# Measuring E-Democracy Opportunities:
# A Global Perspective

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**Abstract.** In recent years, several case studies have emerged illustrating the
impact of Information and Communication Technologies (ICTs) and in particu-
lar the expansion of the Internet and mobile cell phones on socio-political ac-
tivities. This paper investigates 146 economies and the relationship between the
global expansion of ICTs and the current degree of democracy within each na-
tion by constructing an index of e-democracy opportunities among them, for the
period of 1995 to 2005. The key findings in this study are (a) a notable progress
in e-democracy opportunity on the global stage; (b) the fact that in some coun-
tries there is a rapid ICT expansion and global success in e-democracy, and yet,
there is a growing digital divide between the most and least developed e-
democratic nations.

**Keywords:** Civil Liberties, Digital Divide, E-democracy, Economic Freedom,
Filtering, Freedom of Press, ICT, Ideology, Political Rights, Virtual Feudalism.

## 1 Introduction

Many scholars have argued that information and communication technologies (ICTs)
have the potential to create a new space for engagement, deliberation and collabora-
tion in the political process that can make democratic processes more inclusive and
transparent [1, 2, 3, 4]. In this regard, ICTs are seen as providing citizens with infor-
mation regarding relevant local and national government issues, facilitating dialogue
between constituents and government officials, and promoting more accountability
and transparency in political processes [5].

Some scholars point out that the Internet and mobile SMS have the potential for not
only strengthening and transforming the existing patterns of political participation [6] but
also political mobilization [7] and collective actions [8]. Well cited examples of such mo-
bilizations are rallies organized through the Internet against World Trade Organization in
Seattle (1999), the IMF and World Bank meetings in Prague (2000), the G8 summit in
Geneva (2001), [7] as well as rallies organized by feminist bloggers, Iranian women
rights' activists demanding for an end to discriminatory laws against women (2005,2006)
[9] and rallies in Egypt over soaring food and oil prices and a growing gap between the
affluent and the impoverished, organized by Facebook users (2008) [10]. These are just a
few examples of the emancipating power of the Net and its increased role as a platform to
enable public engagement in various socio-political matters.

This study uses archival data from 146 countries in different stages of ICT expansion to investigate (1) the impact of ICTs on the process of democratic participation and (2) the existence of a digital divide on both regional and global scales.

## 2  E-Democracy Framework

The role of the Internet in the 2008 US presidential election displayed evidence of the power of the internet for mobilizing and engaging citizen participation in a democratic process. The Internet was able to attract first time voters and the younger generation as well as appeal to groups which might otherwise be uninvolved in conventional forms of activism and civic engagement, and those who felt alienated [6] from mainstream society. *The Pew Research Center for the People & the Press* [11] states close to a quarter of Americans (24%) reported they regularly learn something about the presidential campaign from the Internet, almost double the percentage in the 2004 campaign (13%) and more than triple the percentage in the 2000 campaign (7%). Almost 42% of young American adults (age 18-29) reported that the Internet was their main source of campaign information in addition to 16% of Americans who have sent or received emails with friends and family regarding candidates and the campaign. According to Pew's report 14% of US citizens have received email messages from political groups or organizations about the campaign; and about 8% reported that they visited US political candidates' website [11].

Globally, the number of Internet users exceeds 1.46 billion [12]. Mobile cell phone subscribers hit another record high value of 4 billion users at the end of 2008 [13]. The massive usage of SMS in Spain's 2004 general election [7], Iran's presidential election in 2005 in support for other candidates or boycotting the election [14], in Egypt's 2005 presidential election [15], in India's 2005 general election [16], and most recently in the 2008 US election [17], SMS played an important role for mobilizing people and/or monitoring the election outcomes.

Clift [18] argues that democratic processes enabled by ICTs  provides greater and more active citizen participation  as well as a different role for government and more participatory forms of direct citizen involvement in efforts to address public challenges.  Dahlgren [19] argues that the Internet extends and pluralizes the public sphere in a number different ways including structures, representation, and interaction. Scholarly research on ICT in developing countries has identified that ICT and in particular, the Internet, positively correlates with the proliferation of democracy [20]. Other scholars consider the global expansion of ICT as a means of imposing Western culture onto other cultures through hegemonic power and dominance [21].

