



وزارة الإتصالات و تكنولوجيا المعلومات

Ministry of Information and  
Communications Technology

# The e-Readiness Assessment of The Hashemite Kingdom of Jordan 2006



Virtually yours الإتصال للمعرفة

# The Hashemite Kingdom of Jordan e- Readiness Assessment

## Executive Summary

e-Readiness is defined as the degree of preparation of a nation or community to participate in and benefit from ICT developments<sup>1</sup>. Information society on the other hand is the coherent development of the business life, the citizens and the government via the effective use of technology. Therefore the extent of the adoption of Information and Communication Technologies as the means of interaction between the government, the citizens and the businesses within a regulatory framework in a country is a precise indicator of its proximity to becoming an information society and e-Readiness can be interpreted as a measure of the extent of this adoption and the country's potential to do so further.

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<sup>1</sup> United Nations Networked Readiness Index Framework 2003-2004

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Undertaking the transition to an information society not only entails vast amount of changes to be implemented in a country in many areas but also the sound coordination and planning of these changes. Especially in the last decade, The Hashemite Kingdom of Jordan has moved very firmly and fast in setting the strategies, establishing the necessary institutions and enacting the laws to enable Jordan to move forward rapidly. The pace of the progress in some areas has been far above that of developing countries' and Jordan's regional counterparts and valuable achievements have been accomplished in connectivity and infrastructure as well as in other aspects of the society.

His Majesty King Abdullah II has selected the ICT sector as having the greatest potential for contributing positively to Jordan's future success and growth. The Hashemite Kingdom of Jordan has made headway in ICT with the liberalization of the telecommunications market and establishment of the independent Telecommunications Regulatory Commission. The current fixed line infrastructure in Jordan is very reliable and alternative infrastructural

changes such as the establishment of National Broadband Network has recently gained momentum. The Mobile and ISP markets in Jordan are highly advanced and moving fast towards becoming fully competitive. Even though extensive improvements have been made in Jordan in ICT, empowerment of the regulatory body and affordability bottlenecks that impede higher penetration rates still remain as problematic issues.

For accomplishing future success and growth, His Majesty not only prioritized infrastructural and policy developments but also recognized the vitality of the fact that these changes needed to be implemented at all layers of the society. Therefore, great emphasis has been given to enhancing the human capital, the macroeconomic conditions and the business environment and the government itself. Public private partnerships with international and regional companies have been formed to undertake many initiatives to achieve countrywide development.

Regarding human capital, a great deal has been accomplished so far including the high speed fiber connection of

public universities and public schools through the National Broadband Network with more schools on the way in the near future. Knowledge stations have been established nationwide and trainings have been provided to more than 70,000 people since 2001. Improvements in student teacher ratios and student computer ratios along with better Internet access in schools have been attained to achieve a superior quality of education. The number of people graduating from ICT related fields has substantially increased and Jordanians have exceedingly become a sought after workforce in the region and in the world. The greatest challenges faced concerning human capital include the relentless brain drain of the highly qualified workforce, the gap between the industry's needs and the skill sets of fresh graduates and issues related to the speed and reliability of connectivity in schools.

Substantial changes have occurred in the macroeconomic structure and the business environment of Jordan with sustainable economic growth for 5 consecutive years, increase in Foreign Direct Investment, modernization of the existing laws and enactment of new

ones including the Investment Promotion Law and Electronic Transactions Law. Nevertheless, business adoption has stayed at very low levels and the general business environment is still fairly immature. With respect to leadership and vision, it is not an exaggeration to say that The Hashemite Kingdom of Jordan is far beyond the other regional countries if not one of the world's best. Substantial advancement with respect to shared services such as the establishment of the Secured Government Network has been accomplished. Computer literacy trainings and technical courses for government employees have been conducted. e-Government has been a highly prioritized area of action and some e-Services have become operational and the e-Government portal will be launched soon. Although much progress has not been accomplished in this area, the e-Government Program within Ministry of Information and Communication Technologies has formed a detailed e-Government strategy addressing the current problems and possible solutions and the strategy will be presented to the Cabinet soon.

The progress in the IT Industry in The Hashemite Kingdom of Jordan is remarkable as the growth rate in the sector since 2001 is well above world averages. The growth of the IT industry is a good signal and is a net result of all the initiatives that have been put into action, starting with the REACH initiative. Further emphasis on developing IT exports will improve the sector competitiveness and strengthen the sector positioning within the Middle East. As has been indicated as a challenge faced regarding the human capital in Jordan, brain drain is a factor that affects the IT sector as well. The highly qualified human resource in Jordan is being lost to gulf countries. Moreover, with its qualified human resource and developed ICT infrastructure and the patent laws and regulations in place, it is unanticipated in Jordan that innovation and R&D activities in the academic and private sector are extremely underdeveloped. Rather, the main challenges with respect to the development of R&D activities are insufficient funding and lack of organized efforts. Private sector companies lack the proper incentives to undertake R&D activities while

professors at universities dedicate most of their time to classroom teaching. The little R&D efforts of the professors are scattered and fail to be organized in a broader level to make impact.

Consequently, The Hashemite Kingdom of Jordan has thrived in many aspects of the society although there are still challenges that need to be overcome to complete the transition to an information society. The Hashemite Kingdom of Jordan has so far performed well with respect to the establishment of the regulatory framework in the ICT sector, enhancement of the human capital, e-Leadership and the IT Industry. Nonetheless, The Hashemite Kingdom of Jordan has lagged behind the desired level and targets with respect to affordability, quality and reliability of connectivity, the macroeconomic structure, business adoption, expansion of e-Government services and R&D. Further development of the legal and regulatory environment, better coordination and implementation of current initiatives and efforts and resolution of affordability bottlenecks are identified as issues that need to be immediately addressed in Jorda

## Purpose of the Document

The first e-Readiness Assessment of The Hashemite Kingdom of Jordan was conducted in 2002. This document aims to evaluate the achievements of Jordan with respect to e-Readiness since the first assessment and identify areas that still remain underdeveloped and require further action to be taken.

This document approaches assessing e-Readiness in Jordan from four directions:

- Benchmark Jordan's progress in utilizing information communications technology (ICT) against that of other nations that have succeeded in deploying information and communications technologies as major economic drivers
- Identify the achievements of Jordan since the 2002 assessment and the remaining gaps. The comparative statements made within this document are done so in reference to changes since the 2002 assessment.
- Highlight Jordan's Information and Communications Technology strengths, successes, opportunities and identify potential ICT-related challenges that could serve as obstacles to Jordan's economic and social sector development
- Underline the ongoing initiatives in Jordan and propose actions that would serve as quickwin solutions and further directional recommendations to close the gap between Jordan's current level and the desired state in terms of e-Readiness.

## Global Comparison

While evaluating the e-Readiness of The Hashemite Kingdom of Jordan; Peppers & Rogers Group focused on five attributes; Connectivity and Infrastructure, Human Capital,

Macroeconomic and Business Environment, Government and IT Industry and Innovation Capacity. A comparison of the sample of 18 countries including Jordan is presented with respect to these five attributes according to the ranking criteria described below.

