

E-Government in the Gulf Cooperation Council Countries: A Comparative Study

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Abstract: The main objective of this paper is to use a descriptive methodology to analyze comparatively the feasibility of e-government and the capability of Gulf Cooperation Council (GCC) states to establish and to use e-government potentials in their public sectors. The paper attempts to facilitate this comparison by concentrating on certain dimensions based on the components of the Networked Readiness Index (NRI), published by the World Economic Forum. These dimensions include: environment, e-readiness, and usage components. The paper uses the operational definitions of these elements in order to facilitate the comparison. The underlying assumption of the paper is that the higher the level of ICT deployment the greater the level of e-government's readiness. It concludes that all GCC countries have made impressive strides towards using ICT and establishing e-government. The paper also finds remarkable variations among them. The United Arab Emirates is the best performer among GCC states and continued to lead them most of the time with remarkable progress in NRI world rankings and scores. Qatar, Bahrain and Kuwait are competing neck-to-neck - with Qatar showing stronger will to outperform even the UAE. Saudi Arabia and Oman are slowly catching up with the others.

Key words: E-government, Networked readiness, Gulf state ICT.

Introduction

The growth of the internet and the massive development of information and communication technology (ICT) provide a highly effective tool for increasing citizen participation in government business,

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through utilizing these technologies in streamlining government operations. Moreover, it is widely believed that e-government may help to effect substantial cost reductions in government operations. This may be a by-product of e-government propensity to simplify administrative procedures, to cut off unnecessary delays and to encourage reductions in the volumes of paperwork in government transactions. Many scholars in public administration, (such as Wolf, 2002, Bhatnagar 2004; Rosenbloom and Kravchuk, 2005; and Khosrow-Pour; 2008) hold that e-government provides new ways for involving the public in the operations of public administration by improving service delivery, infrastructure, and policies.

However, the success of e-government depends not only on the availability of ICT, but also on the level of public access to the internet and the willingness of the main stakeholders to use it. This requires tremendous governments' efforts to design sound ICT deployment and public awareness policies. There are many issues and potential problems associated with implementing and designing e-government programs. These issues include the impact of *disintermediation* of the government and its citizens (i.e. the government may deal with every citizen directly), and the impacts of e-government on economic structure, social fabric, and political settings as well as the disturbances and bureaucratic resistance to changes in the status quo.

The main objective of this paper is to analyze comparatively the e-readiness and ability of Gulf Cooperation Council Countries (GCC) to introduce and use electronic government (e-government) tools in delivering government's services. The reason for selecting GCC states for this study is that their systems of government, political cultures, economies and geographic locations exhibit similar, albeit peculiar, characteristics. The importance of e-government issue to GCCs is evident in the fact that it represents the backbone of their efforts to reform their public administrations and processes of governance. In studying this issue, the researcher hopes to address a gap in comparative studies concerned with GCC countries in the areas of public management and governance.

E-government: A Theoretical Framework

E-Government Terminology

Many terms are used in the literature to refer to the phenomenon of electronic government such as e-governance, e-government, e-gov, online

government, digital government, or in a certain context, transformational government - and, recently, there has been much talk about mobile government or M-government. The term M-government refers to providing government services via the use of wireless technologies like mobile phones, laptops and PDAs (Personal Digital Assistants). However, M-government is not a substitute for e-government; rather it complements it. Some Arab authors even suggest the use of e-management, instead of e-government in Arab countries, because of the political connotations loaded in the word “government” (Bakair, 2006). For simplicity purposes, this paper uses the term e-government.

Definitions of E-government

Many organizations, such as the World Bank, the United Nations, the Global Business Dialogue on Electronic Commerce (GBD), and the Gartner Group offer varied definitions to the generic term e-government (Palvia and Sharma, 2007). Despite the different wording of all of these definitions of e-government, there is a common element that joins them together. They all emphasize the role of using ICT, together with the internet, in improving the delivery of government services to its three main stakeholders: citizens, businesses, and other government institutions (Palvia and Sharma, 2007).

In this paper e-government simply means integrating ICT and “...the internet to facilitate administrative interactions with the public” (Rosenbloom and Kravchuck, 2005: 562). The word “public” here refers to all stakeholders of government: individuals, business, and government. E-government can be utilized to perform almost all of the activities of public administration to promote efficiency in delivering public services and to enhance processes of governance and transparency.

Evolution and Stages of E-government

Although most governments have started in some way or another to offer government services online, in many countries e-government has not evolved beyond its early stages of development. However, to benefit from e-government, governments need to change and review their old ways of doing business. Nevertheless, e-government is not only about employing ICT to support government provision of government services. It is also about fundamentally transforming the ways whereby government services are generated, produced and delivered in order to restructure the network

of relationships between government and its main stakeholder, i.e. citizens, businesses and other government departments.

The process of transformation can be classified into five stages using the Web Measure Index 2005. The Web Measure Index describes the evolution of e-government in term of five stages which include: emerging, enhanced presence, interactive presence, transactional presence and networked presence. The first stage of *emerging presence* is characterized by the existence of only basic data in a government's website that may be linked to government's ministries and departments. The use and processing of information at this stage provide stakeholders with limited options for interactive interfacing with government institutions (Dewachi, 2005).

In the second stage of *enhanced presence*, e-government develops facilities to provide more information about matters such as government policies, laws and regulation, reports, newsletters, and similar materials. Although this stage is more sophisticated than the first one, the interaction of the stakeholders with government departments is still characterized by a top-down flow of information (Dewachi, 2005). In the third stage of *interactive presence*, the relationship of e-government with stakeholders becomes more interactive enabling them to obtain many government services online (Dewachi, 2005). In the fourth stage of *transactional presence*, the system of e-government enables stakeholders to engage in a two-way interaction with government departments to perform many operations such as paying taxes, and applying for other government documents and certificates (Dewachi, 2005).

The fifth stage of *networked presence* is the most sophisticated stage in e-government evolution. At this stage, e-government provides multiple-way interactive relationships with stakeholders to facilitate the provision of government services to the main stakeholders. The system at this stage enables stakeholders to participate in public discussions about government policy issues, law making and public decision-making (Dewachi, 2005).

The Intellectual Roots of E-government in Public Management

The intellectual roots of e-government in public management and the use of ICT in government transactions and operations may be traced back to two schools of thoughts in public administration and political science. These schools are associated with the rise and dominance of globalization, in the form of neo-liberalism and neoclassical market philosophies in the 1980's, 90's and 2000's. In fact, the NRI itself is an

embodiment of neo-liberal thought and market values since it emphasizes market freedom and competition. These two schools are (1) the new public management (NPM) school and (2) the public governance school. Both schools rest on the belief that the market is more efficient than government in allocating and a distributing society's resources (Savas, 1987; World Bank, 1991; Heywood, 2002).

