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**The Impact of ICT Expansion on Promoting Democracy and Economic
Freedom in the Middle East (1995-2005)**

A

Doctoral Thesis

TO

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Presented

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Peer Reviewed Publications

Please note that the following papers were published in the process of conducting this PhD thesis. The list of papers is used for the purpose of reference to the past research outputs - they do not constitute this PhD thesis as a collection of published papers.

Shirazi, F., 'The Impact of Foreign Direct Investment And Trade Openness on ICT Expansion: A Comparative Analysis of Asia Pacific and Middle Eastern Countries', Proceedings of the Pacific Asia Conference on Information Systems PACIS-2008, China.

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Shirazi, F., 'Measuring E-democracy Opportunity, A Global Perspective', Proceedings of the 13th International Conference on Human-Computer (HCI), San Diego, California, July 19-24, 2009.

Shirazi, F. & Greenway, K. 'Examining Validity Claims for Internet Filtering in Islamic Middle Eastern Countries: A Critical Discourse Analysis', Proceedings of the 15th Americas Conference on Information Systems (AMCIS), San Francisco, California, August 6 - 9, 2009.

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Shirazi, F., Gholami, R. & Higon, D. A. 'Do Foreign Direct Investment (FDI) and Trade Openness explain the disparity in ICT diffusion between Asia-Pacific and the Islamic Middle Eastern countries', Journal of Global Information Management (JGIM), 2010, 18(3), 59-81.

Abstract

It has been argued that the expansion of information and communication technology (ICT) has influenced the expansion of democratic ideals, improved the efficiency of governments, boosted economic development, advanced education and healthcare services in various regions of the world. However, until now few studies have interrogated the impact of ICT expansion in the Islamic Middle Eastern countries. This dissertation empirically investigates the impact of ICT expansion on three dimensions of democratic freedoms in eleven Islamic Middle Eastern countries. Specifically, it investigates the impact of ICT expansion on: (a) political rights and civil liberties; (b) economic freedom; (c) freedom of communication and press freedoms. This thesis comprises five distinct empirical projects: 1) the development of a new index called the Index of E-democracy Opportunities, to measure a country's progress in terms of democratic freedom and to provide a relative ranking of countries on a global scale; 2) the development and testing of a theoretical model for analyzing the impact of ICT expansion on social and political freedoms using three stage least squares regression on archival data; 3) a qualitative investigation for interrogating the impact of ICT content filtering and state censorship using critical discourse analysis; 4) a qualitative investigation of the role of blogging in public discourse using hermeneutic content analysis; and 5) the development and testing of a theoretical model for analyzing the impact of ICTs on economic freedom using two stage least squares regression with instrumental variables on archival data. The PhD study has found that ICT expansion has positively influenced democratic freedom, information sharing and dissemination and provides a public sphere for discourse among citizens of the eleven Middle Eastern countries. This thesis also found that ICT expansion positively influences economic freedom in the eleven Middle Eastern countries. However, differences between countries such as the educational attainment of their citizens and institutional resistance to ICT utilization both enhanced and restricted the relationship between ICT and economic freedom in the region.

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Acronyms

2SLS	Two-Stage Least Squares
3SLS	Three-Stage Least Squares
AIC	Akaike Information Criterion
AUS	Australia
AUT	Austria
BET	Belgium
CAN	Canada
CDA	Critical Discourse Analysis
CDG	Center for Democracy and Governance
CHE	Switzerland
CHL	Chile
CL	Civil Liberties
CST	Critical Social Theory
CYP	Cyprus
DEU	Germany
DNK	Denmark
EF	Economic Freedom
ESP	Spain
FDI	Foreign Direct Investment
FIN	Finland
FRA	France
GBR	United Kingdom
GDP	Gross Domestic Product
GPT	General Purpose Technology
HDI	Human Development Index
HF	Heritage Foundation
ICT	Information and Communication Technology
IEO	Index of E-democracy Opportunities
IRL	Ireland
ISL	Iceland
ITA	Italy
ITU	International Telecommunication Union
LUX	Luxembourg
ME	Middle East
MENA	Middle East & North Africa
MLT	Malta
NLD	Netherlands
NOR	Norway
NZL	New Zealand
OECD	Organization for Economic Co-operation and Development
OIC	Organization of the Islamic Conference
OLS	Ordinary Least Squares
ONI	OpenNet Initiative
PR	Political Rights

