services, and devising the right metrics to measure results and account for innovation and continual service improvement. It can also promote innovative public-private partnerships. Grassroots organizations and social intermediaries can play a key role in mobilizing public will, political capital, and champions of social innovation to demand community-defined results, support experimentation, push for creative solutions, and counter risk aversion. Using metrics that focus on results and participatory processes that capture citizen feedback can be key drivers for OSI development.

Small-scale experimentation or “learning by doing” can be used to gradually change the culture and build the capacity of government towards progressive openness and collaboration. Engagement and openness to citizens or social intermediaries is a new experience for civil servants world over, and particularly in North Africa, and this requires ability and incentive to listen to citizens and to increase understanding of client needs and behavior. Sustainable initiatives of open

<sup>72</sup> A deliberate strategy, emphasizing focus and control, has to be complemented by emergent strategy, emphasizing continuous learning and venturing (Mintzberg, Ahlstrand, and Lampel 1998).

<sup>73</sup> This is a key message from the fast transforming countries: the central task of e-transformation is learning at all levels, in government, business, and civil society sectors as well as academia. This is particularly essential for a new sector, for mastering a general-purpose technology as ICT. Singapore and Finland created a high-speed learning environment and made their economies test-beds for ICT innovation.

<sup>74</sup> In seeking foreign direct investment, Singapore was selective and targeted in its incentives and recruitment, emphasizing quality of investment, tapping global knowledge, attracting innovative and leading ICT firms and their research and learning arms, maximizing spillover effects, and building an expanding pool of highly skilled human resources.

<sup>75</sup> Examples of pull platforms or ecosystems may include incubators, telecenters, grassroots innovation funds, innovation networks, ICT diffusion programs, open source software, and open government data, among others.

government also require preparing public agencies to respond to feedback and to the demand for more information and engagement.

New ICT tools and platforms support collaborative, networked, and grassroots innovation for OSI development<sup>76</sup>. Mobile phone penetration throughout North Africa provides a widely shared platform for this collaborative innovation. However, collaborative innovation will also require re-learning skills and changing attitudes. The new collaborative technologies make the process easier, but changing attitudes, habits and practices takes time, persistence, and leadership. Change management capabilities and strategic communication programs can play an important role in fostering such changes.

### ***Pursuing Diffusion and Inclusion***

To promote diffusion and inclusion through ICT, countries may set up and scale inclusive vocational training programs. These can include special training programs that can target disadvantaged groups such as young women. Skills development should not only position young jobseekers for the global IT industry but for local, smaller enterprises as well. IT companies need skills such as agile computing. Training programs should be scalable, through “training-of-trainers” programs and effective industry links. They should build networks between industry and educational institutions to enhance youth employability and innovative research. These networks will result in curricula and training programs that develop applied skills that match the demand from industry. Leveraging advanced networks and private sector corporate social responsibility initiatives, these networks can enable students with increased access to ICT-enabled facilities in both rural and urban areas.

While ICT is likely to be an essential tool for countries to compete in a global economy, the distributional implications of ICT revolution are likely to be profound and must be explicitly addressed. To ensure that transformation is both sustainable and equitable, effective adopters of ICT have strived to diffuse ICT and capture network externalities, and at the same time, addressed the digital divide in all its forms, and starting at early

stages with affordable access and widespread e-literacy. Outsourcing of cyber services is a promising source for employment for some countries, but it cannot be sold as a primary channel to addressing the massive problems of unemployment and underemployment. So, the search for inclusion must go beyond the ICT sector itself, and cover ICT applications across many public services, human development and livelihood strategies, and employment opportunities that would benefit both the poor and those disadvantaged by the technological revolution. ICT diffusion programs may also target small enterprises to enhance their productivity, access to information, and opportunities for growth.

North African countries, particularly the least wealthy and most populous, may need to develop mechanisms to promote “frugal” innovation and affordable solutions that are co-created with the poor and their SIs to address their pressing needs. Countries can seek ways to integrate ICT in pro-poor policies and programs to enhance effectiveness and reach, and accountability to the beneficiaries. The ICT revolution is likely to do the most good for the poor when ICT is systematically integrated into sectors of major consequences to the poor such as rural development, social protection and public works programs.

The five fundamentals discussed above—vibrant ICT ecosystem, holistic strategy and future orientation, leadership and institutions, local initiative and learning, and diffusion and inclusion—interact, and can be mutually reinforcing in support of sustained transformation. Good leadership envisions the road ahead and build consensus for the long term. Commitment to experimentation and learning helps maintain policy flexibility and avoid ideological lock-ins, while securing future orientation and sustained commitment to OSI development. Digital inclusion can enhance social cohesion and human resources development, and such inclusion can be achieved only through national consensus, institutional innovation, and local experimentation and learning. In turn, widespread diffusion of ICT and its tangible benefits lend support to visionary leaders, robust institutions, and social consensus for effective e-transformation. These are some of the many possibilities for a virtuous cycle and promising future.

<sup>76</sup> Singapore, with a tradition of top-down driven strategy, has recently reoriented its transformation efforts to rely on collaborative government and collaborative innovation. Government still steers the fundamentals such as developing an enabling policy environment, co-investing in broadband, and promoting partnerships for innovation and technological capabilities. But it is learning to listen to clients, to seek partners, and to collaborate with all segments of society.

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