The NPM Approach: E-government

NPM efforts to reform the public sector rest on the view that government is a provider of services to citizens and businesses, as customers or clients. Therefore, market tools should be introduced to government business operations. The NPM approach also rests on the belief that the market is more efficient than the government in allocating and distributing a society's resources (Savas, 1987). Thus all social activities should be left to the free play of market forces and government activities must be limited to situations in which markets failed to provide the necessary services to society - as in the cases of public goods (e.g., defense), externalities (smoking in public places), monopoly (imperfect competition) and information asymmetry (lack of information regarding goods and services in the market) (Weimer and Vining, 1999).

To realize this theory in practice, NPM theorists recommend two complementary lines of administrative reform strategies. The first line preaches privatization of public sector entities as a method to improve the public sector performance and productivity. The second line espouses the idea of privatizing public sector management by introducing business management techniques to its operations, in order to enhance its productivity (Niskanen, 1971; Osborne and Gaebler, 1992; Boulter and Kelly, 1994; Morgan and Murgatroyd, 1995; Elhoussein, 2008). Since the introduction of ICT to business organizations is one of the tools that has helped to improve business productivity, e-government is an offspring of this second line of thinking in NPM.

The immediate consequence of this approach is the massive privatization programs witnessed in the last three decades in most countries, and the introduction of business management techniques to the public sector (Niskanen, 1971; Osborne and Gaebler, 1992; Bendell et al., 1994). One of these techniques is the use of ICT to create e-governments to improve the process of governance (Garson, 2006).

The Public Governance School: E-governance

The public governance school is based on a comprehensive view of the role of government in society (World Bank, 1991; Heywood, 2002). However, there is no one universally-accepted definition of governance. It has two related meanings which embrace a broad meaning and a limited one. The broad meaning refers to the different ways through which social life is coordinated. In this sense government is considered as one of the institutions involved in governance i.e. governance is a broader term than government and it is possible to have “governance without government” (Heywood, 2002: 6).

In its limited meaning, governance comes closer to NPM in that it shares NPM’s views of introducing private management techniques, market forces, and public-private partnership strategies to public management. While some associate governance with a shift away from bureaucratic command and control mechanisms, to a reliance on consultation and bargaining, others argue that, like NPM, it implies a preference for less government and the free market (Heywood, 2002). Accordingly, whereas e-government refers to a more limited administrative dimension, e-governance embraces far reaching social, political, and administrative dimensions. So far, no government experience of e-government has significantly crossed the borders of e-government to e-governance.

In line with the broad meaning of governance, Garson (2006) defines e-governance as a “network of organizations that include government, nonprofit, and private-sector entities”. In e-governance, unlike e-government, the boundaries between government and other social organizations are blurred.

Subscribers to this school believe that poor governance is among the most important factors behind governments’ failure to achieve sustainable development (World Bank, 1991). Hence, they call for introducing innovative methods and technologies to governmental operations and administrative systems. Consequently, e-government initiatives have become accepted by the international donor community as a catalyst for such governance reforms (Ciborra and Navarra, 2005). However, it is widely believed now that the characteristics of the governance model, inherent in e-government philosophy, and the actual transition from a traditional bureaucratic organization to e-government, are equally important for the success of development initiatives.

To conclude, e-government belongs intellectually to both approaches of NPM and public governance because it is based on market views, as well as good governance concepts. However, some writers believe that e-government is an independent new approach to public administration that was fueled by tremendous development in information technology. In fact, e-government is an integral part of NPM and governance - and represents an advanced stage in their development.

Models and Functions of E-government

The term “*models of e-government*” in this paper refers to the networked relationships between government and its principal stakeholders to whom it delivers its services. The key stakeholders of ICT and e-government are individuals or consumers, business and government. These stakeholders represent the key models of e-government service delivery. The consumer model (G2C) is concerned with the relationship of the public to the government in the area of service delivery. The business model (G2B) involves transactions between the private sector and the government in many economic areas such as e-procurement. The government model (G2G) involves intra- and inter-departmental electronic exchanges of information and decisions (Palvia and Sharma, 2007). The three models are interrelated because it is individuals who operate and use the system in different capacities, as consumers, businessmen or government employees.

Within these models of delivery, e-government is supposed to perform certain functions that include, according to Brown (2003), providing through the internet, information such as regulations, government decisions and policies - and providing communication channels between government departments and their stakeholders. In these models, users can also, for example, request information from government departments, apply for services and conduct business with the government such as settling tax issues, and applying for jobs and grants. Moreover, e-government can be used by government departments to improve governance and transparency by utilizing, for example, e-polling, e-voting, and e-public participation (Brown, 2003). For the success of these activities, the ability and willingness of stakeholders to use ICT and e-government is central.

Most supporters of ICT and e-government, especially in the ICT

sectors and academia, include in their list of its positive outcomes: accessibility of public services, more transparency, accountability and citizen-focused public services (Longford, 2002; Palvia and Sharma, 2007; Atkinson and Daniel, 2008). The WebPages of government departments may serve as effective tools for facilitating citizens' involvement in public management operations and may also be used to generate "...suggestions for improving service delivery, infrastructure and policies" (Rosenbloom and Kravchuck, 2005: 192).

However, most of these benefits do not show up in the experiences of many countries due, in most cases, to entrenched bureaucratic practices, institutional inertia, and lack of political will (Holliday and Yep, 2005). Supporters of e-government also suggest that e-government amounts to a second reinvention of government that can help to bring the government closer to the people (Chen et al., 2006). The first revolution was the introduction of traditional business management tools, such as Total Quality Management (TQM) and market competition.

Despite this optimism, many critics of e-government believe that it is just another management fad. However, and notwithstanding "the rhetoric about digital democracy, and citizen centered information society" (Longford, 2002: 2), e-government cannot be considered as a mere passing fad. This is because:

.....e-government holds great potential for facilitating the public's interaction with public administration. Agencies can use the internet to disseminate reports, studies, rules, information about their operations, procedures, and eligibility requirements for benefits. They can create electronic readings rooms to reduce the freedom of information requests they receive and process. E-government initiatives can increase public participation in agency rule making and other decision making (Rosenbloom and Kravchuck, 2005, 472).

The Networked Readiness Index

The networked readiness index (NRI) is a measure of countries' levels of readiness to employ information and communication technology (ICT) to facilitate the operation of their economies and to promote effective management. The NRI is composed of three interrelated main components: Environment Component, Readiness Component and Usage Component. The operational definitions of these components are discussed in the

methodology section. The Environment Component emphasizes the importance of creating a suitable environment for introducing ICT, and to encourage the use of this technology in all walks of life. The word environment is used here to include business, political and regulatory as well as infrastructure environments (Dutta and Jain, 2006).

The actions of government in these three environments are necessary pre-requisites to prepare the stage for the use of ICT by the following three stakeholders: individuals, business, and government. This is because the successful usage of ICT depends on the co-operation of these three stakeholders. However, the role of governments in mobilizing and co-ordinating the efforts of the other two stakeholders is pivotal (Dutta and Jain, 2006).

The successful introduction of ICT and usage in government operations is contingent upon the joint efforts and collaboration of the three stakeholders: individuals, business and government. Unlike other indexes, such as the United Nations Index of e-government, the NRI provides valuable ranking of countries with regard to ICT deployment based on comprehensive data on ICT government policies, availability of technical infrastructure, e-readiness and usage of the three stakeholders including e-government itself. Therefore, the NRI provides us with a more comprehensive measure of the efforts of government to introduce e-government to its operations, in order to serve the other two stakeholders.