PRT	Portugal
RWB	Reporters Without Borders
SIC	Schwarz Information criterion
SVN	Slovenia
SWE	Sweden
TCA	Theory of Communicative Action
UAE	United Arab Emirates
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
URL	Uniform Resource Locator
VIF	Variance Inflation Factor
VSAT	Very Small Aperture Terminal
WSIS	World Summit on the Information Society
WSJ	Wall Street Journal

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Chapter 1: Introduction and Motivation

Former United Nations' Secretary General Kofi Annan once observed,

“Information and Communications Technology (ICT) have considerable potential to promote development and economic growth. It can foster innovation and improve productivity. It can reduce transaction costs and make available, in mere seconds, the rich store of global knowledge. In the hands of developing countries, and especially small and medium sized enterprises, the use of ICTs can bring impressive gains in employment, gender equality, and standards of living" (UNCTAD, 2004:2).

Kofi Annan's articulation of the influence and impact of ICT¹ on socio-economic development echoed the position of the World Summit on the Information Society (WSIS, 2003). WSIS reaffirmed that a fundamental goal of ICT is to promote democratic and social change in certain regions of the world through aggressive expansion of the ICT infrastructure. In its 2003 declaration of principles, WSIS stated that everyone can benefit from the opportunities provided by ICTs. These opportunities include but not limited to creating, accessing, utilizing and sharing information and knowledge with others as principles of achieving the full potentials in promoting sustainable development and improving the quality of life, as outlined in the United Nation's *Universal Declaration of Human Rights* (WSIS, 2003).

Furthermore, they emphasized the importance of individual access to ICTs in order for civil society to flourish in an unconstrained atmosphere. Unimpeded access to ICTs was expressed as fundamental to the ability to exercise freedom of expression regardless of other important considerations including security (Gross, 2003). Other scholars argue that the digital and economic divide between rich and poor, and developed and developing countries will widen (Varakin, 2003) should small elite groups be permitted to control power, resources, and knowledge (Alzouma, 2005). There are four broad approaches to the ICT and development literature that are germane to this dissertation.

One stream of research in the field of ICT development supports the WSIS view of ICTs as *enabling platforms for institutional development*. Some have argued that ICT provides an environment for political freedom (Norris, 2006; Nwagwu, 2006) freedom of

¹ For ease of understanding, I use the acronym ICT to denote both singular (information and communication technology) and plural (information and communication technologies).

information (Loader, 1998) social inclusion (Foley, et. al., 2006), virtual rights (Fitzpartick, 2000) and digital rights (Jupp and Six, 2001). ICTs can involve people in new forms of governance such as e-government (Lenihan, 2002b; Clift, 2004; Mercer, 2004), boost public participation in the form of e-democracy (Brücher and Baumberger, 2003) and foster engagement of associations and communities (Wellman, 1999; Burrows et. al., 2000; Lin, 2001; Nwagwu, 2006) by utilizing civil societies, non-governmental organizations (NGOs), human rights activists' groups and marginalized groups (Castells, 1996; Escobar, 1999; Ferdinand, 2000; Meier, 2000; Noveck, 2000; Ott and Rosser, 2000; Jones, 2001; Quan-Haase et. al., 2002). ICTs provide the key mechanisms for creating opportunities to access information and knowledge and disseminate it within the public sphere (Norris, 2006). There is also a belief that these technologies are creating a new type of political actor called the "digital citizen" (Katz, 1997) or "e-citizen" (Clift, 2003; Lenihan, 2002a, 2002b; United Nations, 2008).

Other scholars view ICT development as a form of *emancipation and empowerment of individuals with the aim of improving society* (Ngwenyama, 1991; Hirschheim and Klein, 1994; Ngwenyama and Lee 1997; Stahl, 2008). In this regard, ICTs are seen as providing citizens with information regarding relevant local and national government issues, facilitating dialogue between constituents and government officials, and promoting more accountability and transparency in political processes (Cigler and Burdett, 1998) and/or strengthening and transforming the existing patterns of political participation (Norris, 1999), political mobilization (Suarez, 2005) and collective actions (Osborn, 2008). In this context, ICT is viewed as a medium by which relationships can be transformed and free and open interactions can lead to the democratization of societies.

A third approach adopts a social organization perspective. These scholars adopt the view that ICTs are catalysts for civil democratic processes of citizen consultation and participation such as voting, and other decision-making (Castells, 1997; Wheeler, 1998; Escobar, 1999; Coleman, 1999; Noveck, 2000). In contrast, the economic perspective argues that ICTs ought to be viewed as both catalyst and medium for integrating markets and supporting worldwide electronic trade and business activities (Zembylas and Vrasidas, 2005; Pohjola, 2001, Norris, 2000; Keohane and Nye, 2000).