### 2.1  Components of E-Democracy

Clift [18] defines e-democracy as the use of ICTs in strategies by "democratic sectors" within the political processes of local communities, states/regions, nations and on the global stage.  According to Clift, the "democratic sectors" include governments, elected officials, media (including online portals), political parties and interest groups, civil society organizations, international governmental organizations and citizens.

This paper adapts Clift's conceptual model of e-democracy as depicted in Fig1. There are six components that construct the e-democracy model. At the crux of this model are e-citizens, the individuals who use ICTs to participate in democratization processes. This participation can take many different forms. For example, e-citizens can use ICTs to interact with social groups, government agencies, media and private sectors as well as allowing for the use, creation and dissemination of information, demanding for a more open and democratic society.

Similarly, Morrisett [22] points out that ICTs can be used to enhance the democratic process in the form of an e-government, in which citizens are able to effectively impact the decision-making process in a timely manner within and between institutionally, politically or geographically-distinct networked communities. As such, it is evident that ICT expansion facilitates the growth and development of new communities by coordinating individuals into groups that can express protestation and grief over socio-political oppression. Chadwick [23] argues that ICTs make it possible for linking e-democracy to civil society with e-government at the local and national levels. The main objective of civil societies, such as NGOs, women's groups, trade unions, human rights groups and independent media groups is to use ICTs in the pursuit of "good governance" [24] and democratic development. In addition, political groups are able to use ICTs to promote their political agendas, run online advocacy and political campaigns [18].
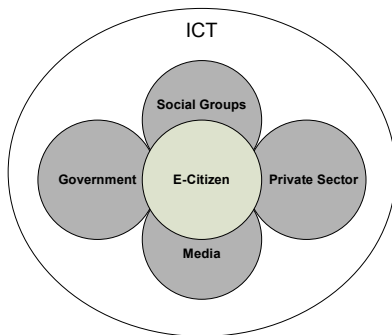


**Fig. 1.** E-democracy Conceptual Model adapted from Clift(2003)

Another important component of e-democracy is media. Access to information is essential to the health of democracy for a number of reasons, including: a) its informative function and b) its monitoring function. In some societies, an antagonistic relationship between media and government represents a vital and healthy element of a fully functioning democracy [25]. The upsurge of websites, weblogs, e-mails, and SMS has also improved communication and interaction among people across the globe and has assisted in opening up new possibilities for political participation [26, 27].

Finally, the private sector is not only representing commercially-driven connectivity, software, and technology [18]; it is also the main ICT provider and developer. The growth and expansion of e-commerce and online transactions have enabled ICT to become a core component of economic development.

# 3   Measuring E-Democracy Opportunities

This section investigates the impact of ICTs on the model of e-democracy as illustrated in Fig 1.  Data collected in this section is related to the components of our e-democracy model and can be grouped into two main categories a) variables that are directly associated with institutional structures [19] namely Political Rights (PR), Civil Liberties (CL) and Economic Freedom (Eco) and b) variables that constitute the ability of citizens to actually use ICT tools and services for disseminating opinion, thoughts, ideas and participate in communication discourses. These variables are ICT, Education (Edu) and Freedom of Press (Media). The freedom of press is also in a casual relationship with the first group of variables, namely institutional structures (democracy) which will be discussed later.

*Institutional Democracy:* To measure the existence level of institutional democracy within each 146 economies in which the governments and legislative representative are elected, the index of Political Rights (PR) introduced by Freedom House was considered. This index is composed of three main components: the electoral process, political participation, and the government. The index of Civil Liberties (CL), introduced by Freedom House, on the other hand consists of four main components: freedom of expression, associational and organizational rights, rule of law, and personal autonomy. Finally, the economic freedom index introduced by Heritage Foundation was used as a benchmark from which to determine a country's prospects for economic success. The index of economic freedom (Eco) is composed of 10 different indices [28].  In the context of this research this index was used to measure the private sector's involvement in socio-economic development as well as a metric to measure the state control and ownership of enterprises, its consumption of economic resources and intervention in economic as a main player [28].