Methodology of Comparison

The paper uses primarily a descriptive methodology to trace and analyze comparatively the experience of GCC states in introducing e-government tools to their public sectors. The comparison concentrates on certain dimensions in the evolution of their e-government's efforts and its implementation. These dimensions include policies and regulations, ICT infrastructures, stakeholders' readiness and their usage of e-government facilities. The underlying assumption of the paper is that the higher the level of ICT deployment and usage the greater the level of e-government services and usage.

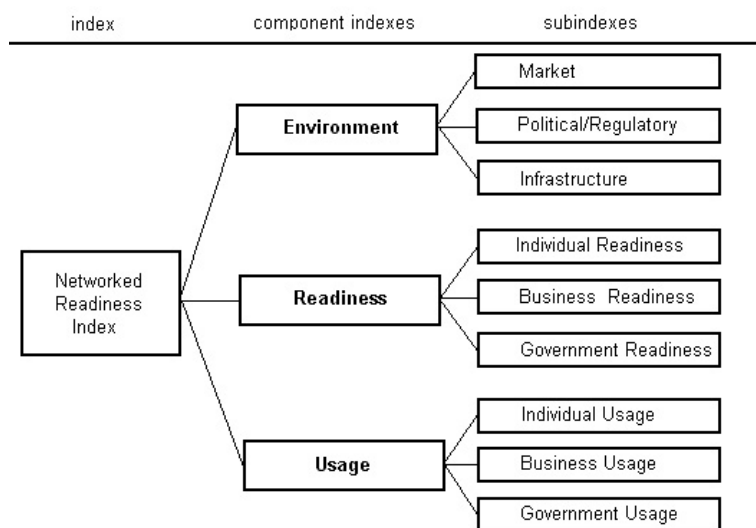
To achieve its objective, the paper uses the Networked Readiness Index (NRI), published by the World Economic Forum, which started in 2001-2002, to facilitate that comparison. Although there are other published reports that provide e-government rankings, the NRI is the most comprehensive one - because it uses data from most other

international indexes and generates its own survey data (see the section on data computation). It is now one of the most comprehensive, and trusted reports, about the status of ICT in different countries (Mia and Dutta, 2007).

Since its establishment in 2002, the NRI framework has remained stable. It was designed to measure the availability of ICT-conducive environment and the level of e-readiness required by the effective use of ICT facilities by the three main national stakeholders of e-government: individual citizens, business organizations, and government institutions. It is also concerned with assessing the actual levels of usage of ICT by the above three stakeholders.

Figure 1 depicts a schematic model of the Networked Readiness Index Framework, its components' indexes and sub-indexes. The figure shows that the NRI consists of nine sub-indexes that measure the three major components of the overall NRI: environment, readiness, and usage.

Figure 1
The Networked Readiness Index Framework



Source: Global IT Report at: <http://www.insead.edu/v1/gitr/wef/main/about.cfm>

The overall NRI measures the country's level of readiness to utilize and benefit from information and communication technology (ICT) in

enhancing its competitiveness in world markets. To achieve this objective, the NRI utilizes a total of 67 variables (increased to 68 in 2007-2008) to produce an overall NRI. These 67 variables are distributed among three main components, (environment, readiness, and usage). Each component consists of three pillars to produce three component indexes (NRI) for each component and nine sub indexes for their constituent pillars. The resultant NRI scores are used to rank participating countries in all components and their pillars (Mia and Dutta, 2007). The paper employs these indexes to compare the achievements of GCC countries in the different dimensions of policies and regulations, ICT infrastructures, stakeholders' readiness and their usage of e-government facilities.

Operational Definitions of Networked Readiness Index Components

The following operational definitions to the components used in the paper are compiled from the World Information Technology Reports and executive summaries of these reports ((Mia and Dutta, 2007 & 2008). The components include the Environment Component, E-readiness Component and the Usage components.

Environment Component

The regulatory and political environment pillar uses nine variables to measure: efficiency and effectiveness of government institutions, the responsiveness of public policies to ICT development, the fairness of legal frameworks, the existence of ICT-specific laws, the extent of protection of property rights and intellectual property, the quality of competition in the ISP sector.

The infrastructure environment pillar employs seven variables that assess: the existence of ICT-conducive soft infrastructure, the state of ICT hard infrastructure, the higher education enrollment rate, the quality of scientific research institutions, the availability of scientists and engineers, the degree of ICT penetration (number of telephone lines, secure internet servers, and electricity production).

E-readiness Component

This component uses 24 variables to provide measurements for the e-readiness of the main stakeholders (individuals, businesses, and governments) to realize the potential of ICT. The factors used to

calibrate this e-readiness include: the existence of necessary human skills for using ICT, access to and affordability of ICT for companies, government's own use of ICT for its services and processes.

The individual e-readiness pillar uses 10 variables to examine the level of individual citizens' preparedness and capability to use ICT. This sub-index includes the following factors: the presence of appropriate human skills, the extent of access to ICT, the affordability of telephone and internet connection and use, the quality of the educational system - with particular emphasis on math and science education, the availability of internet access in schools, residential telephone connection charges, broadband and telephone subscription charges, the cost of mobile telephone calls.

The business e-readiness pillar uses nine variables to assess the e-readiness of business organizations and their ability to integrate ICT facilities in their business activities. This index focuses on factors such as: the presence of an appropriately trained labor force, the extent of company spending on R&D, collaboration between universities and firms on R&D, the affordability of ICT for business, levels of ICT imports.

The *government e-readiness pillar* utilizes five variables to measure government's e-readiness using the following factors: the status of ICT in the priorities of government, the extent to which the government has a clear vision on how to promote ICT use and penetration, the extent of e-government and e-democracy.

Usage Component

This component relies on fifteen mainly quantitative variables to gauge the degree of ICT usage by the main stakeholders: individuals, businesses, and governments. Because of the difficulty to obtain reliable data about the exact impact of ICT on the main stakeholders' usage, the usage component does not provide exact measurements of ICT usage. It only indicates the degree of efficiency and productivity associated with the adoption of ICT by the three stakeholders in each of the countries covered.

The individual usage pillar uses five variables, which are associated with the level of individuals' ability to access the internet, to measure individual usage. The variables include: availability of telephone

facilities, affordability of personal computers (PC), the degree of internet penetration, internet penetration, ability to access the internet

The business usage pillar employs six variables to measure business e-readiness using the following factors: the extent of innovation and technology absorption in the business sector, the availability and usage of fixed lines and mobile telephones for business, internet penetration within firms.

The government usage pillar utilizes four variables that try to test the level of government's usage of ICT. These variables measure the following factors: the availability of online government services and operations, the improvement of government productivity as a consequence of ICT introduction and use, ICT pervasiveness in governmental offices, government success in promoting general ICT penetration.

