

# Evaluation of e-Readiness Indices in Latin America and the Caribbean

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The views expressed in this document are those of the authors and cannot be taken to reflect the official opinion of the European Union or any of the other organizations involved in its preparation.

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# 1. Introduction

The report aims to contribute to a better understanding of the different indices of e-Readiness and their application in the countries of Latin America and the Caribbean.

Different institutions have used indices of "e-Readiness" in search to quantify a country's preparedness for the Information Society. These indices are composed of different indicators that are based on various statistics. The weight of each component of the index, as well as the chosen statistics, differs among indices. In the majority of cases, studies of e-Readiness conclude with a "ranking", listing countries more or less advanced on their way towards the Information Society (or aspects of it). Many of these indices were created during years 2001-2003 with an annual frequency, which means that in some cases it is already possible to have three or four consecutive years of these rankings, showing comparable time series.

After reviewing the main e-Readiness Indices in chapter two, the third chapter of this report identifies if a general theoretical framework exists that supports the different indices and explains the implications in relation to the index. In the fourth chapter, a comparative analysis on methodology, practical limitations and measurement implications is carried out. The fifth chapter constitutes a comparative analysis at regional and subregional level (South Cone, Andean Community, Central America, the Caribbean). It also presents an analysis of each of the 33 Economic Commission for Latin America and the Caribbean (ECLAC) member countries, analyzing the differences in the positions that a country has in different indices, including characteristics and shortcomings of the indices. Finally, the sixth chapter presents some recommendations about the theoretical efforts that should be done in this area, including a critical reflection about the composition of e-Readiness indices.

The study covers 18 countries in Latin America (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and the Bolivarian Republic of Venezuela); as well as 15 countries of the Caribbean (Antigua and Barbuda, Bahamas, Barbados, Belize, Dominican, Granada, Guyana, Haiti, Jamaica, Dominican Republic, Saint Kitts and Nevis, San Vicente and the Grenadines, Santa Lucia, Suriname, Trinidad and Tobago). These are the countries that elaborated and approved the Regional Plan of Action for the Information Society in Latin America and the Caribbean, eLAC2007. This study has been carried out to support action item 26 of eLAC2007, especially goal 26.2, which calls for: "Elaborate comparative studies on the economic and social impact of ICTs, particularly in reference to previously agreed national and international development goals...".

## 2. Main e-Readiness Indices

### 2.1 e-indices

This chapter provides an overview of the various ICT indices (“e-indices”) considered in the report.

#### 2.1.1 ArCo

Named after its two designers (Daniele Archibugi and Alberto Coco), ArCo is derived from the United Nations Development Programme’s (UNDP) Technology Achievement Index (TAI) (see section 1.2.9) as well as United Nations Industrial Development Organization’s (UNIDO) Industrial Performance Scorecard.<sup>1</sup> The index describes itself as a “*new indicator of technological capabilities*”.<sup>2</sup> ArCo is basically similar to the TAI except that it has three categories rather than four (creation of technology, technological infrastructure (combining diffusion of recent and old innovations) and human skills). ArCo also uses a few different indicators than the TAI to compile the index (scientific articles for royalties and license fees, Internet users for Internet hosts) and includes the literacy rate. ArCo calculates index results for 2000 and 1990 and shows the change during that decade. It is not strictly an ICT index since it includes only two sector specific indicators. Given its similarity to the TAI, it is not apparent whether ArCo should be treated as a separate index or a refinement of the former. ArCo’s three categories are averaged to obtain the overall index score. Individual indicators are transformed using goal posts (maximum values); the methodology does not explain how they are converted to category scores—it assumed they are averaged. Note that in some cases, the indicators are based on three-year averages (e.g., 1997-2000) rather than a specific year in order to smooth out fluctuations. The background paper describing the index does not include the category results or the original indicators.

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<sup>1</sup> UNIDO, “Benchmarking industrial performance”, [http://www.unido.org/userfiles/hartmany/03IDR\\_ch3-072602.pdf](http://www.unido.org/userfiles/hartmany/03IDR_ch3-072602.pdf) [Accessed 11 December 2005]

<sup>2</sup> Archibugi, Daniele and Coco, Alberto, “A New Indicator of Technological Capabilities for Developed and Developing Countries (ArCo)”, *CEIS Working Paper No. 44*, January 2004. <http://ssrn.com/abstract=487344> [Accessed 11 December 2005]

## 2.1.2 Digital Access Index (DAI)

The DAI was created by the International Telecommunications Union (ITU) and launched at the 2003 World Summit on the Information Society (WSIS). It uses a relatively small number of indicators (8) based around five categories allowing it to achieve high country coverage (178). Data are from 2002. The purpose of the DAI is to “rank Information and Communication Technology (ICT) access.”<sup>3</sup> Indicators are transformed using goal posts and averaged to obtain category scores. The categories are then averaged to obtain the overall index value. The original indicators used to construct the DAI are available along with background documentation and other information.<sup>4</sup> Although a complete country set of historical data is not available, differences in the DAI score for the years 1998 and 2002 was calculated for 40 countries.

## 2.1.3 Digital Opportunity Index (DOI)

The DOI is a new index spearheaded by the ITU. It uses a subset of the internationally agreed indicators approved by the Partnership for Development.<sup>5</sup> It was created in response to the WSIS Plan of Action which called for a Digital Opportunity Index; the index “measures digital opportunities of Information Society in progress and use of ICTs.”<sup>6</sup> A preliminary version of the DOI has been calculated for 40 countries using 2003 data. The index uses 11 indicators clustered into 3 categories (opportunity, infrastructure and usage). The indicators are transformed using goal posts and averaged to obtain category scores. The categories are then averaged to obtain the overall DOI score. The background data and methodology is published.<sup>7</sup> The ITU plans to apply the DOI to a wider set of countries and years.

## 2.1.4 EIU e-readiness index

The Economist Intelligence Unit (EIU) publishes an annual index — now in its sixth year—of e-readiness rankings. Covering sixty primarily developed and larges developing economies, the index allows “countries to compare and assess their e-business environments” and determines “the extent to which a market is conducive to Internet-based opportunities”.<sup>8</sup> The index uses around 100 quantitative and qualitative variables organized into six categories: connectivity and technology infrastructure; business environment; consumer and business adoption; social and cultural environment; legal and policy environment, and supporting e-services. The original data and detailed methodology are not available with the background document published with the index. The index methodology and composition has also changed over the years, impacting the ability to make historical comparisons.

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<sup>3</sup> “ITU Digital Access Index: World’s First Global ICT Ranking”, *Press Release*, 19 November 2003.  
[http://www.itu.int/newsarchive/press\\_releases/2003/30.html](http://www.itu.int/newsarchive/press_releases/2003/30.html) [Accessed 11 December 2005]

<sup>4</sup> See <http://www.itu.int/ITU-D/ict/dai/index.html> [Accessed 11 December 2005]

<sup>5</sup> Partnership on Measuring ICT for Development, “Final Conclusions”, WSIS Thematic Meeting on Measuring the Information Society, Geneva, 7 – 9 February 2005. [http://measuring-ict.unctad.org/QuickPlace/measuring-ict/Main.nsf/\\$defaultview/215B47A1349CB45AC1256FA400303002/\\$File/WSIS%20Indicators%20Meeting%20Conclusions%20FINAL.PDF?OpenElement](http://measuring-ict.unctad.org/QuickPlace/measuring-ict/Main.nsf/$defaultview/215B47A1349CB45AC1256FA400303002/$File/WSIS%20Indicators%20Meeting%20Conclusions%20FINAL.PDF?OpenElement) [Accessed 11 December 2005]

<sup>6</sup> Phillippa Biggs, “Developing a Digital Opportunity Index”, Parallel Event to PrepCom-3, Geneva, 22 September 2005. [http://www.itu.int/osg/spu/statistics/DOI/linkedddocs/DOI%20Presentation\\_Biggs%20Thurs%2022%20Sept.pdf](http://www.itu.int/osg/spu/statistics/DOI/linkedddocs/DOI%20Presentation_Biggs%20Thurs%2022%20Sept.pdf) [Accessed 11 December 2005]

<sup>7</sup> See <http://www.itu.int/osg/spu/statistics/DOI/index.phtml> [Accessed 11 December 2005]

<sup>8</sup> Economist Intelligence Unit (2005), *The 2005 e-readiness rankings*.  
[http://graphics.eiu.com/files/ad\\_pdfs/2005Ereadiness\\_Ranking\\_WP.pdf](http://graphics.eiu.com/files/ad_pdfs/2005Ereadiness_Ranking_WP.pdf) [Accessed 11 December 2005]

### 2.1.5 Index of Knowledge Societies (IKS)

The United Nations Department of Economic and Social Affairs released the IKS in 2005. The index is a “*summary measure of the performance countries register...in its quest to become a Knowledge Society.*”<sup>9</sup> The IKS is based on 14 quantitative indicators organized into 3 categories (assets, advancement and foresightedness) and is calculated for 45 countries. No mention is made of the year to which the data pertain. Individual indicators are transformed using maximum values. They are then averaged within a category to obtain the category score. The categories are averaged to obtain the overall IKS score. The original indicators are included.

### 2.1.6 Knowledge Economy Index (KEI)

The World Bank Institute has created the KEI as part of the Knowledge Assessment Methodology (KAM) to “*help client countries understand their strengths and weaknesses in making the transition to the knowledge economy...the KAM provides a preliminary knowledge economy assessment of a country.*”<sup>10</sup>

The KEI consists of some 80 quantitative and qualitative indicators across four categories: economic incentive regime, information infrastructure, innovation and education. A streamlined version of KEI, the Knowledge Index (KI) has also been produced using only 12 indicators. The KEI includes 128 countries. The KEI is the average of the four categories. Each category score is calculated by averaging the normalized scores of each indicator. The indicators are normalized based on the highest value in the data set. Data are available for “the most recent” as well as 1995. Though the original data is available the online system for viewing the KEI is cumbersome and limited to the display of a few countries at a time.

### 2.1.7 Network Readiness Index (NRI)

The World Economic Forum (WEF) publishes a Network Readiness Index (NRI) that measures “*the degree of preparation of a nation or community to participate in and benefit from ICT developments.*”<sup>11</sup> Categories include environment, readiness and usage. The index covers 104 countries over a range of 51 indicators, and offers a mixture of qualitative and quantitative data, with a large number of variables coming from surveys. Indicators are organized into three main categories (environment, readiness and usage) which in turn consist of additional sub-categories. Indicators are transformed based on the highest values; the sub-category scores are derived from factor analysis. Sub-categories are averaged to obtain categories scores which are then averaged to obtain the final score.

### 2.1.8 Orbicom

The Orbicom “Infostate” Index ranks 139 economies based on 17 indicators across two categories.<sup>12</sup> What makes the Orbicom index different is that it compiles each country’s index in relation to the average of all of the other countries’ indicators rather than to maximum values as is often the case. Indicators are classified into two

<sup>9</sup> United Nations Department of Economic and Social Affairs, *Understanding Knowledge Societies*, 2005. <http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN020643.pdf> [Accessed 11 December 2005]

<sup>10</sup> Knowledge Assessment Methodology (KAM) Home Page. <http://info.worldbank.org/etools/kam2005/index.htm> [Accessed 8 December 2005].

<sup>11</sup> World Economic Forum. (2002-2003). *The Global Information Technology Report: Readiness for a Networked World*. Available from : [http://www.weforum.org/pdf/Gcr/GITR\\_2003\\_2004/Framework\\_Chapter.pdf](http://www.weforum.org/pdf/Gcr/GITR_2003_2004/Framework_Chapter.pdf) [Accessed 11 December 2005].

<sup>12</sup> Orbicom. (2003). *Monitoring the Digital Divide ... and beyond*. <http://www.orbicom.uqam.ca> [Accessed 11 December 2005].

categories (Infodensity and Info-use). The indicators are averaged within a category and the square root of the two categories results in the final index score. The index has been constructed so that one can observe changes over time and index values going back several years are provided. All data used is quantitative. The latest data are from 2001.<sup>13</sup>

## 2.1.9 Technology Achievement Index (TAI)

The United Nations Development Programme (UNDP) included a *Technology Achievement Index* (TAI) in its 2001 *Human Development Report*.<sup>14</sup> Using eight variables spread over four categories the TAI measured the technological capacity for 72 countries. The indicators are transformed based on maximum values and averaged within categories. The categories are then averaged to generate the TAI score. The methodology and input data is supplied with the report.

## 2.1.10 UNCTAD Index of ICT Diffusion

The United Nations Conference for Trade and Development (UNCTAD) has an Index of ICT diffusion provided in a report published in 2005. The Index is compiled from 11 quantitative and qualitative indicators arranged in 3 categories (connectivity, access and policy) covering 165 countries. The Index “*is designed to evaluate ICT development.*”<sup>15</sup> Data is based on the year 2002 and a time series of rankings is provided for 1995 and 1999-2002. The indicators are transformed based on maximum values and averaged within categories. The categories are then averaged to generate the index score. The methodology is supplied with the report.

## 2.1.11 UNPAN e-Readiness Index

The United Nations Division for Public Administration and Development Management (UNPAN) issued its third e-government report in 2004, ranking 178<sup>16</sup> member states. The index “*assesses the public sector e-government initiatives of Member States according to a weighted average composite index of e readiness based on website assessment, telecommunication infrastructure and human resource endowment.*”<sup>17</sup> Although the index is often cited as an e-government index, in fact, the e-government component (the so-called “web measure”) only constitutes one third of the final index score. The six variables used for the telecom index are based on 2002 data while the human capital index is the same as the UNDP Human Development Index education index. The web measure is a subjective assessment based on a methodological framework. Indicators are transformed based on maximum values and averaged to obtain category scores. The three category scores are then averaged to obtain the overall index value. The methodology and raw data are supplied with the publication.

<sup>13</sup> Orbicom recently released an update to its index based on 2003 data. See *From the Digital Divide to Digital Opportunities: Measuring Infostates for Development*. [http://www.itu.int/ITU-D/ict/publications/dd/material/index\\_ict\\_opp.pdf](http://www.itu.int/ITU-D/ict/publications/dd/material/index_ict_opp.pdf) [Accessed 11 December 2005]

<sup>14</sup> UNDP. (2001) . *Human Development Report 2001* . Chapter 2, “Today’s technological transformations – creating the network age”. <http://hdr.undp.org/reports/global/2001/en/pdf/chaptertwo.pdf> [Accessed 11 December 2005]

<sup>15</sup> UNCTAD. (2005). *The Digital Divide: ICT Development Indices 2004* . [http://www.unctad.org/en/docs/iteipc20054\\_en.pdf](http://www.unctad.org/en/docs/iteipc20054_en.pdf) [Accessed 11 December 2005]

<sup>16</sup> Sub-index values were calculated for an additional 13 countries which UNPAN indicates did not have a government web presence.

<sup>17</sup> UNPAN. (2004) . *Global E-Government Readiness Report 2004* . Available from <http://www.unpan.org/egovernment4.asp> [Accessed 11 December 2005]

### 2.1.12 World Bank ICT Index

The World Bank created a new ICT Index to be issued at the 2005 World Summit on the Information Society (WSIS).<sup>18</sup> Developed as a tool for World Bank sector performance monitoring, the index is a “pure” ICT sector index and does not include non-ICT indicators (e.g., literacy, per capita income) or subjective indicators. The index features 15 indicators arranged in 5 categories (access, quality, affordability, sustainability and applications). The ICT Index uses 2004 data and has been calculated for 144 countries. The methodology uses principal components factor analysis to transform the indicators into category scores. The categories are then averaged to obtain the overall score.

### 2.1.13 Others

There are a number of other projects that assess the e-performance of countries. McConnell International has produced several global e-readiness reports.<sup>19</sup> However they do not provide numerical scores or rankings but rather general overviews of countries strengths and weaknesses.

The Mosaic Group provides a framework for measuring the state of Internet diffusion in an economy.<sup>20</sup> Six factors are rated: pervasiveness, sector absorption, connectivity, organizational structure, geographic dispersion, and sophistication of use. Each factor is ranked on a scale of zero (non-existent) to four (highly developed). The Mosaic group does not combine the six factors to compute an overall index score for a country although others have done so. The methodology is well documented, so that values can and have been computed by different groups.

Market research firm International Data Corporation’s (IDC) Information Society Index claims to be the oldest of all ICT indices, dating back to 1995. It ranks countries according to their ability to “*absorb and utilize Information and Information Technology*.”<sup>21</sup> The index covers 53 countries and contains 15 variables organized into four categories: computers, Internet, telecommunication and social. Unfortunately, the IDC does not make its detailed methodology freely available so it is difficult to analyse. The methodology also has changed over the years, so that results cannot be compared with previous years.

<sup>18</sup> Michael Minges and Christine Zhen-Wei Qiang. “World Bank ICT Index: Framework and Findings.” October 2005.

<sup>19</sup> McConnell International “Library” web page. <http://www.mcconnellinternational.com/library.html> [Accessed 8 December 2005]

<sup>20</sup> Mosaic Group. “The Global Diffusion of the Internet Project.” Available from: <http://mosaic.unomaha.edu/gdi.html>. [Accessed 11 December 2005] Also see McHenry, W. (2003, January). “Studying the Digital Divide with the Mosaic group Methodology”. 3rd World Telecommunication/ICT Indicators Meeting. [http://www.itu.int/ITU-D/ict/WICT02/doc/pdf/Doc28\\_Erev1.pdf](http://www.itu.int/ITU-D/ict/WICT02/doc/pdf/Doc28_Erev1.pdf) [Accessed 11 December 2005]

<sup>21</sup> IDC. “IDC’s Information Society Index” <http://www.idc.com/groups/isi/main.html> [Accessed 11 December 2005]

**TABLE 1**  
**e-INDICES**

	<b>ArCo</b>	<b>DAI</b>	<b>DOI</b>	<b>EIU</b>	<b>IKS</b>
Index Name	Technology Capabilities for Countries	Digital Access Index	Digital Opportunity Index	e-readiness ranking	Index of Knowledge Societies
Publisher	Danielle Archibugi & Alberto Coco	ITU	ITU	Economist Intelligence Unit (EIU)	United Nations Department of Economic and Social Affairs
Publication date	2003	Dec-03	2005	April 2005	2005
Countries included	162	178	40	65	45
Categories	3 (Creation of technology, Technological infrastructure, Human skills)	5 (Infra-structure, Affordability, Knowledge, Quality, Usage)	3 (Opportunity, Infrastructure, Utilization)	6 (infrastructure; business environment; adoption; social & cultural environment; legal & policy environment, & supporting e-services)	3 (Assets, Advancement, Foresighted-ness)
Variables	8	8	11	~100	14
Subjective variables	No	No	No	Yes**	No
# publications	1	1	1	6	1
Data year	2000	2002	2003	No mention	No mention
Historical comparisons	1990, 2000	1998 & 2002 for 40 countries	No	Previous year; index has been changed	No
Documentation	Missing category scores and original data	Good	Good	Missing original data; no details on goalposts; no methodology on how category scores calculated	Good

**Note:** † Web version entitled “Interactive 2005 KAM” ‡ the Network of UNESCO Chairs in Communications. \* Some data based on interview responses. \*\* Some data based on value judgements of non-quantitative information (e.g., competition).

<b>KEI</b>	<b>NRI</b>	<b>Orbicom</b>	<b>TAI</b>	<b>UNCTAD</b>	<b>UNPAN</b>	<b>WBICT</b>
Knowledge Economy Index	Network Readiness Index	Infostate	Technology Achievement Index	Index of ICT Diffusion	E-Government Readiness Index	ICT Index
World Bank Institute	World Economic Forum	Orbicom‡	United Nations Development Programme	UN Conference for Trade & Development	UN Division for Public Admin. & Development Management	World Bank
2005†	March 2005	2003	2001	2005	Nov. 2004	2005
128	104	139	72	165	191	144
4 (Economic Incentive Regime, Innovation, Education, Information Infrastructure)	3 (Environment, Readiness, Usage)	2 (Infodensity (networks and skills), Infouse (uptake and intensity))	4 (Technology creation, Diffusion of recent innovations, Diffusion of old innovations, human skills)	3 (Connectivity, Access, Policy)	3 (Web measure, Telecom, Human Cap)	5 (Access, Quality, Affordability, Sustainability, Applications)
80	51	19	8	11	8	15
Yes*	Yes*	No	No	Yes**	Yes**	No
NA	4	2	1	2	3	1
2003	No mention	2001	1995-2000	2002	2000-2002	2004
1995, latest data	Previous year; index has changed	Scores provided for 1996-2001	No	Rankings for 1995, 1999-2002	Previous year; methodology changed between 1 and 2 publication	No
Good	Good	Good	Good	Original data not supplied	Good	Good

### **3. Does a general framework exist for e-indices?**

It is difficult to find a common framework among information and communication technology (ICT) indices (“e-indices”) since most measure different things (Table 2). While all are concerned with ICT, they vary in their scope. Some, such as the World Bank Institute Knowledge Economy Index (KEI) and the UN Index of Knowledge Societies (IKS) purport to measure the broad area of “knowledge societies” while others, such as the International Telecommunication Union (ITU) Digital Access Index (DAI), are focussed on capturing “the ability of citizens to access ICT services.”

**TABLE 2**  
**e-INDICES STATEMENT OF PURPOSE**

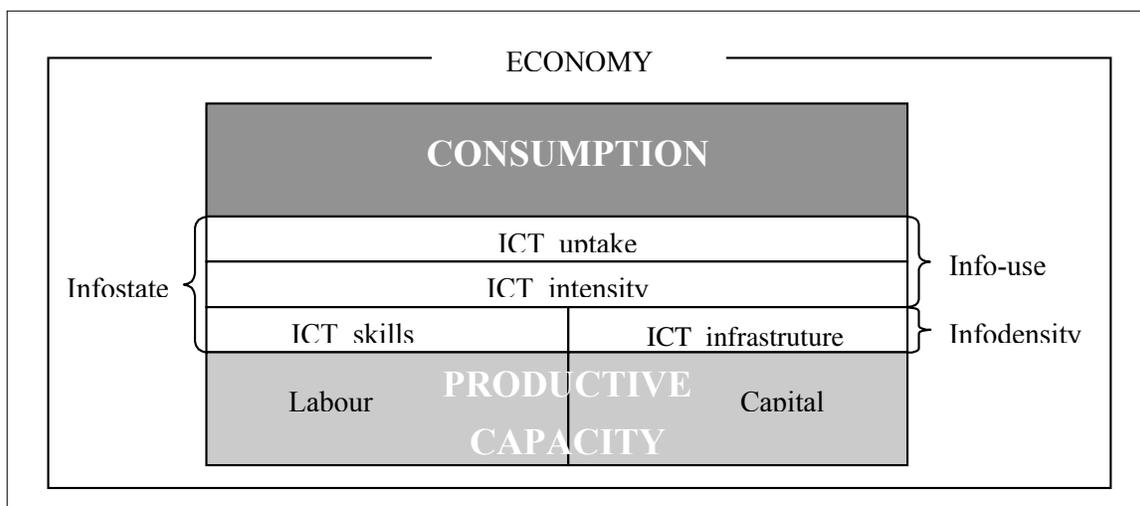
Index	Purpose
ArCo	"...a new index of technological capabilities, ArCo, for a vast number of countries."
Digital Access Index (DAI)	"ITU has developed a Digital Access Index (DAI) to measure the overall ability of individuals in a country to access and use ICTs."
Digital Opportunity Index (DOI)	"...a new index for the status of information and communication technologies (ICT) in each country, and thus a measurement of access to the information society."
e-readiness index (EIU)	"A country's e-readiness is essentially a measure of its e-business environment, a collection of factors that indicate how amenable a market is to Internet-based opportunities."
Index of Knowledge Societies (IKS)	"The IKS is a summary measure of the performance that countries register in assets, advancement and foresightedness in its quest to become a Knowledge Society"
Knowledge Economy Index (KEI)	"... is designed to help client countries understand their strengths and weaknesses in making the transition to the knowledge economy."
Network Readiness Index (NRI)	"...defined as "the degree of preparation of a nation or community to participate in and benefit from ICT developments"."
Orbicom	In that setting, the framework developed the notions of a country's Infodensity and Info-use. Infodensity refers to the slice of a country's overall capital and labour stocks, which are ICT capital and ICT labour stocks and indicative of productive capacity, while info-use refers to the consumption flows of ICTs. Technically, it is possible to aggregate the two and arrive at the degree of a country's 'ICT-ization', or Infostate."
Technology Achievement Index (TAI)	"...aims to capture how well a country is creating and diffusing technology and building a human skill base—reflecting capacity to participate in the technological innovations of the network age."
UNCTAD Index of ICT Diffusion	"The Index of ICT Diffusion is designed to evaluate ICT development using indicators of ICT diffusion across countries."
UNPAN E-Government Readiness Index	"... a composite measurement of the capacity and willingness of countries to use e-government for ICT-led development."
World Bank ICT Index	"The WB ICT Index builds on previous e-indices to offer a fresh perspective into ICT development."

**Source:** Adapted from documentation provided with each index.

Many of the e-indices are premised on the importance of ICT for development. This suggests that their frameworks might fit within traditional economic analysis. In that sense, one can view ICT as a sector that requires input and generates output. The difficulty with this approach is that the scope and impact of ICT is so wide that it often falls outside the boundaries of traditional economic analysis. For example, many policy makers are interested in ICT access. The metrics used to measure this are often not compatible with economic frameworks which use output defined in volume or monetary terms. A related issue is that economic analysis does not generally allow for micro investigation. Economic analysis might be useful for examining the impact of the ICT sector on economic growth but it is inadequate for investigating bottlenecks in access to ICT such as pricing, education and insufficient infrastructure. As a result, most e-indices create a framework in relation to what they are measuring as opposed to a framework that relates ICT to an economic model.

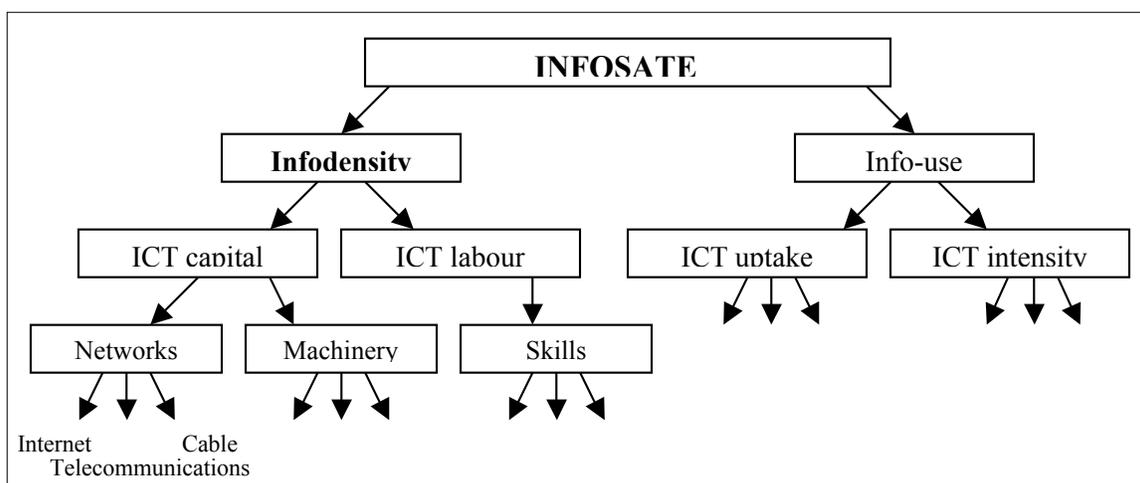
Nonetheless, some e-indices try to relate their framework to economic models. For example, the Orbicom methodology suggests that it is based on a macro-economic system (Figure 1). But on closer examination, the underlying categorization and supporting indicators do not really support this framework (Figure 2). For example, ICT labour in an economic context implies a skilled ICT workforce whereas Orbicom measures the basic education of the general population. Another point is that productive capacity of an economy is primarily generated by the business sector yet Orbicom does not include indicators on business ICT capability.

**FIGURE 1**  
**ORBICOM ECONOMIC FRAMEWORK**



Source: Orbicom.

