

An Overview and Classification of E-Readiness Assessment Models

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Abstract- E-readiness of governments has become a vital policy tool for all countries since it enhances the trust of the citizens through applying the principles of good governance. Recently, e-readiness is becoming more accepted at the level of governments, organizations and citizens especially in the growing global open market. However, e-readiness has turned into a core feature of the international socio-economic development due to its ability to transform the society including the movement from traditional relations to more modern ways of thinking or dealing with health, education and production. This paper presents the different international organizations that have developed a variety of e-readiness models to participate in the global digital economy at the level of e-commerce, e-government and general ICT diffusion. Moreover, the paper provides classifications of the assessment models of e-readiness as e-economy and e-society assessment tools, the methods of quantitative and qualitative pictures and finally the area of focus whether it is macro or micro. In line with this, governments should prepare inventive and realistic e-government projects as providing online services. Thus, such assessment tools are fundamental to achieve substantial progress at the level of e-government, e-commerce, e-education, e-health and e-science that constitute the information society.

Index Terms- E-readiness, ICT, E-society, E-economy, Lebanon

I. INTRODUCTION

As the economic structure of developing countries has been mainly dependent on the technology progress, governments tend to continuously find innovative ways to alter and keep swiftness with such growing technology (Damaskopoulos & Evgeniou, 2003). Accordingly, the electronic readiness or e-readiness of governments has become an important policy tool for any country since it opens the way in front of the citizens to interact with the government and enhances their trust which in turn advances the economic efficiency and business (Holden & Millett 2005). Thus, e-readiness is becoming more accepted at the level of governments, organizations and citizens especially in the growing global open market (Lou, 2010; Das et al., 2009).

II. LITERATURE REVIEW

The Economist Intelligence Unit (EIU, 2006) stated that different corporate and international organizations have developed a variety of e-readiness models to participate in the global digital economy at the level of e-commerce, e-government and general ICT diffusion. Different indices have been developed for the assessment of e-readiness and consequently to measure its component indicators. These indices include "the International Telecommunication Union Digital Access Index, World Economic Forum Networked Readiness Index, United Nations Conference on Trade and Development ICT Development Index, the Economist Intelligence Unit e-Readiness Index, Mosaic Group Index, Conference Board of Canada Connectedness Index and ORBICOM Infostate Index".

Thus, the variety of indices makes it difficult to find a specified definition to be used in the term of e-readiness due to the multiplicity of its applications. Musa (2010) claimed that there has been more than one effort to define what is meant by e-readiness. The United Nations University stated that "e-readiness measures how well a society is positioned to utilize the opportunities provided by ICT, where ICT infrastructure, human capital, regulations, policies and internet penetration are all crucial components of e-readiness" (Ojo et al., 2007). According to the readiness guide for developing countries, Harvard University defined e-readiness as the "degree to which a community is prepared to participate in the Networked World. It is gauged by assessing a community's relative advancement in the areas that are most critical for ICT adoption and the most important applications of ICTs".

From other perspective, EIU (2006) characterized e-readiness as the "state of play of a country's ICT infrastructure and the ability of its consumer, businesses and governments to use ICT to their benefit". Consequently, an inclusive definition can be figured out from the above definitions of e-readiness as the capacity of the community to use ICT as infrastructure to transfer the traditional economy into a digital economy. It fosters competitive and global market through creating a society with abilities to participate in the new economy and respectively, to develop the human capabilities and economic performance.

From these definitions, there are many reasons which stand behind adopting the ICT and motivating the countries as well as the governments to be engaged in the process of e-readiness and respectively, in the new economy. These reasons include benefiting from the ICT to overcome problems and keeping up with the global economy in a digital way. In addition, Potnis and Pardo (2011) claimed that the quality of life for nations is tested through the process of e-readiness, thus it is essential to adopt

ICT to prevent being in the lag within other nations and economies.

It was noted by Dada (2006) that most of literature which is related to e-readiness is to some extent new, and it is progressively more approved that the quick rate of information delivered through e-readiness has become a core feature of the international socio-economic development and the dramatic advance in the use of ICT in business and industry (Saesor & Liangrokapt, 2012; Zarimpas, 2009). In the past years, the role of electronic networks has grown exponentially in developed and developing societies, where a series of e-readiness assessment and measurement models have been developed since 1998 (Eweni, 2012; Economist, 2006; Vosloo & Belle, 2005).