Computation methodology and Types of Data

The method of calculating and computing of the NRI data remained relatively stable and has only changed slightly since 2002. Before 2004, the NRI utilized two types of data: first - hard, quantitative data, obtained from international organizations such as the International Telecommunication Union (ITU), global competitiveness reports, the United Nations and the World Bank. Second, qualitative data obtained from the World Economic Forum's Executive Opinion Survey administered to more than 11,000 business leaders across 125 economies in the world. In the first two reports (2002-3 and 2003-4), responses to the survey used a scale ranging from 1 to 7. The hard data is also converted to this 1 to 7 scale using the following standard formula.

$$6 \times (\text{country value} - \text{sample minimum}) + 1 / (\text{sample maximum} - \text{sample minimum})$$

Accordingly, the scores of the overall NRI score, as well as the scores of its components and pillars, range from 1 to 7.

This methodology was modified in 2004 and the seven-point scale is no longer used. Using the same data, the new methodology henceforth standardized the scores of the sub-indexes with a mean of zero. This led to the production of NRI scores that are spread above and below the mean score of zero. Whereas a positive score indicates that the performance of a country is better than the mean performance of the other countries, a negative one implies a performance level that is below the mean performance of other countries (Dutta and Jain, 2005).

ICT and E-Government in GCC Countries

The GCC Countries

The GCC countries include: Saudi Arabia (KSA), Oman, United Arab Emirates (UAE), Qatar, Bahrain, and Kuwait. The reason for selecting these states for this study is that their systems of government, political cultures, economies and geographical locations exhibit similar, albeit peculiar, characteristics. With the exception of Bahrain (GDP \$ 7.7 billion, (Gulf Yearbook, 2005), they are all very rich (total GCC GDP \$382 billion), (Gulf Yearbook, 2004). All GCC economies depend on hydro-carbon production industries (41 percent of total GDP), (Gulf Yearbook, 2005). Once again, with the exception of Saudi Arabia and Oman, all GCC countries have relatively very small populations. Finally, with the exception of UAE all other GCC countries are unitary states with strong central government and a system of local administrations in the form of municipalities. UAE is a federal system composed of seven *emirates* and consists of three administrative layers at federal, emirate and local levels.

Moreover, all GCC countries suffer in different degrees from the dependence of their economies and public administrations on expatriate personnel and a foreign labor force that dominates private and public sectors' organizations (Elhussein and Elshaheen, 2008). This factor has led to serious imbalance in the population structures making nationals, in some cases, a minority in their countries and posing national security problems. The Crown Prince of Abu Dhabi, a central figure in the UAE system of government, was recently reported to have said at a meeting of GCC Ministers of Labour that population structure, unemployment, and manpower nationalization "are common serious concerns to all GCC States" (Elhussein and Elshaheen, 2008).

This factor, among others, such as enhancing the competitiveness of their economies encouraged by globalization, accounts for the fact that ICT and e-government projects constitute the backbone of the GCC states' administrative reform efforts to improve government operations and delivery of its services - as well as to reduce their dependence on foreign labor. Many other developing countries approach e-government with different objectives, as illustrated by the experience of East and Southeast Asian states, in the wake of their 1997 financial crisis (Holliday, 2002).

Overview of GCC States Networked Readiness

This section uses the scores of GCC countries in the overall Networked Readiness Index to measure their networked readiness. The Networked Readiness refers to a country's level of preparedness and ability to utilize and benefit from ICT technology (Mia and Dutta, 2007). Therefore, it can be used to measure the feasibility of e-government in a particular state. The date of a country's entrance to the Networked Readiness Index (NRI) list of nations is partly a function of availability of reliable data about the country ((Mia and Dutta, 2007). Therefore, the limitations in the availability of reliable data also indicate a relatively underdeveloped status of ICT and low levels of a country's e-readiness.

Whereas UAE and Bahrain had entered the NRI list in 2004-5, Kuwait, and Qatar appeared in 2005. Saudi Arabia and Oman showed up later in 2007-8. This sequence of entrance coincides now roughly with the status of ICT and e-government in the GCC states and their scores in the NRI. In 2004-5, UAE and Bahrain were the only GCC states in the NRI list. From a list of 104 states, UAE and Bahrain ranked 23rd, and 33rd respectively with overall NRI scores of 0.84, 0.37. At first glance, these scores were not really very impressive but when benchmarked against the top score in the countries list (Singapore overall NRI 1.73) they appear as a far cry from the world average in 2004-5. In the years 2005-2008, Kuwait and Qatar joined the race. Whereas Kuwait occupied the rank of 46th (overall NRI 0.06) in 2005-2006, Qatar was placed at the 40th rank (NRI 0.23).

While UAE continued most of the time to lead GCC countries in the period 2004-8 (rank 28; NRI 0.54), Bahrain was pushed down to occupy the fourth rank among the GCCs (rank 49; NRI 0.00) in 2005-6. Qatar achievements in 2005-8, though modest by world standards, reflected the strong political will of the leadership to enter the information age and qualified it to compete in subsequent years for the second place among the GCC states. In contrast, the late arrival of Saudi Arabia and Oman to the NRI in the year 2007-8 qualified them for the bottom place among their sister states, but they are still far better off than most Arab and developing countries by world standards (Clabby-Analytics, 2007).

Environmental Factors of E-government: Policies, Laws and Infrastructure

Globalization encourages a highly competitive environment in international markets and leads many countries to review their policies and political environments to remain competitive and survive in the world market (Cohen, 2008). The NRI for political and regulatory component measures the level of states' efforts in relation to ICT. The environmental variables, that constitute the environment component of NRI, include the elements of markets, policies and laws. They represent the *soft components* of information society but the last two variables are central to government efforts to prepare the stage for the introduction of ICT to all walks of life, including government operations. Hence it is directly related to the feasibility of e-government projects in a certain country. Overall, these two variables provide a rough measure for the level of the government's *political will* which is pivotal to the success of any ICT or e-government initiative.

Political and Regulatory Environment

The political and regulatory environment of the NRI is concerned with the role of government policies, laws and regulations in facilitating the development and use of ICT in society. Perhaps the most important policy in this respect is the availability of a central institution that "...undertakes the function of strategic planning and oversees project implementation" (Bozz, 2001, 4). The existence of a central institution indicates the political will of the country to implement e-government and it is necessary to coordinate government efforts in this respect. All the GCC states have some sort of central ICT authority reflecting general government awareness with the importance of ICT and e-government to their economies (Araa, 2006).

The policies and laws that are adopted by a government influence its ICT deployment and use. These policies and the necessary legal framework are needed to address matters "such as the legal status of electronic contracts, digital signatures, the privacy and security of data transmission, and the facilitations of electronic transactions" (Schware and Deane, 2003, 11). The legal and policy frameworks also include the adoption of ICT policies that encourage foreign and local investment in IT and information sectors.