1.1 Focus of This Research

During the last decade, a profound expansion of ICTs in the Middle East (ME) has changed the nature of communication among people in the region. In January 1994, when the number of Internet users around the world already exceeded 10 million (ITU, 2007), Middle Eastern countries had no Internet connectivity. However, by January 1995, Kuwait and Iran had established the first Internet connectivity in the Persian Gulf region. From 2000 to 2005, countries in the Middle East saw the number of Internet users grow by 2.9 fold; in the same period in Iran, for example, the number of Internet users grew by 18 fold (World Bank, 2005; ITU, 2007). Since the first Iranian blog appeared in 2001, more than 700,000 blogs have been created in the country. According to the 2003 NITL Blog Census report, Farsi is the fourth most common blog language (Greenspan, 2003), and Arabic placed among the top ten languages on the Web (Internet World Stats, 2007). In 2005, the number of Internet users in the Middle East exceeded 19.5 million (ITU, 2007).

ICT connectivity has drastically changed daily life in the Middle East. While the Internet is not yet a mass medium in most countries in the region, it is among young elites (Alterman, 2005). Millions of youth use the Internet to freely express their concerns, and share opinions, reflections, and ruminations normally prohibited from publication in government controlled traditional media. Activists, in the form of non-governmental organizations (NGOs), minority groups, religious groups, political groups/organizations, and independent voices, use the Internet as a campaign platform for a range of agendas and programs.

While a number of scholars have endorsed the view that ICTs such as the Internet can stimulate rapid democratization in regions of the world such as the Middle East, where democracy has not been adopted (Ferdinand, 2000; Meier, 2000), others argue that although the use of ICTs have influenced social movements and have also had an effect on the social life and democratic freedoms in some communities (Cleaver, 1998; Jones, 2001), in some it is unclear as to whether ICTs are having as profound an influence on democratization in the Middle East as was predicted (Alterman, 2000; Kalathil and Boas, 2002).

1.2 Motivation for this Research

It is clear that a networked society (Castells, 2000a, 2000b) is more efficient in facilitating communication among citizens, and with government agents, politicians, political parties, NGOs and other related groups (Kippen and Jenkins, 2003). Some suggest that the substantial and normative power of traditional politics is being supplanted by technocracy (Hacker and van Dijk, 2000). Although there has been an intense interest among international institutions (e.g., ITU, The World Bank, UNCTAD, UNDP, UNESCO) and research communities in regards to ICT and development the International Telecommunication Union (ITU) has pointed out that there is little research measuring the impact of ICT expansion in developing countries (ITU, 2007).

The expansion of ICTs during the last decade coupled with the fact that the Middle East has one of the lowest press freedoms (online and published) (RWB, 2005), and least political rights and civil liberties in the world (Freedom House, 2008), piqued my interest. I wanted to understand the relationship, if any, between the increased availability of ICTs and changes in the socio-political and economic freedoms in the ME region. By reading blogs and participating in dialogues with young people through new communication channels such as e-mail, online chatting, and social networking sites such as Orkut, Facebook, and Twitter, I realized that, on the one hand, ICTs may represent a source for emancipation among the citizens of repressive regimes and, that on the other hand, there was growing and intensifying need for individuals and groups in the region to interact with one another and with the larger world. For example, the termination of all major liberal papers in Iran and the strict governmental control of published and broadcasting media in the region encouraged many people, particularly the younger generation, to use the new media to express their opinions, thoughts and ideas on personal and social levels. These individuals sift through opinions and facts to piece together a semblance of life outside their own world and learn about what they do not know. Through this process, the younger generation becomes actively and openly involved in criticizing the socio-political establishment and expresses their desire for change. I realized that they are willing to risk state sanctions to gain knowledge and inclusion in the global social network, and their journey for personal and cultural change continues in the face of official ignominy.

In addition many NGOs, ethnic and religious minorities, political groups/organizations, women's rights groups, and otherwise silent voices have used the new media to attract more people to their agendas and programs. By participating in this discourse, it became evident to me that an empirical study was needed in order to develop some understanding of the factors that impact citizens' emancipation and participation in democratic discourse through ICT expansion. Further, I realized that few studies in this research area analyze how ICT expansion correlates with measures of democracy and economic freedom. This motivated me to fill this gap in literature by analyzing the extent to which ICT expansion has influenced citizens' participation in the context of socio-political and economic freedom in the Middle East.