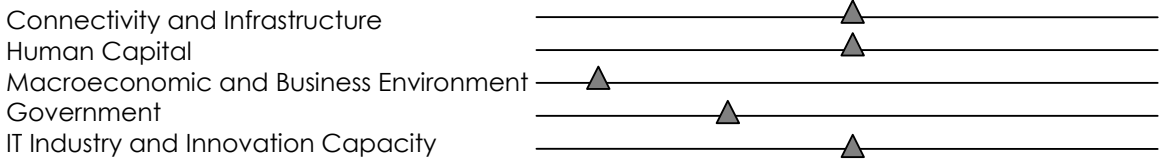
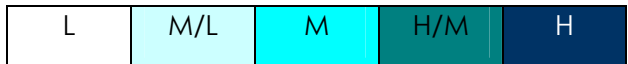
High	Indicates that the country is highly advanced in most components of the attribute
High/Medium	Indicates that the country is advanced in some components of the attribute
Medium	Indicates that the country meets basic requirements of the attribute with potential areas of improvement
Medium/Low	Indicates that the country lacks some basic requirements of the attribute with vital areas of improvement
Low	Indicates that the country lacks numerous basic requirements of the attribute with major needs for improvement

The five interrelated attributes of e-Readiness have been evaluated according to the rating scheme mentioned in the chart above. The scores for the 18 countries are summarized in the chart below.

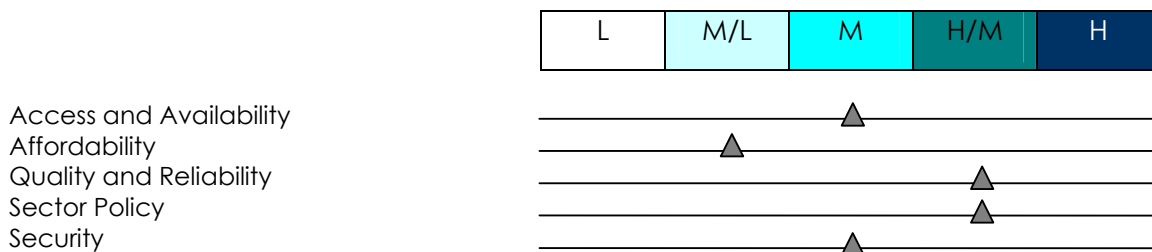


	Connectivity and Infrastructure	Human Capital	Macroeconomic Structure and Business Environment	Government	IT Industry and Innovation Capacity
United States of America					
Singapore					
Canada					
Ireland					
Israel					
Czech Republic					
United Arab Emirates					
Turkey					
India					
Mexico					
China					
Jordan					
South Africa					
Egypt					
Kuwait					
Lebanon					
Morocco					
Oman					

JORDAN'S ATTRIBUTE SCORES



## Connectivity and Infrastructure



Connectivity and infrastructure imply the extent of the existence of the core infrastructure of ICTs and the extent of their use in a country. While assessing Jordan with respect to connectivity and infrastructure, access and availability, affordability, quality and reliability, sector policy and security have been thoroughly studied.

Jordan's ICT industry has been attracting international and local investors and many public private partnerships have been formed, carrying Jordan further down the road to becoming a hub in the region. Jordan's appeal to foreign investors is buried within many positive factors that materialized in Jordan recently. His Majesty King Abdullah II's strong support, leadership and visionary perspective regarding the key role of ICT in the economic prosperity of Jordan has set the basis for all

advancements in this area. The improvements that followed His Majesty's nationwide prioritization of ICT include world-class infrastructural developments, a liberalized telecommunications market and an independent regulatory framework. Consequently, Jordan has expanded beyond many of its regional counterparts and advanced greatly in connectivity and access.

### Summary of Findings

Recent trends of change related to connectivity and infrastructure include stagnation of fixed line growth, increased competition and further advancements in the mobile market and the slow but firm uptake of competition in the ISP market. More specifically;

- Mobile-fixed substitution has caused fixed line penetration to stop at a

lower level than comparables in the Middle East and stagnated fixed line growth at 11%, which forms a barrier for broadband penetration in the future.

- Mobile penetration is growing rapidly and reached 64%, mainly due to significant drops in mobile charges.
- The share of business customers stayed constant in fixed line. The billing structure in fixed line is changing with rising subscription fees and decreasing usage charges although overall costs are decreasing. This trend is visible in the billing structures of businesses in developed countries and is expected to be the case for Jordan in the future.
- PC penetration is growing annually at 27% but it is still behind desired levels due to affordability issues. In countries with GDP per capita below \$7500, PC penetration is a matter of affordability and Jordan experiences difficulties in strengthening its PC penetration and Internet access due to the lower level of average GDP per capita. 89% of the stakeholders of the Jordan e-Readiness assessment

perception survey have also identified the high PC costs and internet prices as the most important obstacle against the increase of PC and internet penetration in Jordan.

- Although competition in the ISP sector is at a satisfactory level with respect to comparable countries, the market is dominated by two players; Wanadoo and Batelco with 43% and 40% market shares respectively. This structure is not expected to change unless the use of the infrastructure is regulated more effectively.
- Broadband penetration is still at low levels with 0.5% and is very immature.
- Telecommunications sector is a key industry for the Jordanian economy with 10% contribution to GDP.
- The mobile market in Jordan is the most liberalized in the Middle East. Still, the market share of largest mobile operator is the largest when compared to any OECD country, which indicates additional regulation to foster competition in the mobile market.
- The quality and reliability of the telecommunications infrastructure is above global standards.

## **Achievements since 2002**

- 8 public universities have been connected through a fiber network and more than 3000 public schools are currently being integrated.
- Two new mobile operators have become operational, totaling four outstanding operators in the market.
- 1 individual license and 22 class license applications have been approved as of February 2006 and Batelco has been awarded with the first individual license.
- Mobile penetration rates have almost tripled and mobile costs have decreased significantly.

## **Gaps**

- Fixed line penetration, both in residential and business customers has leveled off.
- Broadband penetration rates are at very low levels.
- PC penetration and Internet usage growth rates are slower than desired to catch up with the developed countries.



Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▪ Reliable fixed infrastructure</li> <li>▪ Second fixed operator license and National Broadband Network as alternative infrastructures</li> <li>▪ Competitive mobile and ISP markets</li> <li>▪ Dedicated government initiatives for education and access</li> </ul>	<ul style="list-style-type: none"> <li>▪ Monopoly telecom provider in fixed access</li> <li>▪ Low GDP per capita impedes further progress in penetration of all ICT equipment and services</li> <li>▪ Empowerment of the regulatory body</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>▪ Modern and comprehensive framework of regulations to establish competition in the use of infrastructure</li> <li>▪ Full privatization of Jordan Telecom</li> <li>▪ Utilization of National Broadband Network as an alternative and high capacity infrastructure</li> <li>▪ Global low price PC production initiatives and direct follow-up in Jordan</li> </ul>	<ul style="list-style-type: none"> <li>▪ Possible delays in enabling competition on the use of infrastructure resulting in high costs for service providers which will constitute a barrier in front of further penetration</li> </ul>

**Ongoing Initiatives**

- PC@Every Home initiative targeted to offer affordable purchasing schemas to a large segment of the society to overcome PC affordability problems.
- National Broadband Network is being built as a high capacity fixed network for high speed access in the schools.

