MADAR Research

The
Arab Knowledge Economy
NEWSLETTER

September 2006 Volume 1, Issue 2

In This Issue…

A Madar Research Publication
P.O. Box 502180
Dubai – UAE
Tel +971.4.390.3059
Fax +971.4.390.4688
www.MadarResearch.com

Madar Research publishes first assessment of UAE knowledge economy

"Madar Research has well captured the dynamism and drive to remake the UAE society, as it lets go of the industrial model and embraces a 'knowledge economy' approach," says world-renowned authority ***Dr. Charles M. Savage****, commenting on the* ***United Arab Emirates Knowledge Economy 2006*** *– the first report in a unique research-based series that targets international entrepreneurs and Arab policy makers*

Madar Research Group has published the first complete assessment of the United Arab Emirates' progress towards a knowledge-based economy. The 110-page *United Arab Emirates Knowledge Economy 2006* provides an overview of where the seven emirates, individually and collectively, stand in terms of building the institutional, infrastructural and human resources components of a knowledge economy. It also outlines the roadmap the UAE is likely to follow in future as its leaders seek to create a niche for the country in the global economy.

The publication, which inaugurates a Knowledge Economy Series to be published periodically on Gulf Cooperation Council member states and other Arab countries, offers an easy read on a wealth of information, analyses and forecasts based on primary research data generated by Madar Research and secondary data gathered from official sources and global surveys from the World Bank and other sources.

The *United Arab Emirates Knowledge Economy 2006* is testimony to the significant progress made in the UAE over the past few years as contrasted with that in Europe, according to Dr. Charles M. Savage, a Europe-based world authority on knowledge-based economy. "It seems as if Europe is abandoning its Lisbon Strategy, set in March of 2000, to 'become the leading knowledge economy by 2010'. It is a pity the business, academic and governmental communities in Europe are not watching the UAE more closely," he said.

"Madar Research has well captured the dynamism and drive to remake the UAE society, as it lets go of the industrial model and embraces a 'knowledge economy' approach. It is truly exciting to see what is possible if the will is there. As an active European member of AKEA, the Arabian Knowledge Economy Association, I have become fascinated by the best side of the Arab world. I hope many in Europe and the Americas will not only read this well-written report, but also begin to ask, could we do something like this in our own countries," remarked Dr. Savage, who is also a Madar Research Advisory Board member.

Dr. Savage, who believes that a major impediment to knowledge economy progress is that "we are still children of the 'Industrial way of life', said: "Of

course, the real key to the knowledge economy is not just the technological developments, but it is when we actively value the knowledge in one another and thereby awaken the energy of meaningful interaction."

Abdul Kader Kamli, president and research director of Madar Research said: "We have chosen to start the knowledge economy series with the UAE since it is the one country most likely to lead the economic transformation in the Arab world according to our findings and those made by the World Bank, and thus it can set a model for the rest to follow or to use in part as they develop their own models."

The *United Arab Emirates Knowledge Economy 2006* also highlights aspects of weakness and strength in UAE's knowledge economy base, in addition to the opportunities and challenges that lie ahead.

"UAE Knowledge Economy 2006 will be a valuable reference not only for policy makers and top government executives in the UAE, but also for potential investors, business communities and researchers," said Kamli.

Among major topics covered by the *United Arab Emirates Knowledge Economy 2006* are economic performance indicators, information society infrastructure, innovation systems, education systems, economic incentive regime, e-government, e-learning, e-commerce, information and communication technology (ICT) use in the financial sector, ICT market and business environment and lifestyle. The research work also discusses socio-economic challenges faced by the UAE.

Over 50,000 copies in English and Arabic languages will be distributed in print and electronic formats to government officials, business leaders and the media in the UAE and the region. The *United Arab Emirates Knowledge Economy 2006* is mainly sponsored by TECOM Investments, in addition to Samsung and Huawei.

An electronic copy (PDF) of United Arab Emirates Knowledge Economy 2006 is available for free download at www.madarresearch.com. Dubai Media City-based Madar Research, which is the region's only B2B research firm dedicated to the knowledge economy, has over the past two years released a complete study in three separate volumes about Dubai, which maps out the emirate's emergence as a digital economy up to 2008■

Arab mobile subscription hits 87 million in 2005

The number of mobile phone subscriptions in the Arab world grew by a whopping 70 percent in 2005, a recent Madar Research study has found.

Mobile subscription in 18 Arab countries covered by Madar Research – excluding Somalia, Mauritania, Djibouti and Comoros – grew from 51.19 million by end 2004 to 87.06 million by end 2005, exceeding all expectation and forecasts.