In the areas of laws and policies GCC states have shown different degrees of commitment. Using a scale from 1 to 4, with 4 being the top score, to rank countries in term of their policies and laws, the United Nations Economic and Social Commission for West Asia (UN-ESCWA) (UN-ESCWA 2005) ranked Bahrain top (score 4), followed by United Arab Emirates, Saudi Arabia and Kuwait (score 3) and Qatar and Oman at the bottom (score 2). In the area of laws maturity, the study placed UAE and Bahrain at the top, with 3 scores for each. Kuwait, Qatar, Saudi Arabia and Oman (scores 2) were at the same level of maturity. The study shows that UAE and Bahrain are leading GCC countries in adopting policies and legal frameworks necessary for ICT and e-government development. Saudi Arabia and Kuwait achieved moderate and similar levels of maturity, with Oman coming last.

These conclusions are confirmed by Table 1 that shows the NRI rankings and scores of GCC states in the political and regulatory environment. The Table shows that the scores of Qatar (4.56), UAE (4.41), Kuwait (4.15) and Bahrain (3.60) are progressing in this area and leading other GCC countries in the area of administrative and legal reform policies. Qatar's rank in 2007-8 (32) is very impressive.

Table 1
NRI Scores and Rankings for Political and Regulatory Environment in GCC Countries

Country	2004-5 ranking (104 states)	Score	2005-6 ranking (115 states)	Score	2006-7 ranking (122 states)	Score	2007-8 ranking (127 states)	Score	2008-9 ranking (127 states)	Score
UAE	26	0.74	47	0.3	44	4.41	45	4.35	39	5.09
Bahrain	37	0.32	59	-.21	82	3.60	57	4.16	49	4.37
Kuwait	Na	Na	40	0.31	53	4.15	51	4.22	58	4.19
Qatar	Na	Na	43	0.22	37	4.56	32	4.65	33	4.74
KSA	Na	Na	Na	Na	Na	Na	53	4.19	42	4.55
Oman	Na	Na	Na	Na	Na	Na	46	4.30	44	4.52

Source, the Global Information Technology Reports 2004-2009: World Economic Forum

The evolution of scores in Table 1 indicates the presence of a strong political will in all GCC states that may ensure the successful launching of ICT and e-government projects. However, the actual experiences of Saudi Arabia and Oman do not substantiate a strong correlation between scores and rankings in this area and the level of e-government. Although the two countries have some sort of central ICT authority, their e-government projects have not really matured enough to be compared with UAE, Kuwait and Bahrain projects. This fact may be explained by internal social and entrenched bureaucratic practices as well as the presence of strong political will in both Qatar and UAE.

Infrastructure Environment

Whereas the political and regulatory element represents the soft component of ICT, the infrastructure environment constitutes the hard one. It is argued by the United Nations Department of Economic and Social Affairs (UNDESA) in its 2008 e-government survey that the strong performance by all GCC is explained by heavy investment in deploying “broadband infrastructure, coupled with increased implementation of massive economic and legal reforms” (UNDESA, 2008). The infrastructure environment is related to the availability access to quality ICT facilities, which help to encourage the adoption, usage and sustainability of e-governments.

Table 2 shows that UAE was leading in 2004 and 2005 with new competitors who joined the race in 2004. Qatar occupied the top rank in 2005 (rank 27) and Kuwait the second rank (29). UAE and Bahrain were pushed down to the third and fourth ranks respectively. In 2006 and 2007 Kuwait continued to compete for the first and second rank, with Bahrain and UAE competing for third and fourth positions. However, the real distances between GCC countries as measured by NRI scores are not really significant. In fact the scores of all GCC countries are relatively low and modest by world standards.

Table 2
NRI Scores and Rankings for Infrastructure Environment
in GCC Countries

Country	2004-5 ranking (104 states)	Score	2005-6 ranking (115 states)	Score	2006-7 ranking (122 states)	Score	2007-8 ranking (127 sates)	Score	2008-9 ranking (127 states)	Score
UAE	35	-0.81	32	0.28	51	2.86	56	3.08	40	3.52
Bahrain	46	-30	34	0.16	54	2.68	54	3.09	49	3.28
Kuwait	Na	Na	29	0.32	48	2.88	37	3.60	45	3.44
Qatar	Na	Na	27	0.43	45	2.89	46	3.25	35	3.78
KSA	Na	Na	Na	Na	Na	Na	45	3.34	44	3.44
Oman	Na	Na	Na	Na	Na	Na	76	2.73	78	2.69

Source, the Global Information Technology Reports 2004-2009: World Economic Forum

Two important issues, related to the infrastructure environment in GCC states, are worth some consideration here. These are (1) coordination of efforts in the area of ICT and (2) expenditure on ICT and research and development (R&D). Coordination of policies, especially in the area of ICT purchase, is important for GCC countries because it helps to reduce costs and increases efficiency. The present level of coordination among GCC is not very satisfactory and is limited to workshops, conferences and discussion forums (Araa, 2006,). Clabby-Analytics (2007), an independent technology research organization, observed, after conducting six annual e-government seminars in Dubai, that GCC regional e-governments do not cooperate satisfactorily with each other in ICT policies. The lack of coordination may be due to GCC countries tendency to compete fiercely with each other to attract international investment, market their products and services on global markets, and adopt policies that will attract the most skilled personnel to their countries (Awan, 2008).

It is important for these countries, according to Awan (2008), to “standardize their databases so that data can be shared across government institutions and ministries in the region” to reduce costs and achieve political integration. Moreover, the GCC states’ expenditure

on ICT as a percentage of their GDP is low compared to other developed countries. In comparison to countries which have remarkable e-government projects, such as New Zealand, Canada, Singapore, Sweden and the UK, whose expenditures on ICT as a percentage from GDP are comparatively the highest in world, the GCC expenditures on ICT are modest. For example, it is 10.3% in New Zealand; 8.8%, in Sweden; 8%, in UK and 7.8% (Araa, 2006). By way of comparison, it is 2.2% in Egypt and was only 1.8% on average in all GCC countries during the period 1993-2001 (Araa, 2006). It is now estimated to be around 4% but the ICT spending in GCC states is expected to exceed \$10 billion by 2010 (UAE ICT, 2008).

Considering the fact that the information market is growing at an annual rate of 15%, the Saudi Arabian demand for IT tops all other Arab countries (Araa, 2007). This in fact reflects the proportional magnitude of the market demand because Saudi Arabia has the largest population among the GCC states. Qatar has made considerable efforts and investments to enhance its e-government project. These investments will likely accelerate and expand in the future because Qatar finalized a partnership agreement with the Singapore InfoComm Development Authority to improve its ICT status (AWCR, 2007).

Level of Readiness among E-government Stakeholders

The level of readiness and preparedness to deal with ICT among the e-government stakeholders is of crucial significance to the success of e-government projects. The readiness component of the NRI measures the capability of these stakeholders, (individuals, businesses and government) to handle and use ICT. This capability consists of many elements such as the availability of human skills to use ICT, “access and affordability for companies and the government’s own use of ICT for its services and processes” (Mia and Dutta, 2007). The last element is directly related to e-government readiness and feasibility.