The earliest definitions of e-readiness were established in 1998 by the Computer Systems Policy Project (CSPP) through the development of first e-readiness assessment tool "Readiness Guide for Living in the Networked World" (Mutulaa & Brakel, 2006). In this meaning, the concept of e-readiness has been found during the latest 1990s in order to cover the framework of the infrastructure of ICT. This concept took in crystallization to include indices and indicators for evaluating e-readiness to compare the e-readiness of different countries (Lanvin & Qiang, 2004). As the e-readiness grows globally, most countries in the developing world are still trying to implement applicable infrastructures to achieve levels of e-readiness that are sufficient enough to contribute in the emerging global information economy (Lou, 2010).

III. IMPORTANCE OF E-READINESS

As e-readiness is considered one the main faces of development for any country, it represents the transformation of society including the movement from traditional relations and methods to more modern ways of thinking or dealing with health, education and production. The key drivers of such transformation depend on scientific ways of thinking that enable decision makers from recognizing what they know and what do not, thus allowing them to identify the crucial variables that influence the outcomes while trying to make implications based on accessible data (Babcock, 2005).

In parallel to the emergence of ICT, new economies are more concerned on having a sustained non-inflationary growth with a high level of employment to advance the economic growth and productivity. Therefore, it appears that e-readiness is much concerned with the improvement of national economy, human capital and governance performances in developing countries. This leads to ask if there exist a causal relationship between both phenomena of ICT advancements and new economy (Grigorovici, 2004).

Alemayehu (2008) argued that arriving to a successful business and economy, e-readiness can be a source of competitive advantage in the networked economy. EIU (2006) claimed that when governments encourage the use of digital technologies and provide its services online or wirelessly, its citizens' ability to

utilise technology skilfully increases and the economy, business and legal systems becomes more transparent and efficient.

According to the investments, e-readiness assessment models provide information for decision makers in both private and public sectors regarding the proper levels of investments and the suitable policy formulations required for e-government projects (Potnis & Pardo 2011). Davidrajuh and Tvedteras (2006) argued that investor must have good knowledge about the market he is going to invest in. Thus, e-readiness gives the impression about the country and its indices reflect if it is healthy and attractive environment for external investors. Furthermore, it enables the analysts to be engaged in quite customized inquiries, in which customization can be achieved at the economic, industrial, and organizational levels. As well as it provides policy makers with comprehensive scorecard of their economy's competitiveness related to the international counterparts in the digital era across the globe. This is important because investing in countries with higher scores in this area may lead to more secured returns (Ifinedo, 2005; Choucri, et al., 2003).

Moreover it is noted by Lanvin and Qiang (2004) that e-readiness can contribute significantly to the economic growth by increasing its productivity from different perspectives that result from reorganization across the entire economy such as the high growth of total factor productivity (TFP) in ICT producing industries and the real ICT capital stock per worker.

Hence, e-readiness is realised when governments use ICT to boost economic and social development (EIU, 2006). This realization is noted based on the study made by Lanvin and Qiang (2004) and Dada (2006) about the effects of ICT on the national economy through increasing the competitiveness, creating the value of new products and improving the employment and empowerment as well.

Overall, e-readiness is considered important since it creates new business opportunities and competitiveness (Janom & Zakaria 2008). The micro level of benefits of the e-readiness is highlighted from Mutulaa and Brakel (2006) as it is expected to transact business, enhance their operations and management, save time, improve quality and faster delivery of services. In addition, it tends to reduce manpower requirements, increase cost effectiveness, provide better presentations and enhance product selection. These in turn reduce procurements costs, and allow the share of information and communication to improve the general skills of employees and facilitate their access to trade information.

Globally, e-readiness can facilitate the sources of competitive advantage and opportunities for economic and social development (EIU, 2003). Also, ICT constitute the way businesses now interact with key stakeholders such as suppliers, customers, employees and investors. Moreover, the importance of ICTs for economic development in the networked world lay largely in their potential to facilitate the identification, acquisition, organisation, dissemination and application of information (Mutulaa & Brakel, 2006).

Finally and from the social and political perspectives, e-readiness also allows people to share their experience with the world as well as can empower individuals to participate in the political institutions and policymaking of their community, giving voice to those who have traditionally been excluded (Lanvin & Qiang, 2004). In addition, it empowers people in developing countries to overcome development obstacles and interconnectivity across nations to overcome the limitations of physical location (Janom & Zakaria 2008).

IV. CLASSIFICATION OF THE E-READINESS ASSESSMENTS TOOLS

The e-readiness assessments are very diverse in their goals, strategies and results (Mutula, 2010). E-readiness assessments are designed to evaluate organizational capabilities, access and opportunities offered through e-government initiatives. They have emerged as opportunities to collect, organize, share and manage ICTs related data (Potnis & Pardo, 2011). According to Musa (2010), e-readiness has this diversity in order to offer different uses in different manners.