The study also reveals that Bahrain and the United Arab Emirates have achieved mobile phone penetration levels comparable with those prevalent in Europe and Pacific Rim countries.

Ongoing liberalization of the mobile telecom market in many Arab countries, and the resulting competitive prices and quality of service, are encouraging lower strata of Arab societies to subscribe to the service, especially in countries where fixed-line monopolies lack line capacity or quality.

Four new mobile operators entered active service in 2005 in Saudi Arabia, Jordan and Oman. Imminent launch of operations of three more carriers in UAE, Yemen and Sudan will ensure healthy growth in 2006, while 2007 holds the promise of at least four addition operators entering active service after winning license this year in Egypt, Palestine, Saudi Arabia and Iraq.

The Madar Research mobile study details growth in each Arab country, along with comparisons and analyses.

"Natural resources have dropped out of the competitive equation. In fact, a lack of natural resources may even be an advantage … because the industries we are competing for – the industries of the future – are all based on brainpower"

~Lester Thurow

Arab Internet users exceed 26 million in 2005

The number of Internet users in the Arab world has increased by more than nine million in one year to reach 26.3 million by end 2005, according to a Madar Research report.

Growth has substantially risen over 2004 levels, to average at around 55 percent, with few countries where Internet penetration is lowest witnessing three-digit growth. This led to a pan-Arab penetration rate of 8.50 percent in 2005, compared to 5.36 percent in 2004.

Government initiatives, mostly supported by IT companies and private organizations, to increase the PC installed base at educational institutions and homes have largely contributed to growth Internet use in many Arab countries.

Though growth in the number of Internet users in the Arab world is much higher than world average – estimated at around 18 percent, Arab Internet user penetration is still well below the world average of around 14 percent by end 2005.

Madar Research, however, expects growth in Arab Internet population to continue increasing over the next few years before it stabilizes to moderate levels.

The United Arab Emirates remained the Arab leader in terms of Internet user penetration rate in 2005, followed by Bahrain and Qatar.

Country breakdown by number of Internet users, penetration and growth rates, along with analyses, are part of an annual study carried out by Madar Research.

Building Arab innovation system: why and how?

It is always a possibility that some developing countries may succeed in putting together the right combination of resources and strategic plans to create a research environment capable of yielding new knowledge and products that can make tangible contribution to the economy and its competitiveness in a world that is increasingly relying on knowledge. This applies to Arab countries, provided that they find the exact area of research where they have good chances to succeed and generate direct economic benefits and that they back up such research with enough and sustained funding, as research is generally a costly and long-term process until it brings about commercially viable products.

Arab record on research has been very poor. Arab performance in terms of innovation, as a tool for economic growth, has also been poor. Applying the classic parameters prescribed by the World Bank's Knowledge Economy Index for measuring innovation – a) the number of researchers involved in research and development (private and public), b) patent applications granted, and c) the number of scientific and technical journals published in a country – imposes a strong limitation on the capability of most, if not all Arab countries to take advantage of the imploding opportunities created by the global transformation to knowledge economy. Obviously, the status quo – where Arab countries are found to have the lowest spending on research and development in the world – has to change, and this change could only be brought about if the possibility for success outweighs the possibility for failing.

The intrinsic limitation among most Arab countries to produce scientific or technology related inventions or even methods or processes that can be patented, for example, does not preclude the possibility of creating a national innovation system that could systematically generate economic growth in each of these countries in future.

In fact, it is probably wiser for Arab countries to put strong focus on creating a national innovation system – or at least start with facilitating strong linkage between universities and industries – without, however, neglecting research. Research and innovation are much related, yet they are highly distinct in the context of a knowledge-based economy.

Innovation is "the process by which new products or new methods of production are introduced, including all steps from invention to development to pilot production to marketing to production," according to Philip Griffiths, director of the Institute for Advanced Studies at Princeton University.

Thus, innovation often includes a certain level of investigation and research, but it rarely involves the kind of lengthy, full-fledged hardcore research as carried out by universities and research institutes. Typically, innovation comes in the form of commercially viable new solutions, which are often based on existing knowledge or technologies and may take the shape of methods, processes or products, to solve problems or advance existing processes. There are separate instances of this kind of innovation in the Arab world, such as the "smart box" project where Dubai police, the research commercialization arm of the Higher Colleges of Technology and IBM are working together to use information and communication technology for combating road accidents. The project has drawn technology support and investment from IBM and is expected to lead to a patent and a valuable commercial product.

