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E – READINESS ASSESSMENT OF LARGE ORGANIZATION IN A DEVELOPING COUNTRY: THE CASE OF IRAN

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ABSTRACT
Information technology changes the global relation and that is the reason of many advantages and opportunities for economic and social development. In the other hand increases of digital gap let the leader of government, commercial institution and social organizations use power of IT for development. In order to use IT effectively, organizations should be ready in different aspects such as infrastructure, access to IT and other factors that have effects on   e - readiness. In this paper, by using models of e-readiness we design a questioner   which are consist of 7 parts   (human resource and culture, commitment of manager, strategy and policy, relationship, IT security, process, infrastructure) and then organization will be assessed and in the end by use of SPSS 19 total e-readiness will be calculated.

Keywords: E-Government, E-readiness assessment, E-readiness models, Information technology, E-commerce

INTRODUCTION
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 advance in the use of Information Technology (IT) in business and industry (Mutula & van Brakel, 2006). E-readiness can mean different things to different people, in different contexts, and for different purposes (Peters, 2001). Thus, it is important to define e-readiness in the context of this paper. E-readiness of an organization is defined here as the ability of an organization to successfully adopt, use, and benefit from information technologies such as e-commerce (Ruikar, 2006). Information technology (IT) is a term that generally covers the harnessing of electronic technology for the information needs of a business at all levels. It utilizes computer-based systems as well as telecommunication technologies for the storage, processing, and communication (Anderson, 1990; Claus and Schwill, 1992).

 An e-readiness assessment is an attempt to gauge how ready a society or economy is to benefit from information technology and electronic commerce. It is used to measure an organization's ability to take advantage of the Internet as an engine of economic growth and human development. An e-readiness assessment would look at infrastructure, the accessibility of ICT to the population at large, and the effect of the legal and regulatory framework on ICT use (compression of e-readiness assessment models, 2001). The purpose of carrying out the assessment is to gather information that can assist with developing a strategy for ICT development. Over 15 different e-readiness assessment tools are currently available, and the assessments use a range of questionnaires, statistical methods, reports of best practice, and historical analysis. Some tools look specifically at the e-economy and how ICT's can be used to improve the economy, whereas others are concerned with the broader picture, and try to measure the emergence of an e-society, and assess how ICT's are improving social equality(Tan et al,2007). In practice the development of both the e-economy and the e-society are intertwined, as one improves so will the other. Social goals must incorporate business growth and use of ICT, likewise economic results depend on the long-term stability that can only be achieved in an environment of relative equity among social groups and therefore an e-readiness tool should cover both of these areas. There are many factors that promote the organizations to be e-ready;

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- ❖ First, the enormous advantages that ICT will bring along by. It will not only lead to a Simple, Moral, Accountable, Responsive and Transparent (SMART) Government, but also lead to make the citizens lives easy. ICT promises to gain various social and economical benefits as well.
- ❖ Second, the organization is facing a threat of being left behind.
- ❖ Third, international leaders, foreign donors, and lending agencies are integrating ICT into development and aid programs.
- ❖ Again ICT is a key weapon in the war against world poverty. When used properly, it offers a tremendous potential to empower people in developing countries to overcome development obstacles; to address the most important social problems they face; and to strengthen communities, democratic institutions, a free press, and local economies.

An e-readiness assessment, when properly applied in a larger process of evaluation, is a first step towards converting good intentions into planned actions that bring real changes to people's lives. E-readiness assessments are meant to guide development efforts by providing benchmarks for comparison and gauging progress. This is an old process adapted to today's technology realities; determining the current situation in order to plan for the future and advocate specific changes.

E-readiness assessment can also be a vital tool for judging the impact of ICT, to replace wild claims and anecdotal evidence of ICT role in development with concrete data for comparison.