- Through the knowledge stations, the government is providing free PC usage and Internet access to 95% of the population.
- MoICT has put the full privatization of Jordan Telecom in the latest telecommunications sector policy to further improve the competition in the fixed communications sector.

## Directional Recommendations

- **Implement the necessary regulations to further improve effective competition in the mobile market.** Despite the fact that Jordan has the most liberalized mobile telecommunications market in the region, enabling further competition among players requires additional regulations. Regulations such as number portability and mobile virtual network operator as well as competitive laws on binding-agreements regarding purchases from different operators will help enhance the competitive environment in the mobile market.
- **Fully privatize Jordan Telecom.** Government ownership of regulated institutions generally impedes the effectiveness of regulation and prevents increasing levels of empowerment. Full privatization of Jordan Telecom has the potential to increase government empowerment on incumbent and has the potential to power TRC by additional governmental support.
- **Critically consider allowing alternative infrastructures such as commercialization of NBN to enable competition in fixed and ISP sector.** Government subsidized NBN and first fixed infrastructure license of Batelco helps the country to build alternative infrastructures against the monopoly of JT. Easing infrastructure competition and shortening time to market will help Jordan make further progress in attaining additional developments in the ISP sector and will also reduce access prices and improve penetration. However, policy makers have to make sure that the license owners have the chance and available market environment to be operational for a liberal telecommunications market.
- **Use of local loop, a scarce resource, should be made available through regulations.** No alternative infrastructure builder has the capacity, resources and enabling environment to build final access to points. Effective regulation of local loop and licensing alternative technologies to end points is key for effective competition.

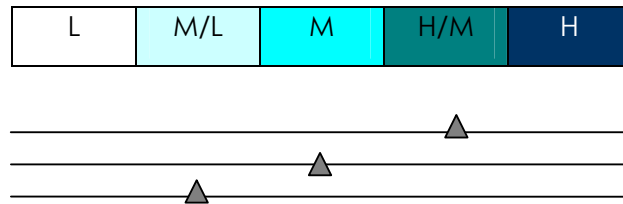
- **Collect official information society and ICT sector related data for measurement, management and planning.** Limited availability and reliability of sector specific data is an inhibitor for proper measurement, monitoring and planning of the sector. New ICT promotion strategy highlights certain definitions and puts the guidelines. Still, national institutions like the Department of Statistics should start collecting ICT sector related statistics and information society data from households.
- **Plan for low cost PC programs.** Global initiatives on low cost PC programs are a major opportunity for improving PC penetration through provision of affordable equipment.

### **Action Recommendations**

- **Continue investing in computer literacy training to help address the affordability barrier.** Public access points are a potential solution against the PC affordability barrier. Knowledge stations, labs in mainstream education system and other mediums like Internet cafés provide the required access to citizens. Increasing computer literacy and citizens capabilities will increase public access usage and reduce affordability barrier.

## Human Capital

Availability and Quality of Workforce  
Training and e-Education  
Attraction and Retention



### Summary of Findings

Through the human capital perspective, citizens are the core of the information society. Peppers and Rogers Group assessed Jordan in terms of human capital's contribution to Jordan's transition to the networked world from availability and quality of the workforce, presence of proper trainings and e-Education opportunities and the facilitation of retaining the highly capable human capital.

As a consequence of the actions taken, human capital in Jordan has prospered in ways beyond in many of its regional counterparts. The Jordanian government has established public private partnerships with local and international companies to invest in the further training and education of the human capital, particularly targeting advancements in ICT capabilities of the Jordanians.

A young and highly qualified workforce is Jordan's most valuable asset for joining the networked world and for further economic growth. In this regard, human capital has been embraced as an area of primary action by His Majesty King Abdullah II within the Reach initiative and most of the initiatives that followed its launch were steered towards the enhancement of this already competent human resource.

- Most of the ongoing initiatives in Jordan have so far served to develop the human capital in Jordan particularly concentrating on the training of the students and the youth. Jordan's largest population segment is the 14 year old or younger segment accounting for 38% of the population. This fact clearly rationalizes concentrating initiatives on the youth in Jordan.

- Jordan has unfortunately not yet reached the desired level of literacy with almost 90% literacy rate but it still is a leader among the regional countries. e-Literacy is an issue that still needs close attention in Jordan. Promotion and motivation of Internet usage through the provision of wider local content and the launch of the e-Government portal are important in improving the e-Literacy of the Jordanians and in enabling an easier and faster transformation to an information society.
- Problems related to connectivity and affordability issues causing low PC penetration and insufficient Internet access are some factors that adversely affect the advancement of the ICT capabilities of Jordanians. National Broadband Network and Knowledge Stations constitute important tools to overcome these problems. Knowledge Stations are not only important for providing trainings to Jordanians, but if promoted appropriately, can be utilized for motivating Internet usage of the public and hence help overcome affordability issues caused by high PC costs. National Broadband Network is a great platform to solve connection problems inhibiting the effective use of e-Content and e-Learning materials. Moreover, NBN can be utilized as an alternative nationwide broadband access network that will enable Jordan to offset Internet access bottlenecks caused by affordability problems.
- Jordan is a leader among the Arab countries in terms of educational spending and with 5,6% of GNI spent on education, Jordan is the third highest spending country in education among the global benchmarks. Student enrollment figures in Jordan are also at satisfactory levels especially in secondary and tertiary enrollment. Challenges faced in Jordan regarding education include quality issues such as high student to computer ratios and low speed and reliability of connections in schools used for e-Learning.
- Another issue Jordan faces related to its qualified human capital is brain drain. Due to the insufficiency

of the compensation packages that are offered to the highly qualified workforce, Jordan fails to compete with the other countries in the region and is unable to retain this entire workforce. Jordan ranks 14<sup>th</sup> among the global benchmarks with respect to retaining its qualified workforce.

- Finally, a gap between the needs of the industry and the skill sets of the graduates is observed in Jordan. This gap can be attributed to both the mismatch between the academic curricula and the technological advancements in the IT sector and to the problems that are being faced in the quality of education resulting in insufficient skills of graduates.

### **Achievements since 2002**

- Human capital has become the area with the most number of initiatives. Out of the 24 initiatives, 21 of them apply to human capital in some respect.
- Although there has been a decrease in the student teacher ratios to 21.7, globally ranked the ratio in Jordan is still relatively high

and Jordan ranks 10<sup>th</sup> among the global benchmarks.