If Arab governments in cooperation with the academic sector and business leaders create a mechanism to identify such opportunities and put together their resources to exploit them commercially, such a mechanism would on the one hand lead to revenue generation in the short-to-medium term and, on the

Schlumberger opens niche oil R&D center in Saudi Arabia

World leader in oilfield services, Schlumberger, has set up its sixth global research center in Saudi Arabia. The center, which is the first of its kind in the Middle East and Africa region, was inaugurated in March at the King Abdullah Science Park, part of the King Fahd University of Petroleum and Minerals (KFUPM).

The facility, called the Schlumberger Dhahran Carbonate Research (SDCR) center, aims to develop technologies that serve the regional as well as the global oil industry.

Schlumberger said the center will cooperate with the other global centers in research related to various aspects of exploration, drilling, completion and production processes in order to advance industry goals of identifying and evaluating oil and gas reservoirs, recovering oil and gas safely, efficiently, cost-effectively and without harming the environment.

SDRC aims to promote future technology development through closer interaction between research scientists from Schlumberger and experts from KFUPM, Saudi Aramco and King Abdul Aziz City for Science and Technology, as well as from a number of regional oil companies.

The center will be an ideal bridge between Schlumberger's global network of research centers, KFUPM's faculty and staff, and Saudi Aramco's scientists, researchers and engineers.

other hand, would contribute to the creation of a national innovation system.

A national innovation system (NIS), which, according to Griffiths, is essentially a framework "to support the ability or capacity of a country to innovate – especially to adapt and create science and technologies for economic and societal use," comprise people, institutions, infrastructure, policy environment and political will.

The quality or availability of these ingredients vary from one Arab country to the other, though generally speaking the Arab world is divided into two camps of socio-economic development; Gulf Cooperation Council (GCC) member states and the rest of the Arab world. The GCC is more developed in terms of infrastructure – most importantly that of information and communication technology (ICT) – wider ICT use and availability of funds, among other parameters, while many countries in the other camp have a stronger and much older tradition of university presence and activities, which constitute the core of institutions credited for fostering innovation. An examination of the six GCC states shows that at least two or three of them are better geared to lead the 22-state Arab world in implementing a networked national innovation system in the coming decade or two, with a possible exception from one or two non-GCC countries, such as Jordan.

Naturally, for Arab countries to progress towards utilizing innovation and the eventual establishment of an NIS, they need to work hard on the five ingredients of NIS. Being the most important among the five ingredients, people or human resources should be given access to quality education. This covers continuous education and training support to the workforce, programs to identify and foster young talents, including scholarships and student exchange programs, and curricula reforms, among others. World Bank statistics shows that almost all Arab countries are underperforming in terms of building human resources. As for the second ingredient, institutions, these are the ones that foster and encourage innovation, such as research and development centers, research foundations, think tanks, science and technology institutes, university research centers and innovation-based incubators. These are few in number, lacking good working agendas and mostly under-funded in Arab countries. Thirdly, almost all non-GCC Arab countries are behind in terms of ICT infrastructure and adoption, but they are catching up rather quickly. Political will to systematically support innovation, on the other hand, though it exists in varying degrees among some Arab countries, with GCC countries having an obvious head-start, it is lacking in the majority of Arab countries.

Finally, policy environment is an area which can best serve innovation, not only in the overall building of a national innovation system, but in the context of attracting and facilitating knowledge and technology transfer through foreign direct investment (FDI), which could expedite the utilization of homegrown innovation to support economic growth. Bringing in FDIs, especially in areas deemed most needed or useful locally – or where the host country has reason to believe it can excel and enhance its economic competitiveness in future – is an ideal approach towards innovation for Arab countries.

According to Lester Thurow, there are two ways for a country to acquire technology. One way is to copy it, and then build on it, as Japan did in the past. But this approach is becoming increasingly difficult to achieve as industries are locking up their technologies due to competition, unauthorized use and other considerations. The other approach, which is more feasible, is to attract foreign investment, which brings technology with it. "FDI is not just money. It's about technology, markets, and hiring scarce managerial and engineering talent," says Thurow.

Dubai Tech Park to host solar energy R&D plant

The region's first research and development center for designing and building solar power plants will be set up in Dubai Techno Park.

The center is part of a $50 million facility California-based Solar Technologies plans to build in the park by June 2007.

The facility will design and assemble solar thermal power plants, solar thermal air-conditioning solutions and other large scale solar thermal solutions for medium and large projects.