**FIGURE 2**  
**ORBICOM INDEX STRUCTURE**

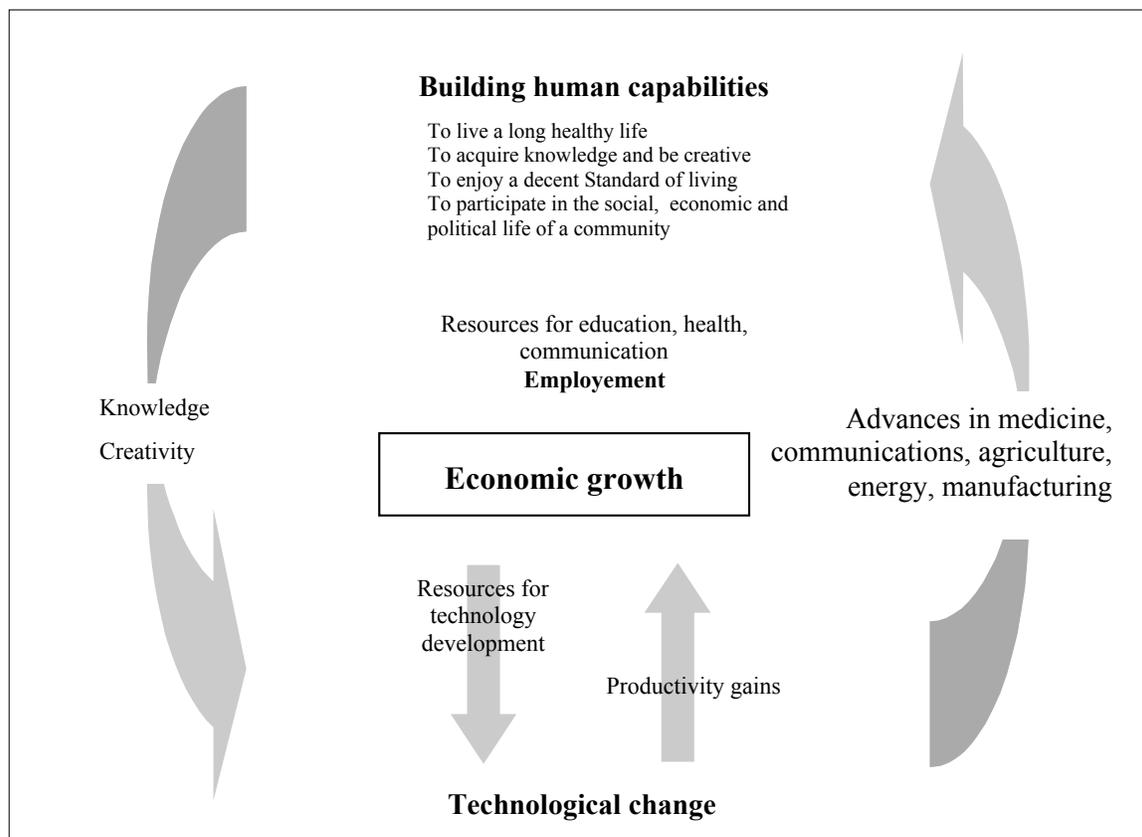


Source: Orbicom.

There are similar problems with the ArCo and TAI indices which place a country's ability to create and diffuse technology within a wider economic framework (Figure 3). Apart

from the fact that these related indices differ in their rankings, the impact between the indicators selected and economic growth is not established.<sup>22</sup> At the same time, these indices are too limited in their scope to provide sufficient insight into ICT development.

**FIGURE 3**  
**LINKS BETWEEN TECHNOLOGY AND HUMAN DEVELOPMENT**

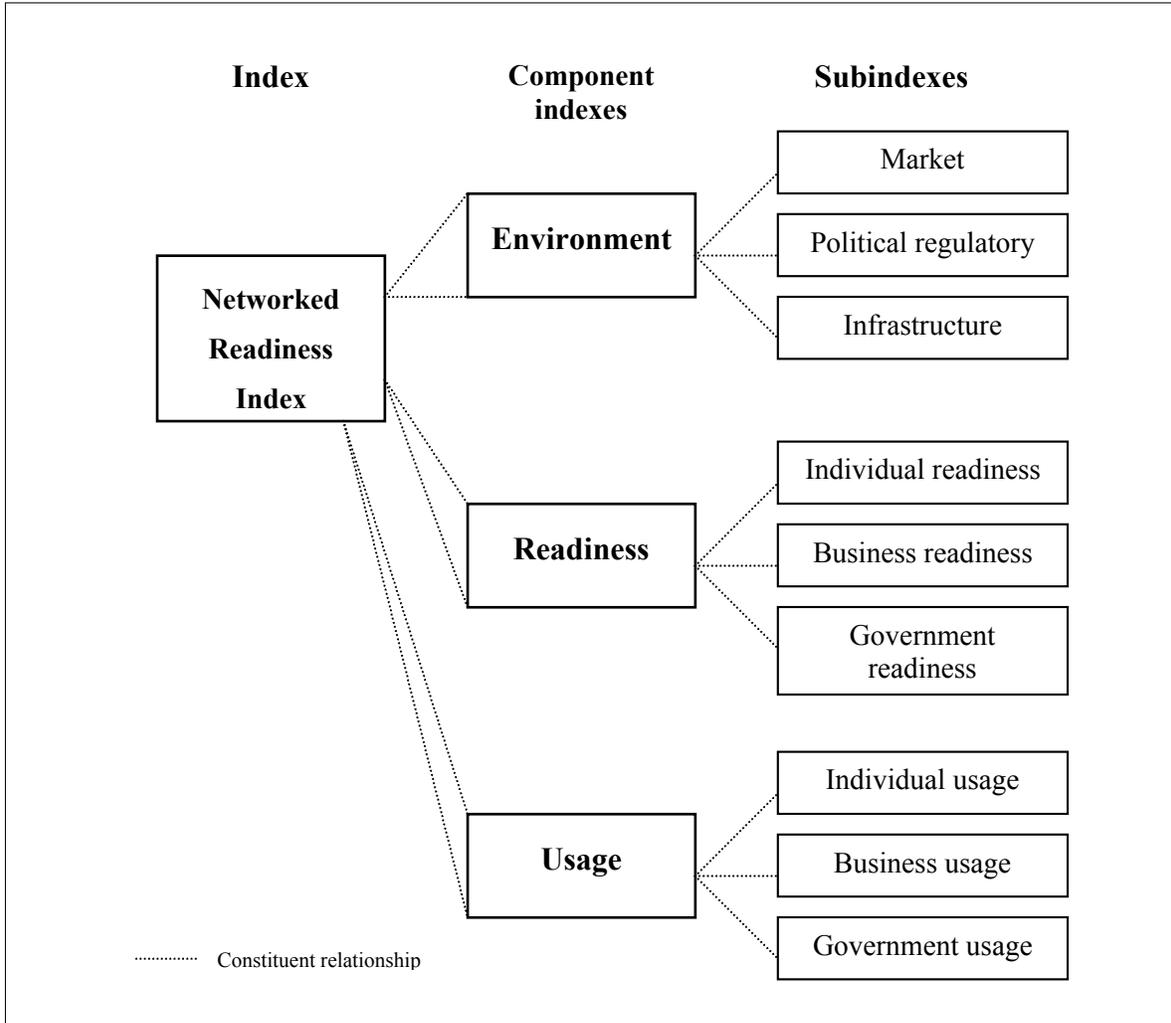


Source: UNDP.

Because of the difficulties and perhaps inappropriateness of analyzing ICT within economic frameworks, e-indices tend to create their own models that match what they are attempting to measure. The NRI premises that the role of ICT in a nation's development is dictated by its environment, readiness and usage (Figure 4). Another perspective views access to ICT independently of the economic or regulatory environment. This view, typified by the DAI, sees infrastructure, quality, affordability and education all interrelated to drive usage (Figure 5, left). A related framework is the DOI, which views opportunity and infrastructure driving usage (Figure 5, right).

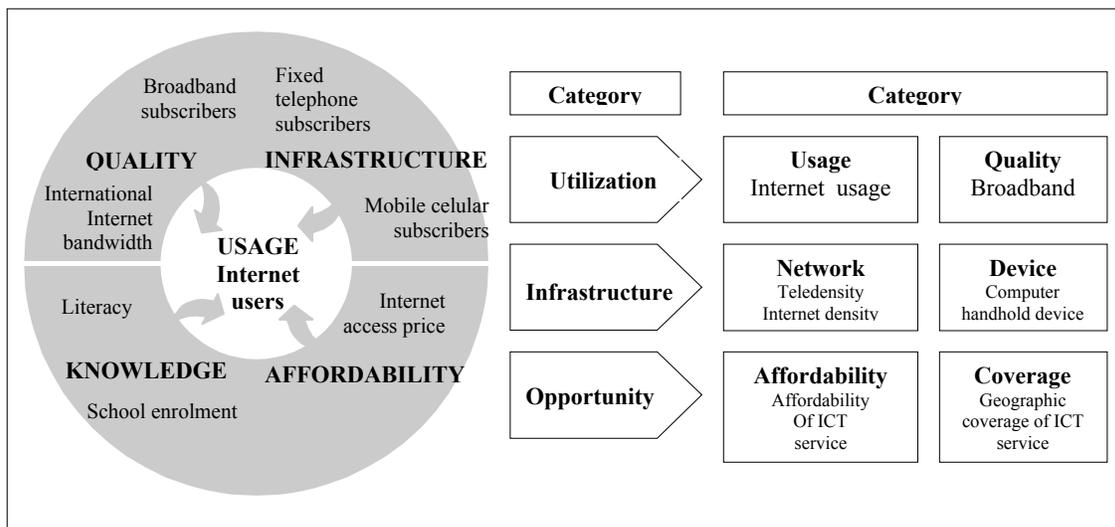
<sup>22</sup> In addition, the direction of the link between technology, wealth and human development is subject to debate. A recent paper finds that human development impacts a country's technological status and not the other way around. See Stephanie A. Birdsall and William F. Birdsall, "Geography matters: Mapping human development and digital access", *First Monday*, volume 10, number 10 (October 2005), URL: [http://firstmonday.org/issues/issue10\\_10/birdsall/index.html](http://firstmonday.org/issues/issue10_10/birdsall/index.html) [Accessed 11 December 2005].

**FIGURE 4**  
**THE NRI FRAMEWORK**



**Source:** INSEAD.

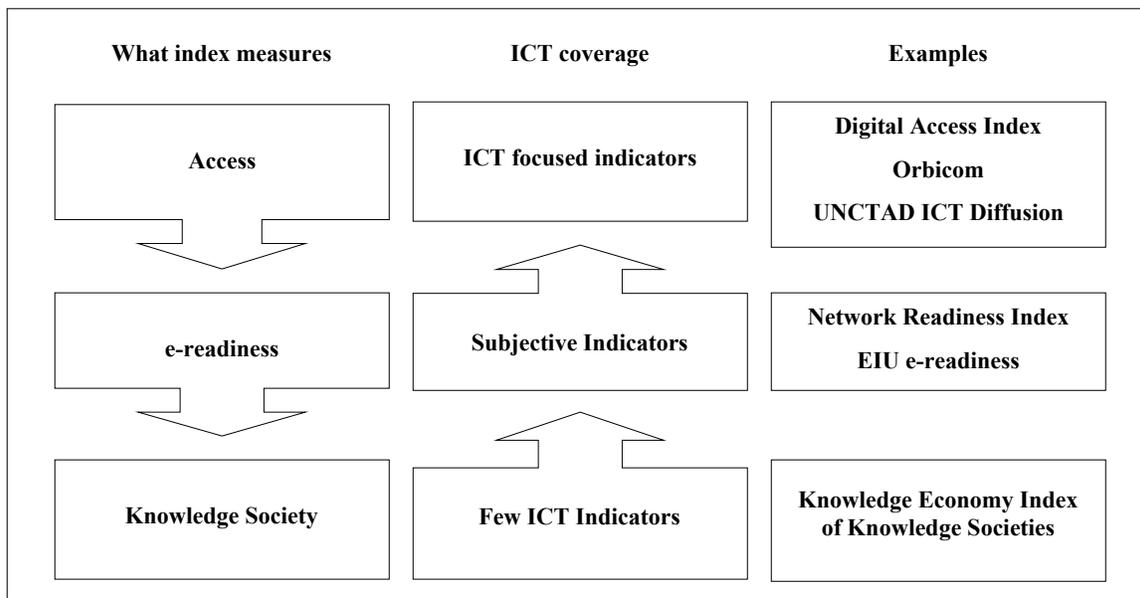
**FIGURE 5**  
**DIGITAL ACCESS INDEX AND DIGITAL OPPORTUNITY INDEX FRAMEWORK**



Source: ITU.

Some indices measure access to ICTs (e.g., DAI, DOI, Orbicom, UNCTAD), others e-readiness (EIU and NRI) and a few cover the more abstract area of knowledge society (KEI and IKS). This classification reveals that as one moves up the hierarchy, the number of indicators increases, the indicators become more subjective and there are more indicators from outside the ICT sector (Figure 6). Thus, commonality, if it exists, is more likely to be found at lower levels.

**FIGURE 6**  
**CLASSIFYING E-INDICES**



Source: Author's compilation.

Most e-indices categorize the components that support the purpose for which they were designed with the number of categories ranging from three to six. Although category names vary, almost all of the indices agree on the need for a category that reflects the availability of *infrastructure* (Figure 7). However, the scope of the category varies tremendously as does the type of indicators included. Some indices include a few indicators in this category while others include many. There is some agreement among a few key variables to measure infrastructure but beyond that, there is substantial variation and duplication. Also, some indices classify some infrastructure indicators in other categories such as usage.

**FIGURE 7**  
**CATEGORIES IN ICT INDICES**

<p><b>ArCo</b> Creation of technology <b>Tech infrastructure</b> Human skills</p>	<p><b>DAI Infrastructure</b> Knowledge Quality Usage</p>	<p><b>DOI</b> Opportunity <b>Infrastructure</b> Utilization</p>	<p><b>EIU</b> <b>Connectivity &amp; technology infrastructure</b> Business environment</p>
<p><b>IKS</b> <b>Assets</b> Advancement Foresightedness</p>	<p><b>KEI</b> Economic Incentive Innovation Education <b>Information infrastructure</b></p>	<p><b>NRI</b> Environment Readiness Usage</p>	<p><b>Orbicom</b> <b>Networks</b> Skills Uptake Intensity</p>
<p><b>TAI</b> Creation of technology <b>Diffusion</b> Human skills</p>	<p><b>UNCTAD</b> <b>Connectivity</b> Access Policy</p>	<p><b>DAI</b> Web Measure <b>Telecom</b> Human Cap</p>	<p><b>WBICT</b> <b>Access</b> Quality Affordability Sustainability applications</p>

**Source:** Adapted from indexes shown in figure.

There are two perspectives on infrastructure, with some indices emphasizing networks and access and providing additional categorization within this area (e.g., pricing, quality, etc.) while others view infrastructure as just one of several necessary components. One question is whether infrastructure is a critical category that merits deeper investigation or whether it is just one part of many. That also impacts the categorization of variables and definition of infrastructure with some including what might be more closely related to usage.

By definition, infrastructure would just include the physical ICT networks in a country. But the indicators for measuring this are hard to find or are fraught with problems. Indicators such as main telephone lines or mobile subscribers are more a reflection of usage rather than the actual physical infrastructure. For example, with growing fixed to mobile substitution, the number of fixed telephone subscriptions is declining but not the actual infrastructure. A related issue is some infrastructure indicators are assigned to quality (e.g., broadband) rather than infrastructure. There are considerable differences among the e-indices as to whether infrastructure is just physical networks (copper telephone lines, fibre optic cables, mobile cellular base stations) or all of the related statistics that relate to infrastructure (quality, affordability, sustainability). There is also a lack of harmonization regarding usage with some e-indices considering the

number of Internet users as infrastructure while others include this in an access or usage category. On the other hand, actual usage statistics (the time spent using ICT, the type of ICT services used, etc.) are not widely included in ICT indices.

A second area of general agreement is that *education* is necessary to successfully exploit ICT. All of the indices except those that explicitly exclude indicators from outside the ICT arena (e.g., DOI and WBICT) have some kind of education category (e.g., “knowledge”, “social and cultural environment”, “Assets”, “Human Cap”) some explicit or some mixed with other variables in a more general category. There is prevalence for literacy and school enrolment indicators—which may not be the best measure of a society’s ability to use ICT. A few indices include higher level indicators such as “tertiary science and engineering enrolment” —which are more a reflection of the ICT workforce. This distinction is critical since there is a big difference between the general population having basic skills to use ICT as opposed to having a sophisticated ICT workforce.

Moving beyond infrastructure and education, the indices begin to diverge in their categorization. Some indices remain focused on ICT deliberately omitting categories and indicators that are prone to subjectivity, are external to the ICT sector or which do not form a tangible part of a country’s ICT assets or usage. For example, while it is widely felt that a supportive regulatory environment is important for nurturing ICT development, measuring what is “good” regulatory policy is difficult. Another argument is that these are external factors that may impact but do not immediately influence what a country has today.

Despite problems of measurement, some of the indices include a *policy and regulatory* category. For example, UNCTAD includes a simple policy variable measuring the existence of competition in a country. NRI has a policy and regulatory sub-index but the indicators do not reflect the actual ICT regulatory environment which probably has the biggest impact on the sector. This is also true of the EIU index.

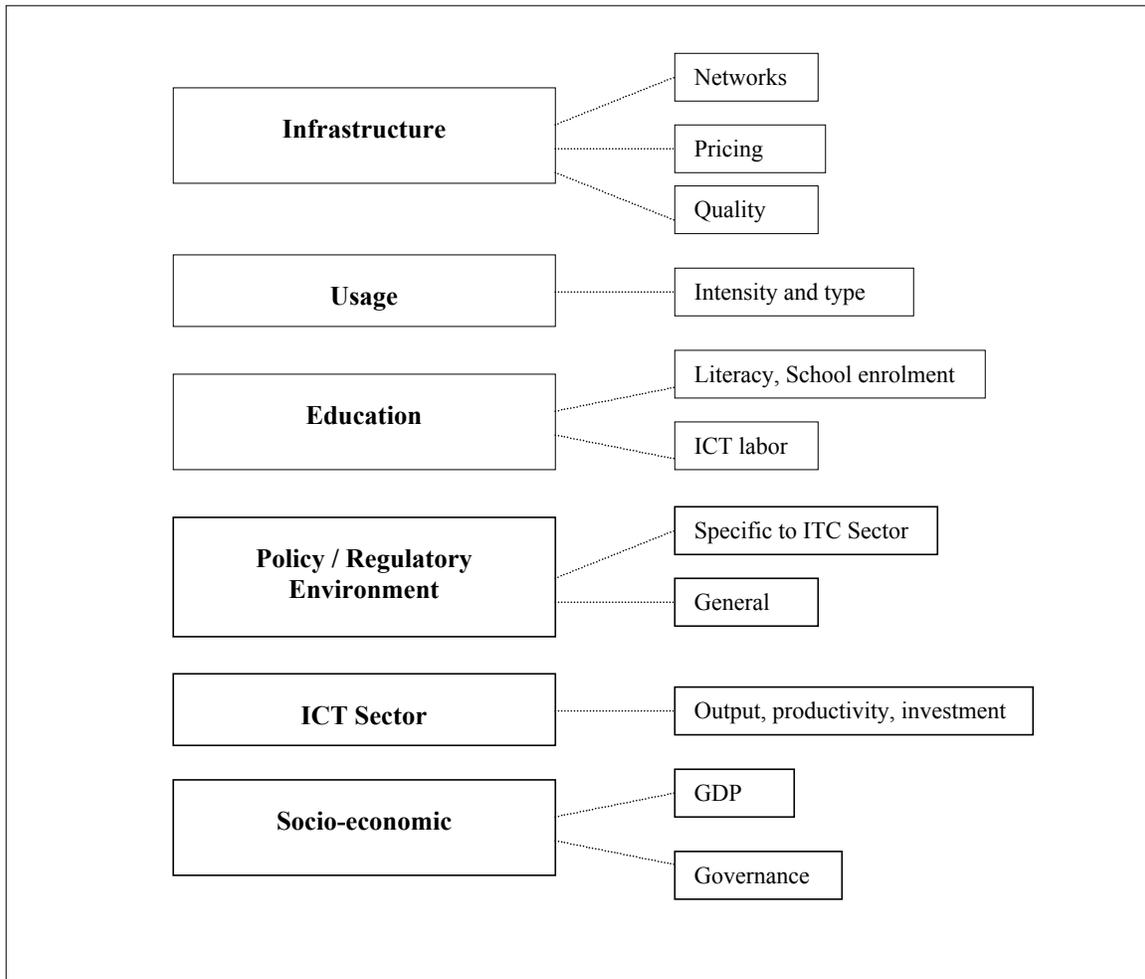
The remaining categories tend to be specific to each index. For example, KEI has an “Economic Incentives” category that includes indicators such as GDP per capita and tariff barriers. TAI and ArCo refer to “technology creation” including indicators such as patents and scientific articles.

The categories included in e-indices are summarized in Figure 8. In conclusion, it is unrealistic to compare the theoretical frameworks of e-indices since they are designed for different purposes. In addition, as one report notes, e-indices are often based on “unexamined theoretical assumptions.”<sup>23</sup> What is surprising is how little consistency there is at the category level. Despite several years of index development and a growing research base, few of the e-indices are in agreement about what constitutes basic ICT infrastructure let alone other determinants of ICT development.

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<sup>23</sup> Dan M. Grigorovici and Jorge Reina Schement (2002), “Weighing the intangible: towards a framework for Information Society indices” [http://www.smeal.psu.edu/ebrc/publications/res\\_papers/2002\\_14.pdf](http://www.smeal.psu.edu/ebrc/publications/res_papers/2002_14.pdf) [Accessed 11 December 2005]

**FIGURE 8**  
**CATEGORIZATION IN ICT INDICES**



**Source:** Author's compilation.

## 4. From Indicators to Index - Methodological Issues

An index uses some method to calculate its value. The method includes selecting indicators to support the index framework and steps to process the indicators including dealing with missing observations, making the indicators comparable to each other, converting the indicators to index values, and finally, aggregating the index values. Sufficient information should be provided that would theoretically allow the user to reconstruct the index. This adds transparency and credibility to the index results. In practice, few indices provide all of the needed information that would allow a complete reconstruction from bottom up. The description of the methodology employed varies from fairly detailed to vague.

### 4.1.1 Selection of indicators

After the design of a framework and its associated categories, indicators must be selected to create the index. There is a wide divide in the number of indicators among the indices, which vary from 8 to over 100. A noticeable problem in indicator selection is that the available indicators are not always the *best* to represent what the index is trying to measure. As the ITU notes:

*“In an ideal index, the variables for measuring infrastructure would include availability of ICTs in homes, schools, businesses and the government, as well as in public locations such as post offices, libraries and Internet cafés. Affordability variables would consist of various ICT service prices in relation to income, ideally from household expenditure surveys. Educational variables would comprise measurements of the digital literacy of the population. Quality variables would incorporate objective measurements of the service reliability and speed of networks. Unfortunately most of the variables suggested above are available only for a limited number of countries. At the present time, an*

*“ideal” index built on this basis would exclude so many countries that its usefulness would be very limited.”<sup>24</sup>*

Just as the “best” indicators limit the number of countries for which data is available, so too do too many indicators. Not only do too many indicators make the index more difficult to understand, there is no compelling evidence that a large number of indicators are any better than a smaller selection particularly since so many are interrelated. Some of the indices carry out an automated data reduction phase to eliminate indicators that do not appear to have much impact.

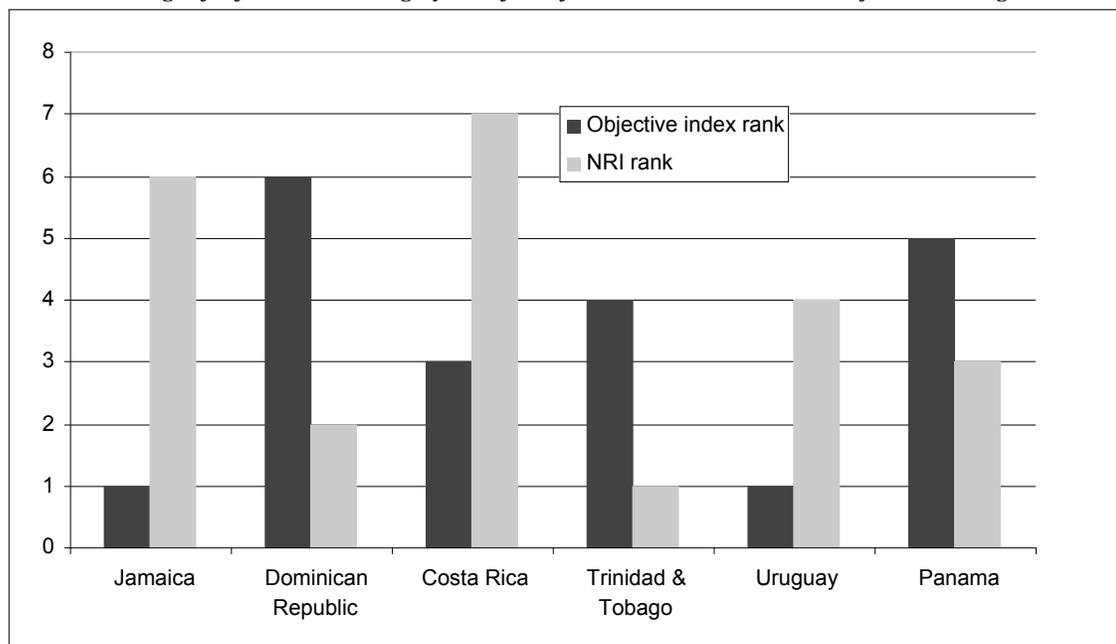
Another problem is the use of *subjective* indicators in indices. These include variables based on value judgements or the use of questionable and simplistic methodologies to represent non-numerical concepts (e.g., degree of competition, etc.). The Network Readiness Index uses a qualitative variable asking respondents their opinion about whether the general infrastructure in their country ranges from “poorly developed and inefficient” to “among the best in the world”. The results are often significantly different when compared to the actual situation of the infrastructure (Figure 9). Respondents in the Dominican Republic and Trinidad and Tobago consider their infrastructure to be better than it is whereas those in Jamaica and Uruguay find it to be worse than it actually is. There was only one country in Latin America and the Caribbean where the perceived infrastructure matched the actual situation (Bolivia). The result is that index scores will be arbitrarily lower for Jamaica and Uruguay and higher for the Dominican Republic and Trinidad and Tobago.

Subjective indicators are particularly problematic when used to reflect the policy and regulatory environment. For example, UNCTAD measures three markets to determine the extent of competition in a country: the presence of an Internet exchange, competition in fixed telephony and competition in the Internet Service Provider market. The first is assigned a value of 1 if there is an Internet exchange and 0 if not. The second is assigned values of 1, 0.5, 0.25 or 0 depending on whether there is full competition, partial competition, a duopoly or a monopoly. The third is assigned a value of 1 if there is competition and 0 if there is not. Apart from being rather simplistic measurements, there are range of issues making such type of policy quantification dubious. For example, the decision to create an Internet exchange is typically a commercial one decided by ISPs and not the government. Regarding fixed telephony competition, the distinction between partial competition and a duopoly is vague. Also, the existence of competition in just one market segment is questionable particularly when mobile communications is much more prevalent in most countries. The existence of Internet competition is complex since an ISP may be constrained in its operations if it cannot also provide its own international connectivity. Finally, the status reflects the legal situation and may not necessarily reflect the actual status (e.g., a country may declare its fixed telephone line market to be open but have only one operator).

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<sup>24</sup> ITU (2003). *World Telecommunications Development Report*. ITU: Geneva. [http://www.itu.int/ITU-D/ict/publications/wtdr\\_03/index.html](http://www.itu.int/ITU-D/ict/publications/wtdr_03/index.html) [Accessed 11 December 2005]

**FIGURE 9**  
**BELIEF VERSUS REALITY**  
*Average of infrastructure category rank for objective indexes versus NRI subjective ranking*



**Note:** The objective index rank is based on the average of the rank for the DAI, UNPAN, UNCTAD and World Bank infrastructure like category. The higher the number, the lower the ranking.

Another example of drawbacks with policy and regulatory indicators is the NRI. Not only does the NRI not include specific variables about the existence of competition in the ICT sector, but the general indicators it uses (Effectiveness of lawmaking, Laws relating to ICT, Effectiveness of judiciary and Intellectual property protection) are subjectively determined from surveys.

A related issue is what might be termed “semi-objective” indicators such as the evaluation of e-government websites in the UNPAN index. While it uses a structured methodology to score websites, there are inevitable biases. For example, it is unlikely that the researchers can read every one of the possible languages used in e-government websites, effectively disadvantaging countries in the rankings whose official language is not a widely-used one. This seems evident in the fact that only two of the top twenty rankings went to non-Western countries (Republic of Korea and Japan) and even these two have extensive English language versions of their e-government pages. It is also ironic that the United States is ranked first and that all of the developed Anglophone nations appear in the top twenty.<sup>25</sup>

On the other hand, subjective indicators are easier to produce than objective indicators, an argument in favour of subjective indicators, as they allow the inclusion countries for which objective indicators do not exist. While this can be a short-term solution to a lack of data for some

<sup>25</sup> The United States does not rank first in two other e-government scoreboards. Both Brown University’s Global E-Government Rankings and Accenture’s e-government maturity score rate the U.S. third. See Brown University, “Global E-Government”, September, 2004 and Accenture, *eGovernment Leadership: High Performance, Maximum Value*, May 2004.

countries, in the long run, efforts need to be devoted to enhancing the availability of objective data for all countries.

Given the importance of the data for the index, it is surprising how little thought appears to go into the selection of indicators. Indices with large number of indicators appear to include anything that is available without giving much thought to whether they are really the best choice. It is also surprising how much variation there is in the indices in indicator selection for the different categories. For example, for categories related to infrastructure in the different indices, the number of “direct” indicators range from 2 to 8 with a total of 27 different indicators used (Table 3).