- Growth in expenditure per student surpassed the growth in GDP per capita resulting in a 3% increase in expenditure per student as a percentage of GDP per capita.
- High speed fiber connection of 8 public universities and 230 public schools through NBN has been completed with more than 3000 schools on the way. Hence, increase in schools with Internet access has been accomplished and currently Jordan ranks 9<sup>th</sup> among the global benchmarks with respect to Internet access in schools.
- 115 knowledge stations have been established and more than 70,000 people have been trained which has been an important factor in enhancing ICT capabilities of Jordanians.
- 50,000 students and 2300 teachers have gained access to the Internet in 100 schools as part of the Discovery Schools track of the Jordan Education Initiative.
- With Intel Teach to the Future Program, 22000 teachers have been trained so far out of 55000 and 5000

are planned to be trained annually going forward.

### **Gaps**

- Although highly qualified and relatively cheap human capital is an inequitable asset for Jordan, insufficient collaboration between educational institutions and the industry sets a barrier against the complete utilization of the existing capital and results in idle capacity. Jordan should have a country-wide plan of the number of engineers or IT related graduates needed per year.
- The skill sets of the graduates and those required by the industry leaders in Jordan do not completely match because university curricula do not reflect industry needs.
- Although high priority has been given to ICT in education, most of the universities started to offer new programs related to ICT instead of introducing the use and utilization of ICT as a tool in the existing programs which was the fundamental target.
- The Ministry of Information and Communication Technologies and Ministry of Education are involved in

many common initiatives which require a higher level of collaboration between the two institutions.



Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▪ Strong leadership and vision</li> <li>▪ Clear national strategy</li> <li>▪ Multiple initiatives on various topics</li> <li>▪ Young and highly qualified population</li> <li>▪ Strong English skills of the population</li> <li>▪ Sufficient school enrollment and funding for education</li> <li>▪ High number of ICT graduates</li> <li>▪ Good cultural fit of the human resource</li> <li>▪ No censorship of the Internet</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mismatch between number of jobs and graduates</li> <li>▪ Mismatch between industry needs and higher education curricula</li> <li>▪ Limited planning and project management skills</li> <li>▪ Slow and unreliable connection in schools</li> <li>▪ Issues in quality of education</li> <li>▪ Insufficiency of motivational elements for citizens: widely used e-Government services, ICT communication strategy, broad local content</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>▪ Availability of funds for education</li> <li>▪ Concentration of trainings on youth</li> <li>▪ Teacher trainings</li> <li>▪ Integration of ICT into existing programs and curricula</li> <li>▪ Leveraging broadband infrastructure to provide access to knowledge resources to increase competitiveness</li> </ul>	<ul style="list-style-type: none"> <li>▪ Financially advantageous neighboring countries leading to brain drain</li> <li>▪ Insufficient coordination between government entities regarding implementation of initiatives</li> <li>▪ Insufficient coordination between universities and the industry</li> </ul>

**Ongoing Initiatives**

- The Reach initiative aims at creating ICT related jobs and increasing employment.
- The National Broadband Network will help solve connectivity problems in schools that impede the complete utilization of the e-Learning material.

- Knowledge Stations are critical in providing trainings to the community to help close the digital gap and improve the ICT capabilities of Jordanians.
- The Jordan Education Initiative is the most comprehensive initiative regarding the enhancement of the human capital and the integration of the education system with ICT, in

terms of development of e-Learning materials and e-Curricula.

- Intel Teach to the Future programs are critical in the training of teachers competent with ICT capabilities to increase e-Literacy in Jordan.
- The IT.JO initiative provides an important platform for ICT graduates to easily be aware of employment opportunities in the sector.
- The NetCorps initiative serves to develop e-Literacy in Jordan and make it easier for the trained and experienced interns to find jobs.

#### **Directional Recommendations**

- **Improve the regulatory framework and establish security systems in schools to enable a more complete utilization of the e-Content and e-Learning material.** Internet security is an area of primary concern and its insufficiency is currently causing the inefficient utilization of e-Content and the e-Learning material in schools. Therefore, establishing the necessary regulatory framework for Internet security is critical for the uptake of e-Education.

#### **Action Recommendations**

- **Offer public access in schools through NBN.** After the completion of the National Broadband Network, not only connectivity problems in schools that impede the complete utilization of the e-Learning material schools will be solved but the fiber speed Internet network can be offered to the public for Internet access after school hours and this way affordability issues that hinder the improvement of e-Literacy of the Jordanians can be overcome.
- **Encourage better utilization of Knowledge Stations as public access points.** Knowledge Stations are critical in providing trainings to the community to help close the digital gap and improve the ICT capabilities of Jordanians. Nevertheless, utilization of knowledge stations as public access points rather than sole training centers would facilitate solving affordability issues in Jordan.
- **Rather than focusing further on pilot schools, deployment of the successful services on other schools**

**would allow the broader use and faster nationwide adoption of ICT in education.** The Jordan Education Initiative is critical for the integration of the education system with ICT, in terms of development of e-Learning materials and e-Curricula. However rather than focusing further on pilot schools, deployment of the successful services on other schools would allow the broader use and faster nationwide adoption of ICT in education.

- **Establishment of a coordinating council between the universities and the private sector.** A council can be established providing coordination between the universities, the Ministry of Higher Education and the private sector through Int@j. The council will be responsible for ensuring that the curricula at universities are up to date and ICT is incorporated efficiently. Moreover, the council will be in close contact with the private sector in terms of understanding and analyzing the employment needs of the sector.

- **Initiate an apprentice system in the ICT industry.** Gainful employment of the youth is a primary concern for Jordan. Although interns are trained through the NetCorps initiative, the introduction of a program to bring in university graduates into the industry via a certification program would be highly beneficial for creating the parallelism between the industry needs and the skill sets of the graduates. The organizer role for this initiative can be assumed by Int@j and to motivate participation of private companies in this system, tax subsidies can be offered.
- **A Nation-wide communication strategy should be developed.** To ensure the sustainability of e-Initiatives and to create awareness of ICT in the society, a clear nation-wide communication and promotion strategy should be developed. Even though initiatives such as Intel Club Houses have been launched for this purpose, they have not been completely deployed and failed to serve their purpose. The results of the information society strategy will be

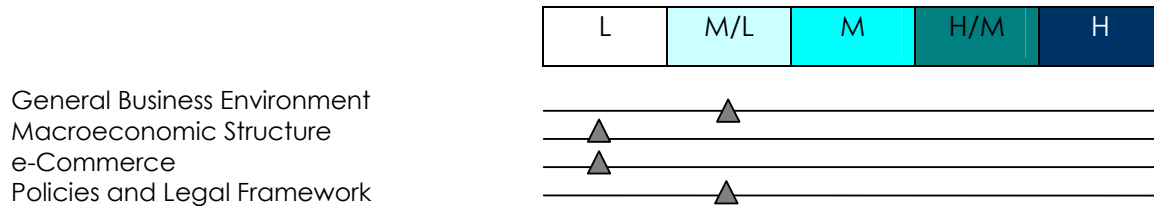
attained much faster and smoother once a communication strategy is set as such a strategy will enable the right messages to reach the right communities through the right media, channels and advertisements.