1.3 Research Questions and Theoretical Approach

This study critically investigates the pits and falls of ICT expansion in the eleven countries of the Islamic Middle Eastern: Bahrain, Iran, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, the United Arab Emirates (UAE) and Yemen. It empirically interrogates the impact of the expansion of ICTs on political and economic freedoms at the global, regional and national levels by addressing five principal issues using both qualitative and quantitative research methods:

First, the study uses the theory of "e-democracy" (Clift, 2003), also known as "digital democracy" (Hale et al., 1999; Hacker and van Dijk, 2000; Solop, 2000) "virtual democracy" (Hacker and van Dijk, 2000), "wired democracy" (Agre, 2002) or "cyber democracy" (Jenkins and Thorburn, 2003), to empirically measure "e-democracy" opportunities on a global scale with an emphasis on a comparative study of the Middle East. Chapter 4 provides key characteristics of regression results and discusses the findings.

Second, this study investigates the impact of ICT expansion on emancipating Middle Eastern citizens in their desire for democracy and freedom of expression. Chapter 5 presents the hypothetical model and regression results as well as a detailed discussion about findings.

Third, this study analyzes the justifications offered by authorities in the Middle East for imposing filtering and sanctions on ICT content. The results of finding and discussion about the validity test are presented in chapter 6.

Fourth, this study investigates the emancipatory role of blogging in the Middle East by introducing a case study of the Iranian blogosphere and its emancipatory role in public political discourse. Chapter 7 discusses the key characteristics of blogging in the region.

Finally, this study researches the impact of ICT expansion on economic freedom in a region that is globally known as a conflict zone and also for its massive export of oil and natural gas.

Table 1.1 below, summarizes the research questions, analytical approach, level of analysis, and reference pages to findings and discussions in this dissertation.

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Table 1.1: Research methods and approaches

Research Topics (Chapters)	Research Methods	Research Questions	Analytical Methods	Findings / discussions on page#
E-democracy (Chapter 4)	Quantitative	<ul style="list-style-type: none"> • What is the impact of ICT expansion on freedom and democracy? • What is the impact of economic freedom on democracy? • What is the impact of education on ICT expansion? • How has systematic filtering affected the expansion of ICTs? 	Hypothesis testing	See page 79
ICT impact on democratic freedoms in the Middle East (Chapter 5)	Quantitative	<ul style="list-style-type: none"> • What does ICT expansion contribute to democratic freedoms in the Middle East? • How ICT determinants correlate with the expansion of ICTs in the Middle East? 	Hypothesis testing	See page 106
Internet Filtering and State Censorship in the Middle East (Chapter 6)	Qualitative	<ul style="list-style-type: none"> • What are the impacts of ICT content filtering and institutional resistance on the expansion of ICTs and democratic freedoms? • What is the role of Ideology in ICT development in the Middle East? 	Critical Discourse Analysis	See page 123
The Emancipatory role of Blogging in the Middle East (Chapter 7)	Qualitative	<ul style="list-style-type: none"> • What is the role of blogging in communication discourse in the Middle East? • To what extent blogging in Iran has contributed to increased political participating? 	Hermeneutic Analysis	See page 150
ICT and Economic Freedom in Islamic Middle Eastern Countries (Chapter 8)	Quantitative	<ul style="list-style-type: none"> • To what extent has ICT expansion in the Middle East contributed to economic freedom? • To what extent differences in educational attainment and institutional resistance to technology have influenced economic freedom in the region? 	Model estimation	See page 176

1.4 Organization of the Thesis

This thesis research comprises five empirical studies on the impact of ICTs on socio-political and economic freedoms in eleven Middle Eastern countries for the period of 1995-2005. The body of this PhD thesis is organized into nine chapters. Chapter 2 sets the context of the research with an extensive review of the general literature on the impact of ICT expansion on socio-political and economic development. Chapter 3 describes the philosophical perspective that informs research, situates it within the Critical Social Theory paradigm, and briefly outlines the multi-method approach of the work. Chapter 4 outlines the e-democracy conceptual framework used in the research and introduces the components of e-democracy adapted from the Clift (2003) model. It also introduces the Index of E-democracy Opportunities (IEO) in order to locate the Middle East position within a global ranking. Chapter 5 reports on the empirical analysis and findings on the impact of ICTs on the promotion of democracy and freedom of expression in eleven Middle Eastern Islamic countries. Chapter 6 reports on the Critical Discourse Analysis on state of filtering censorship in the region. It examines the role of ideology and its relationship to the restrictions on ICT use and their subsequent negative impact on ICT development in the Middle East. Chapter 7 reports on an empirical analysis of the blogosphere in the Middle East and in particular differences between the Arabic and the Iranian blogospheres. The chapter also reviews the formation of online communities as well as the notion of online identity management and the recent responses of the Iranian government to blogging activities in Iran. Chapter 8 reports on the empirical study of the impact of ICT expansion on economic freedom in the Middle East. The chapter also discusses barriers such as institutional resistance towards ICT development and economic freedom in the region. Finally, Chapter 9 discusses the contributions of this thesis, its limitations, and suggestions directions for future research.