**TABLE 3**  
**WHAT IS ICT INFRASTRUCTURE?**

		Arco	DAI	DOI	EIU	IKS	KEI	NRI	Orbicom	TAI	UNCTAD	PAN	WBICT	Total
	Number of indicators related to infrastructure	3	6	10	8	2	3	4	12	4	6	5	1	1
	Number included in infrastructure category	3	2	5	8	2	3	3	8	4	4	5	5	
1	Internet penetration	X	O	O	X	X	X		O		O	X	X	10
2	Mobile penetration		X	X	X			O	X		X	X	X	8
3	Fixed penetration		X		X			X	X		X	X	X	7
4	PCs per capita				X		X		O		X	X	X	6
5	Total telephone penetration	X				X	X			X				4
6	Internet host penetration							X	X	X	X			4
7	Internet affordability		O	O	X								O	4
8	Secure Internet servers				X			X					O	3
9	International Internet bandwidth per inhabitant		O						X				O	3
10	Broadband penetration		O	O	X								O	4
11	Electricity consumption	X								X				2
12	Proportion of households with fixed line			X					O					2
13	Proportion of households with a TV								O				X	2
14	Mobile tariffs			O									O	2
15	Proportion of households with Internet			X										1
16	Mobile Internet subscribers			X										1
17	Proportion of households with a PC			X										1
18	Waiting lines/main lines								X					1
19	Digital lines/mainlines								X					1
20	Cable TV penetration								X					1
21	Secure servers/internet hosts								X					1
22	Technology exports									X				1
23	TVs per capita											X		1
24	Hotspot (WiFi) penetration				X									1
25	Local call charge									O				1
26	Fixed tariffs												O	1
27	Mobile population coverage			O										1

**Note:** “X” means the indicator is found in an infrastructure category whereas “O” means that the indicator is included in the index but located in another category.

The choice of indicators impacts country rankings. Even small differences in indicators can make a difference. For example, ArCo and the TAI, which essentially seek to measure the same thing (“technological capabilities”), are the same index except for a few different indicators (Table 4) but produce strikingly different results for some countries (Figure 10). One reason is that ArCo uses Internet users whereas the TAI uses Internet hosts. Because a host can be located anywhere, it is not really a good measure of the intensity of Internet usage in a country. As a result Jamaica’s score is pulled down in the TAI (it has the second lowest host penetration of the LAC countries included) but raised in ArCo (Jamaica’s 2003 Internet penetration was the 4<sup>th</sup> highest in the region in 2004). On the other hand, the TAI considers high- and medium-technology exports to be significant. As a result, Mexico ranks first in the region in the TAI due to its high level of technology exports whereas in ArCo it only ranks eighth. One is left wondering whether Mexico is a leading technology achiever in the region or not.

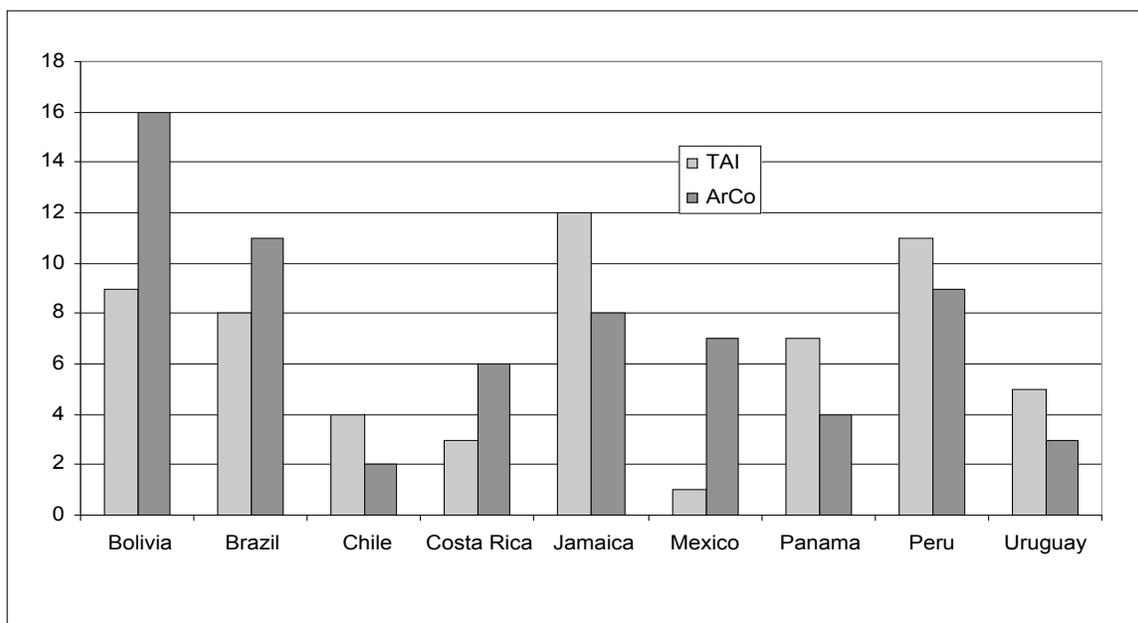
**TABLE 4**  
**INDICATORS IN TAI AND ARCO**

<b>TAI</b>	<b>Arco</b>
Patents	Patents
Royalties and license fees†	Scientific articles†
Internet hosts†	Internet penetration†
Technology exports†	
Telephones	Telephones
Electricity consumption	Electricity consumption
Mean years of schooling (age 15 and above)	Mean years of schooling (age 15 and above)
Gross tertiary science enrolment ratio	Gross tertiary science enrolment ratio
	Literacy†

**Source:** Adapted from UNDP and ArCo.

**Note:** † Differences in indicator selection.

**FIGURE 10**  
**LATIN AMERICA AND CARIBBEAN RANKINGS FOR TAI AND ARCO**



**Source:** Adapted from UNDP and Arco.

**Note:** The higher the number, the lower the ranking.

The indicators selected for the e-indices are not always the most appropriate (Box 1). A number of indices use Internet host penetration despite the fact that a host can be located anywhere and not in the country of its domain name (e.g., *www.host.br* does not mean that the host is necessarily located in Brazil). Countries that do not have a large number of hosts may be penalized in an index even though they have high values for other Internet indicators such as users, broadband subscribers or international bandwidth. Another example is pricing data which generally consist of a number of components. Using just one price element in isolation can distort results. This is a factor in the UNCTAD index where the price of a local call is the only indicator considered. Some countries do not charge for local calls but generally have a higher subscription rate than countries that do charge for a local telephone call. Therefore using only the local call charge or only the subscription charge in the index presents an incomplete picture and favours one group of countries over another.

**BOX 1**  
**“LIES, DAMNED LIES AND STATISTICS”**

The Republic of Korea is well advanced in ICT development. It leads the world in broadband Internet access, is ranked fourth in overall access to the Internet and was one of the first countries to launch third-generation mobile Internet services. It has achieved universal access, not only with practically every household having telephone service, but also with two-thirds having broadband Internet access. Korea also has one of the leading ICT manufacturing sectors in the world. Related to the high level of ICT development is the fact that Koreans rank high in literacy and overall educational achievement. Yet, on most international ICT rankings, Korea is not in the top ten. Why the discrepancy between the statistics and the rankings?

For one thing, there is often a bias of quantity over quality. The rankings are typically designed to favour a common denominator of widely available indicators, rate high per capita values without adjusting for methodological discrepancies, and do not include adjustments for qualitative differences. The potential

inaccuracies of such an approach can easily be illustrated by comparing Korea and some usually higher-ranking countries, for example Switzerland. Like many European nations, Switzerland includes Integrated Services Digital Network (ISDN) channels in the number of main lines—a common indicator in all of the indices, which effectively inflates the total figure reached. Korea on the other hand, does not include ISDN channels. If the number of physical telephone lines were compared, Korea would in fact rank relatively higher. A similar situation exists for mobile cellular subscriber figures that include prepaid cards. This figure is distorted because not all prepaid cards are active. As Switzerland has a high proportion of prepaid cards, it appears to rank higher than Korea on this indicator. Korea on the other hand, has few mobile prepaid subscribers and consequently has a more realistic, but relatively lower, figure for total mobile penetration.

Another methodological weakness is that many surveys use the number of Internet hosts per capita to measure Internet usage. This is misleading since host computers can be located anywhere and are not necessarily in the country of their domain name. On a per capita basis, the number of Internet host computers in Korea—based only on the .KR domain name—is relatively low, affecting its ranking. On the other hand, Korea's high level of Internet and broadband penetration is rarely reflected in the standings.

Global rankings also appear to be biased in favour of theoretical perceptions of competitiveness rather than actual achievement. In general, few Asian nations rank among the top ten. Hypothetical assumptions appear to have more weight with the rankings more focused on the means rather than the ends. For example, a nation that supposedly allows a greater degree of competition than another would be ranked higher even though the latter might have a far greater level of infrastructure. Another shortcoming is that the rankings tend to weight per capita income highly. In the case of Korea, it is doing exceedingly well in ICTs despite a relatively low per capita income. If anything, Korea's ranking should be raised because of this fact. In terms of purchasing power parity, Korea's per capita income is twice that of the conventional measurement. The case of Korea suggests that these scorecards are not very useful in accurately measuring ICT achievements in some countries.

**Source:** ITU.

### 4.1.2 Data sources

Many of the indices use ITU data for their ICT indicators. There are exceptions, with NRI and EIU both using additional data furnished by Pyramid Research and the World Information Technology and Services Alliance (WITSA). There are a number of issues associated with the source of the data that impact the results. Because so much of the underlying data comes from the ITU, errors or omissions will be magnified throughout each index. None of the indices claim to do any data checking or updating of the ITU data that would add value to the results. Another point is that while the ITU data is widely available, those from other sources tends to be of a more proprietary and commercial nature. This data is either unavailable to the general public or relatively expensive to purchase. As a result, this latter data is subject to less stringent quality control and verification that the ITU data might be. Finally, there are data that are unique to some indices. The NRI is the best example of this where it uses a number of subjective indicators based on opinion surveys. This means that the NRI can claim to be unique but also means that the data cannot be verified and put to validity tests.

### 4.1.3 Missing data

It is unlikely that all data will be available for all countries for the same year, particularly if an index wants to use the latest data. In some countries, data compilation lags while in others, the necessary data may not be available. In order to compute the index, either the data can be left blank—in which case the country will be assigned no value for that indicator—or some method can be used to estimate the missing data.

There are a number of implications for the results. First and foremost, the lack of data means that a number of countries are not included in some indices. This is the case in Latin America and the Caribbean where few countries appear in all of the indices. Second, when missing data is simply ignored, it arbitrarily reduces the index value of the country. The country may actually have a high value or an estimate may have produced a better result than zero. The UNPAN Telecom category assigns a zero for those countries where there is no data. As a result, UNPAN assigns a value of zero for computer penetration for Antigua and Barbuda since data is not available. If the “Telecom” category of the UNPAN index is recalculated excluding computer penetration for all countries, then Antigua and Barbuda would rank first in the Latin America and Caribbean region instead of third.

Not all of the e-indices explain how they treat missing data although it can be inferred that they use some kind of estimation method (e.g., use earlier year, gap estimate, trend, based on values from countries in same region or of same economic level, proxy, etc.). None of the indices add value by looking into the reason for the missing data.

#### 4.1.4 Transformation

Transformation is a two stage process to first make the data comparable and then to convert the data into index values. The indicators included in the index must be comparable in a relative sense. Absolute values such as the number of telephone lines or number of mobile subscribers do not convey how well a country is doing, but rather how much of the good or service it has. Absolute values are generally made comparable by dividing by the population; mobile telephone subscribers become mobile telephone subscribers per 100 inhabitants. Many indicators are already supplied in this transformed state so this step may be unnecessary. However, there are also indicators that are transformed based on other denominators besides population. For example affordability indicators are often created by dividing price data by income.

The second stage in transformation involves converting the data to index values. Indicators are typically divided by a maximum value. Some of the indices use the highest value in the data set while others use a pre-established value (“goalpost”):

$$\text{Index value} = (\text{Actual value} - \text{Minimum value}) / (\text{Maximum value} - \text{Minimum value})$$

Although, a minimum value may be subtracted from the actual value and the maximum value, in practice, all of the indices use zero as the minimum value so this step is not needed.

The advantage of using a maximum value is that there is no arbitrariness as might be the case with determining what the goalpost should be. The drawback of a maximum value is that it assigns the best score to the countries that have the highest value. This means that instead of a fixed goalpost the maximum keeps changing over time affecting historical comparisons. This is especially problematic for technologies that may be declining but do not impact the overall capability of a country. For example, the number of fixed telephone lines is declining in some countries with substitution for mobile.

The goalpost method establishes ideal targets for each indicator (see Table 5 for an example from the DAI). Thus even countries that are performing relatively well will not be assigned the maximum value for the index if they have not yet attained the ideal. The index values remain stable over time since the goalpost is fixed. The disadvantage is that in a fast moving area like ICT, it is difficult to establish goalposts. It is tricky to determine what ideal values should be for new technologies. Countries can surpass what seem to be logical goal posts. For example, a logical goalpost for mobile penetration would be 100, but this has already been exceeded in a number of countries. One way around this difficulty is to use indicators where the

maximum cannot be exceeded such as for household penetration levels (i.e., 100% of households having PCs is the maximum value). This is the approach used by the DOI where most normalized indicators cannot exceed 100.

Orbicom uses the simple (non-weighted) average of all countries as the reference value for making the data transformation. Thus a country's data is not compared to a maximum value but rather to the world average.

The implications of different denominators for converting indicators to index values are profound. For example, transforming mobile cellular subscribers per 100 inhabitants to an index value based on a goalpost, maximum value or average value can lead to three different conclusions for a country's progress. Take Chile for example where it can either be perceived as making steady progress, declining or far above average in mobile infrastructure (Figure 11). This illustrates the huge impact that methodologies can have even when indices use the same indicators. These subtle differences are not often explained to index users. In the case of Chile, the choice of index depends on whether the user wants to see how it is doing compared to the average, compared to the best or compared to the ideal—the results are significantly different. Chilean policy makers would undoubtedly be more interested in how the country compares to the best or the ideal given its high ICT ranking in the region. On the other hand, countries with relatively low levels of ICT development might find it more realistic to compare progress to the average. But unless they understand the subtleties of the indices, they may not be using the correct one for their analytical needs.

**TABLE 5**  
**DAI GOALPOSTS**

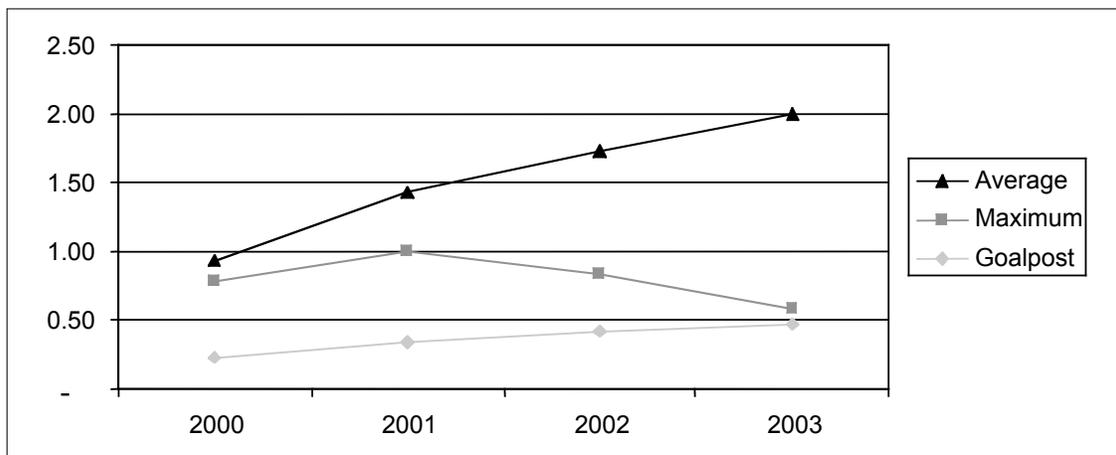
Indicator	Value	Note
Main telephone lines per 100 inhabitants	60	The number of fixed telephone line subscribers has been in decline since 2000. The highest record value for this indicator was 69.3; by Sweden in 1998 This has since declined to 65.3. It seems unlikely therefore that the highest value will ever again be attained. It appears that much of the decline in fixed telephone lines is due to substitution by mobile phones, a fairly recent phenomenon as well as replacement of second lines used for Internet access by higher speed alternatives which share the same line. It will take some years before the high value for main lines per 100 inhabitants reaches a stable level. A goalpost of 60 implies a very well developed fixed line network.
Mobile subscribers per 100 inhabitants	100	Mobile phones are a more personal possession than fixed telephone lines that tend to be shared in households or offices. Thus it is logical to set a higher threshold. The value of 100 has already been reached by two economies: Luxembourg and Taiwan, China. This level implies that all inhabitants have a mobile phone. Of course in practice this is not realistic since infants and very young children would not use mobile phones. Thus there is some duplication (e.g. from people having more than one phone, from non-residents that may take out a mobile subscription in the country they work). Duplication could also arise from delays in administrative records between when a subscriber stops using a subscription on one network and switches to another. Though a lower value might be set at which lit might be estimated that all inhabitants that are able to use a mobile phone would have one, this would vary among countries. A limit of 100 implies that all adults have at least one mobile phone.
Literacy	100	The United Nations Development Programme establishes these values. <sup>26</sup>
School enrolment	100	
Affordability	1	The goalpost for this indicator is 1, a situation where the Internet would be free. On the other hand, where the affordability indicator is negative (e.g. prices are more than per capita income), no points are awarded since a person cannot spend more on Internet access than they earn. Some people make much more than the average and could afford access. However when affordability exceeds the average income in the country, the Internet is clearly out of the financial reach of most inhabitants.
Broadband subscribers per 100 inhabitants	30	Broadband access is still evolving so the penetration limit is unknown. The Republic of Korea leads the world with 21 broadband subscriptions per 100 inhabitants at the end of 2002. This translates into a household broadband connection rate of 68 per cent. At a level of 30 per 100 inhabitants, more than ninety percent of households would have a broadband connection in Korea.
International Internet bandwidth per capita	10'000	This level has already been exceeded in three countries most notably Denmark where the value is more than twice the goalpost. This indicator is computed on a per capita basis but in reality the actual amount of international bandwidth available to an Internet user would be much higher.
Internet users per 100 inhabitants	85	The highest value for Internet penetration over the entire population occurs in Iceland with a rate of 65. This corresponds to 81 percent of Icelanders aged 12-80. A goal post of 85 for this indicator implies that all in that age range are using the Internet.

**Source:** ITU.

**Note:** Minimum goalposts are always 0.

<sup>26</sup> For methodology, see UNDP. *Human Development Report 2003*. "Technical Note." Available from: [http://www.undp.org/hdr2003/pdf/hdr03\\_backmatter\\_2.pdf](http://www.undp.org/hdr2003/pdf/hdr03_backmatter_2.pdf). [Accessed 11 December 2005]

**FIGURE 11**  
**CHILE MOBILE PENETRATION**



**Note:** The chart shows the index value of Chile's mobile subscribers per 100 inhabitants based on a goalpost (100), average of all countries in Latin America and the Caribbean for 2003 (24) or the maximum value for each year (29, 34, 49, 82).

### 4.1.5 Weighting

The final step in calculating the index is to aggregate values within categories and then to aggregate the categories to obtain a single index value. Most of the indices simply average the data within a category and then average the categories—thus they assign each indicator and each category equal weight. This assumes that all are equally relevant which is a transparent approach but may not bear scrutiny. A mathematical test can be applied by altering the weights used for each indicator or each category to see if it has a bearing on the final result. DAI did this and found little difference so to enhance transparency, it assigned categories equal weights. It is not clear whether other indices tested the logic behind equal weighting.

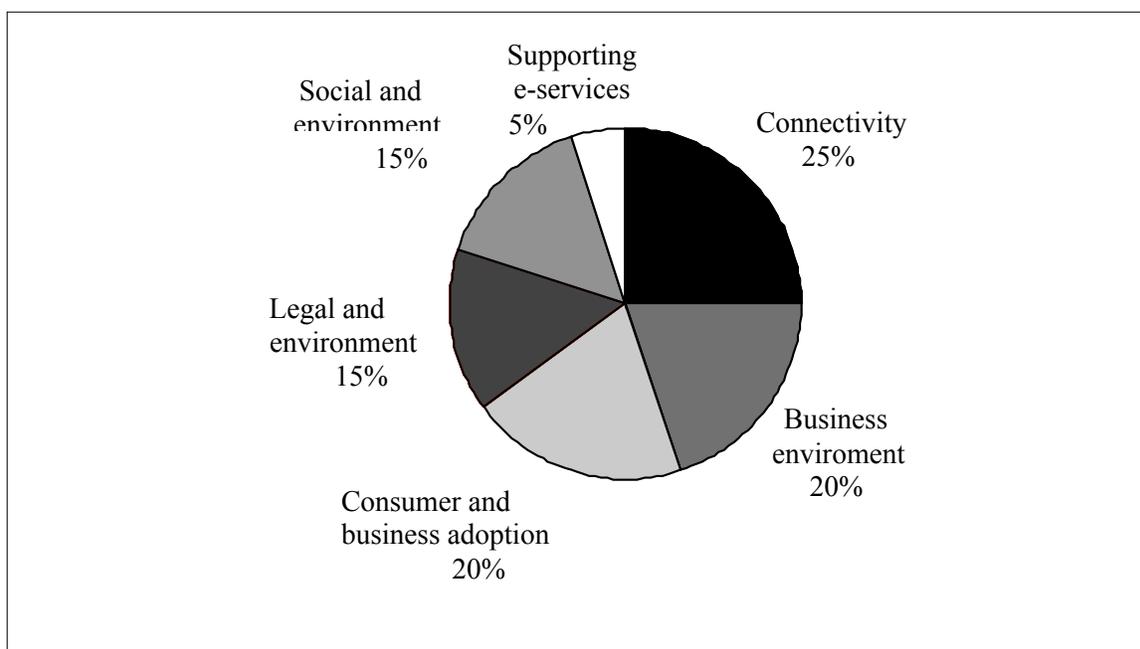
There are two variations on averaging within and across categories. The World Bank ICT Index uses the Principal Components method which generates coefficients for each variable within a category. Thus the weights within a category are automatically calculated based on the relationship between the variables. The World Bank ICT Index then uses simple averages to aggregate the category scores into a single index value, assuming they all have equal impact. The EIU index assigns different weights to each category (Figure 12) so that connectivity will have the most influence on the overall index while supporting e-services will have the least. EIU does not explain how the weights were arrived at.

How weights are assigned affects the overall index value. This will be even more significant when categories are not well structured. For example, some indices include connectivity and access categories that are similar but will have a greater impact on the overall result than other categories. Statistical modelling can be used to see which variables have the most influence but that may not be the designer's intention. For example, if main telephone lines are found to statistically have the biggest influence in a category and assigned the highest weight this may be to the disadvantage of mobile communications and infer a preference for fixed lines over mobile. This is the case in the UN PAN index where greater weight is given to fixed lines than mobile or television on the following grounds:

*“The Survey deems the prevalence of PCs, Internet users, telephone lines and on-line population to be of far greater significance than mobile phones and TVs at this point in e-government service delivery worldwide, although it is acknowledged that governments can, and do, use other forms of ICT such as radio and TV to improve knowledge and service delivery to people. Consequently, the Telecommunications Infrastructure Index was constructed as a composite measure which assigns a 20 per cent weight to the first three variables and 5 per cent to the remaining two.”*

Ironically, some analysts consider mobile telephones to be even more relevant in developing nations for e-government since there are more mobiles in developing countries than fixed lines. They point to the growing use of “m-government” applications such as using text messages to transmit voting information.<sup>27</sup> Clearly more thought is needed that has been given in weighting schemes for indices.

**FIGURE 12**  
**CATEGORY WEIGHTS IN EIU INDEX**



Source: EIU.

<sup>27</sup> See Emmanuel C. Lallana, 2004, “ eGovernment for Development: mGovernment Definitions and Models Page”, <http://www.egov4dev.org/mgovdefn.htm> [Accessed 11 December 2005]

## **5. Country and Regional Analysis**

### **5.1 Regional and sub-regional comparison**

#### **5.1.1 Comparisons with other developing country regions**

Latin America and the Caribbean (LAC) performance on e-indices is in line with its level of economic development (Table 6). In relation to six developing country regions, LAC ranks first in two indices, second in six, third in three and fifth in one. Its average rank is two, in line with its average GDP per capita and human development index (second among the six developing regions).

**TABLE 6**  
**COMPARING LATIN AMERICA AND THE CARIBBEAN**  
**TO OTHER DEVELOPING REGIONS**

	High income: OECD	High income: non OECD	East Asia & Pacific	Europe & Central Asia	Middle East & North Africa	South Asia	Sub Saharan Africa	Latin America & Caribbean	Rank among developing regions
ArCo	0.65	0.45	0.23	0.39	0.27	0.16	0.14	<b>0.32</b>	<b>2</b>
DAI	0.75	0.63	0.32	0.46	0.36	0.27	0.19	<b>0.46</b>	<b>2</b>
DOI	0.62	0.64	0.34	0.41	0.33	0.25	0.25	<b>0.33</b>	<b>3</b>
EIU	7.90	6.91	4.00	4.74	3.31	3.63	4.50	<b>4.75</b>	<b>1</b>
HDI	0.94	0.87	0.69	0.78	0.69	0.60	0.48	<b>0.77</b>	<b>2</b>
IKS	0.65	0.61	0.47	0.50	0.42		0.26	<b>0.45</b>	<b>3</b>
KEI	8.37	6.48	3.64	5.22	3.21	2.06	1.94	<b>4.09</b>	<b>2</b>
MDG	0.75	0.56	0.10	0.27	0.11	0.04	0.04	<b>0.22</b>	<b>2</b>
NRI	1.05	0.81	0.02	-0.27	-0.12	-0.49	-0.72	<b>-0.61</b>	<b>5</b>
Orbicom	190.31	129.25	41.62	83.09	44.20	21.10	23.03	<b>68.93</b>	<b>2</b>
TAI	0.58	0.48	0.31	0.42	0.24	0.16	0.15	<b>0.29</b>	<b>3</b>
UNCTAD	0.62	0.49	0.24	0.30	0.24	0.23	0.19	<b>0.29</b>	<b>2</b>
UNPAN	0.76	0.48	0.28	0.47	0.30	0.28	0.23	<b>0.43</b>	<b>2</b>
WBICT	8.57	7.94	4.58	5.73	5.07	3.79	3.15	<b>5.97</b>	<b>1</b>

**Source:** Adapted from indexes shown in table.

The two e-indices that LAC is ranked first are the WB ICT Index and the EIU e-readiness index. Examining the sub-categories of these indices in more detail reveals where LAC is perceived as relatively strong and weak in ICT. On the WB ICT Index, LAC tops all of the sub-categories except for access. It does particularly well in applications (reflected by UNPAN e-government web measure index and secure servers) and sustainability (labor productivity and telecom revenue as % of GDP). These factors are similar to an analysis of EIU sub-category scores. LAC does best in the business, policy and legal environment (e.g., sustainability) and supporting e-services (e.g., applications) and is worse in connectivity (e.g., access). The EIU notes the reason for LAC rankings as follows:

*“With the exception of Mexico (36th), all Latin American countries included in the ranking have dropped in their positions this year. The continuing digital divide between north and south is rooted in the very issues that constrain Latin America’s overall economic development—income inequality, lack of infrastructure and a still-nascent technological knowledge base.”*

The NRI, where LAC does worse of any index, has an opposite view of the region’s weaknesses. Unlike the World Bank and the EIU, NRI finds that LAC’s weak area is its policy environment:

*“The highest ranking Latin American country is Chile (35), well ahead of Brazil (46), Mexico (60) and Argentina (76). With the exception of Chile, the region as a whole suffers from a poor legal framework for the development of the ICT sector, heavy administrative burdens, low levels of government prioritization for ICT development, low*

*Internet penetration rates and pervasive brain drain, which undermines the potential for faster growth of the economies' ICT sectors. Most countries have thus seen an erosion in their relative ranks within the 104 economies covered."*

Yet ironically, the NRI category that LAC does the worst in is usage (second to last of any region and just above sub-Saharan Africa) and not policy and regulatory (essentially found in the NRI environment category). This category is further separated into individual, business and government usage. The individual usage sub-category consists primarily of objective indicators, an area that LAC does well in so it is unlikely this area pulled the region down. The other sub-categories consist of subjective indicators based on interviews to measure business and government usage. It seems likely that Latin Americans are more pessimistic about their region's business and government usage influencing the rankings. This is far from objective considering that the UNPAN e-government index ranks LAC second highest among all developing regions. The fact that LAC finished next to last in the Network Readiness Index but ranked relatively high in the other eleven ICT indices, suggests there is a problem with the NRI and not the region's actual performance. The shortcoming with the NRI is the use of subjective indicators which do not reflect reality. This argument is reinforced considering that on the other e-readiness index from the Economist Intelligence Unit, Latin America and the Caribbean ranks first among all developing regions. Although the EIU also uses some subjective indicators, there are much fewer than the NRI. Furthermore, the EIU subjective indicators are not of a survey nature but proxies for non-quantitative data.

Given these contradictions among indices, it is difficult to determine if the region's policy and business environment is a strength or weakness for the development of ICT. The one area that most e-indices seem to agree on is the need for LAC to expand its level of infrastructure. They also tend to agree that the region is relatively strong in the applications area, particularly e-government.

Entering the ranks of the elite ICT countries is a difficult target for LAC. Chile has come closest, with a ranking of 6 for its e-government in the 2004 UNPAN ranking (though it is pulled down to 22 overall because of relatively lower levels of infrastructure development). However even Chile is finding it difficult to move up in rankings and has been stuck at around the 35 level for several years. Indeed, most LAC countries are not improving their rankings or are even slipping. Although the ICT sector is growing in LAC, it is not growing fast enough compared to other regions.

### **5.1.2 Sub-regional comparisons**

The South Cone sub-region leads in e-indices with the highest average score in 10 out of 12 indices; it finished second in the other two (Table 7). The South Cone's performance is boosted by Chile which topped the region in most of the indices. Argentina and Uruguay also ranked in the top quartile on most indices while Brazil ranked just below that. The sub-region is the richest and best educated, topping the UNDP HDI. The South Cone sub-region did best despite having a relatively lower level of infrastructure development compared to the Caribbean.