- **Promotion of online job placement programs.** Development and promotion of the use of the IT.JO website (particularly at Knowledge Stations) and partnerships with recruitment agencies in the Middle East would help solving problems that the citizens, especially new graduates, are facing during job

searches. This will also facilitate the matching of appropriate job opportunities with the right people.

- **Conduct a study to evaluate the quality of education and skills of graduates of different universities.** A study can be conducted among the private sector companies to gather their opinions on the quality of education and quality of the graduates of the different universities in Jordan with the objective being to better align private sector needs and education curricula.

## Macroeconomic and Business Environment



Macroeconomic and Business Environment provides insight to the economic perspective of e-Readiness. It involves the business readiness of the country, with regards to the business environment, general macroeconomic structure and strength as well as the political and legal framework of Jordan. e-Commerce, measuring the e-Business adoption status, is an element within the macroeconomic and business environment that aids e-Readiness.

Macroeconomic and business environment's contribution to e-Readiness can be approached from two perspectives. Strong macroeconomic fundamentals are a necessity for the development of all sectors including the ICT sector in a country. Incidentally, economic and political stability will enable more ICT companies to invest in Jordan, the government to allocate more funds for

the promotion of ICT, the businesses to invest more for IT infrastructure and the citizens to be able to afford ICT products and services. In this regard, the suitability of the macroeconomic environment is necessary but not sufficient for the improvement of e-Readiness. Businesses are also a critical element of the information society and diffusion of ICT into businesses is essential for the achievement of productivity growth and the efficient functioning of the information society.

### Summary of Findings

Macroeconomic and Business Environment poses several challenges for Jordan, more so than other dimensions of e-Readiness. Although Jordan has proved to be a stable economy and attracted investments in the recent years, issues of high significance such as high bureaucracy and lack of cyber crime and privacy

laws have impeded Jordan from reaching the level of superiority it can attain.

- Jordan has achieved sustainable growth in the last 5 years with almost 8% growth rate in 2004 and GDP per capita reaching \$4500. However rising oil prices constitute a risk factor to macroeconomic stability.
- As a result of the stable economic situation, total FDI in Jordan has increased and reached 12% of GDP in 2005, but ICT FDI has underperformed compared to general inflow to the country.
- Jordan has an advantage in attracting FDI as it has access to competitive and qualified labor
- Jordan's credit rating and the rule of law are the greatest barriers for FDI attraction and general business environment. e-Readiness Assessment Survey reveals that 61% of the respondents think that inadequate quality of the legal system is an important barrier.
- Over-burdensome procedures and bureaucratic red tape are the main reasons behind the inefficiency of the legal framework. Furthermore the high number of procedures

undermines ease of doing business and Jordan ranks 74<sup>th</sup> in terms of ease of doing business in the world, (also ranking low among the sample of benchmark countries in this study). Hence business process improvement and reengineering should be made a top priority in Jordan.

- Jordan has sufficient access to finance, but initiatives like ICT-SME Risk Capital Fund for easing access to finance should be implemented.
- Diffusion of ICT into the businesses is one of the major challenges for augmenting competitiveness of the general business environment. Jordan's most important weakness in macroeconomic and business environment is the lack of diffusion of ICT into businesses. According to the survey conducted by WEF, Jordan ranks second from the bottom in our sample of benchmark countries.
- e-Commerce volume is limited in Jordan.

## Achievements since 2002

- Sustainable economic growth has been accomplished for 5 consecutive years.
- FDI as a percentage of GDP has increased significantly.
- Days to start a business have been reduced to 14 days through one-stop-shop's services in Amman. However since municipalities and other procedures affect this metric and time to start business is measured for the whole process (rather than only one stop shops) time to start business is still 36 days according to World Bank statistics.
- Electronic Transactions Law has been passed.

## Gaps

- Lack of cyber crime laws, privacy laws, secure transaction certification and PKI persist in Jordan.
- Business process improvement and reengineering in government for business services is needed as the number of procedures for business transactions is substantially above world standards.
- G2B electronic services exhibit a slow pace of improvement.
- FDI growth targets in ICT have not materialized.

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▪ Growing and globally competitive economy</li> <li>▪ Competitive tax rates due to investment laws</li> <li>▪ Low corruption rates</li> </ul>	<ul style="list-style-type: none"> <li>▪ High unemployment rate</li> <li>▪ Low credit rating</li> <li>▪ Inadequate quality of legal system</li> <li>▪ High bureaucratic red tape</li> <li>▪ High costs of starting a new business</li> <li>▪ High number of procedures in government to business transactions</li> <li>▪ Relatively low diffusion of ICT into businesses</li> <li>▪ Lack of cyber crime and privacy laws, digital certification, PKI and e-payment infrastructure</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>▪ Increasing attention to Jordan and FDI growth</li> <li>▪ Initiatives aiming to increase access to finance</li> <li>▪ Excess liquidity in the Middle East</li> </ul>	<ul style="list-style-type: none"> <li>▪ Rising oil prices</li> <li>▪ Instable regional environment</li> </ul>

## Ongoing Initiatives

- Electronic business development (EBDA) initiative, aims to develop awareness and provide trainings for the development of e-commerce in Jordan, but the project did not materialize yet.
- The ICT-SME risk capital fund aims to ease the access to finance problems for SME's.

## Directional Recommendations

- **Prioritize some G2B e-services such as National Legal Network to overcome inefficiencies in rule of law and general business environment.** Inefficiency in the legal system is one of the main problems for Jordan's general business environment. e-Services are a great tool to achieve efficiency in these services and to create transparency. Moreover, if the use of these G2B e-services is gradually made mandatory, business adoption of ICT (which is currently very low in Jordan) will be stimulated and computer and internet penetration among businesses will be boosted.
- **Prioritize business process improvement and reengineering efforts in G2B services.** Over-burdensome procedures and bureaucracy are the main reasons for the inefficiency of G2B services in Jordan, which impedes the competitiveness of the general business environment and creates an overall inefficiency for the economy. Moreover, 83% of the respondents have identified unaligned business processes as the greatest barrier against the collaboration between the government entities. Therefore concentrating BPR efforts primarily on G2B services will be greatly beneficial. Improved G2B services will also enhance the ease of doing business in Jordan which in turn will positively affect FDI attraction and general efficiency in the business environment.
- **Promote e-Commerce:** An e-Commerce and e-Banking awareness campaign developed by public private partnerships of banks and the banking association would motivate the citizens and the

businesses to utilize these functionalities more.

