

# Electronic Readiness: The Concept and Assessment Tools

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**Abstract:** Electronic readiness (e-readiness) is a relatively new concept that has been given impetus by both the rapid rate of Internet and other networks penetration throughout the world, and the increasing uses of facilities provided by the information and communication technologies (ICTs) in organizations. The aim of this paper is to provide more general knowledge about the concept of e-readiness and its assessment tools throughout societies and organizations. In present study, it is discussed the digital divide which has a close relationship with e-readiness and followed up, scientists and ICT organizations' viewpoints about the concept of e-readiness are introduced and then, some e-readiness assessment models and tools are presented. Finally, the paper tries to discuss the significance of e-readiness assessment and some advantages and disadvantages of the use of e-readiness assessment tools.

**Keywords:** e-readiness, e-readiness assessment tools, digital divide, information and communication technology

## 1. Introduction

Nowadays, information and communication technology (ICT) plays an important role to develop the societies and governments and organizations know well that it is not possible to have a sustainable development without the ICT advances. Analyzing ICT development standards known as "e-readiness tools and indices" might be an effective step for countries and organizations to participate in the information society where we can increasingly see the information and communication technology development and expansion with regard to software and hardware systems. According to the latest Economist Intelligence Unit (EIU) report, ten years on, the journey continues to gain pace: every month over 40m more people become mobile-phone users, for example, and the phones themselves are increasingly powerful data devices. The Internet — now a ubiquitous platform for commerce, entertainment and communication — has generated a thriving industry. Global monthly Internet traffic in 2010 is two-thirds higher than one year ago, according to Cisco, a network equipment provider. The capacity of the world's international fiber-optic cables — which carry all this traffic — doubles every 18 months, based on estimates by Telegeography, a telecommunications research firm [1].

E-readiness is a relatively new concept that has been given impetus by the rapid rate of Internet penetration throughout the world, and the dramatic advances in uses of

information technology (IT) in business and industry [2]. Recent studies showing the increasing knowledge intensity of economic activities in almost all of the industrial countries contributed to an accelerated interest in e-venues for growth in the developing countries. National and international institutions alike appear to be focusing on the e-potentials for growth in private as well as public sectors, and almost every developing country is now mounting a national information technology (IT) development plan [3].

## 2. Digital Divide

The "digital divide" is the division between those who have access to ICT and are using it effectively, and those who do not. Since information and communications technology is increasingly a foundation of our societies and economies, the digital divide means that the information "have-nots" are denied the option to participate in new ICT-based jobs, e-government, ICT-improved healthcare, and ICT-enhanced education [4]. Also, Organization for Economic Co-operation and Development (OECD) believes that the term "digital divide" refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies (ICTs) and to their use of the Internet for a wide variety of activities [5]. It is necessary to

say that effective access to the Internet means much more than simply having a network connected machine [computer]. Rather, it includes the ability to use the medium effectively and efficiently enabling users to benefit from the medium. These necessary online skills can only be achieved universally by focusing policy not only on improving access but also investing in training [6].

These days the digital divide is a challenging issue within countries that has engaged in the managers and decision-makers' brains and also in terms of both the dramatic advances in ICTs, and the participation of countries and organizations in the information society, digital divide has been taken into consideration internationally and it has caused the gap between developed and developing countries. Parallel to the rise of the international digital divide as an object of international concern has been the development of what are known as e-readiness assessment tools. Starting in the late 1990s, a number of organizations began developing these survey frameworks in order to provide quantitative snapshots of how thoroughly a particular community, region, or country could take advantage of information technology for development activities [7]. In other words, the e-readiness concept was originated by the intent to provide a unified framework to evaluate the breadth and depth of the digital divide between more and less developed or developing countries during the later part of 1990s [2].

### 3. E-Readiness Definition

Regarding to researchers and ICT organizations' approaches, there are various e-readiness definitions that some are presented:

Computer Systems Policy Project (CSPP) group including American IT companies, was the first organization that undertook the concept of e-readiness. This organization in its e-readiness assessment tool known as "Readiness Guide for Living in the Networked World" developed in 1998 [8], defines "e-readiness" as a community that had high-speed access in a competitive market; with constant access and application of ICTs in schools, government offices, businesses, healthcare facilities and homes; user privacy and online security; and government policies which are favorable to promoting connectedness and use of the network [2].

The World Bank Group believes that "the information readiness" or e-readiness is a level, which a community reached and is prepared to integrate into the informatively networked world [9].