**TABLE 7**  
**LAC SUB-REGION SCORES AND RANKS IN e-INDICES**

	Score					Rank			
	LAC	Andean	Caribbean	Central	South Cone	Andean	Caribbean	Central	South Cone
ArCo	0.32	0.33	0.29	0.31	0.38	2	4	3	1
DAI	0.46	0.43	0.49	0.39	0.51	3	2	4	1
DOI	0.33	0.29		0.36	0.37	3	#N/A	2	1
EIU	4.75	4.15	4.82	5.21	5.36	4	3	2	1
IKS	0.45	0.41	0.37	0.50	0.46	3	4	1	2
KEI	4.09	3.66	3.82	3.74	5.15	4	2	3	1
NRI	(0.61)	-0.88	-0.32	-0.73	-0.37	4	1	3	2
Orbicom	68.93	60.56	68.32	58.21	93.04	3	2	4	1
TAI	0.29	0.27	0.28	0.29	0.33	4	3	2	1
UNCTAD	0.29	0.26	0.30	0.26	0.33	4	2	3	1
UNPAN	0.43	0.46	0.39	0.41	0.55	2	4	3	1
WBICT	5.97	5.84	5.59	5.81	6.65	2	4	3	1
HDI	0.77	0.75	0.77	0.74	0.82	3	2	4	1

**Source:** Adapted from indexes shown in table.

The Caribbean was the next best performing sub-region, ranking first once and second four times. The Anglophone Caribbean countries have a high level of infrastructure compared to other sub-regions. The sub-region has a number of weaknesses impacting its rankings. First, it is diverse. While the Anglophone countries tend to have high levels of ICT penetration, Cuba, the Dominican Republic and Haiti do not. These latter countries, particularly Haiti, reduce the sub-region average because their scores are so low. Second, the region appears to be weak in ICT application. Although Barbados topped the Knowledge Economy Index, it is an exception and the sub-region tends to perform poorly in indices that measure application use. For example, it ranked last in the UNPAN e-government index. Third, most of the Caribbean countries have small populations lacking the economies of scale necessary to develop information creation industries. While many Caribbean countries are keen to promote offshore information processing, they are not creating but rather processing information in tasks such as data entry or call centres. That is why the region does not perform so well on the technology creation indices such as ArCo or TAI. Nor does it perform well on indices that measure the knowledge society such as IKS or KEI.

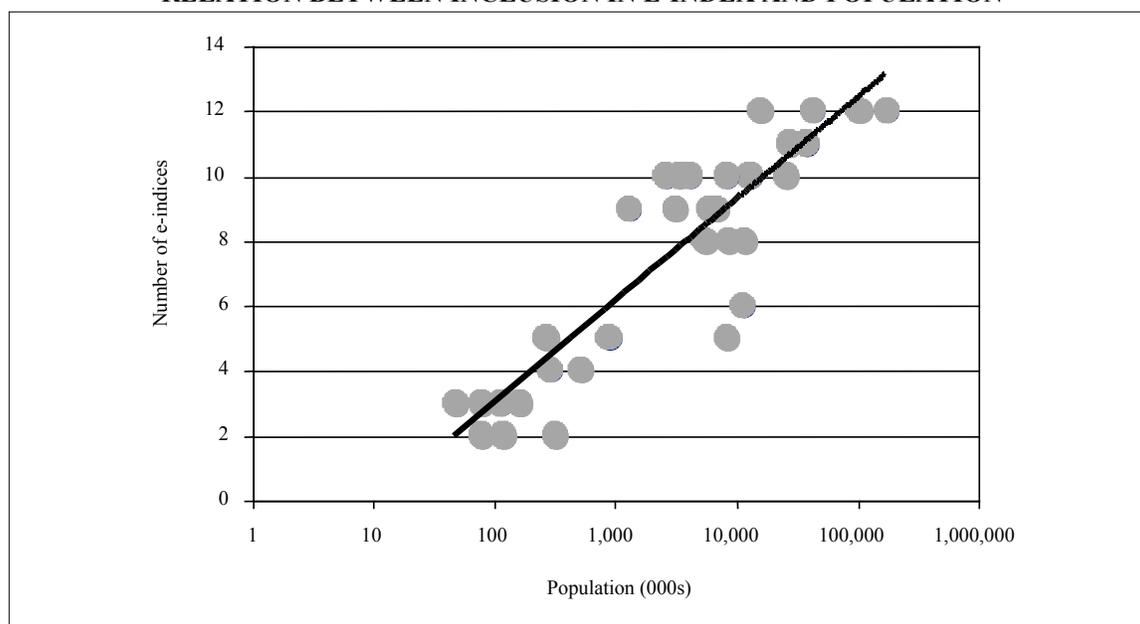
On average, Central America does slightly better than Caribbean but finishes third in six of the indices. The sub-region's performance is boosted by Mexico and Costa Rica with each ranking first in the TAI and IKS respectively. These countries performances mask a large gap between the other nations in the region.

The worst performing region is the Andean which did not obtain a first place ranking in any index. It suffers from the lowest level of infrastructure which because of its large weight in most indices drags the sub-region down. On a bright note, it does well in the potential for technological creation, finishing second in the ArCo. It also does well in the UNPAN e-government index, also finishing second. As a whole, the overall ICT sector in the Andean nations appears to be in relatively good shape, with the sub-region ranking second in the World Bank's ICT Index ranking.

## 5.2 Country analysis

There are a number of issues that have a bearing on the analysis of country performance in ICT indices (“e-indices”). First, all of the countries are not included in all of the indices. Only two of the indices (DAI and UNPAN) include all of the countries. There is a close relation between the population of the country and the number of indices it is included in (Figure 13). This limits the extent of the analysis, particularly for many of the Caribbean nations, which have small populations.

**FIGURE 13**  
**RELATION BETWEEN INCLUSION IN E-INDEX AND POPULATION**



**Note:** Each circle represents a country.

Second, the majority of e-indices considered have only been published once. For the others, the index composition and methodology often changes making it difficult to compare development over time. Although rankings can be compared over time, this is not always useful when the index has changed (particularly if the number of countries included also changes).

Third, each index uses a different methodology to assign a score. Therefore the scores are not comparable across indices. This analysis converts each score to its percentage equivalent to give the relative position of country in an index. Scores and ranks are averaged within the world and the LAC region to analyze a country’s overall situation. The latest status of each country in each index is provided in a summary table in the Annex. The summary table also shows changes in rankings—when available—from 2000 to 2005. If available, the summary table includes the country’s performance in the Orbicom index (the only index which provides a comparable time series of scores) for the period 1996-2001 and shows the country’s performance compared to world and regional averages.

### 5.2.1 Antigua and Barbuda

Antigua and Barbuda is only included in two e-indices, given its small population size of just under 80'000. The results are strikingly different, compounding the difficulty of making a significant analysis of its e-status. In the Digital Access Index (DAI), Antigua and Barbuda ranks 4<sup>th</sup> in the region while the UNPAN E-readiness Index ranks Antigua 24<sup>th</sup> in the region (and only 99<sup>th</sup> worldwide). The implication is that Antigua has a strong infrastructure—it ranks third in the region in fixed telephone penetration and fourth in mobile penetration (2003)—but lags in ICT usage and applications. Despite its high level of fixed and mobile telephone penetration, it is only ranked 11<sup>th</sup> in the region in Internet penetration. This is confirmed by analyzing the sub-components of the indices. Antigua and Barbuda ranks higher in infrastructure, affordability and quality than it does in usage on the DAI. This is confirmed by the UNPAN where Antigua ranks higher in the telecom component than it does in the web-measure. Human skills are also an issue with Antigua ranking lower than its overall score in the knowledge component of the DAI and only equal to its actual score in the UNPAN human capital sub-index. Given the absence of index data for Antigua, trend analysis is inconclusive. The only available inter year rankings are from the UNPAN index which show Antigua dropping 9 positions from 2003 to 2004.

### 5.2.2 Argentina

The fourth most populous nation in Latin America and the Caribbean, Argentina appears in 11 out of the 12 indices considered (it was not included in the IKS), a measure of its size and significance. On average, Argentina ranks in the 60% percentile in the world and the top fifth in the region but there are significant variations depending on the e-index. For example it ranks first in the region in the ArCo index but only 11<sup>th</sup> in the NRI. Given these variations, it is difficult to determine Argentina's relative performance. Examining the various index sub-components suggest that Argentina is strong in human capital and that the level of quality and affordability are adequate. The sub-indices also tend to agree that Argentina's level of infrastructure development should be higher.

Most indices find little change in Argentina's rank: there was no change in 2001 according to Orbicom, a drop of 2 according to the EIU (2005) and a gain of 2 according to UNCTAD (2002) and a drop of 1 according to UNPAN. The one exception was the NRI which had Argentina's rank dropping a whopping 26 points in the 2004 index.

### 5.2.3 Bahamas

The Bahamas is included in only two indices, the DAI and the UNPAN. It is somewhat underrepresented considering its population of 300'000 and the fact that some countries with smaller populations are included in more e-indices. Its two rankings are radically different with the Bahamas scoring first in the region in the DAI and only 12<sup>th</sup> on the UNPAN. The DAI reckons that Bahamas is performing best in quality (it leads the region in broadband and international Internet bandwidth penetration). Despite the low regional UNPAN ranking, Bahamas is ranked third in the Caribbean for e-government and its ranking rose by two places in 2004.

### 5.2.4 Barbados

Barbados is included in five e-indices, which is more than average considering its population of some 270'000. However, it is not enough to prove conclusively whether the country is a regional ICT leader or not. It ranks 1<sup>st</sup> in the region on the KEI and UNCTAD indices but only 14<sup>th</sup> on the UNPAN e-government index. It ranks 5<sup>th</sup> on both the DAI and UNCTAD indices. The country has a high level of infrastructure development: it ranks 2<sup>nd</sup>, 3<sup>rd</sup> and 1<sup>st</sup> respectively in fixed, mobile and Internet penetration. It is also the region's leading country in human development as measured by the UNDP HDI.

Though UNPAN only ranked Barbados fifth in the Caribbean in e-government, it noted that Barbados has made significant progress, moving up 11 points in its global ranking between 2003 and 2004.

### 5.2.5 Belize

Belize is included in four e-indices. Its average world score is 59% and its average regional score is 54%. There is not a tremendous variation in scores, between 46%-64%. UNCTAD finds Belize to be best performing in access and worse in policy and connectivity. The DAI finds Belize to be best in knowledge and affordability and worse in usage and access. In terms of trends, Belize was up two ranks in 2001 on the Orbicom index, down 2 in 2002 on the UNCTAD index and dropped 5 on the UNPAN e-government index in 2004.

### 5.2.6 Bolivia

Bolivia is ranked in ten e-indices with an average score of 34% at the world level and 26% within the region. Regional scores range from just 5% in the NRI (where it was the second lowest ranking nation in LAC) to 53% on the TAI. According to the KEI, Bolivia fares poorly in information infrastructure and economic incentives and does best in education. The latter is somewhat surprising considering that Bolivia's literacy rate is below the regional average. However it has a relatively high level of school enrolment which equalizes its overall education index with the regional average. The DAI rates Bolivia's usage and infrastructure as poor, and like the KEI rates knowledge the highest. Likewise, UNPAN considers the usage area weak, only ranking Bolivia 15<sup>th</sup> in Latin America for e-government. Similarly, the World Bank ICT Index finds that applications are Bolivia's weak suit but rates sector sustainability highly.

In general, recent trends have been negative for Bolivia's ICT development. It dropped 9 positions in the NRI and 10 in the UNPAN in 2004 and 2 in 2001 in the Orbicom index. Only UNCTAD shows a positive rise of 6 in 2002 but this followed a drop of 42 in 2001.

### 5.2.7 Brazil

Brazil is included in every e-index, no surprise since it is the region's most populous nation. Its world e-index grade is 50% while within the region its average score is 64% (close to its regional HDI score of 63%). Brazil does better in the more subjective e-indices such as the EIU or NRI, reflecting its perhaps perceived potential. It finishes last in the region in the DOI (out of 7 Latin American countries included), a purely infrastructure based index. This is confirmed by the World Bank ICT Index, which ranks Brazil's level of access below its overall ranking. Affordability is also an issue where Brazil scores below its overall score. The KEI index

considers that Brazil's economic incentives are insufficient, with a score significantly below its overall score. On the other hand, most of the e-indices rank Brazil's knowledge level as a positive factor for ICT.

The picture is inconclusive as to whether Brazil's ICT capability is improving or not. The NRI has Brazil slipping from 29<sup>th</sup> in 2002 to 46 in 2004, a drop of 17 places. On the other hand, UNCTAD shows a slight rise in rankings for Brazil, from 62 in 2001 to 57 in 2002. According to UNPAN, Brazil's e-government ranking rose 6 between 2003 and 2004, from 41 to 35. Yet the EIU has Brazil falling from 35 to 38<sup>th</sup> between 2004 and 2005.

### 5.2.8 Chile

Chile seems to be the undisputed ICT leader in the region. It appears in all 12 e-indices, ranking first in the region seven times and never appearing lower than fourth.

Breaking apart some of the indices into their sub-components illustrate the reasons for Chile's high position. For example, the country ranks 29<sup>th</sup> in the world in the World Bank's ICT Index. However, it ranks much higher in ICT sector sustainability and applications use than in access, quality and particularly affordability where it only ranks 52<sup>nd</sup> in the world. Chile's relatively low level of infrastructure compared to other factors is confirmed by UNPAN and KEI where its infrastructure ranking is lower than overall index value. On the other hand, policy and business environment related factors rank high—these gets top scores for the country in the UNCTAD policy, the KEI economic incentives, the World Bank sustainability and the EIU business environment sub-indices. Chile also generally scores high in knowledge categories.

There are factors not directly related to ICT that negatively impact Chile's ranking in some of the indices. The UNCTAD ranking is impacted by faulty data and assumptions whereas the TAI is affected by Chile's relatively low population and questionable indicator selection. The latter point is evident considering Chile ranks two positions higher on the ArCo than the TAI since ArCo is very similar to the TAI but has perhaps a more appropriate selection of indicators.

Special mention must be made of Chile's UNPAN score. It ranked 22 in the world overall and sixth on just the e-government part. One cause for concern is there was no change in ranking between 2003 and 2004. This is also the case for the UNCTAD index where there has been no change in Chile's rank between 2000 and 2002. Some indices also show Chile to be slipping, from 32 to 35 in 2004 on the NRI and 29 to 31 in 2005 on the EIU.

Chile is a keen user of e-indices with results often reported in the press and used by the government to promote its attractiveness as an investment venue.<sup>28</sup>

### 5.2.9 Colombia

Colombia, with the third largest population in the region, is one of only four countries included in all 12 e-indices examined. Its average score is 43% of the world and 48% of the region scores. Its regional scores vary significantly from just 13% in the IKS to 84% in the UNPAN. IKS rates Colombia's assets (e.g., telephone lines but also schooling) and advancement as the lowest of any country in the region; it does better on foresightedness which does not include any ICT indicators. The EIU finds that Colombia is doing worse in connectivity. The DAI shows Colombia as performing relatively poorly in usage with infrastructure also scoring relatively low. In terms of

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<sup>28</sup> For example, see Foreign Investment Committee. *Chile's Digital Agenda: A Government Priority*.

strengths, the DAI finds affordability and knowledge high. EIU finds the business environment to be Colombia's strong suit. UNPAN rates Colombia's e-government presence as 6<sup>th</sup> best in the region.

The indices rate Colombia's progress unevenly. UNCTAD shows Colombia's ranking to have basically remained the same between 1995 and 2002, within a range of 6 positions. The EIU has Colombia dropping 7 positions in 2004 while in the latest NRI it falls 6 positions. On the other hand, UNPAN finds that Colombia's e-government improved 13 positions in 2004. These differences can be explained by several factors. Colombia's slippage is mainly linked to other countries either increasing their scores faster or not having as big a drop in their scores as Colombia. Also, the UNPAN study is mainly concerned with e-government and while the country is doing well in that specific area, the UNPAN report notes that improvements in e-government alone are not sufficient unless matched by growth in other ICT areas:

*“However, the fact that some of these South & Central American countries do not qualify for the overall e-government readiness index shows that despite considerable improvements in expanding and consolidating their e-government portals the effective outreach and access eludes the majority of the populations. With limited human and technological infrastructure support, many countries, which invest in e-government, tend to lose out in the set of world comparative rankings when assessed for overall e-readiness.”*

The Colombian government has commented on the rankings it has received in some of the indices using the NRI findings for noting its strengths and weaknesses.<sup>29</sup>

### 5.2.10 Costa Rica

The Central American nation of Costa Rica features in 10 e-index surveys. Its average index score falls in the 60% range in the world and 75% in Latin America. It ranks first in the region in the United Nations Index of Knowledge Societies (IKS), albeit the least ICT intensive index, with only two network indicators out of 14. Non-ICT factors often increase Costa Rica's e-index rankings. For example, it does best in the economic incentives category in the KEI and in human capital in the UNPAN. Ironically, though the KEI ranks economic incentives highly, there is little scope for private investment since the Costa Rican telecom sector is essentially a monopoly. This is reflected in the UNCTAD index where Costa Rica lowest score is policy. There is also confusion about Costa Rica's applications usage. The DAI ranks Costa Rica favorably in usage given its relatively elevated level of Internet access (the highest penetration in Central America) but UNPAN rates Costa Rica's e-government capability only 24<sup>th</sup> in the region. Given these inconsistencies and lack of convincing evidence of overwhelming strength in one area, Costa Rica's relatively high ranking in Latin America appears to be more because of the weakness of its Central American neighbors.

Costa Rica's does not fare well in e-index progress. It fell from 49 to 64<sup>th</sup> in 2004 in the NRI, dropped 7 positions in 2004 in the UNPAN e-government survey and has slipped two positions since 2000 in the UNCTAD survey. Nevertheless, the country emphasizes its relatively strong position in several e-indices.<sup>30</sup>

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<sup>29</sup> Comisión de Regulación. *Informe Sectorial des Telecomunicaciones No. 4*. February 2005.

<sup>30</sup> Radiográfica Costarricense S.A., “Disminuye Brecha Digital en el País”, 2005.  
[http://www.racsa.co.cr/racsa\\_noticias/disminuye\\_brecha\\_digital.htm](http://www.racsa.co.cr/racsa_noticias/disminuye_brecha_digital.htm) [Accessed 8 December 2005].

### 5.2.11 Cuba

Cuba is included in six e-readiness rankings with an average score of 42% in the world and 23% in the region. Its worst score is in the World Bank ICT Index where it is ranked last of the regional countries included; Cuba's best score is in the UNCTAD Diffusion index at 60% of the region. The World Bank ICT Index rates applications as Cuba's weakest performing category (it finds access to be the best). The DAI also finds usage to be low (Cuba ranks last in the region in Internet penetration) as well as infrastructure. UNCTAD rates connectivity to be low and access (including low tariffs) to be Cuba's best area; similarly the DAI finds affordability to be Cuba's best performing category.

UNPAN rates Cuba's e-government presence to be next to last in the Caribbean (consistent with the poor marks for applications and usage noted above) and its ranking to have dropped 16 positions in 2004. Orbicom found no change in Cuba's ranking in 2001 while UNCTAD shows Cuba's rank dropping 9 places in 2002.

### 5.2.12 Dominica

Dominica is ranked in three e-indices. It has an average world score of 53% and an average regional score of 45%. It scores low in the region on the UNCTAD and UNPAN indices but high in the DAI. Its biggest strength on the DAI is usage (Dominica's Internet penetration was 8<sup>th</sup> highest in the region in 2003). It scores lowest on the knowledge sub-index within the DAI. UNCTAD rates Dominica's connectivity relatively high but policy low. The latter indicator does not reflect the current status of Dominica's telecom sector which has been liberalized. UNPAN rates Dominica's e-government as relatively low ranking it 8<sup>th</sup> in the Caribbean. It does not provide the change stating that the government did not have an online presence in 2003. UNCTAD shows erratic results for Dominica's ICT progress: it ranked 58<sup>th</sup> in 1999, there was no data for 2000, it fell to 125 in 2001 and rose 23 places in 2002.

### 5.2.13 Dominican Republic

The Dominican Republic is included in eight e-indices. Its average score is 43% at the world level and 32% within LAC. Scores within LAC range from 12% (TAI) to 44% (UNPAN) so the country could be considered to be in the bottom half of countries in terms of ICT performance. The KEI judges the Dominican Republic to be doing best in information infrastructure and worse in innovation. The DAI finds usage and infrastructure to be poor and knowledge and affordability relatively good. In the World Bank ICT Index, the Dominican Republic does best in sustainability and access and worse in applications. Low applications use is reflected in the country's UNPAN e-government ranking which places it 7<sup>th</sup> in the Caribbean and a decline of 17 points in global rankings in 2004. Other trend data is also down; the NRI has the Dominican Republic declining 21 positions in 2004 while UNCTAD has it falling 6 in 2002 (after rising 48 in 2001). Orbicom shows no change in rankings for the last couple of years of its rankings.

### 5.2.14 Ecuador

The Andean nation of Ecuador appears in 10 rankings. Its average score is 38% in the world and 26% in Latin America. Though there is some variation in the index scores, none finds Ecuador's score to be above 50% in the region. The worse score is the EIU which ranks the country last in

the region (out of 9 countries). According to the KEI, Ecuador's strength is information infrastructure and its weakness economic incentives. This contradicts the EIU which rates Ecuador's connectivity worse and its business and policy and regulatory environment best. On the other hand, the WB ICT Index rates Ecuador's access and sustainability high and its quality and applications use low. The latter is confirmed by the DAI which rates usage as the worse category and knowledge and affordability as best. Applications and usage would appear to be an issue with UNPAN rating Ecuador's e-government presence as only 21<sup>st</sup> in the region.

The EIU shows Ecuador declining 7 positions in 2005 but rising 1 in 2006. The NRI has Ecuador declining 6 positions in 2004. On the other hand, both UNCTAD and UNPAN have Ecuador rising 3 places in their latest rankings.

### 5.2.15 El Salvador

The Central American nation of El Salvador appears in 9 e-indices. Its average score is 39% within the world and 30% within the region. There is considerable variation with UNCTAD ranking El Salvador next to last in the region while the NRI places El Salvador in the mid-range of scores for LAC. The KEI judges that El Salvador is doing worse in innovation and doing best in economic incentives and information infrastructure. An in-depth assessment has been carried out for El Salvador within the KEI framework, where they summarize the country's status as:

*“The main conclusion was that, despite the progress made by El Salvador's government in terms of liberalizing and opening up the economy, other areas such as enterprise development and innovation, linkages between industry and the academic sector, and the attraction of FDI, have been rather disappointing, and growth rates over the past five years have been poor. The presentation concluded that building El Salvador's capacity to generate, access and use knowledge would be one of the keys to turning this progress into better economic performance.”<sup>31</sup>*

Unlike the KEI, the DAI rates El Salvador worse in infrastructure and usage and best in affordability and knowledge. To add to the inconsistency, the World Bank ICT Index considers El Salvador to be doing worse in affordability and best in sustainability and access.

The general trend for El Salvador is down. The NRI dropped El Salvador 8 positions in its 2004 rankings, Orbicom dropped it 3 for 2001 and UNCTAD reduced El Salvador's ranking an inexplicable 54 positions in 2002. The only exception was UNPAN where El Salvador rose one position in 2004 in the E-government readiness rankings.

### 5.2.16 Grenada

The Caribbean nation of Grenada appears in only 3 e-indices, given its population of some 112'000. Its average scores are 56% for the world and 43% within Latin America. UNPAN provides the lowest relative score at 25% and ranks Grenada's e-government readiness third from the bottom for the Caribbean. On the other hand, Grenada's DAI score is 63% within the region with the country given high marks for affordability and low marks for usage.

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<sup>31</sup> Robert Whyte, “The Challenge of the Knowledge Economy for El Salvador: Preliminary Assessment”, November 24, 2003.  
<http://web.worldbank.org/WBSITE/EXTERNAL/WBI/WBIPROGRAMS/KFDLP/0,,contentMDK:20292307~menuPK:461231~pagePK:64156158~piPK:64152884~theSitePK:461198,00.html> [Accessed 11 December 2005]

There is scarce trend information. UNCTAD shows missing data for 2001 so the change cannot be calculated; Grenada's 2002 rank is ten less than its 2000 rank. UNPAN has Grenada declining two positions in world rankings in 2004.

### **5.2.17 Guatemala**

Guatemala is ranked in 8 indices where its average rank is 93. Its average score is 37% of world scores and in the bottom fifth of the region. Its regional scores ranged from 4% (ArCo) to 46% (UNCTAD). KEI judges Guatemala to be performing poorly in education and best in economic incentives. The DAI rates usage and infrastructure as relatively poor and affordability as best. The WBICT rates quality and applications as weaknesses and sustainability as a strength. In short, there is little agreement about what are Guatemala's main strengths and weaknesses. ICT trends in Guatemala have been erratic according to the indices. The country's average change moved little in 2000 and 2001, rose 16 places in 2002 and dropped 18 in 2003. Both the NRI and UNPAN show Guatemala dropping 2 places in 2004.

### **5.2.18 Guyana**

Guyana appears in five e-indices. Its average scores rank 52% in the world and 42% with the LAC region. Guyana's LAC scores range from 22% in the ArCo to 71% in UNCTAD's index. The DAI finds Guyana's weakest area to be access and its strongest knowledge. The general trend of Guyana's e-index rankings is up. Although it dropped 2 in Orbicom it had gained 6 ranks the year before while both UNCTAD (up 9) and UNPAN (up 1) have Guyana's e-index scores rising for their latest year.

### **5.2.19 Haiti**

Haiti ranks last in the region in the five e-indices for which it is included. The nation's political, social and economic problems are immense impediments to ICT development—UNPAN notes Haiti as one of only 13 countries (and the only one the LAC region) without a government web presence. The low level of overall development and governance also impacts the availability of indicators needed to compile e-indices. There is little trend data for the country; NRI shows Haiti's world rank falling 18 places in 2003 while UNCTAD shows little change between 2000 and 2002.

### **5.2.20 Honduras**

Honduras is included in 9 e-indices, with an average world score of 29% and a regional score of 9%. The e-indices seem to be in agreement about the country's low ranking with scores ranging between 5% and 16% in the region. Although Honduras ranks low in most of the components that make up the various indices, many cite different factors as the worst. UNPAN considers e-government presence to be poor, with the second lowest ranking in Latin America. The KEI scores innovation the lowest. The World Bank ICT Index and the DAI consider that Honduras is doing relatively poorest in quality. UNCTAD finds the policy area to be weakest. It is somewhat surprising that infrastructure did not factor as the biggest obstacle in the indices considering that Honduras has the region's fourth lowest fixed penetration and third lowest mobile density.

It is difficult to determine from the indices if Honduras is making progress vis-à-vis other nations. It moved up 11 spots in the UN e-government index in 2004 but is stagnant in the UNCTAD rankings, 112 in 1995, 116 in 2000 and 114 in 2002.

### 5.2.21 Jamaica

Jamaica is ranked in ten e-indices, the most of any Caribbean nation. Its average score is 53% of the world and 60% within the region. Jamaica's regional scores range widely from 25% (UNCTAD) to 89% (NRI) indicating conflicting perceptions about its ICT performance. This inconsistency extends to analysis of Jamaica's strengths and weaknesses. According to the KEI, Jamaica's best performance is in information infrastructure whereas the EIU finds that connectivity is its worst performing area. Conversely, the KEI considers Jamaica's economic incentives and innovation to be poor while the EIU found that the business, legal and policy environment was where the country was best performing. Although Jamaica only ranks 10<sup>th</sup> in the UNPAN e-readiness index, in terms of e-government presence, it is ranked first in the Caribbean.

The confusion over Jamaica's ICT status extends to perception about trends. UNCTAD has Jamaica declining 29 positions on its diffusion index in 2002 while Orbicom found that Jamaica dropped two spots in 2001. On the other hand, the NRI shows Jamaica rising 4 places and UNPAN indicates that Jamaica's e-government presence ranking rose by 2 in 2004.

The Jamaican government tracks its e-readiness rankings and published a brief about its first time inclusion in the EIU index in 2005.<sup>32</sup>

### 5.2.22 Mexico

Mexico's average ranking is in the 50% range on a global level and almost in the upper 25% in the LAC region. It is included in every e-index, attesting to its size and influence in the region. According to the DAI, Mexico's strongest area is affordability and its weakest usage. The DOI finds that opportunity is strong but infrastructure and utilization are low. The EIU rates Mexico's business and legal and policy environment highly and finds connectivity to be lacking. In the KEI, economic incentives are Mexico's highest scoring area while education is the lowest.

Results are mixed about Mexico's ICT progress. UNCTAD shows a rise since 2000 but a drop of two positions in 2002. UNPAN reports no change in Mexico's e-government ranking in 2004. Mexico's NRI rank recorded a large drop of 16 positions in 2004 while the EIU index has Mexico rising two positions in 2005.