Level of Consumer’s Readiness (G2C)

The e-readiness level of citizens as consumers of government services determines their ability to utilize and benefit from ICT development in general, and e-government in particular. The variables that affect this readiness include: “literacy rates, mode and level of access to the internet and the degree of citizen connectivity” (Mia and Dutta, 2007, 10). It is

evident that these factors are related to the *digital divide*. All governments in the Gulf region made varied efforts to attack the *digital divide*, by simplifying the delivery of e-government services for all social strata and by continuously lowering their costs to their citizens. The NRI uses these factors to measure the level of individual preparedness in different countries. Table 3 shows remarkable progressive levels of individual preparedness for all GCC countries. They all, with the exception of Saudi Arabia and Oman, started with low scores in 2004 - to achieve impressive levels in future years. Although UAE, with a world rank of 33 and a NRI score of 5.67, was leading GCC states in 2006 and 2007, Qatar took the lead in 2008-2009 with a world rank of 20 and a NRI score of 6.05.

Table 3
NRI Scores and Rankings for Individual Readiness in GCC Countries

Country	2004-5 ranking (104 states)	Score	2005-6 Ranking (115 states)	Score	2006-7 ranking (122 states)	Score	2007-8 ranking (127 states)	Score	2008-9 ranking (127 states)	Score
UAE	28	0.63	29	0.73	33	5.67	33	5.90	32	5.89
Bahrain	34	0.45	47	0.33	50	5.35	41	5.67	35	5.70
Kuwait	Na	Na	39	0.47	41	5.49	48	5.57	62	5.37
Qatar	Na	Na	34	0.53	36	5.64	28	5.99	20	6.05
KSA	Na	Na	Na	Na	Na	Na	71	5.13	79	5.06
Oman	Na	Na	Na	Na	Na	Na	49	5.57	49	5.54

Source, the Global Information Technology Reports 2004-2009: World Economic Forum

Qatar outperformed UAE in 2007-8 by occupying the top rank in the region. These results reflect the UAE and Qatar efforts to transform their educational systems to respond to the challenges of the digital age. Computer education and the internet are massively introduced to general and higher education facilities in these two states. It is also notable that in 2007-2008, Oman outperformed Saudi Arabia in individual readiness with a rank of 49 (very close to Kuwait 48). However, as indicated by 2006-2007 scores, the real distance among GCC states is not really significant and the race is neck to neck in consumer's readiness.

Level of Businesses' Readiness (G2B)

To benefit from ICT and e-government, business has to achieve high levels of e-readiness. The focus here is not only the role of big business, but also the efforts of small and medium size businesses to build the technological skills of their employees and to increase their willingness to utilize ICT in their work (Mia and Dutta, 2006) - and to therefore become able to also use e-government services. Table 4 shows the rankings of GCC states in the period 2004-8. The rankings and scores show that the business readiness in GCC is less remarkable than individual readiness. The Table shows that UAE is leading here, however, the distance, measured in NRI scores, between UAE, Kuwait and Qatar is not really significant. In 2007-8, whereas Oman moved up to occupy the 46th rank, Bahrain lost many positions to occupy the 79th rank.

Table 4
NRI Scores and Rankings for Business Readiness in GCC Countries

Country	2004-5 ranking (104 states)	Score	2005-6 ranking (115 states)	Score	2006-7 ranking (122 states)	Score	2007-8 ranking (127 states)	Score	2008-9 ranking (127 states)	Score
UAE	42	0.18	58	-0.29	30	4.82	37	4.80	33	4.94
Bahrain	57	0.01	90	-0.83	73	3.81	79	4.12	62	4.32
Kuwait	Na	Na	59	-0.30	57	4.12	53	4.38	64	4.30
Qatar	Na	Na	80	-.60	43	4.54	41	4.78	30	5.01
KSA	Na	Na	Na	Na	Na	Na	40	4.78	28	5.04
Oman	Na	Na	Na	Na	Na	Na	46	4.68	48	4.80

Source, the Global Information Technology Reports 2004-2009: World Economic Forum

The evolution of ranks and scores in Table 4 indicates that the business readiness is progressing consistently, reflecting the GCC efforts to attract foreign investment and to employ ICT technologies to enhance their competitiveness in the international markets. The achievements and success of UAE in this regard are documented by the Arab World Competitiveness Report (AWCR) which considered the UAE as the most suitable country in the Arab World for investment and innovativeness (AWCR, 2007). It is imperative here to acknowledge the impressive

achievements of Qatar which started its ICT reforms recently and managed to occupy the second rank after UAE among other GCC states.

Level of Government's Readiness (G2G)

This level affects and measures the readiness of government to move from bureaucratic styles of administration, to modern e-government operations. This is because the level of government's e-readiness to deal with ICT, which is reflected in its policy making, internal processes of government and the availability of online government services, determine its ability to establish e-government. If the government decides to make ICT a policy priority, this trend will be clear in its laws that encourage ICT deployment and use, its use of ICT and its attempts to qualify its citizens to use it (Mia and Dutta, 2007). Compared to other Arab governments such as Egypt, the e-governments readiness of some GCC governments such as those of Saudi Arabia and Dubai are world-class today. The other Arab countries lag in "e-government provisioning significantly" (Clabby-Analytic, 2007).

Table 5 measures these factors, with scores that show, in general, similar government e-readiness to individual and business e-readiness. It is significant that whereas UAE moved up from the rank of 28th in 2006-7 to join the top ten in 2008, Oman out-performed Kuwait. Qatar was moving up very quickly, to occupy the second place in the region and Bahrain moved up to the third position.

Table 5
NRI Scores and Rankings for Government Readiness in GCC Countries

Country	2004-5 ranking (104 states)	Score	2005-6 ranking (115 states)	Score	2006-7 ranking (122 states)	Score	2007-8 ranking (127 states)	Score	2008-9 ranking (127 states)	Score
UAE	4	1.83	36	0.28	28	4.48	10	5.22	9	5.33
Bahrain	14	1.00	71	-0.37	56	3.61	31	4.57	28	4.75
Kuwait	Na	Na	96	-0.76	101	3.00	80	3.79	80	3.80
Qatar	Na	Na	53	-0.13	36	4.12	24	4.96	22	4.99
KSA	Na	Na	Na	Na	Na	Na	40	4.34	38	4.55
Oman	Na	Na	Na	Na	Na	Na	46	4.22	39	4.47

Source, the Global Information Technology Report 2004-2009: World Economic Forum

The level of government's readiness, which simultaneously indicates the level of the political will to transform traditional bureaucratic administration to e-government, reflects itself in practical efforts to establish e-government in GCC states. Almost all GCC countries, with the exception of Bahrain, began their e-government projects around the same time, at the turn of 21st century. Being short of oil revenues and opting to become the financial center of the region, Bahrain started its e-government project in the early 1990s. Although UAE started its e-government project late in 2000, it was able to outperform all GCC states in record time and occupy the top ranking among them. Until 2004, Bahrain topped the list of e-governments in GCC states and was the only GCC country which had a relatively advanced e-government projects (Araa, 2006).