*ICTs and Freedom of expression:* In our e-democracy model, the e-citizen and other actors are connected through the use of ICTs.  The index of ICT is used to measure the level of ICT infrastructure and usage in each country.  This index is composed of eight indices namely the number of Internet users, main telephone lines, cell phone subscribers and Personal Computers per 100 inhabitants, Cable TV subscriptions (per 100 households), the number of Internet hosts (per 1,000 inhabitants), Secure Servers/Internet hosts and the International Internet bandwidth (Kbs per inhabitant) [29]. The use of ICT tools and services requires users to have access as well as possess the capability to learn and acquire a certain level of knowledge in order to use them effectively.  People who possess this knowledge (e-citizens) are those who will have the ability to create and disseminate information, and demand a more open and democratic society.  The education variable (Edu) is composed of two main indices, namely adult literacy rates and gross enrollment rates. Education data was collected mainly from UNDP, UNESCO and ITU. And finally, to measure the variable, *Media*, as depicted in Fig 1, the freedom of press indices published by Freedom House and Reporters Without Borders (RWB) are used.  These institutes provide valuable information about the level of press freedom experienced by the populace of each country. The focus of these indices is the study of the degree of intervention in media (print and online) on the part of governments and authorities.

### 3.1   The Index of E-Democracy Opportunities

Before constructing the index of e-democracy opportunities, data from the above sources were converted and rescaled so that 100 represents the highest level of freedom (PR, CL, Eco and Media), Education and ICTs.  A series of statistical tests including the test for multicollinearity and heteroskedasticity issues [14] were applied on panel data. To deal with multicollinearity issue the Variance Inflation Factor (VIF) was estimated. The study's test shows a VIF value of 2.32 which is a value far from VIF's critical values of 10 (moderate multicollinearity) and/or 30 (sever multicollinearity) [14]. A two-stage least-squares regression with endogenous variables Civil Liberties (CL) and ICT was applied on panel data.

Following successful test results, we arrive at a higher level of aggregation namely to construct the index of e-democracy opportunity. The Index of Institutional Democracy (IID) was obtained by aggregating variables PR, CL and Eco as:

$$\text{IID} = (\prod_{i=1}^{k} I_{k,t}^{i,j(c)})^{1/k} \tag{1}$$

Where $I$ represents the value of each index $i$ for the period of $t$ and $k$ denotes the number of variables (for Eco k=10, for PR k=3, for CL k=4). IID was used as a barometer to help indexing each country's progress in e-democracy over the period of 1995 to 2005 as well as comparing countries to one another. Similarly the index of ICT Opportunity Index (IOI) was obtained by aggregating variables ICT, Edu and Media as:

$$IOI = (\prod_{i=1}^{n} I_{n,t}^{i,j(c)})^{1/n} \tag{2}$$

Where $n$ denotes the number of indices within each variable (for ICT n=8, for Edu and Media n=2).  The output of regression is an index which we call it the Index of E-democracy Opportunities (IEO).

## 4   Data Analysis

To analyze e-democracy performance on a global stage, countries are divided into six different categories as follows:

1. Front-Runners: countries with an e-democracy value above 80% have very high levels of ICT development where citizens enjoy an elevated level of social, economic and political freedom (PR, CL and Eco);
2. High Performance: countries with an e-democracy value between 70% and 79% have high levels of ICT development where citizens enjoy an admirable degree of social, economic and political freedom (PR, CL and Eco);
3. Upper Medium: countries with an e-democracy value between 60% and 69% in both ICT development index and social, economic and political freedom are considered above average on the world index (54.3%);