### 5.2.23 Nicaragua

Nicaragua is included in 8 e-indices. Data availability may be an issue which is the reason it was not included in the UNCTAD index. Along with Haiti, Nicaragua is the worst performer on the e-indices, ranking last or next to last in the region on five e-indices. Its average score is only 6% of

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<sup>32</sup> "Jamaica's 2005 E-Readiness Update." Jamaica approached the EIU about being included in the index. Curiously the article states that there is no direct cost to the country yet little mention is made of where the needed data come from; the article does not provide any background data and accepts the EIU findings. <http://www.cito.gov.jm/pdf/Jamaica%202005%20e-readiness%20article.pdf> [Accessed 11 December 2005]

the region average. Infrastructure is a big problem; Nicaragua has the region's second lowest fixed density and fifth lowest mobile density. It also has the region's third lowest Internet penetration. Affordability is also a problem; it had its lowest score in this category of the World Bank ICT Index.

Nicaragua's ICT evolution has not been promising according to the available e-index data. UNPAN has Nicaragua's e-government ranking slipping 9 places between 2003 and 2004 while it has declined from 79 in 2002 to 103 in 2002 in the NRI rankings

### **5.2.24 Panama**

Panama is included in 9 e-indices. Its average score is 51% compared to the world and a slightly higher 59% within the region. Panama does reasonably well in a couple of the indices ranking 4<sup>th</sup> in the region on the ArCo and scoring 78% on the UNPAN. The available evidence is contradictory about Panama's relative strengths and weaknesses. UNPAN ranks the country's infrastructure capacity as relatively weak whereas the World Bank finds quality to be Panama's weakest area. In terms of strengths, UNPAN ranks human capacity the highest whereas the World Bank finds its ICT sector sustainability strong.

The indices are conflicting about Panama's ICT progress. UNCTAD finds that Panama has declined 32 places in world ranking in 2002 whereas in the UNPAN e-government ranking, it rose 9 positions between 2003 and 2004.

### **5.2.25 Paraguay**

Paraguay is ranked in 9 e-indices with an average score of 36% compared to the world and 22% within Latin America and the Caribbean. Its worst score is on the World Bank ICT Index and its best score on the ArCo. The KEI finds that Paraguay is performing worst in innovation and best in education whereas the DAI rates Paraguay best in knowledge and worst in usage and infrastructure. The trend in Paraguay is down; it has declined in every e-index over the last several years with sharp drops in the most recent indices.

### **5.2.26 Peru**

The Andean nation of Peru is ranked in 11 indices. Its average score is 42% in the world and 38% within the region. Peru's average scores within the region range from 0% (the DOI) to 81% (UNPAN). It should be noted that the DOI only includes 40 primarily developed and large emerging countries. Nevertheless, Peru's weakness in affordability in the DOI should be noted where it ranks last among the 40 countries. Ironically, the DOI's predecessor, the DAI finds that Peru does not do as poorly in affordability but rather its worse areas are usage and access. The EIU likewise finds the Peru's weakness is connectivity (the best is business and legal and policy environment). Yet the KEI rates Peru's information infrastructure as its second best performing area (the best is education) and finds that Peru's weaknesses are economic incentives and innovation. UNPAN rates Peru's e-government presence relatively high, ranking the country 7<sup>th</sup> in Latin America.

Peru's recent performance does not appear to be keeping up with other nations since it has registered a drop in rankings in most of the indices. In the EIU, Peru fell by 3 places in 2005, by 20 in the NRI in 2004 and by 5 in 2003 in the UNCTAD index.

### 5.2.27 Saint Kitts and Nevis

St. Kitts and Nevis, with the smallest population of the countries considered (less than 50'000), is nevertheless included in three e-indices. Its average world score is 72% while its regional score is 81%. The DAI and UNCTAD indices are in general agreement about St. Kitts' regional ranking (2<sup>nd</sup> and 3<sup>rd</sup> respectively). However, the UNPAN index deviates significantly only ranking St. Kitts 16<sup>th</sup>. The DAI finds the level of infrastructure and Internet use consistent with St. Kitts overall ranking. Affordability, knowledge and quality score roughly the same; all fall below the country's overall ranking and therefore might be seen as weaknesses. UNCTAD rates St. Kitts' connectivity as relatively high, access (which includes affordability) as a little worse than its overall average and policy fares poorly. However the latter has changed given the opening of the St. Kitts' telecom market reflecting the inability of most e-indices to keep up with recent changes. UNPAN finds St. Kitts' e-government applications to be only fifth best in the Caribbean and shows a decline of five positions in 2004. On the other hand, UNCTAD's index shows St. Kitts' rank rising 13 positions in 2002.

### 5.2.28 Saint Lucia

St. Lucia is included in three e-indices, about average considering its population of some 160'000. The Caribbean island's average world score is 57% while in the region it is 49%. While the DAI and UNPAN indices find St. Lucia to just miss scoring in the upper third of the region, UNCTAD ranks St. Lucia much lower with a score of only 20% within the region. It is difficult to say what the country's strengths and weaknesses are since UNPAN finds that human capital is a strength whereas the knowledge was the lowest ranking sub-category for St. Lucia in the DAI. Both the DAI and UNCTAD index rank St. Lucia's infrastructure as adequate whereas the UNPAN rates it as relatively low.

It is difficult to comment on St. Lucia's progress since UNCTAD shows missing data for earlier observations. Although UNPAN finds St. Lucia to have the fourth best e-government in the Caribbean, its ranking declined five positions in 2004.

### 5.2.29 Saint Vincent & the Grenadines

St. Vincent and the Grenadines is included in only two e-indices, the DAI and UNPAN. This is the least of other countries, partly attributable to St. Vincent's small population of some 120'000. Another reason is a lack of data (this was the reason it was not ranked by UNCTAD). As a result of these few rankings, it is difficult to draw many conclusions. St. Vincent averages 47% in the world and 23% in LAC in terms of its score. But the results are widely divergent. Its score is only 6% of the region in UNPAN and St. Vincent is rated as having the poorest e-government presence in the Caribbean. The DAI is not so severe, where Saint Vincent and the Grenadines' scores 41% of the region. According to the DAI, Saint Vincent's strongest area is affordability and its weakest usage. Here there is some consistency with the UNPAN evaluation. UNPAN also reckons that Saint Vincent dropped 8 positions in global rankings in 2004.

### 5.2.30 Suriname

Suriname is ranked in four e-indices with an average score 54% of the world and 43% of the region. Like many countries in the region, there is little consistency in the rankings. Suriname's

average score is below 20% in the region for the ArCo and UNPAN indices but it ranks second in the region in the UNCTAD index. These wide variations may be impacted by extraneous factors. For example, analyzing Suriname's Dutch e-government sites poses a linguistic barrier for many researchers whereas the country's high UNCTAD ranking appears to be impacted by faulty data and assumptions. UNCTAD finds Suriname worst performing in connectivity, the DAI in usage and UNPAN in e-government. Surprisingly both the DAI and UNPAN find knowledge to be Suriname's strong suit, yet its literacy rate and school enrolment are both below the regional average.

In terms of progress, there is little data to go by. Only UNCTAD provides a time series. Here it astoundingly finds Suriname's ranking rising from 168<sup>th</sup> to 45<sup>th</sup> in the world in 2000, a change that seems hard to believe. Since 2000, Suriname's UNCTAD position rose only two positions from 45 to 43<sup>rd</sup>. UNPAN did not publish a ranking for Suriname in 2003 stating its government was not online that year.

### 5.2.31 Trinidad & Tobago

The second most populous Anglophone Caribbean nation, Trinidad and Tobago is ranked 9 times. Its population of 1.3 million makes the cutoff point of indices where inclusion is dictated by the number of inhabitants (typically one million). Its average score is 47% in the world and 65% in Latin America and the Caribbean. Trinidad and Tobago does the worst in the IKS where it finishes last in the region. It ranked lowest in the so-called IKS "foresightedness" sub-index basically due to low environmental scores. This is no surprise given Trinidad's large oil industry. Trinidad tends to score better in infrastructure categories (WBICT, DAI); it also does well in affordability. The DAI finds Trinidad's biggest weakness to be knowledge although its HDI education index score is the same as the regional average (literacy is high but school enrolment below average). The World Bank ICT Index finds Trinidad's biggest weakness to be quality (although this was reported as average by the DAI). UNPAN finds Trinidad's e-government presence to be the second highest in the Caribbean and up four positions in 2004. UNCTAD considers that Trinidad has risen slightly in ICT, rising two positions between 2000 and 2002. The NRI drops Trinidad 7 places in 2004.

### 5.2.32 Uruguay

Uruguay features in 10 e-indices with an average score of 62% in the world. Its average places it within the top 20% of Latin American and Caribbean nations. There is rough agreement among the e-indices with Uruguay's scores ranging between 68% and 95%. It places 2<sup>nd</sup> in the region in the Orbicom index and third in three knowledge type indices (Arco, IKS and KEI). Education is an important component in the knowledge indices and Uruguay's main strength according to three indices (DAI, KEI, UNPAN). The indices are contradictory about what Uruguay's biggest weakness is. UNPAN cites telecom access yet this is the main strength according to the World Bank ICT Index. The KEI notes innovation and the World Bank ICT Index applications as weaknesses yet Uruguay is ranked fifth in Latin America by UNPAN for its e-government. The DAI notes affordability as an issue while UNCTAD considers policy to be weak.

Indications of progress are mixed. The UNPAN shows Uruguay's e-government ranking rising 7 places in 2004 and UNCTAD has Uruguay rising 9 places in 2002 (after falling 16 places in 2001). The NRI shows Uruguay falling 10 places in 2004.

### 5.2.33 Bolivarian Republic of Venezuela

The Bolivarian Republic of Venezuela is included in 10 e-indices. Its average of scores is 49% at the world level and 57% within the region. Regionally, its scores range from 37% to 78%, scoring lowest in the NRI and highest in the ArCo. There is significant contradiction about the country's relative strengths and weaknesses. While, the KEI finds Venezuelan economic incentives to be lacking, the EIU rates the legal and policy environment as the best category. The EIU scores the business environment almost twice as high as connectivity, Venezuela's lowest scoring category in that index. The DAI finds that Venezuela's worst performing categories are usage and infrastructure and its best affordability. The KEI rates innovation as highest.

Although UNPAN finds Venezuela's e-government presence to be only 9<sup>th</sup> best in Latin America, it rose 37 places in the world ranking in 2004. Although both the EIU and NRI have Venezuela falling in their latest indices, in the case of the EIU it is only one place whereas the NRI has it falling 8 positions. UNCTAD has Venezuela's world rank increasing 7 places in 2004.

## 6. Conclusions

### 6.1.1 Limitations about existing e-indices

This survey has uncovered various limitations with e-indices. Because the indices view ICT from different perspectives (e.g., access, readiness, knowledge) there is little commonality in their framework. Even e-indices that claim to measure similar aspects of ICT such as e-readiness are not consistent in their rankings. Each index producer has their own idea of how ICT should be analyzed, the structure for studying it and the indicators to be included. These different approaches suggest a lack of a consensual and systematic framework for measuring and comparing ICT development across countries. In addition, most of the indices suffer from methodological weaknesses and inconsistencies as well as the selection of inappropriate indicators that make the results questionable and comparisons over time unreliable. Finally, some indices have only been produced once while the rest are subject to ongoing revisions, suggesting that frameworks and understanding of the information society has not yet achieved a point of maturity.

Specific shortcomings with the existing e-indices include:

- **Poor at tracking ICT evolution.** While a few of the e-indices provide a time series, most do not. The reasons for a lack of historical results are either because the index has only been computed once or the methodology of the index keeps changing. Among those that do provide a time series, the most recent observations are several years old, which makes them not so useful in the fast-changing and dynamic ICT sector. The choice of a maximum or average value or goalpost for transforming indicators also has profound implications for understanding trends over time. The end result is that none of the indices provide a timely and consistent perspective of how ICT is evolving in a country.
- **Categorization not consistent.** There is little agreement about what indicators constitute the various categories in the different indices. An infrastructure category should have the same indicators across indices but it does not. The lack of consensus about a basic category such as infrastructure reduces confidence in the indices. Furthermore, there is significant inconsistency about how indicators should be

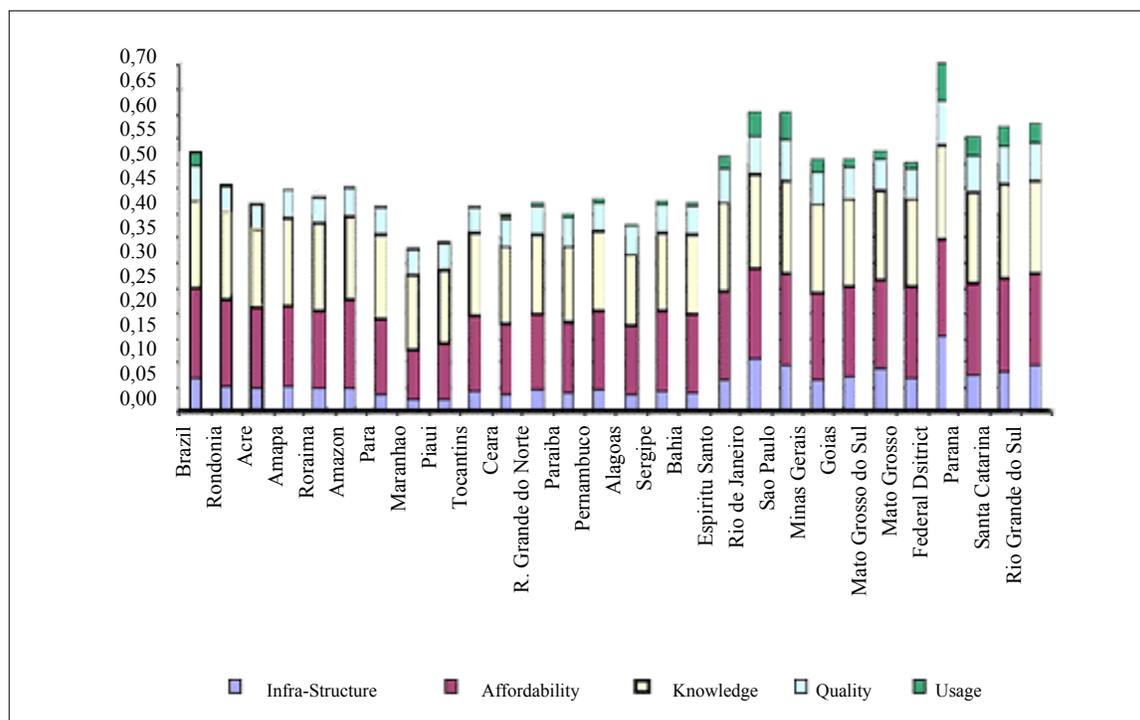
classified with the same indicator appearing in different thematic categories in different indices.

- **Lack of transparency.** Finding the right mix of sufficient information to understand the index but not so much that only experts can understand it is a challenge. Ideally, enough information about the methodology and specific indicators used should be supplied with the index to allow users to reconstruct it. This is rarely the case, detracting from the credibility of the indices. At the same time, some indices have a large number of indicators that make it impossible to decode. There is little evidence that a large number of indicators are better than a few well-thought out ones.
- **Poor choice of indicators.** The indicators selected by the indices are not always the best to represent categories. In addition, there is little consistency about what indicators should constitute a category.
- **Subjective.** Several of the indicators use subjective indicators such as interview results or assigning simple values to non-numeric information. Sometimes the subjective indicators differ from reality.
- **Exclusive.** On the one hand, most of the indices exclude countries either as a matter of focus (e.g., only interested in large economies) or a lack of data availability. On the other hand, the indices are exclusive in the sense that they do not have a community of users providing feedback into the process.
- **Limited extensibility.** Many countries are interested in exploring social and geographical discrepancies in ICT access and use. Few of the indices describe or are limited in their ability to de-aggregate by gender, region or other factors. One that does is the Digital Access Index (DAI) where researchers have provided a breakdown of DAI index values for Brazilian states (Figure 14).<sup>33</sup>
- **Applicability to developing countries.** Few of the indices are relevant to the situation of developing nations. Most include indicators that reward individual use of ICT (e.g., individual or household PC and Internet penetration) rather than shared access. Indicators that might acknowledge steps developing countries are taking to spread ICT access through shared facilities would include the number of Internet access centres and the number of public payphones but these are rarely included. Another consideration would be to adjust rankings based on income so that countries doing better than expected considering their income level would be rewarded with higher rankings.

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<sup>33</sup> See DAI - Índice de Acesso Digital A Divisão Aumentou at <http://www.teleco.com.br/emdebate/caio01.asp> [Accessed 11 December 2005].

**FIGURE 14**  
**THE DAI IN BRAZIL**



Source: Caio Bonilha.

### 6.1.2 General Recommendations

The different e-indices, different approaches and different results confuse users and detract from overall confidence in any one index. Alternatively, one can accept that the e-indices measure different aspects of ICT and that each has its merits for the specific area they focus on.

Whatever the conclusion, there are a number of standard principles that should be abided by when designing an e-index. The fundamental starting point is the purpose of the index, which should be clear and well-defined. The theoretical basis of the index should be based on rigorous analysis and supporting evidence. There is often a tendency to link ICT indices to economic frameworks because of the importance of ICT for development. However, ICT has wide-ranging impacts from better governance to improved health care delivery that a purely economic framework will not capture. Any framework that does not consider the large scope of ICT is bound to be limiting.

In addition, the following principles should be adhered to:

- Harmonization.** The categories that make up the structure of the index should be consistent with what the index is measuring. Furthermore, there should be *standard* categories containing the most appropriate indicators. Ideally, there should be a *modular* approach so that categories can be compared across indices. Modularity would also allow indices to be built up from agreed upon categories without having to reinvent the wheel each time. It would also allow categories that are not part of the ICT sector to be extracted from standard sources. For example, many indices incorporate indicators like literacy or school enrolment. It makes more sense to just use the tried and tested Human Development Index education sub-index for this

category. If the basic categories can be agreed on, then indices could be developed from standard categories to measure different aspects of ICT development with a greater degree of confidence. Just as the international community has agreed on core list of indicators,<sup>34</sup> efforts could be made to agree on a core list of categories. These core indicators have also been classified into categories (Figure 15). Debate should be instigated as to whether these categories are appropriate and whether they can serve as the building block of any index. After all, a measurable category like infrastructure should be the same across indices. If not, why does the definition of infrastructure differ? Why are some variables included and not others? By the same token categories should be transparent and not mixed or embedded in others.

- **Longevity.** The index should have staying power. That means there should be resources available to ensure that it will be reproduced over time, allowing for the analysis of ICT development.
- **Inclusive.** The index should aspire to incorporate as many countries as possible to make it relevant for the broadest group of nations possible. By the same token, it should incorporate a framework that is developing country friendly by acknowledging the role that public access can play in boosting ICT development. A truly inclusive index would have some system for allowing users to provide feedback in order to improve the index.
- **Objectivity.** Subjective indicators should be avoided since they cannot be tested and are opinions rather than facts. Any data used in the index should stand up to independent testing and verification.
- **Transparency.** The sources of all the data used in the index should be identified. Proprietary data should be avoided since it cannot be tested and verified. Wherever possible, administrative and survey data should be used from official national sources. By the same token, categorization of indicators should be clear. There is general agreement that infrastructure and education are important components of ICT, therefore these categories should be clearly identified and not mixed with others.
- **Data correctness.** In addition to the points mentioned under transparency regarding sources of data, effort should be made to select appropriate indicators. It would also be useful for the index to add value by noting incorrect indicators or uncovering new internationally acceptable data sources.
- **Indicators.** There is no evidence that a large number of indicators are any better at predicting ICT capability than a few well-thought out ones. Effort should be devoted to the selection of a few key indicators that are credible proxies for what is being measured. Fewer indicators will also ensure greater country coverage.
- **Documentation.** All indices should provide sufficient information about their methodology and include the indicators used to allow users to reconstruct the index. Historical data should also be provided whenever the index composition or methodology changes.

At this point in time, no e-index is completely satisfactory for providing an adequate representation of a country's ICT development, for benchmarking one country to others and for portraying ICT development over time. Inconsistent frameworks, methodological problems and a

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<sup>34</sup> See "UN adopts core ICT indicators" at <http://d-two-indicators.blogspot.com/2005/02/un-adopts-core-ict-indicators.html> [Accessed 11 December 2005]

lack of transparency continue to plague most e-indices. But perhaps the biggest shortcoming is with the “ingredients”: the indicators used to calculate the index. A chef may have the perfect recipe but unless the ingredients are right, the result will be not live up to expectation. There is a move to standardize core ICT indicators. These indicators now need to be incorporated into e-indices so that consistent and reusable categories can be developed. This would allow users to construct their own e-index according to their analytical needs (e.g., basic infrastructure, e-readiness, etc.) using standard categories. The choice of the method to construct the index is equally important particularly if policy-makers want to analyze performance compared to the best or to the average. Ideally users should be given a choice by creating indices that allow goalposts to be established dynamically (i.e., either to the highest, ideal or average values). At the same time, users need to be educated about the differences in the indexes—what they measure and the methodology they use—so that the most appropriate index is selected:

*“...it becomes more a matter of educating the users than any inherent advantage or drawback of any index or other aggregate measure. Numeracy is always an asset in such cases...”<sup>35</sup>*

At the same time, greater effort needs to be devoted to ensuring that the core indicators are available for as many nations as possible so that e-indices can become more inclusive in their country coverage.

**FIGURE 15**  
**CORE INDICATOR CATEGORIES**

<b>Infrastructure</b>	<b>Access and use of ICTs by households and individuals</b>	<b>Access and use of ICTs by businesses</b>	<b>ICT sector</b>
Fixed telephone lines per 100 inhabitants	Proportion of households with a TV	Proportion of businesses using computers	Proportion of total workforce involved in the ICT sector
Mobile cellular subscribers per 100 inhabitants	Proportion of households with a fixed line telephone	Proportion of employees using computers	Value added in the ICT sector (as a percentage of total value added)
Computers per 100 inhabitants	Proportion of households with a mobile cellular telephone	Proportion of businesses using the Internet	ICT goods imports as percentage of total imports
Internet subscribers per 100 inhabitants	Proportion of households with a computer	Proportion of employees using the Internet	ICT goods exports as percentage of total exports
Broadband Internet subscribers per 100 inhabitants	Proportion of households with Internet access at home	Proportion of businesses with a website	
International Internet bandwidth per inhabitant	Proportion of individuals that used the Internet	Proportion of businesses receiving orders over the Internet	
Percentage of population covered by mobile cellular telephony			

<sup>35</sup> George Sciadas. *International Benchmarking for the Information Society*. September 2004

### 6.1.3 Recommendations about Country's e-index

The analysis of Latin America and Caribbean countries rankings in different e-indices uncovers a number of limitations severely hampering comparability. The results of the indices are so widely diverging for a number of countries that one does not know what the reality is. There are a number of problems with such an exercise:

1. *Inclusiveness*. Not all of the countries in the region were included in all of the indices. Brazil is included in 12 while the Bahamas only features in two. There are various reasons for this. One is the index designers conscious choice to limit rankings to large economies; this is generally the case for private or academic indices which are under less political pressure to include as many as nations as possible. Another reason is data limitations; indices with large number of indicators are unlikely to obtain the needed data from a large number of countries. Of course, some countries are to blame in that they either do not compile the necessary data or do not make it readily available. The lack of inclusion of all countries in all indices makes inter-country comparisons difficult.
2. *Timeliness*. ICT is a fast moving, dynamic sector. Given this, some of the one-time indices (TAI, ArCo) are clearly out of date and do not reflect today's situation. Others, while recently published, actually use data that is several years old (UNPAN's 2004 e-readiness index uses data from 2002 as does the UNCTAD index, published in 2005). A related issue is the indices often do not include variables illustrating recent market developments. While some indices include TV or radio sets, few include broadband subscriptions or mobile data users.
3. *Transparency*. In general, most indices do an acceptable job of explaining their methodology. However, it is hard to follow the calculation for those that use many variables and categories. Furthermore, though the methodology may be explained, few of the indices provide the raw data used to compile them. Ideally, enough information should be provided so a user can recalculate the index themselves. This would possibly enable users to generate their own time series which would aid immensely in analyzing trends.
4. *Data*. Apart from the aforementioned issue of the timeliness of the data, there are other problems regarding sources, quality and relevance. Most indices cite the sources of the data but are often not specific about exactly which source supplied which data. Many seem to rely on World Bank or ITU data with little value added, especially in terms of data verification. Thus a wrong number tends to be replicated throughout indices. For indices that use many data variables, some of the data does not exist for a number of nations. The missing data must be estimated which can generate unreliable results. There are also relevance problems particularly for indicators that are highly correlated (it would be better to omit those that are not easily attainable or widely compiled such as radio sets). The relevance also extends to their inclusion in the index. It is well documented that Internet hosts data does not necessarily reflect the actual physical location of a host yet it continues to be used. There is also sloppiness about the way missing data is handled; some indices simply assign a value of zero. There are also cases of double counting (e.g., UNPAN includes both Internet users and online users which are the same thing).
5. *Subjectivity*. While some of the indices strive for impartiality by avoiding any subjective indicators (e.g., DAI, World Bank ICT Index), others do not. Qualitative indicators are subjective. For example, many of the NRI and EIU indicators are based on their (or their correspondents) interpretation of regulatory or policy issues. They suffer from two limitations. On the one hand, the sample is not scientific and therefore not representative.

- Sometimes the actual facts differ from the subjective interpretation (e.g., hard data on quality sometimes differ from the correspondents perception of quality). On the other hand, some areas are too broadly defined and do not reflect nuances or the results that a more scientific approach would provide. For example, there is often a general interpretation of market liberalization (e.g., UNCTAD assigns a simple variable of 1 if the country says its market is open and zero if not). A more scientific approach would use something like Herfindahl-Hirschmann Index to actually measure the degree of market competition. These qualitative, subjective indicators are the main area that results in inconsistent findings across the indices.
6. *Categorization.* Most of the indices break the results down into to sub-categories to enable understanding of where countries are relatively strong or weak. However the categories differ between indices in terminology so it is difficult to know if they are similar (e.g., the connectivity category in UNCTAD versus EIU). Also the indices use different variables in the categories that might be more appropriate elsewhere (e.g., affordability is included in UNCTAD access category but is a separate category in the DAI). This makes it difficult to understand if a given country is weak in the same areas across indices.
  7. *Progress.* Practically all of the e-indices fail in their ability to measure ICT development over time. This is either because they are one-off indices (TAI, DAI, etc.) or because the methodologies continually change or do not permit meaningful historical comparisons. While we can compare results consistently for decade of the 1990s with ArCo's consistent methodology, we have only an incomplete and inconsistent picture of what has happened in the first half of the decade of 2000.

## 7. Acronyms

Arco	The index named after its designers, Archibugi and Coco
DAI	Digital Access Index (ITU)
DOI	Digital Opportunity Index (ITU)
EIU	Economist Intelligence Unit
IKS	Index of Knowledge Societies (UN)
ITU	International Telecommunication Union
KEI	Knowledge Economy Index (KEI)
LAC	Latin America and the Caribbean
NRI	Network Readiness Index (WEF)
Orbicom	The index created by Orbicom
TAI	Technology Achievement Index (UNDP)
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
UNIDO	United Nations Industrial Development Organization
UNPAN	United Nations Department of Public Administration and Development e-government index
WBICT	World Bank ICT Index
WEF	World Economic Forum
WSIS	World Summit on the Information Society

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## **9. Annexes**

### **9.1 Latin America and the Caribbean results in e-indices**

### 9.1.1 Composite index of technological capabilities across countries (ArCo)

	Rank 2000	ArCo index 2000	ArCo Index 1990	Rank 1990	Growth from the last decade
Argentina	40	0.43	0.38	45	12.5%
Chile	41	0.42	0.34	57	26.2%
Uruguay	43	0.42	0.35	52	19.9%
Panama	51	0.38	0.34	56	13.3%
Trinidad & Tobago	53	0.38	0.35	51	9.3%
Bolivarian Republic of Venezuela	59	0.37	0.33	60	12.4%
Costa Rica	60	0.36	0.32	62	12.2%
Mexico	63	0.36	0.32	64	11.8%
Jamaica	66	0.35	0.26	85	30.8%
Peru	67	0.35	0.29	74	18.2%
Colombia	71	0.33	0.29	76	15.6%
Brazil	72	0.33	0.28	77	17.6%
Paraguay	76	0.32	0.27	84	20.0%
Cuba	78	0.32	0.31	65	2.8%
Ecuador	79	0.32	0.29	70	8.3%
El Salvador	83	0.31	0.24	93	31.9%
Dominican Republic	84	0.31	0.26	86	19.4%
Bolivia	87	0.31	0.25	88	19.8%
Guyana	98	0.27	0.23	99	20.0%
Suriname	101	0.26	0.22	102	20.1%
Honduras	102	0.26	0.22	103	18.3%
Nicaragua	108	0.24	0.20	106	17.8%
Guatemala	109	0.23	0.19	110	25.2%
Haiti	134	0.13	0.12	126	10.4%
LAC		0.32	0.28		

**Source:** Adapted from Danielle Archibugi and Alberto Coco.

**Note:** The ArCo is categorized into three sub-indices but the results were not provided with the background paper. The three sub-indices are averaged to obtain the overall index value.