At present, occupying the second position after UAE, Bahrain has moved from preliminary stages of e-government to provide advanced government services and transactions through the comprehensive Bahrain government e-gate. The Arab World Competiveness Report, Part 7/11 (2007) disclosed that before 2004, Bahrain occupied the first ranking in e-government readiness but, starting from 2005, UAE took the lead. This fact was confirmed in the UN E-government Readiness Report of 2008 in which UAE is the highest ranked country in the Middle East. The UAE moved up from 42nd in 2005 to 32nd ranking in 2008. All other GCC states also made major improvements, reflecting their drive towards building knowledge-based economies (MENAFN, 2008). In the UN report, Bahrain rose from 53rd to 42nd and Qatar from 62nd to 53rd. Meanwhile, Kuwait moved up from 75th to 57th, Saudi Arabia from 80th to 70th Oman moved up from 112th to 84th (Albawaba.com, 2008).

Usage of ICT in GCC States and Models of E-government Delivery

The scope of use of e-government functions, though mostly dependent on levels of e-readiness, is also affected by socio-cultural factors that influence stakeholders' willingness to use ICT and e-government.

The Individual Usage (G2C)

This element is highly subjective and very difficult to measure exactly because it is related not only to citizens' technical ability and e-

readiness, but also to the willingness of the individual to use ICT and e-government. This willingness of individuals to use ICT is influenced also by two factors: (1) entrenched cultural and social factors, and (2) semantic factors. Therefore, the level of individual usage may not be directly correlated to levels of individual e-readiness. Table 6 shows these discrepancies. All GCC countries obtained modest scores and it is significant that Bahrain is leading GCC with a ranking of 32 (score, 3.22) with UAE occupying the 40th ranking (score 2.64) and Qatar positioned at the 41st ranking (score 2.54). Both UAE and Qatar were placed in the second and third places among GCC states, respectively. This situation is explained by the fact that Bahrain started to provide education to its people well before all other GCC countries.

Table 6
NRI Scores and Rankings for Individual Preparedness to Use E-Service in GCC Countries

Country	2004-5 ranking (104 states)	Score	2005-5 ranking (115 states)	Score	2006-7 ranking (122 states)	Score	2007-8 ranking (127 states)	Score	2008-9 ranking (127 states)	Score
UAE	29	0.75	37	0.20	40	2.64	36	2.97	31	3.57
Bahrain	37	0.30	39	0.16	32	3.22	43	2.64	44	2.90
Kuwait	Na	Na	42	0.14	44	2.34	47	2.36	51	2.41
Qatar	Na	Na	45	0.03	41	2.54	40	2.75	38	3.26
KSA	Na	Na	Na	Na	Na	Na	56	2.02	53	2.38
Oman	Na	Na	Na	Na	Na	Na	69	1.78	79	1.57

Source, the Global Information Technology Report 2004-2009: World Economic Forum

The low scores of all GCC states in the individual usage element may provide evidence to prove the existence of the digital divide in the region, and its consequent effects of lack or under use, unavailability or inaccessibility of ICT and e-government to the general public. However, the discrepancies between individual readiness and individual usage may be explainable, *inter alia*, by some socio-cultural and semantic factors which are discussed below.

Socio-Cultural Factors

In all GCC states, the operation of the formal departments of government is influenced by the existence of a parallel informal public sector (the traditional system), in which there are direct relationships between rulers and ruled in all levels of governments, exemplified by the institution of *majlis* or *diwan* (both words refer to informal regular meetings) (UAE Yearbook, 2006, p. 53). This informal structure of relationships between rulers and ruled, which exists in slightly different forms in all GCC countries, constitutes networks of patron-client relations that coexist with the formal bureaucracy (Elhussein, 2007).

This system of traditional government often helps to lubricate the wheels of formal bureaucracy and to encourage direct face-to-face personal contacts between citizens and government departments. In this cultural context, full computerization of government services may cause *disintermediation* - which means in economics - the removal of intermediaries in the relationship between customers and buyers, and thereby reduce the costs of service delivery. In the context of GCC governments, this may depersonalize the existing close face-to face informal relations between governments and their citizens. This is especially relevant to countries with a small population, such as UAE, Bahrain and Qatar.

Semantic and Literacy Factors

Semantic and literacy factors are mostly related to the scarcity of Arabic digital content in the internet, and Arabic and English illiteracy, especially among older generations. These factors worked to reduce the level of GCC citizens' willingness to use ICT and whatever e-government services which are available in the Web. According to AWCR (2007, 85):

While the world's Arabic speakers number 300 million, Arabic Web pages represented 0.2 percent only of total Web pages in 2006, or an estimated 100 million pages compared with approximately 40 billion pages in all other languages. By contrast, Korean Web pages account for 4.4 percent of the Web's content, although Korea has a population of 45 million.

The literacy factor also worked to reduce the level of citizens' participation. One expert, commenting on problems of e-government in GCC countries, said that "... the biggest issue of all is literacy itself - not just computer literacy. And how e-government can reach those underprivileged masses and provide effective services (Blair, 2006).

The Business Usage (G2B)

The level of business usage of ICT determines also business preparedness, not only to use it in business-to-business (B2B) transactions, but also to interact with e-government services (G2B). G2B is a two-way process involving government to business and business to government transactions - the most important of which is e-procurement and tenders (Palvia and Sharma, 2007). Hence, the business NRI scores measure the degree of incorporating and using ICT technology in business operations in the country. It uses variables such as the degree of “innovation and technology absorption in the business sector, the availability and usage of fixed lines and mobile telephones for business and internet penetration within the firm” (Mia and Dutta, 2007, 7). Table 7 shows the rankings and scores in GCC countries in 2004-8.

In contrast to the individual usage in GCC, the business usage is remarkably high. Here again, UAE is leading other GCC countries with a world ranking of 32 (score 5.21) in 2007. This result reflects the immigration of world multinational corporations to UAE, and especially to Dubai and Abu Dhabi. Qatar, Kuwait and Bahrain improved their rankings and scores in 2006-7. It is remarkable here that Saudi Arabia has moved up to the third ranking among GCC countries, outperforming both Kuwait and Bahrain.

Table 7
NRI Scores and Rankings for Business Preparedness to Use E-Service in GCC Countries

Country	2004-5 ranking (104 states)	Score	2005-6 ranking (115 states)	Score	2006-7 ranking (122 states)	Score	2007-8 ranking (127 states)	Score	2008-9 ranking (127 states)	Score
UAE	24	0.81	32	0.68	31	5.21	32	5.00	27	5.18
Bahrain	39	0.47	52	0.08	58	4.75	56	4.52	45	4.77
Kuwait	Na	Na	47	0.21	50	4.81	51	4.57	54	4.63
Qatar	Na	Na	62	-0.11	62	4.69	46	4.66	41	4.86
KSA	Na	Na	Na	Na	Na	Na	49	4.59	39	4.87
Oman	Na	Na	Na	Na	Na	Na	67	4.32	66	4.44

Source, the Global Information Technology Report 2004-2009: World Economic Forum

The UAE ranking and scores in Table 7 reflect the impressive efforts of business organizations to modernize, and upgrade their management styles by employing ICT technology. It also indicates the high level of preparedness of these businesses to interact with the advanced level of e-government in UAE.