E-readiness is generally defined as the degree to which a society is prepared to participate in the digital economy with the underlying concept that the digital economy can help to build a better society. Regardless of a country's level of development, readiness is assessed by determining the relative standing of its society and its economy in the areas that are most critical for its participation to the networked world. However, e-readiness can be a relative concept and it could be defined differently depending on each country's priorities and perspective [10].

According to Bui et al. (2003), e-readiness is defined as the aptitude of an economy to use information and communications technologies to migrate traditional

businesses into the new economy. E-readiness reaches its optimal level when the economy is able to create new business opportunities that could not be done otherwise [11].

Another definition of e-readiness is from Prabhu defining it as the infrastructural prerequisites for taking up any e-governance initiative. These infrastructural prerequisites or preconditions may be identified as data system infrastructural preparedness, legal infrastructural preparedness, human infrastructural preparedness, institutional infrastructural preparedness, technological infrastructural preparedness, leadership and strategic planning [12].

Dada (2006) believes that e-readiness (electronic readiness) is a measure of the degree to which a country, nation or economy may be ready, willing or prepared to obtain benefits which arise from information and communication technologies (ICTs). This measure is often used to gauge how ready a country is to partake in electronic activities such as e-commerce and e-government [13].

The Center for International Development at Harvard through its macro Readiness for the Networked World tool defines e-readiness in relation to a society that has: the necessary physical infrastructure (high bandwidth, reliability, and affordable prices); integrated ICTs throughout business, communities, and government and universal access [2].

The Economist Intelligence Unit's (2005) defines a country's e-readiness as a "measure of its e-business environment, a collection of factors that indicate how amenable a market is to Internet-based opportunities" [13].

Center for E-Business at MIT (2003) defines "e-readiness" as the ability to pursue value creation opportunities facilitated by the use of the Internet [3].

### 4. E-Readiness Assessment Tools/Models and Indices

Realizing the importance of e-readiness measurement and its implications for economic planning, many governmental and world organizations have created instruments either in the form of self-assessment tools or surveys [11]. In a classification, e-readiness or ICT assessment tools/models have been developed in either national/international level or organizational level. For instance, models of Asian Pacific Economic Cooperation (APEC), CID, CSPP and Massachusetts Institute of Technology (MIT) in national/international level, and E-Technology Group and Verdict in organizational level measure e-readiness [14]. In addition of that, e-readiness surveys may be broadly classified into two groups: those that focus strictly on e-economy (APEC's e-Commerce Readiness Assessment Guide (2000) and the World Information Technology and Services Alliance's (WITSA) International Survey of E-Commerce (2000) are examples) and those that look more widely at the role of ICT in society (examples include the World Bank's Knowledge Assessment Methodology (2006) and Orbicom's Monitoring the Digital Divide (2002)) [7]. In Table 1, selected e-readiness assessment surveys are presented.

**Table 1.** Selected e-readiness assessment surveys [7]

Project Name	Responsible Organization	Starting Year	Frequency	Countries Surveyed	Area of Focus
Global Diffusion of the Internet	Mosaic Group	1997	Case Studies	30	E-economy
Ready? Net. Go!	McConnell International	2001	One-time project	53	E-economy
E-Readiness Rankings	Economist Intelligence Unit	2000	Annual	65	E-economy
Knowledge Assessment Methodology	World Bank	1998	Annual	128	E-society
Monitoring the Digital Divide	Orbicom	2002	One-time project	between 139-192	E-society
Digital Access Index (DAI)	ITU	1998	Annual	178	E-society
International Survey of E-Commerce	WITSA	2000	One-time project	25	E-economy
APEC Readiness Initiative	APEC	1999	Case Studies		E-economy
ICT Assessments	USAID	1999	Case Studies	~9	E-economy
Information Society Index	IDC	1995	Annual	53	E-society
E-Readiness Assessment	ASEAN	2001	One-time project	10	E-society

constructed, or how they might be adjusted to analyze particular e-business opportunities" [3]. However, Table 2 shows some measuring indices of e-readiness models.

Each of those discussed e-readiness assessment tools has undertaken some different indices to measure the level of e-readiness, but "many e-readiness reports provide little information on how their indices were

**Table 2.** Selected e-readiness assessment indices [15]

Model Name	Measuring Indices
CSPP	23 indices in 5 groups: 1. infrastructure; 2. access; 3. applications and services; 4. economy; 5. enablers.
APEC	1. basic technology and infrastructures; 2. access to network services; 3. Internet use; 4. advances and facilities; 5. skills and human resources; 6. e-economy situation.
McConnell	1. connectivity; 2. e-leadership; 3. information security; 4. human capital; 5. e-business situation.
Mosaic	1. penetration; 2. geographical dispersal; 3. absorption level; 4. communication infrastructures; 5. organizational infrastructures; 6. use complexity.
WITSA	1. customer trust; 2. technology; 3. workforce; 4. general policy; 5. tax; 6. business processes; 7. expenditures; 8. customer attitude.
CID	19 indices in 5 groups: 1. accessibility; 2. learning; 3. society; 4. economy; 5. policy.