Chapter 2: Literature Review

This chapter provides an extensive literature review in regard to the impact of ICT expansion on socio-political and economic development.

2.1 ICTs and Democracy

In recent years, many scholars have argued that ICTs are central to access to information and participation in social and political life (Bennett and Fielding, 1997; Becker, 2001; Harwit and Clark, 2001; Snellen, 2001; Drezner and Farrell, 2004), specifically because these technologies facilitate communication, collaboration, group interaction (Norris, 1999), and the rapid accumulation and dissemination of information. Further, they allow citizens to engage in debates on political matters and become familiar with political opinions and international events that affect their communities (Jankowski and van Selm, 2000; La Porte et al., 2001; Oates, 2003).

The use of ICT for communication and collaboration is viewed as an opportunity for otherwise disenfranchised citizens to participate in political life and to challenge the dominant order. Walsham (1995) points out that while the term “informaté” is used to describe the process, IS yields new information at all levels by providing opportunities for enhanced democracy and the fuller utilization of human potential. Also, it is argued that IS can be used as a means of emancipation and in the practicing democratic discourse. Stahl (2008b) points out that mutual relationship between emancipation and democracy exist, in which the participative aspects of democracy are constitutive of emancipatory development.

Bonchek (1997) points out that the scholarly literature demonstrates a relationship between the flow of political information and political behavior. In particular, information is considered to be an important factor in political participation (Tolbert and Mcneal, 2003; Bimber, 2001; Quintelier and Vissers, 2008), political cognition (Eveland, 2004; Bimber, 2001; Lau and Redlawsk, 2001; Fiske et al., 1983), public opinion (Norris, 1999, 2001; Neuman and Pool, 1986), political meaning (Davenport, 1998; Neuman et.

al., 1992), political discussion (Eveland, 2004; Norris, 2001; Gamson, 1992) and political mobilization (Bimber, 1998; Ayres, 1999; Norris, 2001; Dahlgren, 2005; Suarez, 2005).

Brown et al. (2007) argue that Internet diffusion has been a valuable resource to business (both large and small), government, NGOs and society as a whole in South Africa. It has provided tools and services to contribute to development and help bridge the socio-economic divide created by apartheid.

A summary of some key points discussed in existing literature is presented in Table 2.1.

Table 2.1: Major topics discussed in some existing literature

Topic	Key arguments	Some examples in existing literature
Democracy	<ul style="list-style-type: none"> • Protection of liberties and freedom, legal entitlement, free discussion, uncensored distribution of thoughts and comments • Representative democracy • Pluralism, participation, civil and political assembly and organization • Dynamics of democracy • Political institutions 	Sen (1999); Norris (2001), Snellen (2001), Feng (2003), Johnson (2007).
ICT & political participation	<ul style="list-style-type: none"> • Participation and political actions • ICT as a low cost medium for political participation • ICT for strengthening institutions & organizations • ICT & campaign activities • Social networks and political participation 	Barnes and Kaase (1979); Olsen (1982); Boncheck (1997); DiMaggio et al. (2001); Oates (2003), Balkin (2004); Pickerill (2004); Albrecht (2006); Ward & Vedel, (2006); Smith (2009).
ICT & political mobilization	<ul style="list-style-type: none"> • Contribution to political mobilization • ICT as medium for collective actions • ICT tools for re-engagement in public debates • ICT for managing street protestation 	Ayres (1999); Doherty (1999); Norris (1999, 2001), Lusoli et al. (2002); Dahlgren (2005); Garrett (2006); Suarez (2005); Bosi (2007).
ICT & Emancipation	<ul style="list-style-type: none"> • ICT & Critical Social Theory • The role of ICTs for emancipation & development • ICT and digital divides 	Ngwenyama (1991); Hirschheim and Klein (1994); Ngwenyama and Lee (1997); Klein and Meyers (1999); Walsham (1995); Silva (2007); Stahl (2007, 2008a); Brown et al. (2007).
Online Communities & Identity management	<ul style="list-style-type: none"> • Online communities from text to blogging • Online communities & authoritarian regimes • Online community & identity management approaches (anonymity and pseudonymity) 	Bimber (1998); Ren et al. (2007); Rheingold (1993); Ma & Agarwal, (2007); Huerta & Navarrete (2008); Zukowski & Brown (2007).