The Government Usage (G2G)

Unlike other stakeholders' levels of usage, the NRI for government usage measures directly the level of e-government service availability because it is concerned with the government level of use of ICT, and its efforts to enhance stakeholders' access to e-government services, and to improve their delivery (Mia and Dutta, 2007). Table 8 rankings, in 2006-7, UAE 10th (score 5.36) and Qatar 17th (score of 5.21), reflecting the efforts of the two governments to promote ICT usage in government activities. Again, in this respect, Saudi Arabia has outperformed Kuwait. Bahrain's high government readiness is compatible with its high government's usage.

Table 8
NRI Scores and Rankings for Government Preparedness to Use E-Service
GCC Countries

Country	2004-5 Ranking (104 states)	Score	2005-6 Ranking (115 states)	Score	2006-7 Ranking (122 states)	Score	2007-8 Ranking (127 states)	Score	2008-9 Ranking (127 states)	Score
UAE	7	1.46	11	1.57	10	5.36	17	4.92	16	5.06
Bahrain	30	0.49	62	-0.13	50	4.21	39	4.25	29	4.58
Kuwait	Na	Na	77	-0.48	96	3.22	97	3.13	97	3.23
Qatar	Na	Na	25	0.90	17	5.21	27	4.67	25	4.73
KSA	Na	Na	Na	Na	Na	Na	51	3.95	42	4.30
Oman	Na	Na	Na	Na	Na	Na	46	4.04	45	4.21

Source, the Global Information Technology Report 2004-2009: World Economic Forum

As expected and shown by the evolution of NRI scores, the scope of use of e-government is relatively wide in UAE, Qatar and Bahrain. Qatar managed to put online almost all government services and information.

UAE and Bahrain's e-governments are so developed that their governments are experienced with e-voting. In Bahrain, e-voting was used in an experimental manner in February 2001 Referendum of National Action Charter, and in municipality elections of 2002. It was also used in the general elections of 2006 and 2007, in both UAE and Bahrain (Araa, 2006: 46).

Bahrain's project of the multi-purpose smart card was developed to perform many administrative activities and services (AWCR, 2007,86). In addition to stored information, the smart card includes also e-signatures (Araa, 2006, 46). The UAE Federal Government also initiated a similar project that employs smart card and biometric technologies to create the Emirates Identity Authority. The project purpose is to develop and manage an "integrated system for population data and identity management systems for UAE citizens and residents" (AWCR, 2007, 86). Moreover, the UAE online government services and information were combined in a one e-gate (AWCR, 2007).

Awan. (2008) evaluates major government websites of GCC countries using criteria for ranking them that included online information, foreign language access, communication, services provided, and use of advertisements on government websites. Awan found "considerable variations across GCC countries in how much material is on these government websites. Among the GCC countries, UAE government websites were ranked as highest in all the criteria researched. The Saudi Arabia was rated as the lowest" (Awan, 2008).

Conclusions and Recommendations

It is clear that all GCC countries have made impressive strides towards using ICT and establishing e-government compared to other Arab countries; however there are remarkable variations among them. The analysis of the NRI data between 2004 and 2009 clearly illustrates this conclusion. Bahrain started as a leader in 2004 and then was gradually pushed down by other GCC competitors. The UAE is the best performer among GCC states and continued to lead them most of the time, with remarkable progress in NRI world rankings and scores. Qatar, Bahrain and Kuwait are competing neck-to-neck - with Qatar showing a stronger will to outperform even the UAE. Saudi Arabia and Oman are slowly catching up with the others. Surprisingly, Bahrain played catch-up

and the UN report on e-government in 2010 portrayed it as leading all Arab countries, including the GCC countries, by placing it in a 13th ranking worldwide.

One important conclusion to be drawn from the analysis of the environment component, which simultaneously offers a rough measure of leadership and political will, is that among GCC countries under populated GCC states (UAE, Kuwait, Qatar, and Bahrain) show more political will to introduce ICT and e-government than states with larger populations (Oman and Saudi Arabia). This may be explained by a desire of these countries to use ICT technology to reduce their dependence on expatriate labor that threatens their demographic balance and national identity. Being the poorest among them, the experience of Bahrain suggests that the political will is as equally important as economic wealth.

The GCC countries need to address certain issues urgently. First, they need to address the issue of a lack of co-ordination in ICT and e-government matters by coordinating ICT policies and standardizing databases so that data can be shared across governments' institutions and ministries in the region. Secondly, they need to enhance the levels of individual e-readiness and individual usage by attacking the digital divide and making access to e-government's services more accessible to all users, by removing illiteracy in general, and computer illiteracy in particular.

Future studies on the topic of e-government in the GCC countries may concentrate on the importance of demographic factors, and their impact on user readiness and user willingness to engage in e-government. Moreover, future studies may also consider the willingness of governments and bureaucracies in GCC countries to accept the level of transparency required by e-government. There is also a need to address the economic impact of e-government programs on different stakeholders.

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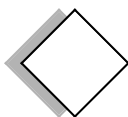
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الحكومة الإلكترونية في دول مجلس التعاون الخليجي: دراسة مقارنة

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ملخص: الهدف الرئيس من هذا البحث هو استخدام المنهج الوصفي التحليلي لإجراء دراسة مقارنة حول الحكومة الإلكترونية في دول مجلس التعاون الخليجي وقدرة هذه الدول على إدخال أدوات الحكومة الإلكترونية واستخدامها في قطاعاتها العامة. ويحاول البحث القيام بهذه المقارنة من خلال التركيز على أبعاد معينة استناداً إلى مكونات مؤشر الجاهزية الشبكية الذي طوره المنتدى الاقتصادي العالمي. هذه الأبعاد تشمل: البيئة، والاستعداد، وعناصر الاستخدام. ويستخدم البحث التعاريف الإجرائية لهذه العناصر من أجل تسهيل المقارنة بين دول مجلس التعاون الخليجي. الافتراض الأساسي لهذا البحث هو أنه كلما ارتفع مستوى نشر تكنولوجيا المعلومات والاتصالات أدى ذلك إلى دعم الاستعداد التكنولوجي وقدرة الدول الخليجية لاستخدام الحكومة الإلكترونية. ويخلص البحث إلى أن جميع دول مجلس التعاون الخليجي قطعت أشواطاً مهمة على طريق استخدام تكنولوجيا المعلومات والاتصالات، وإنشاء الحكومة الإلكترونية، على الرغم من وجود اختلافات ملحوظة فيما بينها. تتميز مثلاً دولة الإمارات العربية المتحدة بأفضل أداء بين دول مجلس التعاون الخليجي، وظلت في مقدمة تلك الدول، في معظم الوقت، كما يتضح من التقدم الملحوظ الذي أحرزته في التصنيف العالمي للجاهزية الشبكية. وتنافس دول قطر والبحرين والكويت دولة الإمارات على الصدارة، وقد أظهرت إرادة سياسية أقوى لتتفوق حتى على دولة الإمارات العربية المتحدة. وتحاول المملكة العربية السعودية وسلطنة عمان اللحاق ببطء بالآخرين.

المصطلحات الأساسية: الحكومة الإلكترونية، الجاهزية الشبكية، دول الخليج، تكنولوجيا الاتصالات والمعلومات.

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