### 9.1.2 Digital Access Index (DAI)

	Rank	Infra-structure	Afford-ability	Knowledge	Quality	Usage	DAI
Bahamas	37	0.53	0.98	0.88	0.49	0.23	0.62
St. Kitts & Nevis	39	0.58	0.96	0.89	0.32	0.25	0.60
Chile	43	0.41	0.94	0.89	0.36	0.28	0.58
Antigua & Barbuda	44	0.56	0.97	0.81	0.38	0.15	0.57
Barbados	45	0.50	0.97	0.96	0.28	0.13	0.57
Uruguay	51	0.33	0.93	0.93	0.34	0.16	0.54
Dominica	53	0.34	0.94	0.86	0.33	0.21	0.54
Argentina	54	0.27	0.96	0.94	0.35	0.13	0.53
Trinidad & Tobago	55	0.35	0.98	0.88	0.32	0.12	0.53
Jamaica	57	0.41	0.83	0.83	0.30	0.27	0.53
Costa Rica	58	0.26	0.92	0.86	0.34	0.23	0.52
St. Lucia	59	0.31	0.93	0.87	0.33	0.13	0.52
Grenada	61	0.30	0.92	0.84	0.31	0.17	0.51
Mexico	64	0.25	0.95	0.86	0.32	0.12	0.50
Brazil	65	0.29	0.88	0.90	0.32	0.10	0.50
Panama	72	0.20	0.89	0.86	0.36	0.05	0.47
Bolivarian Republic of Venezuela	73	0.22	0.94	0.85	0.29	0.06	0.47
Belize	74	0.21	0.77	0.88	0.36	0.14	0.47
St. Vincent	75	0.24	0.91	0.79	0.31	0.07	0.46
Suriname	77	0.25	0.82	0.88	0.28	0.05	0.46
Colombia	79	0.20	0.88	0.85	0.26	0.05	0.45
Peru	83	0.11	0.81	0.88	0.31	0.11	0.44
Guyana	89	0.13	0.70	0.94	0.21	0.17	0.43
Dominican Republic	94	0.18	0.83	0.81	0.23	0.04	0.42
Ecuador	96	0.16	0.74	0.85	0.23	0.05	0.41
Paraguay	101	0.18	0.63	0.84	0.27	0.02	0.39
Guatemala	103	0.12	0.79	0.65	0.32	0.04	0.38
El Salvador	104	0.15	0.72	0.74	0.24	0.05	0.38
Bolivia	107	0.11	0.70	0.85	0.19	0.04	0.38
Cuba	108	0.04	0.70	0.90	0.22	0.01	0.38
Honduras	125	0.06	0.47	0.71	0.18	0.03	0.29
Nicaragua	135	0.05	0.00	0.66	0.23	0.02	0.19
Haiti	152	0.02	0.00	0.51	0.22	0.01	0.15
<b>LAC</b>		<b>0.25</b>	<b>0.80</b>	<b>0.84</b>	<b>0.30</b>	<b>0.11</b>	<b>0.46</b>

Source: ITU.

Note: The DAI score is calculated from the average of the five component sub-indices.

### 9.1.3 Digital Opportunity Index (DOI)

Country	Rank	Opportunity	Infrastructure	Utilization	DOI
Chile	25	0.79	0.26	0.24	0.43
Argentina	26	0.85	0.23	0.11	0.40
Mexico	27	0.78	0.20	0.09	0.36
Bolivarian Republic of Venezuela	34	0.62	0.15	0.14	0.30
Colombia	36	0.54	0.28	0.05	0.29
Brazil	38	0.49	0.21	0.13	0.28
Peru	37	0.69	0.07	0.10	0.28

**Source:** ITU.

**Note:** The DOI is computed from the average of the three sub-indices. 40 countries were considered.

### 9.1.4 Economist Intelligence Unit (EIU) e-readiness, 2005

	Overall score	Connectivity	Business environment	Consumer and business adoption	Legal and policy environment	Social and cultural environment	Supporting e-services
<i>Weight</i>		25%	20%	20%	15%	15%	5%
Chile	5.97	3.80	7.99	5.60	7.72	5.60	6.00
Mexico	5.21	3.15	6.97	4.50	6.98	5.20	6.00
Brazil	5.07	2.55	6.54	5.40	6.86	4.80	6.00
Argentina	5.05	3.00	5.95	5.30	6.49	5.20	6.00
Jamaica	4.82	2.90	6.00	4.80	6.60	4.80	4.50
Bolivarian Republic of Venezuela	4.53	2.70	5.28	4.40	6.20	4.60	6.00
Colombia	4.18	2.20	6.07	3.70	5.90	3.60	5.00
Peru	4.07	1.70	5.84	3.30	6.29	4.00	5.50
Ecuador	3.83	1.80	5.42	3.00	5.63	4.20	4.50
<b>LAC</b>	<b>4.75</b>	<b>2.64</b>	<b>6.23</b>	<b>4.44</b>	<b>6.52</b>	<b>4.67</b>	<b>5.50</b>

**Source:** Adapted from Economist Intelligence Unit.

**Note:** The overall score is computed from the sum of the weighted sub-indices. 65 countries were considered.

### 9.1.5 Index of Knowledge Societies (IKS)

	Score	Rank	Assets	Advancement	Foresightedness
Costa Rica	0.556	23	0.328	0.582	0.759
Chile	0.502	30	0.406	0.492	0.607
Uruguay	0.500	31	0.406	0.529	0.566
Panama	0.499	32	0.294	0.529	0.674
Mexico	0.457	37	0.338	0.510	0.523
Bolivia	0.431	38	0.344	0.368	0.581
Brazil	0.390	41	0.318	0.390	0.464
Colombia	0.389	42	0.275	0.358	0.533
Trinidad & Tobago	0.368	44	0.207	0.407	0.390

**Source:** Adapted from United Nations Department of Social Affairs

**Note:** 45 countries were considered.

### 9.1.6 Knowledge Economy Index (KEI)

	<b>KEI</b>	<b>Economic Incentive Regime</b>	<b>Innovation</b>	<b>Education</b>	<b>Information Infra-structure</b>
Barbados	7.00	6.02	6.99	7.77	7.23
Chile	6.49	7.73	5.51	6.13	6.59
Uruguay	6.11	6.37	4.88	7.17	6.02
Costa Rica	5.50	5.89	5.29	4.56	6.28
Argentina	5.24	1.79	6.15	7.49	5.53
Mexico	5.10	5.79	4.67	4.43	5.51
Brazil	5.05	3.94	5.02	5.75	5.50
Jamaica	4.45	3.94	3.18	4.55	6.12
Peru	3.90	3.65	2.74	4.71	4.50
Bolivarian Republic of Venezuela	3.82	1.82	4.33	4.27	4.85
Colombia	3.73	2.79	3.14	4.40	4.60
Bolivia	3.63	3.74	1.76	5.52	3.51
El Salvador	3.50	4.98	1.48	3.17	4.37
Ecuador	3.21	2.13	2.67	3.88	4.17
Dominican Republic	2.96	2.65	0.35	3.93	4.92
Nicaragua	2.86	4.06	2.12	2.54	2.73
Paraguay	2.86	2.53	0.89	4.19	3.84
Guatemala	2.83	3.42	2.58	2.15	3.18
Honduras	2.63	3.16	2.12	2.49	2.76
Haiti	0.85	0.95	0.08	0.97	1.41
<b>LAC</b>	<b>4.09</b>	<b>3.87</b>	<b>3.30</b>	<b>4.50</b>	<b>4.68</b>

**Source:** Adapted from World Bank Institute.

### 9.1.7 Network Readiness Index (NRI), 2004

Country	Score	World Rank	Readiness	Environment	Usage
Chile	0.29	35	4.73	3.85	3.24
Brazil	0.08	46	4.49	3.66	2.85
Jamaica	-0.03	49	4.11	3.20	2.78
Trinidad & Tobago	-0.28	59	3.98	3.36	2.76
Mexico	-0.28	60	4.29	3.36	3.05
Costa Rica	-0.29	61	4.14	3.37	2.87
Uruguay	-0.39	64	4.18	3.25	2.63
Colombia	-0.42	66	4.34	3.02	2.48
Panama	-0.47	69	4.01	3.24	2.68
El Salvador	-0.49	70	4.08	3.07	2.52
Argentina	-0.62	76	4.24	3.15	2.97
Dominican Republic	-0.65	78	4.18	3.23	2.54
Bolivarian Republic of Venezuela	-0.72	84	4.02	2.75	2.49
Guatemala	-0.78	88	3.48	2.61	2.19
Peru	-0.91	90	3.97	2.83	2.48
Ecuador	-1.08	95	3.19	2.57	2.27
Honduras	-1.19	97	2.97	2.29	1.97
Paraguay	-1.2	98	3.42	2.53	1.91
Bolivia	-1.25	99	3.46	2.60	1.93
Nicaragua	-1.61	103	3.42	2.23	2.03

Source: Adapted from World Economic Forum.

### 9.1.8 Orbicom Digital Divide Index

Country	Infostate Score	Rank	Infodensity	Info-use
Chile	110.8	39	104.5	117.3
Uruguay	109.9	40	114.8	105.3
Argentina	107.9	41	114.3	101.8
Brazil	91.6	48	96.9	86.4
Barbados	91.2	49	82.1	101.4
Trinidad & Tobago	90.6	50	86.8	94.5
Costa Rica	86.0	55	71.1	103.9
Mexico	83.0	56	90.2	76.3
Belize	75.5	58	70.6	80.7
Panama	72.6	62	81.4	64.7
Bolivarian Republic of Venezuela	72.3	63	69.5	75.3
Jamaica	70.8	64	71.2	70.3
Colombia	67.8	66	68.1	67.5
Peru	61.8	70	57.3	66.6
Ecuador	53.9	76	52.6	55.2
El Salvador	51.9	78	48.8	55.2
Guyana	49.4	82	40.4	60.4
Bolivia	47.0	86	52.5	42.0
Paraguay	45.0	87	56.3	35.9
Guatemala	41.9	89	48.3	36.4
Nicaragua	38.4	93	38.3	38.4
Honduras	33.7	96	32.8	34.7
Cuba	32.4	98	28.2	37.2

**Source:** Adapted from Orbicom.

**Note:** Infostate score =  $\sqrt{\dots}$

### 9.1.9 Technology Achievement Index (TAI)

Rank	Country	TAI value	Technology creation		Diffusion of recent innovations		Diffusion of old innovations		Human skills	
			Patents granted to residents (per million people) 1998	Receipts of royalties and license fees (US\$ per 1,000 people) 1999	Internet hosts (per 1,000 people) 2000	High- and medium-technology exports (as % of total goods exports) 1999	Telephones (mainline and cellular, per 1,000 people) 1999	Electricity consumption (kilowatt-hours per capita) 1998	Mean years of schooling (age 15 and above) 2000	Gross tertiary science enrolment ratio (%) 1995-97
32	Mexico	0.39	1	0.40	9.20	66.3	192	1'513	7.20	5.00
34	Argentina	0.38	8	0.50	8.70	19	322	1'891	8.80	12.00
36	Costa Rica	0.36	...	0.30	4.10	52.6	239	1'450	6.10	5.70
37	Chile	0.36	...	6.60	6.20	6.1	358	2'082	7.60	13.20
38	Uruguay	0.34	2	0.00	19.60	13.3	366	1'788	7.60	7.30
41	Trinidad & Tobago	0.33	...	0.00	7.70	14.2	246	3'478	7.80	3.30
42	Panama	0.32	...	0.00	1.90	5.1	251	1'211	8.60	8.50
43	Brazil	0.31	2	0.80	7.20	32.9	238	1'793	4.90	3.40
46	Bolivia	0.28	...	0.20	0.30	26	113	409	5.60	7.70
47	Colombia	0.27	1	0.20	1.90	13.7	236	866	5.30	5.20
48	Peru	0.27	...	0.20	0.70	2.9	107	642	7.60	7.50
49	Jamaica	0.26	...	2.40	0.40	1.5	255	2'252	5.30	1.60
52	Paraguay	0.25	...	35.30	0.50	2	137	756	6.20	2.20
53	Ecuador	0.25	...	...	0.30	3.2	122	625	6.40	6.00
54	El Salvador	0.25	...	0.20	0.30	19.2	138	559	5.20	3.60
55	Dominican Republic	0.24	...	...	1.70	5.7	148	627	4.90	5.70
61	Honduras	0.21	...	0.00	...	8.2	57	446	4.80	3.00
64	Nicaragua	0.19	...	...	0.40	3.6	39	281.00	4.60	3.80

**Source:** Adapted from UNDP.

**Note:** Each of the categories has equal weight. Each of the indicators within a category also has equal weight. ... = not available.

### 9.1.10 UNCTAD Index of ICT Diffusion

Country	Rank	Diffusion	Connectivity	Access	Policy
Barbados	34	0.47	0.22	0.7227	0.00
Suriname	43	0.39	0.12	0.6516	0.50
St. Kitts & Nevis	44	0.38	0.24	0.5197	0.00
Chile	46	0.38	0.20	0.5595	1.00
Trinidad & Tobago	49	0.36	0.16	0.5554	0.25
Costa Rica	51	0.36	0.16	0.5526	0.00
Argentina	53	0.35	0.13	0.5629	1.00
Brazil	57	0.33	0.14	0.5154	0.75
Guyana	58	0.32	0.06	0.5753	0.00
Uruguay	61	0.31	0.17	0.4588	0.13
Bolivarian Republic of Venezuela	63	0.31	0.11	0.5005	0.75
Cuba	69	0.30	0.01	0.5867	0.25
Belize	70	0.30	0.13	0.4679	0.00
Colombia	72	0.30	0.09	0.5064	1.00
Mexico	73	0.30	0.13	0.4622	0.75
Guatemala	74	0.30	0.05	0.5367	0.50
Grenada	77	0.29	0.19	0.4002	0.00
Dominican Republic	79	0.28	0.10	0.4659	0.75
Ecuador	83	0.28	0.07	0.4931	0.13
Paraguay	86	0.28	0.09	0.4585	0.25
Peru	88	0.27	0.06	0.4859	1.00
Jamaica	98	0.25	0.19	0.3217	0.25
Dominica	102	0.25	0.14	0.3656	0.00
St. Lucia	105	0.25	0.17	0.3251	0.00
Panama	113	0.22	0.09	0.3585	0.50
Honduras	114	0.22	0.03	0.4188	0.00
Bolivia	141	0.18	0.05	0.3146	0.25
El Salvador	148	0.16	0.07	0.2529	0.75
Haiti	164	0.10	0.01	0.1803	0.00

Source: UNCTAD.

### 9.1.11 UN PAN E-Readiness Index, 2004

Country	Web measure	Telecom	Human Cap	E Readiness	World Rank-Readiness	LAC Rank - Web measure
Chile	0.884	0.276	0.89	0.684	22	1
Mexico	0.784	0.143	0.86	0.596	30	2
Argentina	0.643	0.179	0.94	0.587	32	3
Brazil	0.637	0.165	0.9	0.567	35	5
Uruguay	0.483	0.232	0.93	0.548	40	9
Colombia	0.641	0.109	0.85	0.533	44	4
Peru	0.517	0.107	0.88	0.501	53	7
Panama	0.523	0.089	0.86	0.491	54	6
Bolivarian Republic of Venezuela	0.517	0.112	0.84	0.49	56	7
Jamaica	0.409	0.199	0.83	0.479	59	10
Trinidad & Tobago	0.328	0.193	0.88	0.467	61	13
Bahamas	0.299	0.215	0.88	0.465	62	16
St. Lucia	0.326	0.178	0.88	0.462	64	14
Barbados	0.197	0.212	0.96	0.456	65	23
Guyana	0.208	0.124	0.94	0.424	71	22
St. Kitts & Nevis	0.116	0.264	0.89	0.423	72	25
Costa Rica	0.174	0.223	0.86	0.419	73	24
Belize	0.216	0.149	0.88	0.415	76	21
Dominican Rep.	0.355	0.068	0.81	0.411	77	12
El Salvador	0.394	0.077	0.74	0.403	79	11
Ecuador	0.243	0.084	0.85	0.392	82	19
Bolivia	0.255	0.054	0.85	0.386	88	18
Dominica	0.069	0.175	0.86	0.368	98	28
Antigua & Barbuda	0.035	0.252	0.81	0.366	99	31
Grenada	0.035	0.202	0.84	0.359	102	31
Cuba	0.093	0.051	0.9	0.348	104	27
Suriname	0.05	0.112	0.88	0.347	105	29
Paraguay	0.108	0.074	0.84	0.341	109	26
Guatemala	0.317	0.051	0.65	0.339	111	15
Honduras	0.243	0.037	0.71	0.33	113	19
St. Vincent	0.046	0.135	0.79	0.324	119	30
Nicaragua	0.274	0.031	0.66	0.322	121	17
Haiti	0	0.012	0.51	0.174	184	33

Source: Adapted from UNPAN.

### 9.1.12 World Bank ICT Index

World rank	Country	Access	Quality	Affordability	Sustainability	Applications	ICT Index
29	Chile	8.56	7.36	5.71	9.11	7.68	7.68
37	Argentina	8.26	6.87	6.38	7.97	6.21	7.14
38	Mexico	7.93	6.36	6.36	8.02	6.68	7.07
40	Brazil	8.03	6.45	5.09	8.78	6.23	6.92
43	Uruguay	8.28	6.04	5.94	7.72	5.80	6.76
44	Jamaica	8.08	5.68	5.15	9.22	4.98	6.62
47	Bolivarian Republic of Venezuela	7.50	6.23	5.53	8.20	5.18	6.53
49	Colombia	7.50	5.50	5.18	8.59	5.70	6.50
50	Panama	7.20	4.79	5.45	8.23	6.36	6.41
51	Costa Rica	8.79	4.98	6.51	7.00	4.63	6.38
53	Trinidad & Tobago	8.02	4.51	7.34	7.19	4.68	6.35
60	El Salvador	7.27	5.45	4.41	8.27	4.65	6.01
61	Peru	7.07	5.84	4.28	7.36	5.21	5.95
64	Dominican Republic	7.13	5.13	4.76	7.15	4.29	5.69
73	Guatemala	6.69	3.53	5.05	6.94	4.12	5.27
74	Bolivia	6.47	3.43	4.13	8.57	3.43	5.21
80	Ecuador	6.99	3.20	4.62	6.66	3.60	5.01
81	Honduras	5.98	2.56	3.93	8.28	3.80	4.91
85	Paraguay	6.10	4.16	3.86	7.10	2.63	4.77
90	Nicaragua	5.71	4.19	2.72	6.62	3.69	4.59
103	Cuba	5.39	2.59	4.51	4.78	1.19	3.69

**Source:** Adapted from World Bank.

**Note:** ICT score calculated as average of five category scores.

### 9.1.13 Human Development Index (HDI), 2005

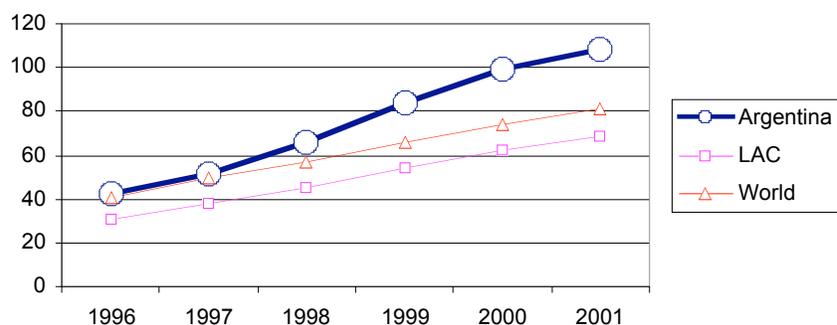
Country	Rank	Score	Life expectancy at birth (years) 2003	Literacy	Enrol-ment	GDP per capita	Life expectancy index	Education index	GDP index
Barbados	30	0.88	75.00	99.70	89	15'720	0.83	0.96	0.84
Argentina	34	0.86	74.50	97.20	95	12'106	0.82	0.96	0.80
Chile	37	0.85	77.90	95.70	81	10'274	0.88	0.91	0.77
Uruguay	46	0.84	75.40	97.70	88	8'280	0.84	0.94	0.74
Costa Rica	47	0.84	78.20	95.80	68	9'606	0.89	0.87	0.76
St. Kitts & Nevis	49	0.83	70.00	97.80	89	12'404	0.75	0.95	0.80
Bahamas	50	0.83	69.70	95.50	77	17'159	0.75	0.89	0.86
Cuba	52	0.82	77.30	96.90	80		0.87	0.91	0.67
Mexico	53	0.81	75.10	90.30	75	9'168	0.83	0.85	0.75
Panama	56	0.80	74.80	91.90	79	6'854	0.83	0.88	0.71
Trinidad & Tobago	57	0.80	69.90	98.50	66	10'766	0.75	0.88	0.78
Antigua & Barbuda	60	0.80	73.90	85.80	69	10'294	0.82	0.80	0.77
Brazil	63	0.79	70.50	88.40	91	7'790	0.76	0.89	0.73
Grenada	66	0.79	65.30	96.00	96	7'959	0.67	0.96	0.73
Colombia	69	0.79	72.40	94.20	71	6'702	0.79	0.86	0.70
Dominica	70	0.78	75.60	88.00	75	5'448	0.84	0.84	0.67
Bolivarian Republic of Venezuela	75	0.77	72.90	93.00	75	4'919	0.80	0.87	0.65
St. Lucia	76	0.77	72.40	90.10	75	5'709	0.79	0.85	0.68
Peru	79	0.76	70.00	87.70	87	5'260	0.75	0.88	0.66
Ecuador	82	0.76	74.30	91.00		3'641	0.82	0.86	0.60
St. Vincent	87	0.76	71.10	88.10	67	6'123	0.77	0.81	0.69
Suriname	86	0.76	69.10	88.00	73		0.74	0.83	0.70
Paraguay	88	0.76	71.00	91.60	73	4'684	0.77	0.86	0.64
Belize	91	0.75	71.90	76.90	77	6'950	0.78	0.77	0.71
Dominican Republic	95	0.75	67.20	87.70	76	6'823	0.70	0.84	0.70
Jamaica	98	0.74	70.80	87.60	74	4'104	0.76	0.83	0.62
El Salvador	104	0.72	70.90	79.70	68	4'781	0.76	0.76	0.65
Guyana	107	0.72	63.10	96.50	77	4'230	0.63	0.90	0.63
Nicaragua	112	0.69	69.70	76.70	69	3'262	0.75	0.74	0.58
Bolivia	113	0.69	64.10	86.50	87	2'587	0.65	0.87	0.54
Honduras	116	0.67	67.80	80.00	62	2'665	0.71	0.74	0.55
Guatemala	117	0.66	67.30	69.10	61	4'148	0.70	0.66	0.62
Haiti	153	0.48	51.60	51.90		1'742	0.44	0.50	0.48

Source: Adapted from UNDP.

## 9.2 Country tables

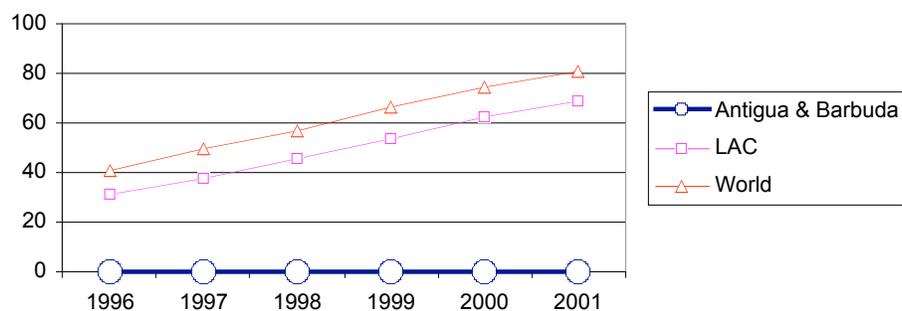
### 9.2.1 Argentina

Number of e-index inclusions:								11
Average world rank:								44
Average LAC rank:								4
Average scores compared to world:								60%
Average scores compared to LAC:								81%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC
1	ArCo	40	162	1	24	0.426	76%	100%
2	DAI	54	178	8	33	0.53	68%	72%
3	DOI	26	40	2	7	0.4	36%	83%
4	EIU	39	65	4	9	5.05	41%	63%
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A
6	KEI	50	128	5	20	5.24	61%	79%
7	NRI	76	104	11	20	-0.62	27%	47%
8	Orbicom	41	139	3	23	107.9	71%	91%
9	TAI	34	72	2	18	0.381	54%	94%
10	UNCTAD	53	165	7	29	0.346	68%	79%
11	UNPAN	32	191	3	33	0.587	84%	94%
12	WBICT	37	144	2	21	7.14	75%	95%
<b>Reference:</b>								
	HDI	34	177	2	33	0.863	81%	97%
<b>Change in world rankings:</b>								
		2000	2001	2002	2003	2004	2005	
	<b>e-Index</b>							
	EIU		5	4	0	2	2	
	NRI			13	5	26		
	Orbicom	0	0					
	UNCTAD	1	3	2				
	UNPAN				0	1		
	<b>Average</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>2</b>	<b>10</b>	<b>2</b>	
Note: Due to changes in methodology, changes over time are not always comparable.								
<b>Orbicom Index:</b>								
		1996	1997	1998	1999	2000	2001	
	Argentina	42.2	51.6	65.9	84.2	99.4	107.9	
	LAC	31.1	37.9	45.3	53.8	62.5	68.9	
	World	41.0	49.2	57.2	66.0	74.4	81.0	



## 9.2.2 Antigua & Barbuda

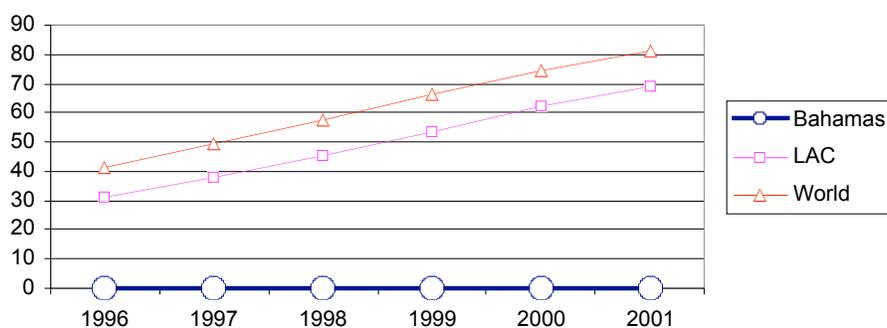
Number of e-index inclusions:									2
Average world rank:									72
Average LAC rank:									14
Average scores compared to world:									61%
Average scores compared to LAC:									58%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	N/A	162	N/A	24	N/A	N/A	N/A	
2	DAI	44	178	4	33	0.57	75%	88%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	N/A	139	N/A	23	N/A	N/A	N/A	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	N/A	165	N/A	29	N/A	N/A	N/A	
11	UNPAN	99	191	24	33	0.366	48%	28%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	60	177	12	33	0.797	66%	66%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI								
	Orbicom								
	UNCTAD								
	UNPAN					7			
	<b>Average</b>					7			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Antigua	0.0	0.0	0.0	0.0	0.0	0.0		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



### 9.2.3 Bahamas

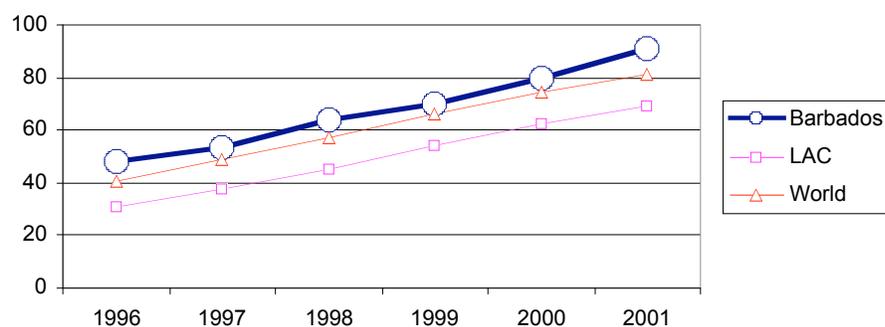
Number of e-index inclusions:									2
Average world rank:									50
Average LAC rank:									7
Average scores compared to world:									74%
Average scores compared to LAC:									83%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	N/A	162	N/A	24	N/A	N/A	N/A	
2	DAI	37	178	1	33	0.62	80%	100%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	N/A	139	N/A	23	N/A	N/A	N/A	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	N/A	165	N/A	29	N/A	N/A	N/A	
11	UNPAN	62	191	12	33	0.465	68%	66%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	50	177	7	33	0.832	72%	81%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
<b>e-Index</b>									
EIU									
NRI									
Orbicom									
UNCTAD		3							
UNPAN					17	2			
<b>Average</b>		3			17	2			

Note: Due to changes in methodology, changes over time are not always comparable.