Solar Technologies is looking at systems for the region that combine solar energy with other energy sources. Some of the systems will use thermal storage at night, while others will alternate between solar energy and natural gas.

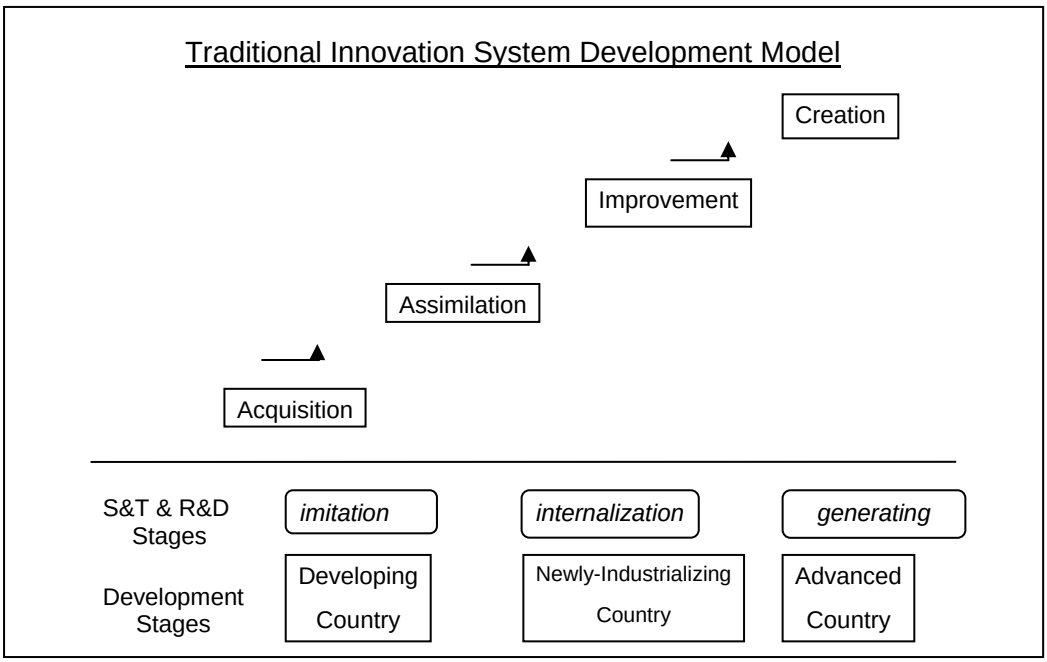
Solar Technologies will target municipalities, energy and water distribution companies, telecommunication companies, metros, large real estate developments, industrial facilities and energy projects in the UAE, Oman, Qatar, Kuwait and Bahrain.

Policy and regulatory environment, along with a legal framework that are geared to serve FDIs – as well as the establishment of an NIS – are among the most important factors to attract knowledge and technology proprietors.

The classic model for the development of an innovation system in a country starts with the acquisition of knowledge, which is assimilated internally as a second step before improvement is achieved in a third step. The fourth and final stage should commence with the creation of new knowledge and innovation. While the FDI approach may not lead to full acquisition or transfer of knowledge, there is always a certain level or amount of knowledge transfer involved due to interaction with the local environment and the knowledge gained through exposure or training of local staff. This knowledge transfer can only increase with time and as it gradually becomes assimilated by local communities it can be used for problem-solving, improvements and innovation, and would contribute to the creation of an NIS.

In fact, the greatest immediate benefit that could be gained by many local companies from a close interaction with their multinational counterparts across the board is in the area of adopting tacit knowledge flowing from these companies' process or organizational operations and applying the same into their own operations to achieve cost efficiencies and thereby contribute to the country's economic development. Furthermore, the presence of a dynamic and research-orientated academic community can optimize the opportunities for innovation presented by the transfer of knowledge from FDIs.

Lastly, Arab governments have a major role to play in both attracting FDIs and creating the environment needed for an NIS. In his Building Innovation Systems presentation, Griffiths sees a three-tier role for government: firstly, as a "promoter" in terms of creating tax and financial incentives, in addition to providing sufficient intellectual property protection and passing a liberal commercial law; secondly, as a "producer" of innovation through government R&D and public research institutes; and thirdly, as a "user" in terms of procurement of innovative products and services■



Source: Dr. Phillip A. Griffiths, "Building Innovation Systems," Science Initiatives Group (Institute of Advanced Study, Princeton), 2005

Global leader in glass processing technology sets up in DSO

Lisec, the world's largest manufacturer of high-tech production lines for the insulating glass industry and a leader in photovoltaic technology which generates solar energy, is setting up a manufacturing and research and development facility at Dubai Silicon Oasis (DSO).