4. Medium: countries with approximately 54% in their ICT development and social, economic and political performance are at the average level of the world's e-democracy (54.3%);
5. Transitional: countries with which their e-democracy index is below the world average with a potential to move on to a higher e-democracy category but either exercise poorer performance in their socio-political and economic freedom and/or have a lower e-democracy index in terms of both ICT development and citizens participation in e-democracy process; and
6. Low Performers: countries with an e-democracy opportunity index below 25%; they have a poor performance record with regards to both ICT development and social-political and economic development. Within this category, however, there are countries that perform much better in their economic and ICT development which result in a higher ranking, as well as countries that do not show any improvement in their e-democracy performance and/or changes in their e-democracy opportunity indexes are very small, despite citizen involvement in the e-democracy process.

## 5   Findings and Discussion

The analysis of countries' e-democracy performance shows interesting information.

At a glance, as indicated in Fig 2, we can observe a notable progress in terms of e-democracy opportunity index during the period of 1995-2005. For example, while the number of countries located in categories such as medium, upper, high and front-runners account for 38% of the total countries in the year 1995, this value has increased to 49% in the year 2005. In other words, 11% of countries have successfully advanced from low performers and/or transitional categories to a higher category. In addition, some countries located within the "safe zone" (medium and up) were able to position themselves in a higher category during this period. As depicted in Fig 2, the most successful e-democracy category is related to the front-runners category.
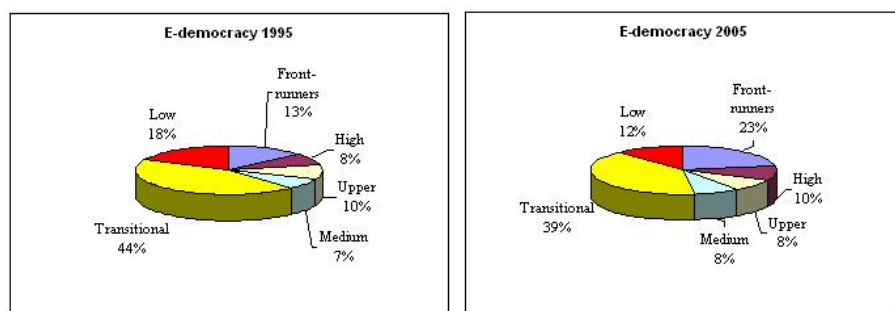


**Fig. 2.** Six categories of e-democracy performance

Among the 14 new nations that joined this category in year 2005, ten nations were from Europe; in particular, those countries representing the former Eastern block such as Estonia, Lithuania, Slovenia, Hungary and Slovak republic. Among the newly

joined nations, Estonia had the highest rank (14th place). The other notable e-democracy progression is related to Lithuania. This country had a transitional progress from upper medium in 1995 to the front-runners category in 2005. Another successful example within the front-runners category is Chile. Like Lithuania, Chile, within the same 11-year time period, exercised a two-level jump from the upper medium level to the front-runners level. In addition, Chile is the only nation from Latin America that is placed in this category.

In the African region, countries such as Mauritius and South Africa had the best e-democracy progress (High performers) followed by Botswana, Namibia and Ghana (Upper Medium). The citizens in these countries not only enjoyed the highest level of socio-political and economic freedom but also had the greatest access to ICTs in the region.

*Digital Divide:* A further analysis of e-democracy data shows that despite the global progress towards e-democracy opportunities, we can observe a growing digital gap in some parts of the world. A larger digital gap can be found in Americas, the digital divide between the high performers and the low performers in the region has increased from 5.5 fold in 1995 to 5.7 fold in 2005. In Europe, the digital divide between the leading European countries and countries located within the low performers and transitional categories have increased over an 11-year period from 3.1 fold in 1995 to 3.5 fold in 2005. In another category, among the members of the Organization of the Islamic Conference[1] (OIC), Mali, Albania and Turkey had the best e-democracy performance over the same 11-year period. The countries' e-democracy opportunity index increased from 47.5%, 38.3% and 33.9% to 59.3%, 53.7% and 54.4% respectively. Turkey's e-democracy value is equal to the world's e-democracy average (54.3%). This locates Turkey at 69th place in the 2005 ranking list. While Mali's e-democracy opportunity index is above the world average (59.4%), this value for Albania is slightly below the world's e-democracy average of 54.3%. Although the e-democracy opportunity index among OIC nations has increased from 28.3% to 35%, this rate is far from the world's average value.