Some scholars argue that ICTs extend the public sphere (Habermas, 1989a), which rests upon a “lifeworld” of shared meaning (Danowski, 1991; Benkler, 2006) developed through discussion. Habermas (1989a) defines public sphere as a realm of our social life in which the process of public opinion making can be formed. Not only does the digital revolution empower citizens in decision making processes, it also affords national and

local governmental bodies the opportunity to enhance democracy (Dertouzos, 1997; Sussman, 1997; Cigler and Burdett, 1998; Bennett and Fielding, 2001; Bimber, 2001). Bonchek (1997) points out that public discourse are vital to citizens' understanding of issues and events (as cited in Stanley 1983; 1989); without such debate, democracy suffers, as citizens withdraw from their communities and view their governments as separate and beyond influence (Barber 1984, Bellah et al., 1985; 1991). Subsequently, without engagement in the public sphere, public life atrophies (Arendt, 1979).

Other researchers argue that while communication technologies facilitate the distribution of political documents and provide a virtual space for citizens to discuss and engage in local political processes, this does not necessarily result in widespread participation (Cavanaugh, 2000; Watson and Mundy, 2001; Frissen, 2002; Hoff et al., 2003; Hill and Hughes, 1998).

2.1.1 Defining Democracy

At the most basic level, democracy is a form of government in which all constituents are able to participate by standing for election to public office and electing others to represent their interests. This process also includes the right to challenge and/or call to account an existing government should it commit actions that violate public trust. In a recent comment on the nature of democracy, Nobel laureate Amartya Sen asserted that "democracy has complex demands, which certainly include voting and respect for election results, but it also requires the protection of liberties and freedoms, respect for legal entitlements, and the guaranteeing of free discussion and uncensored distribution of news and fair comment" (Sen, 1999:9).

Feng (2003) points out that the term *democracy* and *political freedom* is often used in literature interchangeably. According to Feng *democracy* is meant to be the degree of liberal democracy consistent with the idea of an incremental state of democracy, rather than the idea of dichotomous state. In this context the institutions in question consist of three main components namely political freedom, political stability and policy certainty.

Snellen (2001) argues that representative democracy was necessitated because it seemed to be impossible to realize direct democracy by giving all citizens an equal opportunity to participate in the collective decision making process.

Norris (2001) points to three major characteristics of representative democracy: 1) pluralistic competition among parties and individuals for all positions of government power; 2) a participative feature that allows citizens equal opportunities in the selection of parties and representatives through free, fair, and periodic elections; and 3) civil and political liberties to speak, publish, assemble, and organize, necessary conditions to ensure effective competition and participation. These characteristics focus particularly “upon how representative democracies function through free and fair elections, as the primary mechanism for holding governments accountable for their actions” (p. 7). However, democracies vary in how they achieve participation, decision making, equality, and transparency, and these very features of democracy promote variation; that is, when individuals participate in relatively equal roles, in open environments, new ideas and new forms of democracy can possibly be envisioned and created (Johnson, 2007). In this context democracy is rather a dynamic concept- it has been and continues to be interpreted and reinterpreted, invented and reinvented as the world changes, because of new technologies, new ideas, new knowledge, new venues, new circumstances, and many other factors that directly and indirectly impact human lives. The challenge of reinventing democracy today is the challenge of reinventing it from the perspectives of ICTs (Johnson, 2007).