REVIEW OF E – READINESS ASSESSMENT MODELS

The first efforts in defining e-readiness were undertaken in 1998 by the Computer Systems Policy Project (CSPP) (Mutula &van Brakel, 2006). CSPP defined e-readiness as the degree to whicha community is prepared to participate in the networked world (CSPP, 1998). Since development of the first e-readiness definition, Centre for International Development (CID) at Harvard (2000) with the support of International Business Machines (IBM) (CID,2000) and INSEAD,World Bank andWorld Economic Forum (WEF) (Kirkman, Osorio, & Sachs, 2002) developed the same definition as CSPP. In contrast to these measures that focus on community's readiness for participating in the networked world, Asian Pacific Economic Cooperation (APEC) in 2000 (APEC, 2000), McConnell International (MI) in 2000 (Popova et al., 2005) and Association of Southeast Asian Nations (ASEAN) in 2001 ASEAN, 2001) defined e-readiness as the degree to which an economy or community is prepared to participate in the digital economy. 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 late 1990s. In recent years, a number of e-readiness measures have been developed (Grigorovici et al., 2003). On the surface, each measure gauges how ready a society or economy is to benefit from IT and e-commerce. On closer examination, the measures use widely varying definitions for e-readiness and different methods for measurement and the assessments are very diverse in their goals, approaches and results (Bridges.org, 2005).An increasing number of readiness assessment tools have been developed over the last few years(grigorovici,2003). On the surface, each tool gauges how ready a society or economy is to benefit from information technology and e-commerce.

However, according to Peters, the range of tools use widely varying approaches for readiness assessment, including different methods for measurement. Each assessment tool or model has a different underlying goal and definition of e-readiness. While some gauge the readiness of countries and economies to adopt Internet-technologies on a global platform, others are more focused on assessing the readiness of specific industry sectors to adopt Internet technologies. E-readiness measures in terms of different definitions have different assessment objectives. The objective of CID and CSPP is to determine the degree to which individuals and organizations are prepared to participate in the networkedworld (Bridges.org, 2001), while the objective of WITSA (Grigorovici, Constantin, Jayakar,Taylor, & Schement, 2004), APEC (APEC, 2000), Choucri, Maugis, Madnick and Siegel (Choucri et al., 2003), MI (WITSA, 2000) and 'measuring the internet economy measure' (Barua, Pinnell, Shutter, & Whinston, 1999) is to assess the readiness of e-commerce and digital economy. Some others such as CIDCM, Information Society Index

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(ISI), Technology Achievement Index (TAI) and Digital Access Index (DAI) assess the e-readiness with the objective of measuring access to and use of ICT (Minges, 2005). In addition, the objective of Crenshaw and Robison (Robison & Crenshaw, 2002) and Bui, Sankaran and Sebastian (Bui et al., 2003) was to determine the server factors for increasing a country's e-readiness.

Table 1: The various global studies bring out the following indicators for the assessment

row	Model name	Indicators
1	APEC (bridges,2001)	☐basic infrastructure and technology (speed, pricing, access, market competition, industry standards, foreign investment), ☐access to network services (bandwidth, industry diversity, export controls, credit card regulation), ☐use of the Internet (use in business, government, homes), ☐promotion and facilitation (industry led standards), ☐skills and human resources (ICT education, workforce), and ☐positioning for the digital economy (taxes and tariffs, industry self-regulation, government regulations, consumer trust).
2	CSPP (cspp,1998)	☐infrastructure ☐access ☐applications and services ☐economy; and☐"enablers" (policy, privacy, security, ubiquity).
3	The Economist Intelligence	☐Connectivity (30%) ☐Business Environment (20%) ☐E-Commerce Consumer and Business Adoption (20%) ☐Legal and regulatory Environment (15%) ☐Supporting e-Services (10%) ☐Social and cultural Infrastructure (5%)
4	Information Society Index	☐Computer infrastructure ☐Information Infrastructure ☐Internet Infrastructure ☐Social Infrastructure
5	Knowledge Assessment Matrix	☐Performance Indicator ☐Economic Incentives and Institutional Regimes ☐Education and Human Resources ☐Innovative System ☐Information Infrastructure
6	McConnell (McConnell,2000)	☐connectivity (infrastructure, access and pricing), ☐e-leadership (government policies and regulations), ☐information security (intellectual property, privacy, electronic signatures), ☐human capital (ICT education, available skilled workforce), and ☐e-business climate (competition, political and financial stability, foreign investment, financial infrastructure).
7	Metric-net	☐Knowledge Jobs ☐Globalization ☐Economic Dynamism and Competition ☐Transformation to a Digital Economy ☐Technological Innovation Capacity