## 5. Significance and Advantages of E-Readiness Assessment

With the help of information and communication technologies, different firms and organizations have could increase their managerial and functional power, prevent the time-wasting, improve the quality of their goods and services, enhance the time-effectiveness, share more information, and provide an easy access to information for all people [8]. Furthermore, many governors believe that information and communication technology might help them solve the socio-economic problems of their countries and so they are ready for making some necessary changes in order to take advantage of these modern technologies. They need to understand the real value of what could be done by ICT and should trust in it. The first step for converting the objectives into the planned actions is to

measure e-readiness level leading to basic changes in the people's life styles [16]. Based on the outcomes of this assessment, it is possible to produce strategies and action plans for building human resource capability, legislative frameworks, institutional infrastructures, technological infrastructures and accessibility for all in a tailored and effective way [17].

According to Bui et al. (2003), the concept of e-readiness is important because its level can be a strong predictor of how well a country can perform in the new economy. An e-readiness assessment would provide policy makers with a detailed scorecard of their economy's competitiveness relative to its international counterparts. Further, a breakdown of indicators allows policy analysts to pinpoint areas of strengths and weaknesses, thus providing a balanced perspective in guiding a country through the

digital transformation [11].

Countries with high level of e-readiness can use the Internet to improve services and create new opportunities and have a competitive edge over those whose levels of e-readiness are low. For example, countries such as Denmark, United Kingdom, Sweden, Norway, Finland and the United States that are ranked top in e-readiness have also competitive business environments [2].

## 6. Disadvantages of E-Readiness Assessment Tools

From the view of information science, the information modeling by which the organizations are able to organize, store, process, and restore the information is extremely important for the theorist. Thus, the studies and surveys about the information readiness level of the societies should be done with more emphasis and more rapidly than before. Moreover, understanding how the users communicate to their needed information sources through the common information systems should not be omitted too. According to Holtham, these days for being successful in business, the significance of information itself is more than information technology, despite that, more investments, time, and management and media attention have been focused on information technology [8].

Furthermore, Rizk (2004) observed that a common parameter in e-readiness assessments tools was the inclusion of some measure of physical infrastructure/usage (e-infrastructure) and education (including knowledge of ICTs) [2]. So, one of the most important shortages of e-readiness assessments tools is little or no attention to the value of information and how to access the information sources.

Another disadvantage of e-readiness assessment tools is that although there is a wide range of e-readiness assessment models available, but each has limitations. Every model evaluated would require re-designing to make it a comprehensive assessment tool. The tools that are ready-to-use are either limited in scope or lack detailed description on how to use the tool in practice [18].

In other words, each of the e-readiness assessment models, both in national/international level and organizational level, either analyzes some limited countries or organizations or in its presented reports, there is not a detailed description on how to make use of the tools to measure e-readiness.

## 7. Conclusion

It can be said that among common technologies, this is the only characteristic of information and communication technology that it is considered as both an infrastructure to develop other parts of a society and a driving factor by which countries and organizations could achieve the sustainable competitive advantage in the international world. In order to effective use of information and communication technology countries need to be prepared electronically with respect to the infrastructures, the access level to ICT for all people, and the affect of the logical frameworks on ICT use [15]. Businesses and governments that are able to effectively employ information and communication technologies find more sophisticated and efficient ways of managing their external relationships and

communications. This growing ICT usage helps form the critical mass of electronic transactions which supports a networked economy, both in terms of the network size and the demand for associated goods, services, labor, and policy reform [19]. Thus, we understand that e-readiness can be a source of competitive advantage in the networked economy and the prerequisite for successful e-business [20].

Nowadays, many organizations and firms all over the world are working on assessing the e-readiness level in different countries and organizations with regard to their approaches and definitions of e-readiness and they usually publish the results in the special reports. Although each of these reports does not provide detailed information about all used e-readiness assessment tools and indices, but as a whole the reports might help policy makers and managers obtain a general view of e-readiness level in their own countries and organizations that it would help them improve the e-readiness indices and also other ICT development standards.

The advantages of e-readiness depend on the extent of the information and communication technology use in a society and they are more when the number of ICT users increases [16]. This makes managers and investors provide the appropriate hardware and software infrastructures and socio-economic facilities and possibilities to increase the various ICT uses throughout the society where all people, regardless to their social class, are able to make use of information and communication technologies.

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