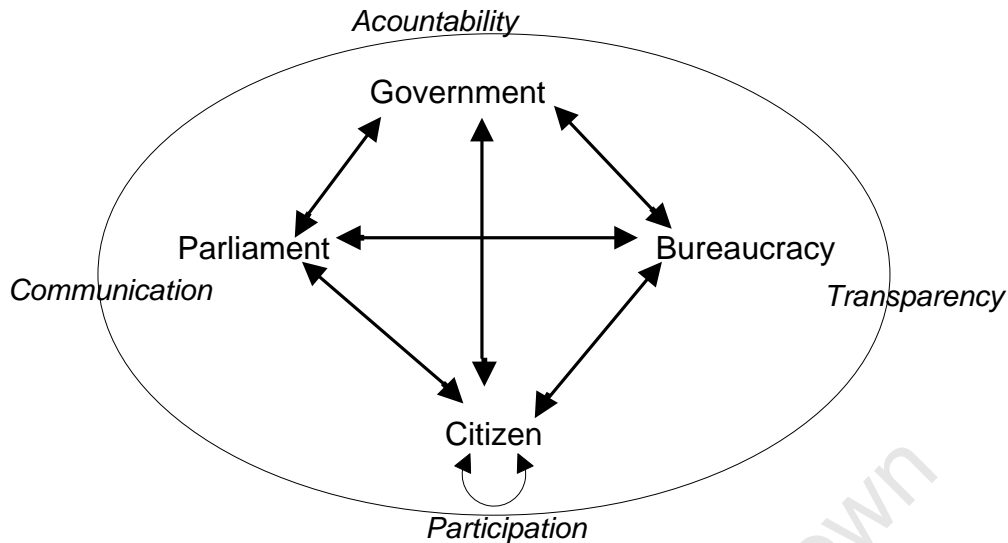
2.1.2 ICT and Political Participation

ICT is the infrastructure, the platform, and the backbone of human communication across the globe in which democracy must now be realized (Johnson, 2007). In this context, the notion of information societies has been developed since the introduction of ICT, but ICT itself, is, in part is a product of the character of the societies that produced it. In other words there is a mutual relationship between ICT and information society. The information society can be changed in part by changing ICTs and ICTs can be changed by changing our societies (Johnson, 2007). Pickerill (2004) points out that certain networks have been able to move toward practices of participatory democracy, in that using ICTs has significantly contributed to a citizens’ ability to make their opinions clearly heard. In this context, ICTs have provided promising tools and services to enhance citizens’ participation in democratic discourse. Or, as suggested by Percy-Smith

(1996), ICTs coupled with democracy will create a more participatory democracy. As depicted in figure 2.1, in regard to democratic participation, ICTs make it easier for not only citizen-to-citizen communications to prevail, but also for establishing communication and building relationships with other actors in the political arena. In addition, ICTs provide effective channels for communication between and among other interest groups, civil society, elected representatives, government officials and public servants. Many scholars have argued the positive correlation between ICT connectivity and democracy (Percy-Smith, 1996; Kedzie, 1997; Ott, 1998; Snellen, 2001; Chadwick and May, 2003; Pina et al., 2006; Sæbø et al., 2007). In other words, ICTs have provided effective, faster and yet cheaper ways of communication channels to participate in decision making processes. For example, citizens can use ICT applications such as e-mails, group discussion forums, e-petitions, SMS and/or the Web 2.0 applications used by social networking sites and blogs to interactively involve in dialog with policy makers (e.g., using blog posts or comments to group discussions within social network sites as well as governmental websites) in order to raise their concerns about various issues or as Ott (1998) has suggested transporting the citizens' needs and wants to the elite; in other words e-participating in communication discourse. E-participation, according to Sæbø et al. (2007), is the citizens' use of ICTs — particularly the Internet — to access information and to participate in the promotion of a fair and efficient society.

Snellen (2001) argues that the theory of democracy, which forms the foundation and legitimating of democratic practices, does not take the intermediary role of the bureaucracy into account. However, ICTs have provided citizens with the ability to approach public servants directly thus bypassing traditional intermediary channels. On the other hand, politicians increasingly rely on the expertise, insights and analytical power of the bureaucracy due to the development of ICTs. Chadwick and May (2003) point out that ICTs are capable of reshaping structures of governance by providing citizens, civil society and the state a more efficient (measured in speed delivery and cost reduction) ways of interaction, communication and participation within the context of democratic discourse. In addition, ICTs encourage the transparency and accountability of representative bodies as well as to encourage public bureaucrats to be more effective and efficient (Snellen, 2001).

Figure 2.1: ICTs and Democratic Participation



Adapted and modified from Snellen (2001), arrows represent two-way ICT communication channels.

Pina et al. (2006) argue that in many countries, ICTs will bring a shift from the traditional accountability process to a new stage of openness, transparency and accountability of public administrations and will therefore increase the degree of interest and involvement of citizens in politics and communication discourse.