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8	Network Readiness Index (NRI)	Network Use Enabling Factors - Information Infrastructure, Hardware, Software and Support, ICT Policy, Business and Economic Environment, Network Learning, ICT Opportunity, Social Capital, E-Government, E-Commerce, General Infrastructure
9	CID (Beardsley et al,2001)	This guide measures 19 different categories, covering the availability, speed, and quality of network access, use of ICTs in schools, workplace, economy, government, and everyday life, ICT policy (telecommunications and trade), ICT training programs, and diversity of organizations and relevant content online.
10	Mosaic (Bridges,2001)	pervasiveness (per capita usage), geographic dispersion, sectoral absorption (usage within major sectors of the economy), connectivity infrastructure, organizational infrastructure (the state of the Internet service market), and sophistication of use
11	WITSA (witsa,2000)	Trust Technology Workforce Issues Public Policy Taxation Business Process Costs Consumer Attitude
12	Swedish International Development Cooperation Agency	Demographic parameter Economic Parameters ICT Parameters
13	U.S. Agency for International Development (USAID)	Pipes (Access), Public Sector (Government Policies, E-Government), Private Sector (Usage), People (Training)
14	World Economic Forum	Policy Basic Infrastructure Ground level Projects Cellular connections, Length of Optical fiber etc will be the parameters
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RESEARCH MODELS AND GOALS:
This paper is based primarily on secondary sources. Two sources in particular have been explored and analyzed: first, published academic journal and newspaper articles on e-readiness; second, reports published by the international organizations; and finally, In order to assess large organizations'   e-readiness in Iran the below stages perform:
a). library study and examination of famous models
b). determination of index that are used in e-readiness assessment of large organization

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c). getting help from experts with the determined index

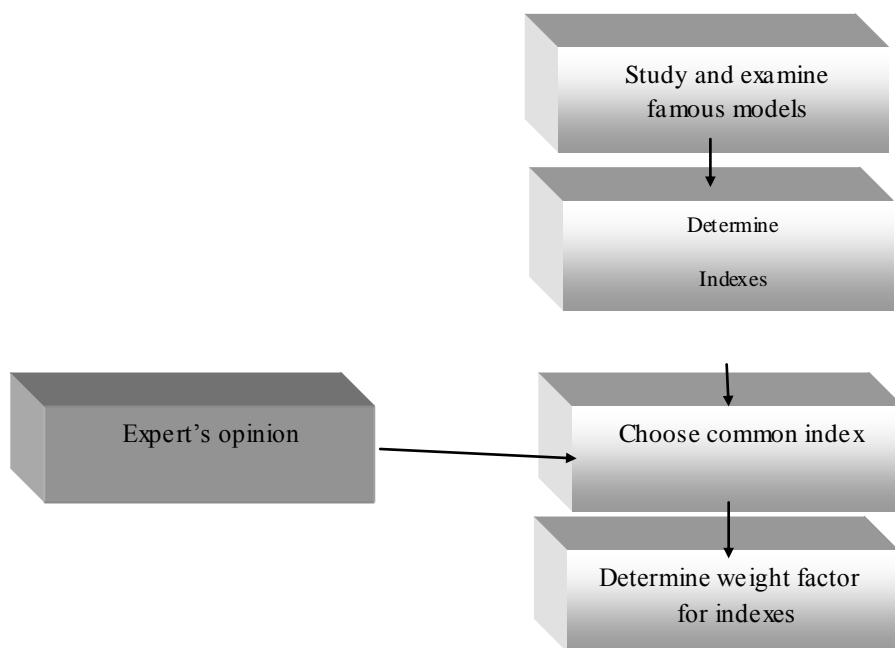d). determine weight factor for indexes

Figure 1: research steps

Determination of e -readiness assessment indexes:

In this stage we determine common assessing indexes of large organizations of Iran getting help from experts and library study 7 items declared:

1. Culture and human resource
2. Commitment of manager in order to use IT in all levels of organization
3. Strategy and policy
4. Relationship
5. IT security
6. Process
7. Infrastructure

Goals:

This study consists of two goals:

1. The total e- readiness of organization
2. Classification of factors base on e-readiness score.

RESEARCH METHOD

The data collection process began with one letter sent by the manager to all employees. It announced the intention to perform the survey and encouraged employee's participation. In the letters, he also explained the purpose of the survey. The data were collected using a paper questionnaire survey. It was consist of 57 questions and distributed by researcher to 35 employees. These persons were choosing from 100 staffs that were active in field of information and communication technology. In the assessment process, researcher also answered staffs question.