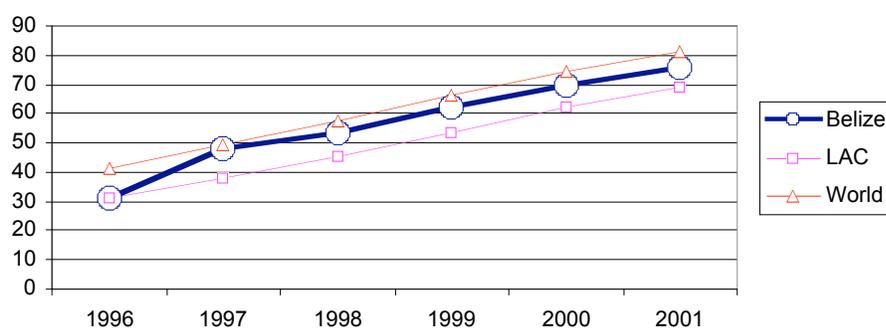
## 9.2.4 Barbados

Number of e-index inclusions:									5
Average world rank:									45
Average LAC rank:									5
Average scores compared to world:									72%
Average scores compared to LAC:									86%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	N/A	162	N/A	24	N/A	N/A	N/A	
2	DAI	45	178	5	33	0.57	75%	88%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	33	128	1	20	7	75%	100%	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	49	139	5	23	91.2	65%	82%	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	34	165	1	29	0.4695	80%	100%	
11	UNPAN	65	191	14	33	0.456	66%	59%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	30	177	1	33	0.878	84%	100%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI								
	Orbicom	1	3						
	UNCTAD	3	2	7					
	UNPAN				6	11			
	<b>Average</b>	<b>2</b>	<b>1</b>	<b>7</b>	<b>6</b>	<b>11</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Barbados	47.8	53.3	63.9	69.9	79.6	91.2		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



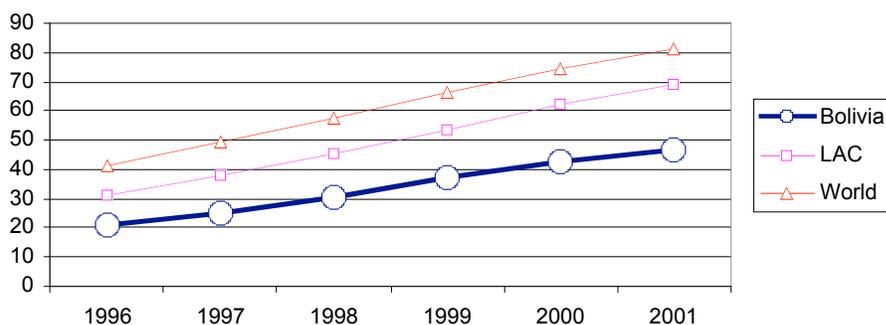
## 9.2.5 Belize

Number of e-index inclusions:									4
Average world rank:									70
Average LAC rank:									15
Average scores compared to world:									59%
Average scores compared to LAC:									54%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	N/A	162	N/A	24	N/A	N/A	N/A	
2	DAI	74	178	18	33	0.47	59%	47%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	58	139	9	23	75.5	59%	64%	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	70	165	13	29	0.2994	58%	57%	
11	UNPAN	76	191	18	33	0.415	61%	47%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	91	177	24	33	0.753	49%	28%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
<b>e-Index</b>									
EIU									
NRI									
Orbicom		1	2						
UNCTAD		48	43	2					
UNPAN					10	5			
<b>Average</b>		<b>25</b>	<b>23</b>	<b>2</b>	<b>10</b>	<b>5</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
Belize		31.3	48.0	53.4	62.3	69.7	75.5		
LAC		31.1	37.9	45.3	53.8	62.5	68.9		
World		41.0	49.2	57.2	66.0	74.4	81.0		



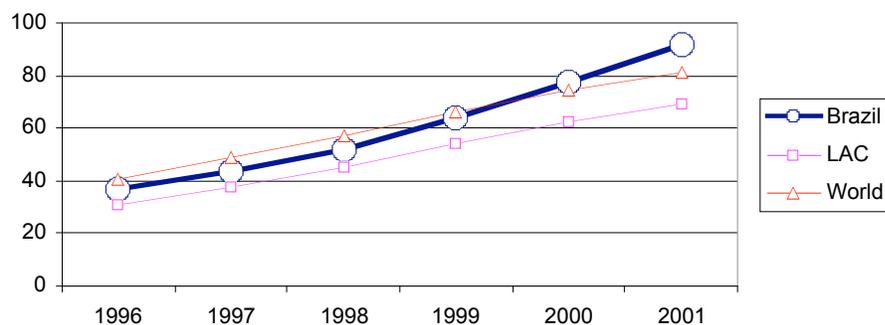
## 9.2.6 Bolivia

Number of e-index inclusions:									10
Average world rank:									85
Average LAC rank:									18
Average scores compared to world:									34%
Average scores compared to LAC:									26%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	87	162	18	24	0.305	47%	26%	
2	DAI	107	178	29	33	0.38	40%	9%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	38	45	6	9	0.431	16%	38%	
6	KEI	81	128	12	20	3.63	37%	42%	
7	NRI	99	104	19	20	-1.25	5%	5%	
8	Orbicom	86	139	18	23	47	38%	23%	
9	TAI	46	72	9	18	0.277	37%	53%	
10	UNCTAD	141	165	27	29	0.1813	15%	7%	
11	UNPAN	88	191	22	33	0.386	53%	34%	
12	WBICT	74	144	16	21	5.21	49%	25%	
<b>Reference:</b>									
	HDI	113	177	30	33	0.687	36%	9%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI			11	12	9			
	Orbicom	5	2						
	UNCTAD	1	42	6					
	UNPAN				27	10			
	<b>Average</b>	<b>3</b>	<b>22</b>	<b>3</b>	<b>20</b>	<b>10</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Bolivia	20.9	25.2	30.7	37.5	42.6	47.0		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		



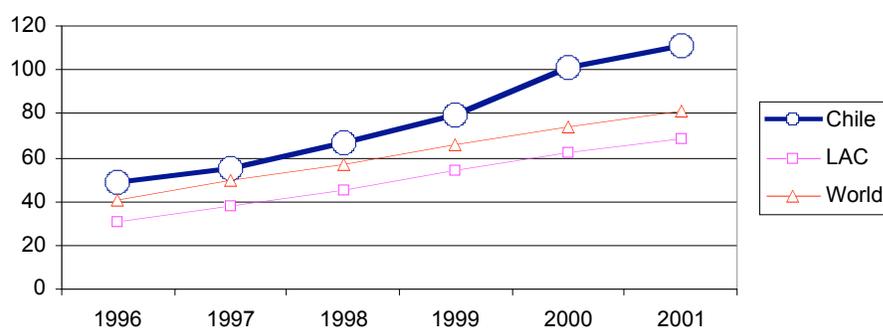
## 9.2.7 Brazil

Number of e-index inclusions:									12
Average world rank:									48
Average LAC rank:									7
Average scores compared to world:									51%
Average scores compared to LAC:									64%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	72	162	12	24	0.33	56%	52%	
2	DAI	65	178	15	33	0.5	64%	56%	
3	DOI	38	40	7	7	0.28	5%	0%	
4	EIU	38	65	3	9	5.07	42%	75%	
5	IKS	41	45	7	9	0.39	9%	25%	
6	KEI	57	128	7	20	5.05	56%	68%	
7	NRI	46	104	2	20	0.08	55%	95%	
8	Orbicom	48	139	4	23	91.6	66%	86%	
9	TAI	43	72	8	18	0.311	41%	59%	
10	UNCTAD	57	165	8	29	0.3256	66%	75%	
11	UNPAN	35	191	4	33	0.567	82%	91%	
12	WBICT	40	144	4	21	6.92	73%	85%	
<b>Reference:</b>									
	HDI	63	177	13	33	0.792	64%	63%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU		1	2	2	1	3		
	NRI			9	10	7			
	Orbicom	4	5						
	UNCTAD	4	0	5					
	UNPAN				23	6			
	<b>Average</b>	<b>4</b>	<b>1</b>	<b>5</b>	<b>12</b>	<b>0</b>	<b>3</b>		
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Brazil	36.6	43.6	52.1	63.9	77.3	91.6		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



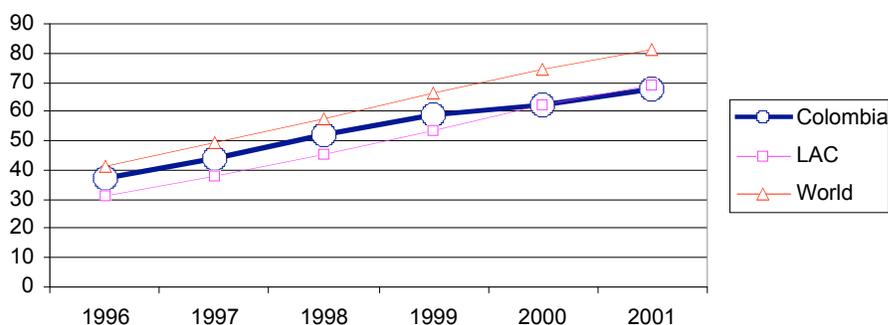
## 9.2.8 Chile

Number of e-index inclusions:									12
Average world rank:									35
Average LAC rank:									2
Average scores compared to world:									65%
Average scores compared to LAC:									95%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	41	162	2	24	0.424	75%	96%	
2	DAI	43	178	3	33	0.58	76%	94%	
3	DOI	25	40	1	7	0.43	38%	100%	
4	EIU	31	65	1	9	5.97	53%	100%	
5	IKS	30	45	2	9	0.502	34%	88%	
6	KEI	38	128	2	20	6.49	71%	95%	
7	NRI	35	104	1	20	0.29	67%	100%	
8	Orbicom	39	139	1	23	110.8	72%	100%	
9	TAI	37	72	4	18	0.357	49%	82%	
10	UNCTAD	46	165	4	29	0.3787	73%	89%	
11	UNPAN	22	191	1	33	0.684	89%	100%	
12	WBICT	29	144	1	21	7.68	80%	100%	
<b>Reference:</b>									
	HDI	37	177	3	33	0.854	80%	94%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU		6	1	0	1	2		
	NRI			1	3	3			
	Orbicom	7	1						
	UNCTAD	4	1	1					
	UNPAN				13	0			
	<b>Average</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>1</b>	<b>2</b>		
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Chile	48.8	55.3	66.6	79.5	100.7	110.8		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



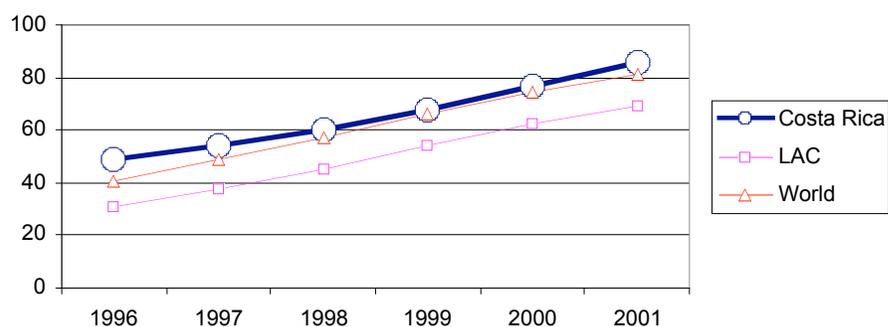
## 9.2.9 Colombia

Number of e-index inclusions:									12
Average world rank:									58
Average LAC rank:									10
Average scores compared to world:									43%
Average scores compared to LAC:									48%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	71	162	11	24	0.331	57%	57%	
2	DAI	79	178	21	33	0.45	55%	38%	
3	DOI	36	40	5	7	0.29	10%	33%	
4	EIU	48	65	7	9	4.18	27%	25%	
5	IKS	42	45	8	9	0.389	7%	13%	
6	KEI	77	128	11	20	3.73	40%	47%	
7	NRI	66	104	8	20	-0.42	37%	63%	
8	Orbicom	66	139	13	23	67.8	53%	45%	
9	TAI	47	72	10	18	0.274	35%	47%	
10	UNCTAD	72	165	14	29	0.2972	57%	54%	
11	UNPAN	44	191	6	33	0.533	77%	84%	
12	WBICT	49	144	8	21	6.5	66%	65%	
<b>Reference:</b>									
	HDI	69	177	15	33	0.785	61%	56%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU		10	0	1	4	7		
	NRI			2	1	6			
	Orbicom	4	0						
	UNCTAD	2	4	2					
	UNPAN				17	13			
	<b>Average</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>6</b>	<b>1</b>	<b>7</b>		
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Colombia	37.2	44.1	51.8	58.6	62.3	67.8		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



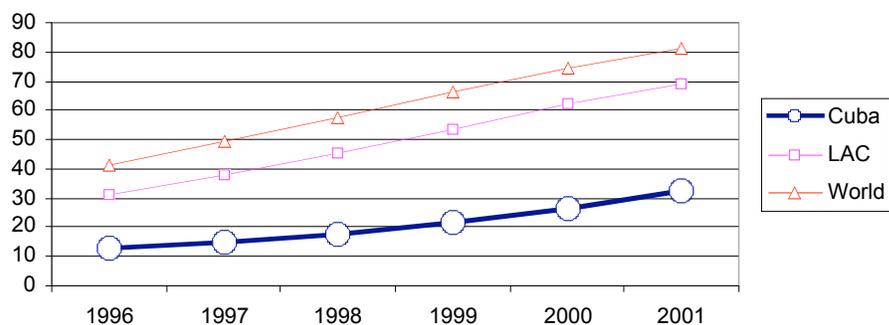
## 9.2.10 Costa Rica

Number of e-index inclusions:		10						
Average world rank:		52						
Average LAC rank:		7						
Average scores compared to world:		59%						
Average scores compared to LAC:		75%						
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC
1	ArCo	60	162	7	24	0.361	63%	74%
2	DAI	58	178	11	33	0.52	67%	66%
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A
5	IKS	23	45	1	9	0.556	50%	100%
6	KEI	49	128	4	20	5.5	62%	84%
7	NRI	61	104	6	20	-0.29	42%	74%
8	Orbicom	55	139	7	23	86	61%	73%
9	TAI	36	72	3	18	0.358	51%	88%
10	UNCTAD	51	165	6	29	0.356	70%	82%
11	UNPAN	73	191	17	33	0.419	62%	50%
12	WBICT	51	144	10	21	6.38	65%	55%
<b>Reference:</b>								
	HDI	47	177	5	33	0.838	74%	88%
<b>Change in world rankings:</b>								
		2000	2001	2002	2003	2004	2005	
	<b>e-Index</b>							
	EIU							
	NRI			4	0	12		
	Orbicom	3	0					
	UNCTAD	3	5	3				
	UNPAN				3	7		
	<b>Average</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>10</b>		
Note: Due to changes in methodology, changes over time are not always comparable.								
<b>Orbicom Index:</b>								
		1996	1997	1998	1999	2000	2001	
	Costa Rica	48.6	53.9	59.8	67.6	76.4	86.0	
	LAC	31.1	37.9	45.3	53.8	62.5	68.9	
	World	41.0	49.2	57.2	66.0	74.4	81.0	



## 9.2.11 Cuba

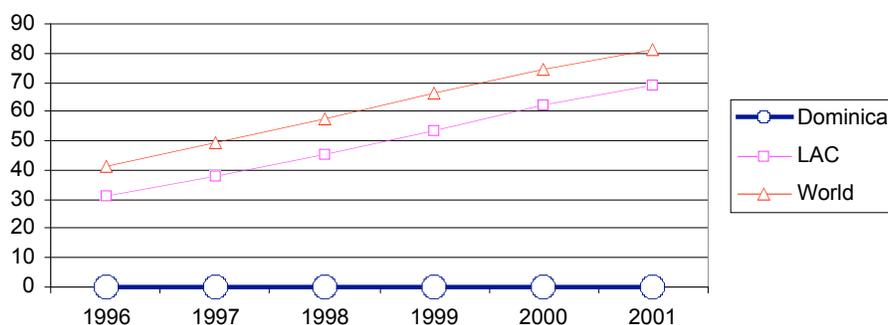
Number of e-index inclusions:									6
Average world rank:									93
Average LAC rank:									21
Average scores compared to world:									42%
Average scores compared to LAC:									23%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	78	162	14	24	0.322	52%	43%	
2	DAI	108	178	30	33	0.38	40%	9%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	98	139	23	23	32.4	30%	0%	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	69	165	12	29	0.3007	59%	61%	
11	UNPAN	104	191	26	33	0.348	46%	22%	
12	WBICT	103	144	21	21	3.69	29%	0%	
<b>Reference:</b>									
	HDI	52	177	8	33	0.817	71%	78%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI								
	Orbicom	0	2						
	UNCTAD	4	4	9					
	UNPAN				21	16			
	<b>Average</b>	2	3	9	21	16			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Cuba	12.7	15.0	17.8	21.6	26.5	32.4		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



## 9.2.12 Dominica

Number of e-index inclusions:									3
Average world rank:									84
Average LAC rank:									18
Average scores compared to world:									53%
Average scores compared to LAC:									45%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	N/A	162	N/A	24	N/A	N/A	N/A	
2	DAI	53	178	7	33	0.54	71%	81%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	N/A	139	N/A	23	N/A	N/A	N/A	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	102	165	23	29	0.2525	38%	21%	
11	UNPAN	98	191	23	33	0.368	49%	31%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	70	177	16	33	0.783	61%	53%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
<b>e-Index</b>									
EIU									
NRI									
Orbicom									
UNCTAD				23					
UNPAN									
<b>Average</b>				23					

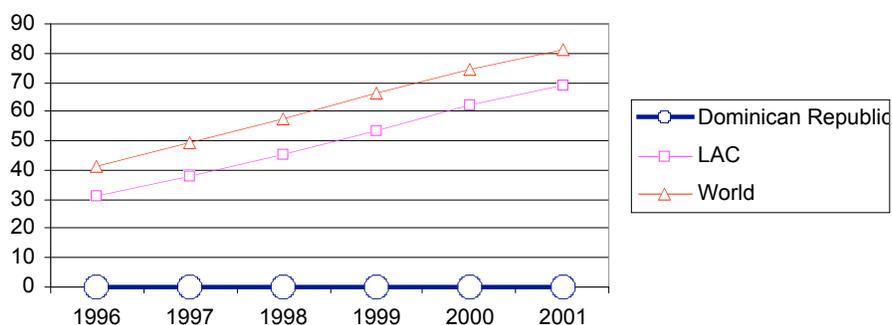
Note: Due to changes in methodology, changes over time are not always comparable.



## 9.2.13 Dominican Republic

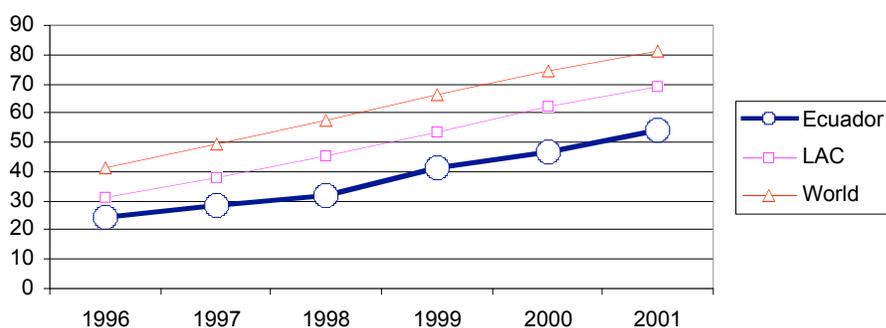
Number of e-index inclusions:									8
Average world rank:									78
Average LAC rank:									17
Average scores compared to world:									43%
Average scores compared to LAC:									32%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	84	162	17	24	0.308	48%	30%	
2	DAI	94	178	24	33	0.42	47%	28%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	89	128	15	20	2.96	31%	26%	
7	NRI	78	104	12	20	-0.65	24%	42%	
8	Orbicom	N/A	139	N/A	23	N/A	N/A	N/A	
9	TAI	55	72	16	18	0.244	24%	12%	
10	UNCTAD	79	165	18	29	0.2842	52%	39%	
11	UNPAN	77	191	19	33	0.411	59%	44%	
12	WBICT	64	144	14	21	5.69	56%	35%	
<b>Reference:</b>									
	HDI	95	177	25	33	0.749	47%	25%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI			_10	_0	_21			
	Orbicom								
	UNCTAD	_26	_48	_6					
	UNPAN				_13	_17			
	<b>Average</b>	<b>_26</b>	<b>_48</b>	<b>_8</b>	<b>_7</b>	<b>_19</b>			

Note: Due to changes in methodology, changes over time are not always comparable.



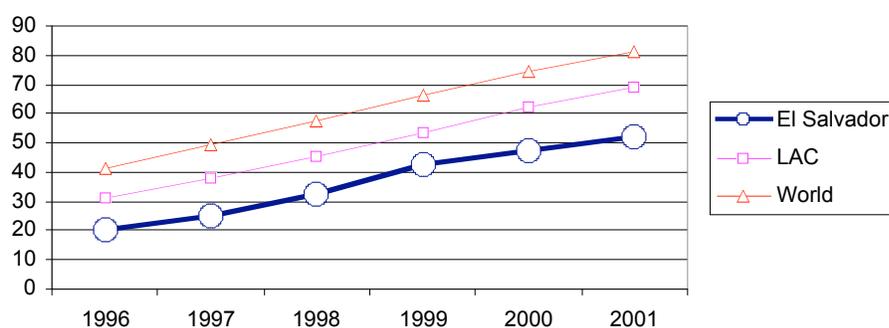
## 9.2.14 Ecuador

Number of e-index inclusions:									10
Average world rank:									78
Average LAC rank:									17
Average scores compared to world:									38%
Average scores compared to LAC:									26%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	79	162	15	24	0.319	51%	39%	
2	DAI	96	178	25	33	0.41	46%	25%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	55	65	9	9	3.83	16%	0%	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	85	128	14	20	3.21	34%	32%	
7	NRI	95	104	16	20	-1.08	9%	21%	
8	Orbicom	76	139	15	23	53.9	46%	36%	
9	TAI	53	72	14	18	0.253	25%	18%	
10	UNCTAD	83	165	19	29	0.2805	50%	36%	
11	UNPAN	82	191	21	33	0.392	57%	38%	
12	WBICT	80	144	17	21	5.01	45%	20%	
<b>Reference:</b>									
	HDI	82	177	20	33	0.759	53%	41%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU		_2	_1	_1	_7	_1		
	NRI			_4	_14	_6			
	Orbicom	_2	_0						
	UNCTAD	_6	_0	_3					
	UNPAN				_28	_3			
	<b>Average</b>	<b>_4</b>	<b>_1</b>	<b>_0</b>	<b>_14</b>	<b>_3</b>	<b>_1</b>		
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Ecuador	24.4	28.7	31.8	41.4	46.6	53.9		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



## 9.2.15 El Salvador

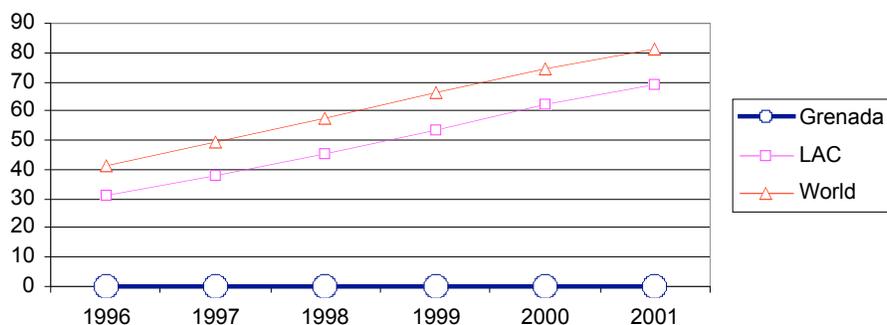
Number of e-index inclusions:									9
Average world rank:									84
Average LAC rank:									18
Average scores compared to world:									39%
Average scores compared to LAC:									30%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	83	162	16	24	0.311	49%	35%	
2	DAI	104	178	28	33	0.38	40%	9%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	82	128	13	20	3.5	36%	37%	
7	NRI	70	104	10	20	-0.49	32%	53%	
8	Orbicom	78	139	16	23	51.9	44%	32%	
9	TAI	54	72	15	18	0.253	25%	18%	
10	UNCTAD	148	165	28	29	0.1604	10%	4%	
11	UNPAN	79	191	20	33	0.403	59%	41%	
12	WBICT	60	144	12	21	6.01	59%	45%	
<b>Reference:</b>									
	HDI	104	177	27	33	0.722	41%	19%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI			8	1	8			
	Orbicom	2	3						
	UNCTAD	1	2	54					
	UNPAN				5	1			
	<b>Average</b>	<b>2</b>	<b>3</b>	<b>31</b>	<b>3</b>	<b>4</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	El Salvador	20.6	25.3	32.7	42.4	47.1	51.9		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



## 9.2.16 Grenada

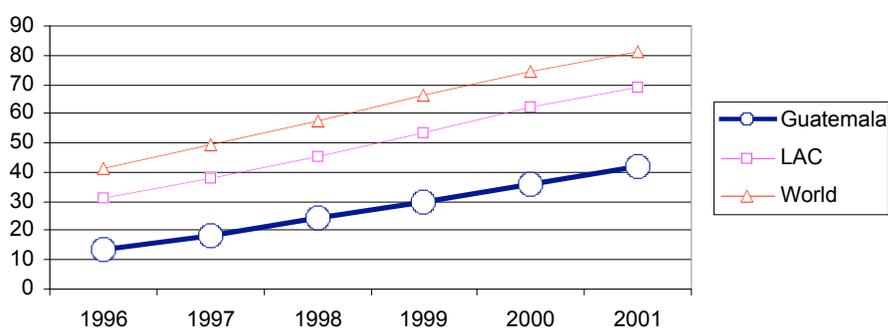
Number of e-index inclusions:									3
Average world rank:									80
Average LAC rank:									18
Average scores compared to world:									56%
Average scores compared to LAC:									43%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	N/A	162	N/A	24	N/A	N/A	N/A	
2	DAI	61	178	13	33	0.51	66%	63%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	N/A	139	N/A	23	N/A	N/A	N/A	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	77	165	17	29	0.2938	54%	43%	
11	UNPAN	102	191	25	33	0.359	47%	25%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	66	177	14	33	0.787	63%	59%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI								
	Orbicom								
	UNCTAD	_4							
	UNPAN					_2			
	<b>Average</b>	_4				_2			

Note: Due to changes in methodology, changes over time are not always comparable.



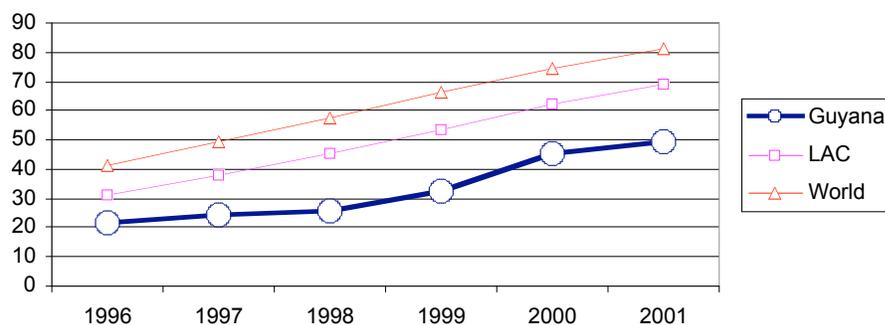
## 9.2.17 Guatemala

Number of e-index inclusions:									8
Average world rank:									93
Average LAC rank:									20
Average scores compared to world:									37%
Average scores compared to LAC:									20%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	109	162	23	24	0.234	33%	4%	
2	DAI	103	178	27	33	0.38	40%	9%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	93	128	18	20	2.83	28%	11%	
7	NRI	88	104	14	20	-0.78	16%	32%	
8	Orbicom	89	139	20	23	41.9	36%	14%	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	74	165	16	29	0.2955	55%	46%	
11	UNPAN	111	191	29	33	0.339	42%	13%	
12	WBICT	73	144	15	21	5.27	50%	30%	
<b>Reference:</b>									
	HDI	117	177	32	33	0.663	34%	3%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI			_5	_13	_2			
	Orbicom	_0	_0						
	UNCTAD	_3	_5	_36					
	UNPAN				_23	_2			
	<b>Average</b>	<b>_2</b>	<b>_3</b>	<b>_16</b>	<b>_18</b>	<b>_2</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Guatemala	13.5	18.6	24.3	29.6	35.8	41.9		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



## 9.2.18 Guyana

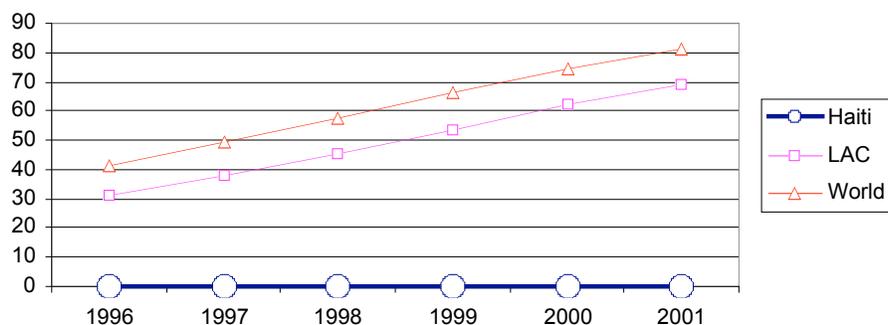
Number of e-index inclusions:									5
Average world rank:									80
Average LAC rank:									17
Average scores compared to world:									52%
Average scores compared to LAC:									42%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	98	162	19	24	0.271	40%	22%	
2	DAI	89	178	23	33	0.43	49%	31%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	82	139	17	23	49.4	41%	27%	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	58	165	9	29	0.3199	65%	71%	
11	UNPAN	71	191	15	33	0.424	63%	56%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	107	177	28	33	0.72	40%	16%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI								
	Orbicom	6	2						
	UNCTAD	5	1	9					
	UNPAN				11	1			
	<b>Average</b>	<b>6</b>	<b>1</b>	<b>9</b>	<b>11</b>	<b>1</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Guyana	21.5	24.2	25.4	32.3	45.3	49.4		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



## 9.2.19 Haiti

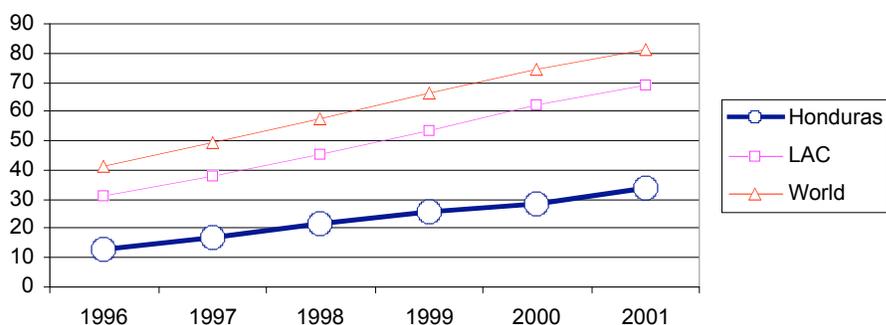
Number of e-index inclusions:									5
Average world rank:									152
Average LAC rank:									28
Average scores compared to world:									9%
Average scores compared to LAC:									0%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	134	162	24	24	0.129	17%	0%	
2	DAI	152	178	33	33	0.15	12%	0%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	125	128	20	20	0.85	2%	0%	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	N/A	139	N/A	23	N/A	N/A	N/A	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	164	165	29	29	0.0955	1%	0%	
11	UNPAN	184	191	33	33	0.174	14%	0%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	153	177	33	33	0.475	14%	0%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI				_18				
	Orbicom								
	UNCTAD	_2	_2	_1					
	UNPAN								
	<b>Average</b>	_2	_2	_1	_18				

Note: Due to changes in methodology, changes over time are not always comparable.