The move will make DSO base for Lisec's first major R&D and manufacturing site outside Austria, where the company is headquartered.

R&D focus of the new facility will be on photovoltaic (PV) and thin film technology. Photovoltaic or solar cells, whose value-chain consists of polysilicon, thinner-than-hair wafers, solar modules and systems, converts sunlight directly into electricity. The main market for this technology is façade mounted solar panels.

Lisec's chief executive officer said his company chose Dubai for a number of reasons, including its proximity to Lisec's customers in the Middle East, Europe and Asia, in addition to DSO's supporting environment and the easy access from Dubai to a pool of engineering talent in the region.

Adult literacy remains major hurdle for Arab knowledge economy development

Adult illiteracy remains high in the Arab world, and it is posing a more serious threat than ever, due to its detrimental effect on the development of an Arab information society and a knowledge-based economy. The worst part is that progress in eradicating illiteracy in Arab countries has generally been slow, with the gap in adult illiteracy with the developed world and other developing regions widening.

Pan-Arab literacy rate within the age group 15 and above has been averaged at nearly 63 percent for the period 2000-2004, according to United Nations estimates. Only four countries displayed literacy rate of 85 percent and above for the period. These are Jordan. Palestine, Bahrain and Qatar. The worst cases are Yemen (49 percent literacy), Morocco (51 percent), Sudan (59 percent) and the most populous Arab country, Egypt (56 percent). Palestine on the other hand has the best Arab literacy rate (92 percent), followed by Jordan (90 percent).

Since adult illiteracy eradication programs, especially in rural areas, focus more on reaching the youth – while the rate at which people shun illiteracy programs is higher among older generations – literacy among people aged between 15 and 24 has been much higher than it is among the group aged 15 and above. In Yemen, for example, literacy rate jumps from 49 percent for the whole adult population to 68 percent for those between 15 and 24 years. In Morocco the rate surges from 51 percent to almost 70 percent.

The more important observation to highlight due to its socio-economic implications is the discrepancy between male and female literacy in many Arab countries, which favors males■

Estimates of Adult Literacy Rates (population aged 15+) By Region 1990 and 2000-2004

	Literacy Rates (%)	
	1990	**2000 - 2004**
World	75.4	81.9
Developing Countries	67	76.4
Developed Countries	98	98.7
Countries in Transition	99.2	99.4
Sub-Saharan Africa	49.9	59.7
Arab States	50	62.7
Central Asia	98.7	99.2
East Asia and the Pacific	81.8	91.4
South and West Asia	47.5	58.6
Latin America and the Caribbean	85	89.7
Central and Eastern Europe	96.2	97.4
North America and Western Europe	97.9	98.7

Source: United Nations

Microsoft allocates $4 million for community IT training in Qatar

Microsoft will allocate about $4 million over the next twelve months in six technology-related projects aimed at raising the level of IT skills in Qatar.

The IT giant will work closely with universities, government departments and Qatar Science and Technology Park (QSTP) to implement the projects.

The projects include a joint research with the Doha branch of Carnegie Mellon University on the development of students English language skills, and the development of an "Office 4 Kids" version of Microsoft Office applications involving Qatar's computer science students.

Two other projects will lead to the development of an Arabic Digital Literacy Curriculum for IT training, and customization of Microsoft's Community Learning program, in cooperation with local organisations to offer the general community basic-to-intermediate IT skills training.

Another project will see the implementation of Microsoft IT Academy program, which provides academic institutions with teaching tools, such as course material and virtual labs, encouraging individuals to improve IT skills or pursue an IT career.

Part of the funds will also support the continuation of the Microsoft Certified Systems Engineer and Microsoft Certified Application Developer training programs for IT professionals in the government and education sector in Qatar.