Statistical Analysis

This study used both of descriptive statistics and inductive statistics methods for data analyzing.

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4.2. Reliability and validity:

Cronbach's alphas as reliability measures of variables in e-readiness assessment of the analytical process included a questionnaire reliability analysis, factor analysis and identification of the factors.

The Cronbach's alpha calculated from the 7 variables was 0.940 in this research, which showed high reliability for designed scale. We consulted with 6 experts about the questionnaire to ensure its validity.

In this paper using various models of e-readiness assessment such as CID, APEC, CSPP, McConnell, EIU, ITU, USAID, CIDCM, NRI, 7 factor as main factor chose (Culture and human resource, Commitment of manager in order to use IT in all levels of organization, Strategy and policy, Relationship, IT security, process, infrastructure) and then by analytical hierarchy process factors ranked and determine a weight factor for them. In order to calculate e-readiness the below stage should be down:

Indicators calculating: in this step each indicators are calculated by the next formula (kirkman et al, 2001):

$$I_\alpha = \sum_{\beta=1} W_{\alpha\beta} * I_{\alpha\beta}$$

$I_{\alpha\beta}$: quantity of β indicator from α dimension
I_{α}: quantity of α dimension
n_{α}: number of indicators belong to α dimension
$W_{\alpha\beta}$: Wight of β indicator from α dimension
Calculation of e-readiness of large organization in Iran by the next formula (kirkman et al, 2001):

$$I_{E\text{-}READINESS}: \sum_{\alpha=1}^{N} I_\alpha W_\alpha$$

N: number of dimension
Wα: Wight of α dimension
By the expert opinion and one- sample T test score of acceptance is equal or more than 3.

RESULTS

Our research findings provided potentially transferable recommendations for planning the items which we need to pay attention and make them strong enough to achieve good score. Ranking shows infrastructure with the score of 3.50 has the best situation and security as well, other items need planning and some changes to score more than or equal 3. All results are presented in table 2.

Table 2: Result of analyze

row	Index name	Index w/f	e-readiness	conclusion
1	infrastructure	0.1	3.50	0.36
2	IT security	0.22	3.36	0.74
3	Commitment of manager in order to use IT in all levels of organization	0.3	2.947	0.88
4	Culture and human resource	0.15	2.903	0.44
5	Relationship	0.06	2.58	0.15
6	process	0.045	2.569	0.12
7	Strategy and policy	0.125	2.245	0.28
	Total e-readiness		2.97	

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SUMMARY AND CONCLUDING REMARKS

The rapid rate of ICT penetration throughout the world, coupled with dramatic advance in its usage in business and society, is creating an extensive literature on various aspects of digital divide and e-readiness (Choucri et al., 2003). Methodologically, most assessments are based on statistical studies or questionnaires, country cases, interviews and summary evaluations of IT-readiness for economic growth and/or for business opportunities defined in the most general terms.

Two overarching lessons can be drawn from this comparison: First, the chosen e-readiness assessment tool must fit the user's goal. Each assessment tool or model has a different underlying goal and definition of e-readiness.

The user should be careful and have a clear understanding of the kind of results that any particular tool is likely to lead them toward. This report aims at providing a foundation for that choice.

The second lesson is that there is a wide range of e-readiness assessment models available, but each has limitations. Every evaluated model 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. Of course, no tool will fit every user's needs. However, one could envision a tool that gave the user control over what was measured, and provided the resources to measure the various aspects of e-readiness.

This study provides the following recommendations:

In order to make improvement in e-readiness of Niordc organization, some changes should be taking placed:

1. Managers should be chosen from who are familiar whit concept of IT
2. In organizations strategy and vision, IT should be considered as an important factor that can be the cause of many advantages.
3. Training courses in field of IT, provided for employees and managers.
4. In the organization employees use email to make connection with each other and customers.
5. DBMS should be designed and used to improve the quality of data and information.

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