Africa and Asia show the greatest regional digital divide reduction. The digital gap between the most developed e-democracy nations and the least developed e-democracies in Africa has decreased 3.6 fold to 3.1; this value in Asia shows a reduction from 4.8 fold to 4.2 fold during the period of 1995 to 2005. This reduction is not only due to the expansion of ICTs but also the overall progress that the regions made during the last decade in the area of socio-political and economic development.

*Internet content filtering:* Filtering and state censorship applied by some governments across the globe is used to suppress freedom of communication. Studies on Internet content filtering show systematic Internet filtering typically targets political, religious and ethnic minority sites as well as those that promote gender equality and women's rights [30, 31]. In the context of ICT, it applies not only to the Internet but also to satellites, cable TVs and SMS messages, and is commonly practiced in countries in the transitional and low performers' categories. For example, the OpenNet Initiative's (ONI) report [30] indicates that the Iranian government controls the information environment over the Internet in areas such as websites, blogs,

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[1] OIC is a solidarity organization of 57 Islamic states (www.oic-oci.org).

e-mails, and online discussion forums.  The Saudi Arabian government has also created one of the world's largest Internet filtering systems [39] and publicly announced that they have blocked access to nearly 400,000 web pages to protect Saudi citizens from offensive content that violates the principles of Islam. According to the RWB report [31], China has developed the most advanced technology for interception of e-mail and Internet censorship [30, 31]. Some of the countries located in the low performers' category remained in the same position despite the global success in e-democracy opportunity index during the last decade. A number of the governments in this category view ICT development with the lens of ideology and therefore consider ICT development and access to ICT tools and services by citizens, a risk to their national security. Mowshowitz's [32] uses the term of "virtual feudalism" to refer to the reluctance of authoritarian regimes to have open use and development of ICTs and in particular the activities on the Internet.  In the context of this research, virtual feudalism is defined as the hegemonic control [33, 34] of ICT developments and strategies by governments.  This control is applied to mass communication channels such as the Internet and SMS messaging. It controls the monopoly of resources, imposing restrictions on the use of high speed Internet access to prevent Internet users from accessing sites and services that require this type of connection, or banning SMS messaging to prevent sending out political messages [35] or banning the use of mobile phone cameras [14].Virtual feudalism imposes the hegemonic control of ICTs in the form of economic, political, cultural, physical and religious pressure on social groups and individuals [36].

## 6   Conclusions

ICT media and services such as the Internet enable new dimensions of expression and democratic participation [7, 37, 38, 39].  The proliferation of Websites, Weblogs, e-mails, and SMS has improved communication and interaction among people across the globe and has facilitated and assisted in opening up new possibilities for political participation [26, 27, 40]. It is not surprising to see that the world's highly developed economies are among the top list of e-democracy opportunities (front-runners).  Citizens in these countries experience the highest level of freedom in accessing ICTs and participate in e-democracy processes. The countries' ICT infrastructure is highly developed and all actors within the e-democracy framework are actively involved on the Net. According to e-democracy opportunities index on a yearly basis 1% of all the countries in this research improved their positions from a lower category to a higher category.

In juxtaposition, there exists the digital divide between the front-runners and low performers which increased at both global and regional scales during the last decade. Internet filtering and state censorship on ICT content influence negatively on citizens' participation in e-democracy processes thus promote an increase in the digital divide.

Despite ICT development, the processes of filtering impede the e-democracy processes. That is, the role of ICT infrastructure is to provide access; however, its capability depends on its thoroughfare of information starting with the policy makers, cascading to the users.  The watershed effects of the government policy, political parties, social groups, media, private sector, and e-citizen in some societies have developed tributaries while in other societies, government policies operate as main barriers to development.

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