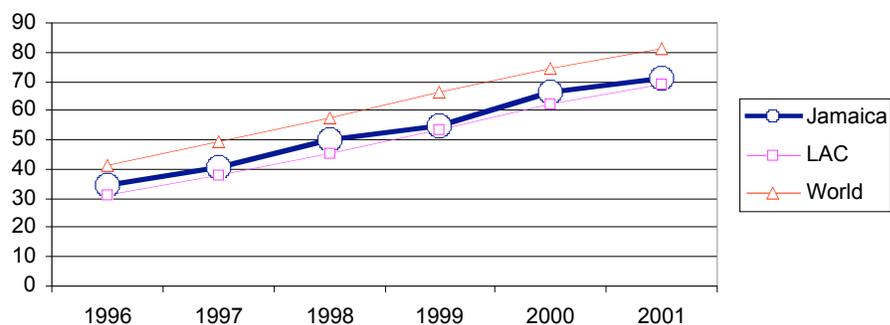
## 9.2.20 Honduras

Number of e-index inclusions:									9
Average world rank:									99
Average LAC rank:									22
Average scores compared to world:									29%
Average scores compared to LAC:									9%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	102	162	21	24	0.258	37%	13%	
2	DAI	125	178	31	33	0.29	30%	6%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	98	128	19	20	2.63	24%	5%	
7	NRI	97	104	17	20	-1.19	7%	16%	
8	Orbicom	96	139	22	23	33.7	31%	5%	
9	TAI	61	72	17	18	0.208	15%	6%	
10	UNCTAD	114	165	26	29	0.2234	31%	11%	
11	UNPAN	113	191	30	33	0.33	41%	9%	
12	WBICT	81	144	18	21	4.91	44%	15%	
<b>Reference:</b>									
	HDI	116	177	31	33	0.667	35%	6%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI			_9	_17	_1			
	Orbicom	_2	_1						
	UNCTAD	_6	_4	_2					
	UNPAN				_40	_11			
	<b>Average</b>	<b>_4</b>	<b>_3</b>	<b>_6</b>	<b>_29</b>	<b>_6</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Honduras	12.7	16.8	21.5	25.5	28.6	33.7		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



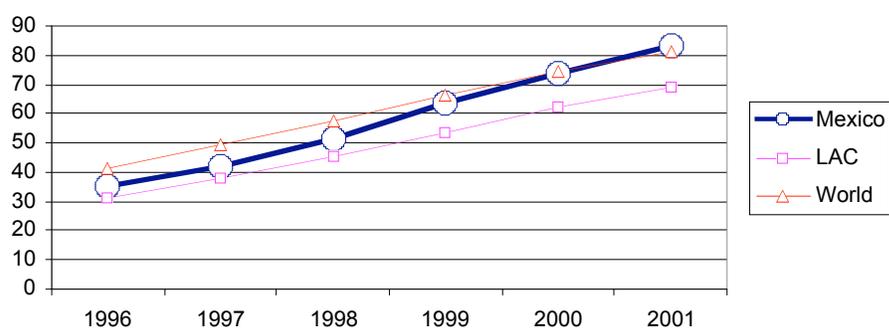
## 9.2.21 Jamaica

Number of e-index inclusions:									10
Average world rank:									59
Average LAC rank:									10
Average scores compared to world:									53%
Average scores compared to LAC:									60%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	66	162	9	24	0.346	60%	65%	
2	DAI	57	178	10	33	0.53	68%	72%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	41	65	5	9	4.82	38%	50%	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	66	128	8	20	4.45	49%	63%	
7	NRI	49	104	3	20	-0.03	53%	89%	
8	Orbicom	64	139	12	23	70.8	54%	50%	
9	TAI	49	72	12	18	0.261	32%	35%	
10	UNCTAD	98	165	22	29	0.2543	41%	25%	
11	UNPAN	59	191	10	33	0.479	69%	72%	
12	WBICT	44	144	6	21	6.62	70%	75%	
<b>Reference:</b>									
	HDI	98	177	26	33	0.738	45%	22%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI			_4	_7	_4			
	Orbicom	_2	_2						
	UNCTAD	_6	_0	29					
	UNPAN				_15	_2			
	<b>Average</b>	<b>_4</b>	<b>_1</b>	<b>_17</b>	<b>_11</b>	<b>_3</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Jamaica	34.2	40.5	49.8	54.5	66.3	70.8		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



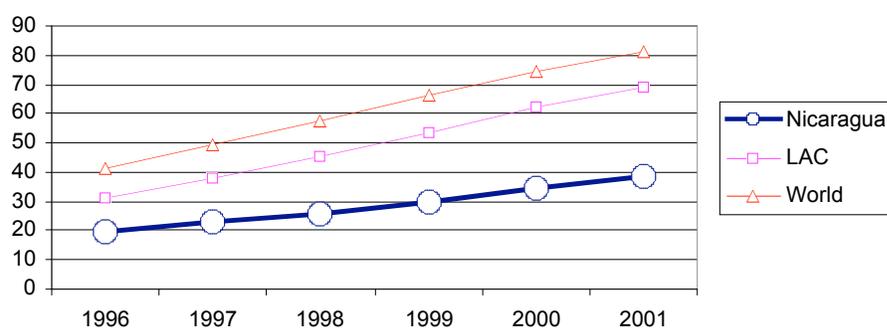
## 9.2.22 Mexico

Number of e-index inclusions:									12
Average world rank:									48
Average LAC rank:									6
Average scores compared to world:									54%
Average scores compared to LAC:									74%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	63	162	8	24	0.358	61%	70%	
2	DAI	64	178	14	33	0.5	64%	56%	
3	DOI	27	40	3	7	0.36	33%	67%	
4	EIU	36	65	2	9	5.21	45%	88%	
5	IKS	37	45	5	9	0.457	18%	50%	
6	KEI	55	128	6	20	5.1	57%	74%	
7	NRI	60	104	5	20	-0.28	43%	79%	
8	Orbicom	56	139	8	23	83	60%	68%	
9	TAI	32	72	1	18	0.389	56%	100%	
10	UNCTAD	73	165	15	29	0.2969	56%	50%	
11	UNPAN	30	191	2	33	0.596	85%	97%	
12	WBICT	38	144	3	21	7.07	74%	90%	
<b>Reference:</b>									
	HDI	53	177	9	33	0.814	70%	75%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU		0	4	1	8	3		
	NRI			3	3	16			
	Orbicom	1	1						
	UNCTAD	2	8	2					
	UNPAN				8	0			
	<b>Average</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>2</b>	<b>8</b>	<b>3</b>		
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Mexico	35.0	42.2	51.6	63.6	73.6	83.0		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



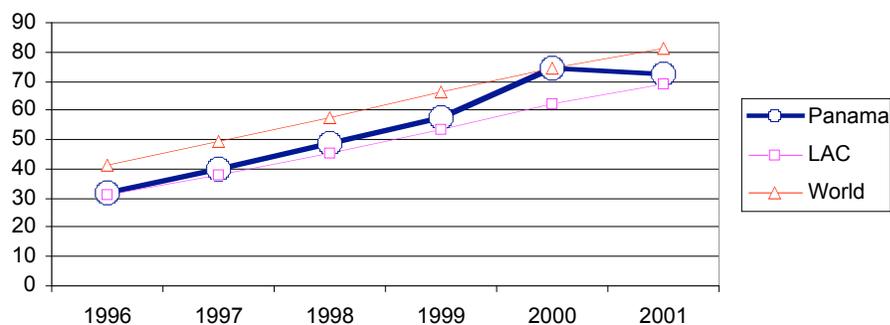
## 9.2.23 Nicaragua

Number of e-index inclusions:									8
Average world rank:									101
Average LAC rank:									23
Average scores compared to world:									26%
Average scores compared to LAC:									6%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	108	162	22	24	0.238	34%	9%	
2	DAI	135	178	32	33	0.19	23%	3%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	91	128	16	20	2.86	28%	16%	
7	NRI	103	104	20	20	-1.61	1%	0%	
8	Orbicom	93	139	21	23	38.4	33%	9%	
9	TAI	64	72	18	18	0.185	11%	0%	
10	UNCTAD	N/A	165	N/A	29	N/A	N/A	N/A	
11	UNPAN	121	191	32	33	0.322	37%	3%	
12	WBICT	90	144	20	21	4.59	38%	5%	
<b>Reference:</b>									
	HDI	112	177	29	33	0.69	37%	13%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI			_10	_15	_9			
	Orbicom	_2	_1						
	UNCTAD								
	UNPAN				41	_9			
	<b>Average</b>	<b>_2</b>	<b>_1</b>	<b>_10</b>	<b>_28</b>	<b>_9</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Nicaragua	19.7	22.9	25.9	29.5	34.7	38.4		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



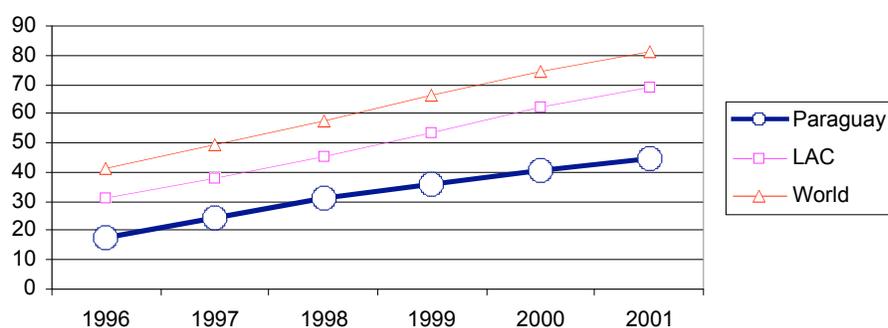
## 9.2.24 Panama

Number of e-index inclusions:									9
Average world rank:									61
Average LAC rank:									10
Average scores compared to world:									51%
Average scores compared to LAC:									59%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	51	162	4	24	0.382	69%	87%	
2	DAI	72	178	16	33	0.47	59%	47%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	32	45	4	9	0.499	30%	63%	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	69	104	9	20	-0.47	34%	58%	
8	Orbicom	62	139	10	23	72.6	56%	59%	
9	TAI	42	72	7	18	0.321	42%	65%	
10	UNCTAD	113	165	25	29	0.2235	32%	14%	
11	UNPAN	54	191	8	33	0.491	72%	78%	
12	WBICT	50	144	9	21	6.41	66%	60%	
<b>Reference:</b>									
	HDI	56	177	10	33	0.804	69%	72%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI			_13	_3	_11			
	Orbicom	_7	_6						
	UNCTAD	_0	_3	_32					
	UNPAN				_8	_8			
	<b>Average</b>	_4	_5	_23	_6	_2			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Panama	32.1	39.7	48.7	57.2	74.6	72.6		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



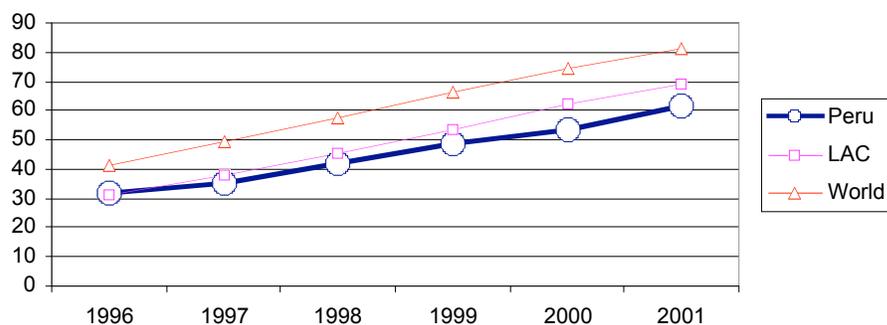
## 9.2.25 Paraguay

Number of e-index inclusions:									9
Average world rank:									87
Average LAC rank:									19
Average scores compared to world:									36%
Average scores compared to LAC:									22%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	76	162	13	24	0.323	53%	48%	
2	DAI	101	178	26	33	0.39	43%	22%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	92	128	17	20	2.86	28%	16%	
7	NRI	98	104	18	20	-1.2	6%	11%	
8	Orbicom	87	139	19	23	45	38%	18%	
9	TAI	52	72	13	18	0.254	28%	29%	
10	UNCTAD	86	165	20	29	0.2755	48%	32%	
11	UNPAN	109	191	28	33	0.341	43%	16%	
12	WBICT	85	144	19	21	4.77	41%	10%	
<b>Reference:</b>									
	HDI	88	177	23	33	0.755	51%	31%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI			_13	_15	_7			
	Orbicom	_6	_0						
	UNCTAD	_1	_1	_1					
	UNPAN				_9	_34			
	<b>Average</b>	<b>_4</b>	<b>_1</b>	<b>_7</b>	<b>_12</b>	<b>_21</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Paraguay	17.7	24.1	31.3	36.2	40.7	45.0		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



## 9.2.26 Peru

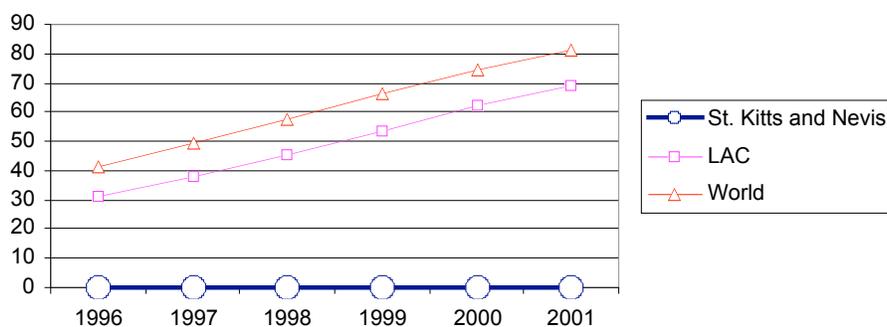
Number of e-index inclusions:									11
Average world rank:									65
Average LAC rank:									12
Average scores compared to world:									42%
Average scores compared to LAC:									38%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	67	162	10	24	0.345	59%	61%	
2	DAI	83	178	22	33	0.44	54%	34%	
3	DOI	37	40	6	7	0.28	8%	0%	
4	EIU	50	65	8	9	4.07	23%	13%	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	71	128	9	20	3.9	45%	58%	
7	NRI	90	104	15	20	-0.91	14%	26%	
8	Orbicom	70	139	14	23	61.8	50%	41%	
9	TAI	48	72	11	18	0.271	34%	41%	
10	UNCTAD	88	165	21	29	0.271	47%	29%	
11	UNPAN	53	191	7	33	0.501	73%	81%	
12	WBICT	61	144	13	21	5.95	58%	40%	
<b>Reference:</b>									
	HDI	79	177	19	33	0.762	56%	44%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
<b>e-Index</b>									
EIU			13	5	2	6	3		
NRI				15	3	20			
Orbicom	3	0							
UNCTAD	2	5	5						
UNPAN					9	0			
<b>Average</b>	<b>3</b>	<b>6</b>	<b>8</b>	<b>1</b>	<b>9</b>	<b>3</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
Peru		31.5	35.4	42.2	49.0	53.2	61.8		
LAC		31.1	37.9	45.3	53.8	62.5	68.9		
World		41.0	49.2	57.2	66.0	74.4	81.0		



## 9.2.27 St. Kitts and Nevis

Number of e-index inclusions:									3
Average world rank:									52
Average LAC rank:									7
Average scores compared to world:									72%
Average scores compared to LAC:									81%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	N/A	162	N/A	24	N/A	N/A	N/A	
2	DAI	39	178	2	33	0.6	79%	97%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	N/A	139	N/A	23	N/A	N/A	N/A	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	44	165	3	29	0.382	74%	93%	
11	UNPAN	72	191	16	33	0.423	63%	53%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	49	177	6	33	0.834	0%	84%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI								
	Orbicom								
	UNCTAD		_0	_13					
	UNPAN					_5			
	<b>Average</b>		_0	_13		_5			

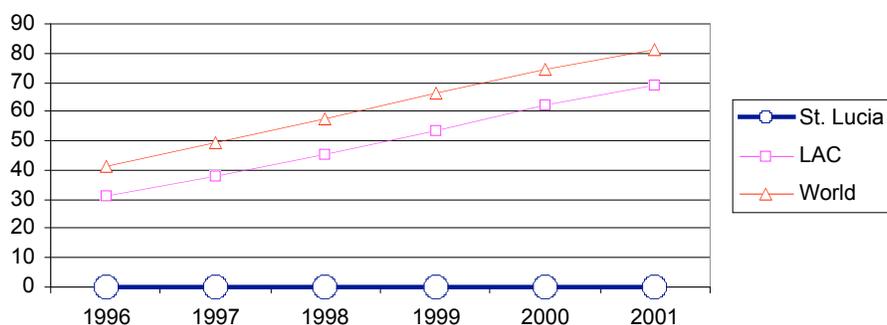
Note: Due to changes in methodology, changes over time are not always comparable.



## 9.2.28 St. Lucia

Number of e-index inclusions:									3
Average world rank:									76
Average LAC rank:									16
Average scores compared to world:									57%
Average scores compared to LAC:									49%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	N/A	162	N/A	24	N/A	N/A	N/A	
2	DAI	59	178	12	33	0.52	67%	66%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	N/A	139	N/A	23	N/A	N/A	N/A	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	105	165	24	29	0.2455	37%	18%	
11	UNPAN	64	191	13	33	0.462	67%	63%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	76	177	18	33	0.772	57%	47%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
<b>e-Index</b>									
EIU									
NRI									
Orbicom									
UNCTAD									
UNPAN						_5			
<b>Average</b>						_5			

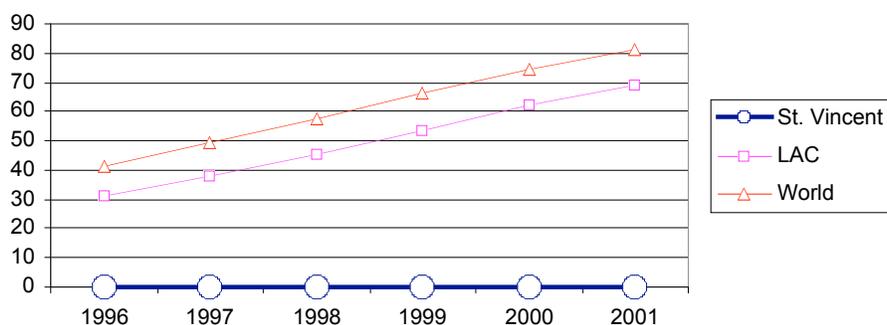
Note: Due to changes in methodology, changes over time are not always comparable.



## 9.2.29 St. Vincent

Number of e-index inclusions:									2
Average world rank:									97
Average LAC rank:									25
Average scores compared to world:									47%
Average scores compared to LAC:									23%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	N/A	162	N/A	24	N/A	N/A	N/A	
2	DAI	75	178	19	33	0.46	57%	41%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	N/A	139	N/A	23	N/A	N/A	N/A	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	N/A	165	N/A	29	N/A	N/A	N/A	
11	UNPAN	119	191	31	33	0.324	38%	6%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	87	177	22	33	0.755	51%	31%	
<b>Change in world rankings:</b>									
	2000	2001	2002	2003	2004	2005			
<b>e-Index</b>									
EIU									
NRI									
Orbicom									
UNCTAD									
UNPAN					_8				
<b>Average</b>					_8				

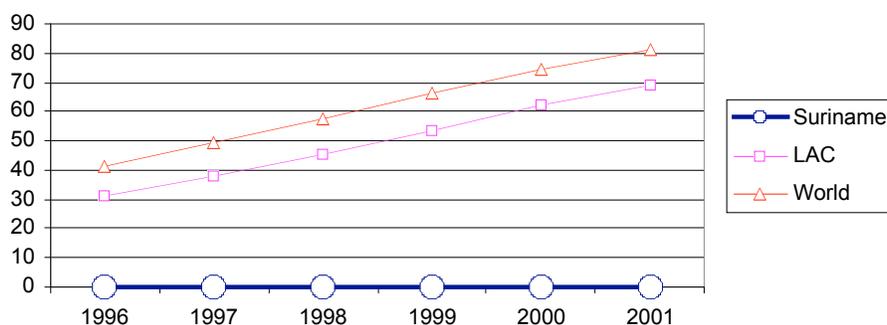
Note: Due to changes in methodology, changes over time are not always comparable.



### 9.2.30 Suriname

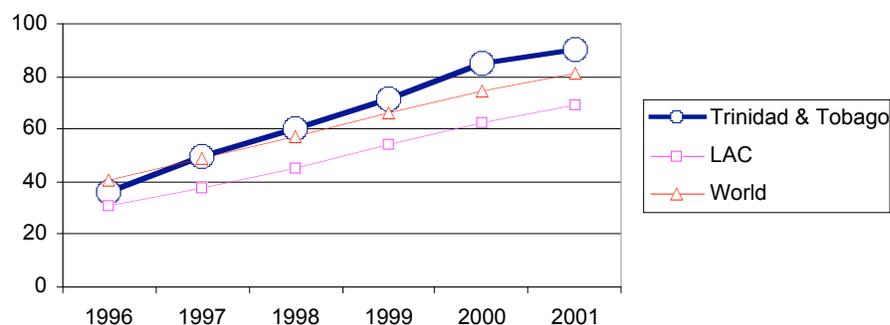
Number of e-index inclusions:									4
Average world rank:									82
Average LAC rank:									17
Average scores compared to world:									54%
Average scores compared to LAC:									43%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	101	162	20	24	0.264	38%	17%	
2	DAI	77	178	20	33	0.46	57%	41%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A	
7	NRI	N/A	104	N/A	20	N/A	N/A	N/A	
8	Orbicom	N/A	139	N/A	23	N/A	N/A	N/A	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	43	165	2	29	0.3864	74%	96%	
11	UNPAN	105	191	27	33	0.347	45%	19%	
12	WBICT	N/A	144	N/A	21	N/A	N/A	N/A	
<b>Reference:</b>									
	HDI	86	177	21	33	0.755	51%	31%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI								
	Orbicom								
	UNCTAD	_123	_1	_3					
	UNPAN								
	<b>Average</b>	<b>_123</b>	<b>_1</b>	<b>_3</b>					

Note: Due to changes in methodology, changes over time are not always comparable.



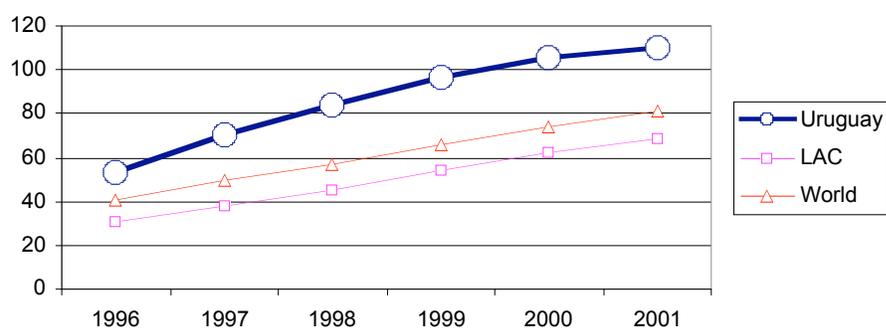
### 9.2.31 Trinidad & Tobago

Number of e-index inclusions:								9
Average world rank:								52
Average LAC rank:								7
Average scores compared to world:								47%
Average scores compared to LAC:								65%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC
1	ArCo	53	162	5	24	0.38	0%	83%
2	DAI	55	178	9	33	0.53	68%	72%
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A
5	IKS	44	45	9	9	0.368	2%	0%
6	KEI	N/A	128	N/A	20	N/A	N/A	N/A
7	NRI	59	104	4	20	-0.28	43%	79%
8	Orbicom	50	139	6	23	90.6	64%	77%
9	TAI	41	72	6	18	0.328	44%	71%
10	UNCTAD	49	165	5	29	0.3577	71%	86%
11	UNPAN	61	191	11	33	0.467	68%	69%
12	WBICT	53	144	11	21	6.35	64%	50%
<b>Reference:</b>								
	HDI	57	177	11	33	0.801	68%	69%
<b>Change in world rankings:</b>								
		2000	2001	2002	2003	2004	2005	
	<b>e-Index</b>							
	EIU							
	NRI			_12	_6	_7		
	Orbicom	_2	_3					
	UNCTAD	_3	_2	_4				
	UNPAN				_8	_4		
	<b>Average</b>	<b>_3</b>	<b>_3</b>	<b>_4</b>	<b>_7</b>	<b>_2</b>		
Note: Due to changes in methodology, changes over time are not always comparable.								
<b>Orbicom Index:</b>								
		1996	1997	1998	1999	2000	2001	
	Trinidad & Tobago	36.2	49.5	59.8	71.7	84.7	90.6	
	LAC	31.1	37.9	45.3	53.8	62.5	68.9	
	World	41.0	49.2	57.2	66.0	74.4	81.0	



## 9.2.32 Uruguay

Number of e-index inclusions:									10
Average world rank:									45
Average LAC rank:									5
Average scores compared to world:									62%
Average scores compared to LAC:									81%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	43	162	3	24	0.417	74%	91%	
2	DAI	51	178	6	33	0.54	71%	81%	
3	DOI	N/A	40	N/A	7	N/A	N/A	N/A	
4	EIU	N/A	65	N/A	9	N/A	N/A	N/A	
5	IKS	31	45	3	9	0.5	32%	75%	
6	KEI	41	128	3	20	6.11	69%	89%	
7	NRI	64	104	7	20	-0.39	39%	68%	
8	Orbicom	40	139	2	23	109.9	72%	95%	
9	TAI	38	72	5	18	0.343	48%	76%	
10	UNCTAD	61	165	10	29	0.3134	63%	68%	
11	UNPAN	40	191	5	33	0.548	79%	88%	
12	WBICT	43	144	5	21	6.76	71%	80%	
<b>Reference:</b>									
	HDI	46	177	4	33	0.84	74%	91%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU								
	NRI			18	1	10			
	Orbicom	0	5						
	UNCTAD	7	16	11					
	UNPAN				13	7			
	<b>Average</b>	<b>4</b>	<b>11</b>	<b>4</b>	<b>6</b>	<b>2</b>			
Note: Due to changes in methodology, changes over time are not always comparable.									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Uruguay	53.1	70.2	83.7	96.8	105.5	109.9		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		



### 9.2.33 Bolivarian Republic of Venezuela

Number of e-index inclusions:									10
Average world rank:									60
Average LAC rank:									9
Average scores compared to world:									49%
Average scores compared to LAC:									57%
	e-Index	World rank	Countries included	LAC rank	Countries included	Score	% rank World	% rank LAC	
1	ArCo	59	162	6	24	0.369	64%	78%	
2	DAI	73	178	17	33	0.47	59%	47%	
3	DOI	34	40	4	7	0.3	15%	50%	
4	EIU	45	65	6	9	4.53	31%	38%	
5	IKS	N/A	45	N/A	9	N/A	N/A	N/A	
6	KEI	74	128	10	20	3.82	43%	53%	
7	NRI	84	104	13	20	-0.72	19%	37%	
8	Orbicom	63	139	11	23	72.3	55%	55%	
9	TAI	N/A	72	N/A	18	N/A	N/A	N/A	
10	UNCTAD	63	165	11	29	0.3053	62%	64%	
11	UNPAN	56	191	9	33	0.49	71%	75%	
12	WBICT	47	144	7	21	6.53	68%	70%	
<b>Reference:</b>									
	HDI	75	177	17	33	0.772	57%	47%	
<b>Change in world rankings:</b>									
		2000	2001	2002	2003	2004	2005		
	<b>e-Index</b>								
	EIU		5	10	1	6	1		
	NRI			16	6	12			
	Orbicom	3	0						
	UNCTAD	6	1	7					
	UNPAN				55	37			
	<b>Average</b>	5	1	0	21	6	1		
<i>Note: Due to changes in methodology, changes over time are not always comparable.</i>									
<b>Orbicom Index:</b>									
		1996	1997	1998	1999	2000	2001		
	Venezuela	36.7	42.8	51.9	61.9	65.8	72.3		
	LAC	31.1	37.9	45.3	53.8	62.5	68.9		
	World	41.0	49.2	57.2	66.0	74.4	81.0		