- **Develop a support scheme for ICT investments of enterprises to enable faster diffusion of ICT into businesses:**

Diffusion of ICT into business is limited in Jordan. Due to affordability reasons and network externalities, firms may be reluctant to invest in ICT equipment. Therefore, the government can play an active role in this area by subsidizing ICT investments of businesses.

#### **Action Recommendations**

- **Enact cyber crime law, secure transaction certification and privacy laws to establish a secure environment for e-Commerce.**

- **Develop PKI infrastructure to enable high security in e-Business:**

PKI infrastructure will increase the security level of transactions and will create more secure environment and higher use of e-Commerce.

- **Develop the business side of the e-Government portal:** Business information portals that provide G2B

services, information on procedures, information on commercial relations and trade, and sectoral information help most countries in promoting e-Business. Such a portal is currently missing in Jordan and establishment of it would fasten the take-up rate of e-Business in Jordan.

- **Develop a “Unique ID number” system for businesses and establish a business information database:**


Unique business IDs and a business records database are essential requirements for online migration of most of the G2B services.

- **Revise new business establishment criteria:**

Currently, the establishment of a business outside a commercial area is not possible in Jordan. Modification of this law to encourage entrepreneurs and e-Businesses is necessary.

- **Enable back-office integration within One-stop-shops and their country-wide deployment:**

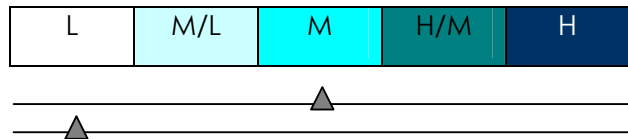
Currently there exists no back-office integration within one-stop-shops and they are only operational in Amman. Procedures within one-



stop-shops should be integrated  
and one-stop-shops should be  
made available in other regions of  
the country.

## Government

e-Leadership  
e-Government



The government assumes two key roles during the transition to an information society and from an e-Readiness point of view these two roles - e-Leadership and e-Government - are subject to analysis. e-Leadership is the extent of the leadership the government provides in all ICT activities, the coherent action of all government departments and government's success in promoting ICT. Government assumes a critical role for the information society as its strong leadership and support adds greatly to the possibility of success of the e-Initiatives. e-Government on the other hand suggests how successful the government is in the provision of e-Services and adoption of ICT within the governmental structure as well as at maintaining high level of ICT use within the society. e-Government services enable higher efficiency in the government, in businesses and for citizens. Efficiency savings through online interactions with the

government can be enormous and translates into productivity growth. Furthermore by utilizing ICT effectively, the government can achieve superior quality in its services. Since e-Transformation is not only a technology deployment project but also entails the complete transformation of all processes and people, it provides the basis for the improvement of the quality of all electronic and traditional government services. Another aspect of government's contribution to e-Readiness is through policy setting. Better utilization of information in the decision making processes of the government help optimize the policies of the government.

### Summary of Findings

His Majesty King Abdullah II initiated the e-Government National Program with the vision of developing Jordan both economically and socially by providing access for everyone to

government e-Services and information irrespective of location, economic status, ICT ability and education. To that end, a number of e-Services have become operational and the e-Government portal as an informational platform will be launched soon.

- A number of ongoing initiatives including REACH and Public Sector Reform support Jordan's citizen and client centric vision for e-Government.
- e-Government program in the Ministry of Information and Communication Technologies implemented important infrastructure and shared service projects (e.g. enterprise architecture, secured government network, data operation center etc.), but the progress at individual ministries is still limited despite a number of e-services are launched since 2003. Currently the e-Government strategy addressing the institutional, legal, infrastructural and business aspects of the e-Government program has been formed and will be presented to the Cabinet.

- Due to slow progress in e-Services, Jordan's global ranking in the provision of e-Services has declined during the last 3 years. However, e-Services in Jordan are relatively advanced within the region and an opportunity to leapfrog others exists due to the advanced infrastructure. The major difficulty in realizing this opportunity is the insufficiency of implementation skills. The results of the e-Readiness Assessment of Jordan perception survey also support this fact. 83% of the respondents have identified lack of project management skills to be the major barrier against successful e-Transformation within the government in Jordan.
- Fast progress has been achieved in developing the public sector connection infrastructure and nearly 80% of all government institutions are connected to Internet.
- e-Leadership is one of the areas that Jordan is the strongest in and the Jordanian government is highly successful in the promotion of ICT.
- Ministerial governance structures are powerful in leadership but require a great deal of collaboration and coordination for

cross-ministerial implementation where the strength of the e-Government unit and the existence of a Project Management Office gain high importance.

- Due to the absence of a coordinative body, collaboration between government entities is limited.
- MoICT is the main responsible body for policy setting and implementation coordination of ICT strategy. However current working model is not very effective in diffusing the individual ministries and driving change

### **Achievements since 2002**

- Internet connections of public institutions rose with CAGR 33% and reached 92%.
- e-Services in the Department of Land's and Survey; Driver Vehicle Licensing Department, Income Sales and Tax Department, Municipality car and building tickets, business licensing at MIT, Telecom licensing at TRC, the Jordan Information Center (Jordan.jo), Customs Comprehensive Integrated Tariff System, Prime Ministry site, Jordan

Securities Commission web site and other automation projects in ministries have been launched.

- A number of strategic plans have been determined.
- e-Government strategy has been prepared addressing the current issues. A roadmap for the implementation of e-Services is defined within the strategy.
- Enterprise architecture including technological structure and standards, data structure and standards and business process structure has been prepared.
- Secured Government Network has been installed with lease lines and 18 departments have been hooked to SGN since 2003.
- The e-Government portal will be launched as an informational portal.
- 7700 computer literacy trainings and 1200 technical courses have been conducted for government employees.
- Strategic partnerships and framework agreements with some private firms have been established.

## Gaps

- Most of the e-Services of primary importance for the citizens and businesses are not provided online.
- Fast track projects have lasted more than 4 years, which is another signal of implementation problem.
- Most of the governmental departments still do not have complete automation and lack IT transformation projects.
- Lack of an action plan for prioritized e-Government services constitutes a problem in terms of budget allocation and implementation planning.
- There is no visual and content standardization in governmental websites.
- Lack of ICT utilization in government employees: Only 4% of employees actively utilize the Internet.
- Lack of a transactional e-Government portal is a major area of improvement for Jordan.
- Data and interoperability standards have not been implemented in individual ministries.
- NITC has not operationalized to pursue its function as a Project Management Office.



Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▪ Strong vision and objectives parallel to the most developed e-Government strategies in the world</li> <li>▪ Citizen centric e-Government mission</li> <li>▪ Advancement in the development of shared services such as the Secured Government Network</li> <li>▪ High Internet connection rates in public institutions</li> </ul>	<ul style="list-style-type: none"> <li>▪ Lack of project management and implementation skills</li> <li>▪ Lack of citizen centricity in actual implementation</li> <li>▪ Underdeveloped e-Services</li> <li>▪ Relatively low organizational capacity of the e-Government unit and low readiness of some government departments</li> <li>▪ Lack of an action plan and allocated budget for e-Government deployment</li> <li>▪ Lack of collaboration between government departments and unaligned business processes</li> <li>▪ Lack of motivation and ICT utilization in government employees</li> <li>▪ Limited operational leadership from individual ministries in terms of following up the actions</li> <li>▪ Limited formal feedback structures for the development of national strategy</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>▪ Leadership from His Majesty</li> <li>▪ High motivation in IT department Heads</li> </ul>	<ul style="list-style-type: none"> <li>▪ Limited funds</li> <li>▪ Resistance to change from government employees</li> <li>▪ Having e-Government unit in a vertical organization and lack of a body for enabling collaboration among ministries</li> <li>▪ Low utilization of open source software</li> <li>▪ Limited participation from private sector and NGO's in preparation of e-Government strategy</li> <li>▪ Shortage of qualified resources</li> </ul>

**Ongoing Initiatives:**

- ICT literacy program aims to develop the ICT capabilities of Government employees and provide training to government employees accordingly.

- The e-Government program within the Ministry of Information and Communication Technologies has prepared a new strategy and attached action plan addressing

most of the problematic issues and areas.

### **Directional Recommendations**

- **Operationalize NITC.** To facilitate interdepartmental coordination between government entities and raise the implementation level of e-Government services, NITC should be restructured with the required set of capabilities to assume a PMO role as a separate, horizontal body outside the ministerial structure. Consequently the implementation and coordination problems will largely be overcome and the pace of deployment of e-Services will increase
- **Establish coordination mechanisms between the e-Government Program at MoICT, NITC and MoPSD.** Close coordination with NITC and PSD are essential to ensure efficient delivery of e-Government.
- **Prioritize e-Services and create an action plan for the launch of the prioritized ones.** Prioritization of the most essential e-Services and an action plan with defined milestones

and success measurement criteria is currently missing. Establishment of an action plan detailing the required budgets, project descriptions and measurement criteria will enable the depiction of the e-Government roadmap of Jordan.

- **Clearly define ownership and roles and responsibilities of government institutions for e-Transformation.** Clear definition of ownership, roles and responsibilities and accountability in projects will facilitate faster and more effective implementation. Collaboration, audit and strategy setting must be ensured and success measurement of roles should be undertaken. Operational leadership and performance monitoring are also needed for the effective regulation of the ICT sector.
- **Launch a change management program for government personnel.** To overcome resistance to change and raise motivation among government employees, a change management program is necessary. Moreover, the program should focus

on the importance of the utilizing of ICT technologies within government and maintaining collaboration between the government entities. Since e-transformation in public sector is closely related to public sector reform, a joint service improvement initiative can be launched co-sponsored between MoICT and Ministry of Public Sector Development for undertaking BPR and change management within the government.

- **Develop a local e-Government strategy.** Since there is not a unit coordinating local e-government project, the national e-Government strategy needs to be expanded and carried onto the local administration level (municipalities).
- **Force implementation of interoperability standards.** The empowerment of NITC to force implementation of interoperability standards within the government institutions will aid easier communication and better coordination between entities.

### **Action Recommendations**

- **Establish a “Change Agent Outreach Program”.** Establishment of such a program would effectively drive ownership within the ministries. MoICT should assume the role of a communicating and enabling body that provides the tools and coordination to enable success and the actual delivery of projects should be handled within the individual ministries.
- **Establish a CIO council to enable coordination of initiatives and implementation strategy.** By appointing individual government institutions for the implementation of the information society strategy, ownership of the strategy at the institutional level will be ensured and accountability mechanisms within these institutions will become operational.
- **Initiate project implementation and capability development program.** Trainings for the effective management of e-Government and ICT projects should be provided for government employees and

actions taken towards generalizing standardization of project management processes. Furthermore, activities such as contests to motivate creative e-Government projects development within the government entities and to support e-Government research in universities should be organized.

- **Develop a channel migration strategy for the e-Services that are already launched.** Government institutions that have launched e-Services should devise a communication strategy for these services and channel migration strategies should also be determined. While determining channel migration strategies, measuring citizens' needs and

channel costs, migrating different citizen groups to different channels, providing incentives schemes and informing citizens should be exercised.

- **Finalize shared service projects such as e-Procurement, geographical information system and call center.** e-Procurement will especially serve to develop e-Commerce as it will facilitate ICT adoption by businesses.
- **Standardize government websites in terms of content, usability, security and visual interface, service quality and identity management.**

## IT Industry and Innovation Capacity

IT Sector  
R&D and Innovation



The IT Industry, Research and Development activities and innovation capacity in a country are key enablers of the information society and readiness to the networked world. Without a strong national IT Industry, countries will only grow as users of the information society. A strong IT sector is the provider and the enabler of a full-pledged information society and without proper R&D activities and Innovation systems, the growth and competition of a national IT Industry is unlikely.

His Majesty King Abdullah II has identified the IT sector as a primary area of focus

### Summary of Findings

- The growth of the IT sector, which is primarily driven by hardware sales and license fees, is surpassing the growth in the telecommunications

sector. Therefore, the share of IT sector in ICT in total is increasing.

- With the REACH initiative, the establishment of an export oriented IT sector was aimed but the targets have not been fully realized and the REACH initiative has been revised with a focus on ICT FDI instead.
- IT exports are geographically focused in the Middle East and exhibit an expected sectoral balance with the global demand.
- The export markets overlap with the final destination of the brain drain of Jordanian professionals. This fact constitutes an opportunity for Jordan to utilize the Jordanian-IT Diaspora and create demand from Jordanian IT firms from export markets.
- Although, Jordan's large pool of scientists and engineers offers a wide potential to enhance research and development in the country, the insufficient collaboration between the universities and the

industry along with the lack of proper incentives inhibits businesses' efforts on R&D.

- Strong emphasis should be put on the restructuring of the government institutions that will drive R&D activities. Initiatives like Sun Incubator, ILab, Jordan Connect and Yarmouk Center of Excellence has not materialized due to lack of resources and sustained commitment.

#### Achievements since 2002

- The share of IT Industry in GDP substantially increased to 5%.

- The share of IT revenues as a percentage of ICT revenues grew from 20% to 32%.
- Exports doubled from 40 million USD to 79 million USD in 2004.

#### Gaps

- Limited foreign direct investment is observed in the ICT sector.
- The share of exports of the total IT market has been stable between 18% and 24%.
- Insufficient attention and expenditure on nationwide R&D activities has resulted in its underdevelopment.