Many researchers have classified e-readiness according to its economic or social perspectives (Azab, et al., 2009; Janom & Zakaria, 2008; Luyt, 2006; Lanvin & Qiang, 2004). From the perspective of e-society, the society benefits from using the ICT when it is related to social objectives like social inclusion, individual property rights and population density. On the other hand, e-readiness will be under the perspective of e-economy since its role related to the economy and in specific business potential to benefit from integrating ICT in its environment. For instance, some of the economic aspects include taxes and tariffs, quantity of exports, and IT spending by industry. However, these two categories which are described as e-

economy assessment tools and e-society assessment tools are not mutually exclusive. Nonetheless, e-society tools incorporate business growth and consider it necessary for society's e-readiness. While e-economy tools contain some factors of interest to the larger society, such as privacy and universal access (Vaezi & Bimar, 2009).

It is noticed recently that the international concern has been developed of what is known as e-readiness assessment tools, where a number of organizations began to develop survey frameworks as shown in table 1, in order to provide quantitative and qualitative pictures of how thoroughly a particular community, region, or country could take advantage of information technology for its development activities (Luyt, 2006).

As claimed by Hourali et al (2008), these categories of models also have different assessment methodologies such as questionnaires, statistical methods, best practices and historical analyses. In this context, there are several studies that have been conducted about e-readiness assessment tools, measurements, aspects, indicators and methods (Mutula, 2010; Vaezi & Bimar, 2009; Zaied et al., 2007; Luyt, 2006; Mutula & Brakel, 2006; Rizk, 2004; Bui, 2003). They were developed by different organizations to measure the e-readiness of the countries and its economies in the recent two decades. Zhai (2011) argued that based on these theories and models, the influencing factors can be classified into innovation characteristics, organization characteristics and environment characteristics.

Table 1: Assessment models of E-readiness.

Organization Name	Content tool	Year	Aspects	Area	Methodology
Economist Intelligence Unit	E-Business Readiness Ranking	(2003)	E-economy	Macro	Quantitative
Center for International Development Harvard University	Networked Readiness Index	(2002-2003)	E-society	Macro	Quantitative
IDC	Information Society Index	(2000-2002)	E-society	Macro	Quantitative
UNDP	Technology Achievement Index	(2001)	E-society	Macro	Quantitative
UNCTAD	ICT Development Indices	2001)	E-society	Macro	Quantitative
McConnell	McConnell International Risk Business	(2000-2002)	E-economy	Macro	Qualitative
Computer Systems Policy Projects	Readiness Guide	(2001)	E-society	Macro and	Qualitative

CSPP				Micro	
Mosaic Group	A framework for Assessing the Diffusion of the Internet	(2001)	E-economy	Macro	Qualitative
World Bank	Knowledge assessment methodology	(1998)	E-economy	Macro	Qualitative
Orbicom	Monitoring the digital divide and beyond	(2002)	E-society	Macro	Qualitative
IUT	Digital Access Index	(1998)	E-society	Macro	Quantitative
WITSA	International survey of e-commerce	(2000)	E-economy	Macro	Qualitative
APEC	APEC readiness initiative	(1999)	E-economy	Macro	Quantitative
USAID	ICT assessments	(1999)	E-society	Macro	Qualitative
ASEAN	E-Readiness Assessment	2001	E-society	Macro	Qualitative

The analysis of the literature proves that most of the researchers study the indicators of e-readiness related to infrastructure and technology, people and human skills and accessibility and connectivity (Zaied et al., 2007). Whereas, Rao (2003) considered the 8Cs: connectivity, content, community, commerce, capacity, culture, corporation and capital as the checklist to measure the ability of any country to be involved in e-readiness in order to make their businesses more efficient or develop new export sectors.

Moreover, Ojo et al (2007) organized the indices of e-readiness into two categories. Indices that are related to particular themes such as e-commerce and e-government, while other category includes general indices which measure the capacity of ICT, internet diffusion and other access-related issues without any particular focus on specific aspects of information society.

For example, the Economist Intelligence Unit Index of e-readiness measures the degree to which a society is ready for e-commerce and e-business opportunities. While the UN-DESA e-readiness model, is more involved with e-government readiness.

In the same context, Ojo et al (2007) goes farther than in showing the significance of the e-readiness assessments as it is not only useful in implementing e-government in the right way, but also keeping it on way and pushing it further on in which an effective e-government readiness assessment framework is a necessary condition for advancing e-government.

V. CONCLUSION

Accordingly, governments should prepare innovative and practical e-government projects in line with the private sector, which has to be encouraged in adapting e-commerce as to provide online services. Therefore, such initiatives and general

assessment tools are fundamental to achieve substantial progress and they are needed to identify the basic concerns for social actions towards the information society that is based on e-government, e-commerce, e-education, e-health and e-science etc.

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