Adult Literacy Rates in Arab Countries, 2000-2004*

	Aged 15 and Over (%)			Aged 15 -24 (%)		
Country	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
Algeria	69.8**	79.5**	60.1**	90.1**	94.1**	86.1**
Bahrain	87.7**	92.5**	83**	99.3**	99.2**	99.3**
Egypt	55.6**	67.2**	43.6**	73.2**	79**	66.9**
Iraq						
Jordan	89.9**	95.1**	84.7**	99.1**	99.3**	98.9**
Kuwait	82.9	84.7	81	93.1	92.2	93.9
Lebanon						
Libya	81.7	91.8	70.7	97	99.8	94
Morocco	50.7	63.3	38.3	69.5	77.4	61.3
Oman	74.4	82	65.4	98.5	99.6	97.3
Palestine	91.9**	96.3**	87.4**	98.7**	98.7**	98.6**
Qatar	89.2**			98.6**		
Saudi Arabia	79.4**	87.1**	69.3**	95.9**	98.1**	93.7**
Sudan	59**	69.3**	49.9**	74.6**	81.6**	69.2**
Syria	82.9**	91**	74.2**	95.2**	97.1**	93**
Tunisia	74.3**	83.4**	65.3**	94.3**	96.4**	92.2**
UAE	77.3	75.6	80.7	91.4	88.2	95
Yemen	49	69.5	28.5	67.9	84.3	50.9

Source: UN and UIS

* Data refer to the most recent year available during the period specified.
** For countries indicated with (*) national observed literacy data are used. For all others, UIS literacy estimates (July 2002 assessment) are used.

" Knowledge has become what we buy, sell, and do. It is the most important factor of production "

~Thomas Stewart

Saudi climate control equipment market gets testing lab

Saudi Arabian Zamil Air Conditioners (ZAC) company has set up a laboratory for independent testing and benchmarking of climate control machinery and solutions. The lab, the first of its kind in the Arab world, will also be positioned by ZAC to play a key role in supporting research and development initiatives in the heating, ventilation and air conditioning (HVAC) industry in the Middle East.

The lab, branded Ikhtibar, offers air conditioning manufacturers and importers a comprehensive range of performance tests for consumer and commercial air conditioners and chillers.

ZAK officials say the lab was established at an opportune time when Saudi Arabia and other countries in the region prepare to drop trade barriers in line with World Trade Organization membership, which they believe would backfire by leading to more products that do not comply with quality standards entering the region, and thus aggravating the situation for markets already hit by some products of inferior quality.

Dubai loses commanding lead to fast-moving Cairo in Rutgers municipal e-governance survey

The Egyptian capital, Cairo, has overtaken Dubai as the Arab world's leader in municipal e-governance according to an American survey of 100 official websites worldwide. The survey, conducted by Rutgers University (State University of New Jersey at Newark) by end 2005 and released in second quarter of 2006, ranked Dubai in 50th place worldwide with a total score of 25.12 (out of 100), a dramatic drop from the city's standing in 2003, when it scored 37.48 and ranked 18th. Cairo scored 29.49 to rise to 45th place, improving markedly over 2003, when it scored only 13.12 and trailed every Arab city except Beirut.

However, performance in individual parameters of the survey varied. Dubai maintained its lead over other Arab municipalities in e-service delivery, despite dropping from 11th to 31st place worldwide. The city lost local preeminence, however, in the four other parameters measured in the survey, most significantly, privacy and security policy: ranked 9th in the world in 2003, Dubai tumbled to 32nd place behind Cairo and Riyadh in 2005. Cairo also achieved the highest Arab score in content, while Riyadh led in usability and Beirut in citizen participation.

Entitled 'Digital Governance in Municipalities Worldwide,' the survey assessed official websites and portals providing information about municipal administration and online services. Websites were evaluated according to 98 indicators divided among five core parameters (privacy and security, usability, content, service and citizen participation), with each parameter given a weighted score of 20 for a possible total of 100. Criteria for inclusion in the survey changed only slightly from 2003 to 2005. As in 2003, the size of the cities and the percentage of citizens online remained deciding factors; however, owing to the global explosion in Internet usage, the minimum size of online population required to enter the survey rose to 160,000 from 100,000. The largest city meeting this standard in each country was taken to represent all cities in the nation. Finally, Hong Kong and Macao were again added to the mix to bring the total to 100 cities. All websites were evaluated in their native languages, although about two-thirds offered multi-lingual access.

Other than Cairo and Dubai, the three other Arab cities assessed were Riyadh (Saudi Arabia) at 52nd, Amman (Jordan) at 65th and Beirut (Lebanon) at 66th. Manama (Bahrain) was one of the six cities excluded from the survey because its online population was under 160,000. Tripoli (Libya) and Aleppo (Syria) were two of the six added, even though neither had eligible websites. Five other Arab cities met the overall criteria, but did not have websites: Algiers (Algeria), Casablanca (Morocco), Tunis (Tunisia), Kuwait City and Muscat (Oman) ■

"Innovation is the central issue in economic prosperity"
~Michael Porter