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>▪ Rapid growth in the IT industry and its share in ICT</li> <li>▪ Young, well-educated and IT capable population</li> <li>▪ Availability of engineers and IT trained resources</li> <li>▪ Sectoral institutionalization</li> <li>▪ Government prioritization of R&amp;D and established institutions to lead government R&amp;D</li> <li>▪ Comprehensive action plan to develop ICT sector</li> <li>▪ Emphasis on exports and FDI</li> <li>▪ High contribution of ICT to GDP</li> </ul>	<ul style="list-style-type: none"> <li>▪ Insufficient R&amp;D and innovative skills to create IP products</li> <li>▪ Small business sector and underdeveloped economic environment to develop large scale and/or sectoral expertise for the IT sector</li> <li>▪ Limited growth in exports</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>▪ Opportunity for Jordanian IT Diaspora in export markets</li> <li>▪ IT investments in e-Government and e-learning to enlarge Arabic content and online services</li> <li>▪ Fast growing regional IT demand</li> </ul>	<ul style="list-style-type: none"> <li>▪ Competitive regional clustering and tax advantages</li> <li>▪ Regional political instability and prevention of foreign IT companies from long term investments</li> </ul>

## Ongoing Initiatives

- REACH 4.0 has revised the targets for the IT sector development and monitors the progress with a comprehensive set of actions for sector development.
- e-Village is going to improve collaboration and coordination among Jordanian IT companies while providing an attractive environment for foreign IT companies to invest.
- Sun Incubator initiative is a public private partnership facility to promote entrepreneurship among talented university students and enable innovative product development as a result of R&D activities.
- Similarly, ILab, another public private partnership model for promotion of entrepreneurship and innovation for university graduates has a potential to support innovation.
- Jordan Connect project targets to provide the necessary resources for IT inventors and bring inventions to market for creation of the IP products.
- Yarmouk Center of Excellence is a planned incubation within the university campus targeting university-entrepreneur relationship building and creating synergies between latest researches in academia with new ideas.
- MoICT has finalized the ICT promotion strategy, highlighting the necessary actions for IT sector development.

## Directional Recommendations

- **Focus on business adoption within Jordan for growing local IT firms.** As is the case in many countries in the world, few IT firms can grow in export markets without maintaining necessary business volume and cash flow in the local market. Increased business adoption in Jordan will provide the local demand for IT companies.
- **Enable self-sourcing for R&D expenses.** Instead of collecting funds from each company, the necessary financial incentives for companies that invest in R&D should be built by enabling self-sourcing for R&D expenses through providing tax

cuts to those companies that use a certain percentage of their net income for R&D related activities Tax deductible R&D expenses resolve the source of funding problems for companies involved with R&D.

- **Utilize Jordanian Diaspora in Gulf countries, the main export markets for generating extra demand for Jordanian IT firms with cost advantages, boost exports and transform brain drain into a growth opportunity for the sector.** Gulf countries are not only the main IT export markets for Jordan but also the main destination of the brain drain. Building a community network of Jordanian professionals and IT people in these countries might help

sourcing from Jordanian IT firms with cost advantages, boost exports and transform brain drain into a growth opportunity for the sector.

- **Prioritize and support e-learning and e-content in IT sector as a niche sub-sector in Middle East market.**

Arabic speaking countries are in need of Arabic content and Jordan is producing a remarkable amount of information on ICT in education. Companies that produce e-Learning material and demonstrate potential for exports as well as match local demand of these products should be supported. These companies will serve to fulfill the pipeline required for the infrastructural investments in educational institutions.


## Conclusion

The Hashemite Kingdom of Jordan, with the strong vision and leadership of His Majesty King Abdullah II that inspired and guided the Jordanian citizens, is ensured to progress faster towards becoming an information society. So far the strategies and the complementary actions have been revolutionary but due to some implementation bottlenecks, all efforts have not paid off and have prevented certain targets from being met. Nevertheless, if The Hashemite Kingdom of Jordan perseveres and continues to have strong leadership, remains open-minded, has highly educated human resources and pursues infrastructural and regulatory development, it will outperform its regional competitors and reach the standards of the developed countries. The Hashemite Kingdom of Jordan must maintain its dedication and efforts if not keep adding onto them persistently. The current e-Readiness level of The Hashemite Kingdom of Jordan is not only an indicator of the successful efforts that Jordan has put forward so far but also a messenger of

the progress Jordan is promising for the future.

When the sixteen sub attributes of e-Readiness defined within the Peppers and Rogers Group Assessment Methodology are evaluated, The Hashemite Kingdom of Jordan is found to perform well with respect to sector policies in ICT, all attributes of human capital, e-Leadership and the IT Industry. However, some areas have still lagged behind and The Hashemite Kingdom of Jordan is found to be the least developed and must intensely contemplate in the following areas: Affordability, quality and reliability of connectivity, macroeconomic structure, business adoption, e-Government and Research and Development. Within this report, specific recommended actions have been pointed out in the appropriate sections with respect to these issues. Notably, if Jordan concentrates on the following actions immediately, rapid improvement of the e-Readiness level will be ensured:

- Continuity of Telecommunications Regulatory Communication's



dedication in issuing and implementing regulations in the ICT sector while preserving its independence.

- Development of alternative solutions to overcome access and affordability bottlenecks
- Improvement of Research and Development activities to facilitate the creation of IP products in the IT sector
- Prioritization of business process improvement and reengineering efforts in G2B services to attract more investment and create an efficient and desirable business environment
- Prioritization of G2B e-Services and gradually making the usage of the launched services mandatory to motivate business adoption of ICT.
- Achievement of better operational management within the government through the establishment of a Project Management Office

With high concentration on these areas, Jordan is certain to move up the ladder towards reaching the developed countries of the digital world.

## Appendix

### Methodology

While evaluating Jordan's e-Readiness and ranking it among the sample of benchmark countries, Peppers & Rogers Group used comprehensive qualitative and quantitative data from four main sources:

- Results of an e-Readiness Assessment Perception Survey that has been conducted among distinguished public and private entities of Jordan
- Interviews with more than fifty public and private entities
- Data gathered from the public and the private stakeholders of e-Readiness in Jordan
- Desktop research and expert opinions on Jordan's overall situation as well as on regional and global conditions

The data that has been accumulated through these sources have later been matched with the metrics and after the normalization and the weighing of these metrics have been performed,

sub attribute scores have been determined. The sub attribute scores were employed to constitute the ultimate e-Readiness scores of all 18 countries of concern, including Jordan.

The transition to a digital knowledge-based economy is set to be a powerful factor for growth, competitiveness and job creation. As e-Readiness is the measure of the capacity of a country to participate in and benefit from the digital world, evaluating a country's e-Readiness in comparison with global benchmarks is an effective way of observing the competitiveness of a country relative to others. Accordingly, Peppers & Rogers Group has selected 17 benchmark countries to facilitate a comparison of e-Readiness and its five attributes globally. While some benchmark countries have been selected based on their common attributes with Jordan, others have been included as global best practices. The criteria for the inclusion of a country in the study were:

- Selection in the 2002 Report
- ICT Export Oriented and/or Regional Hub Successes
- Population

- 
- Size of foreign direct investment
  - Location
  - Status in 2002 Rankings
  - Level of GDP per capita
  - Demographic Structure
  - The pace of progress in the last year
  - Worldwide leadership in e-readiness