Since their introduction to modern society, ICTs have been used to increase political participation. In the context of this thesis, political participation is referred to as the set of political actions and processes in which individuals (see figure 2.1) are engaged (Boncheck, 1997). Verba and Nie (1972) define these activities as conducted by private citizens, and more or less directly aimed at influencing the selection of government personnel and/or their actions. Verba et al. (1997) argue that citizens' participation in democratic discourse is at the heart of democracy and access to information is the cornerstone of any shifts that may have taken place in the world (Carnaby and Rao, 2002). Political participation provides the mechanism by which citizens to communicate information about their interests, preferences, and needs and generate pressure to respond (Carnaby and Rao, 2002). In this context ICTs are changing the landscape in which activists communicate, collaborate, and engage (Garrett, 2006) in communication discourse. By reducing the costs associated with publishing and accessing information flow, ICTs created an environment that not only facilitated group formation (Bonchek, 1997) and low-cost forms of participation, but also improved group efficiency and

communication coordination (Garret, 2006). ICTs have revolutionized today's communication capabilities among people by facilitating news reporting, supporting cultural events, broadening the expression of political views and the dissemination of information, thoughts, ideas, opinions, research articles, and engaging millions of people in digital communities and social networking sites.

While many scholars have argued that ICTs provide opportunities for strengthening traditional institutions and organizations (Coleman, 1999; Lusoli, Gibson and Ward, 2002; Karamagioli, 2003; Ward and Vedel, 2006; Hanssen, 2008), others have argued that the provision of more information and the ability to increase communication does not only lead to greater political participation in and of itself (Bimber, 1998) but also oversimplify the presentation of political issues. Rather, as Bimber (2001) suggests, donating money is the only form of participation that is demonstrably connected to the use of the Internet. In regards to social and political participation, scholars such as Verba and Nie (1972), Olsen (1982), and Barnes and Kaase (1979) pointed out six interrelated yet distinct categories of participation: campaign activity, voting, communal activity, particularized contacting, and expressive (public voice) and cognitive participation. According to Boncheck (1997), while campaign activity includes participation in activities such as encouraging people to vote, working for a party or candidate, attending a political meeting, contributing money to a party, distributing materials, and/or belonging to a political club, the voting category includes casting ballots in presidential and local elections. Communal activities comprise cooperation among social and/or political groups or associations that work together on community and local issues, contacting government officials concerning public issues, whereas particularized engagement includes contacting leaders concerning personal problems. Zukin et al. (2006) point out that while expressive participation includes citizens' engagement in form of contacting public officials, media, signing petitions, engaging in e-mails or blog communication to raise awareness about public or political issues, cognitive engagement involves paying attention to political and public affairs. Pickerill (2004) points out that political participation should not be limited to conventional political parties or lobbying groups but should value the importance of grassroots and community level activities and their ability to gain political leverage through manipulation of the media. However, one

of the main concerns in most liberal democracies as discussed by Tsagarousianou et al (1998), Hale et al (1999), Lusoli et al (2002) is the evidence of growing detachment from politics in form of decline in voter turnout and collective action via representative political organizations on one hand and attendance at public meetings, political party membership, trade unions, NGOs, and other social groups on the other. They argue that this decline is occurring among young people in particular. Smith (2009) argues that this long-standing pattern could be changed because of the increased civic engagement anchored through applications such as blogs and social networking sites. He points out that some 19% of American internet users; in particular the younger activists have posted material online about political or social issues and/or used a social networking site for some form of socio-political engagement. This tendency in particular is interesting because young adults are not generally a politically active group (Smith, 2009). We can observe the same pattern as noticed by Smith (2009) in the Middle East and in particular in the recent events developed in Iran, which will be discussed later in this chapter. ICTs provide tools and services that can effectively be used for widening and deepening political participation. For example, these tools and services can facilitate citizens' ability to gather information about campaign issues, mobilize community networks, create diverse coalitions around policy problems, and lobby elected representatives. The Internet has also the potential to foster citizen participating in political decision-making such as the election of government and other representatives (Oates, 2003) dialogue and consultation between citizens and government, citizens and political parties, and groups of citizens; through such dialogue, government and social representatives can better understand people's needs, and citizens can seek to contribute actively with the knowledge they gain (Karamagioli, 2003).

The empirical research by Albrecht (2006) has not only found a positive correlation between the use of internet (in general) as an effective communication medium in political debates but also as the means of delivering discussions and thoughts on political matters in a more creative and resourceful manner not available by the traditional means. Others point out that some members of digital communities may monopolize the discussions of their interests by distorting the distribution of contributions. For example, Jankowski and van Selm (2000) point out that a newsgroup on abortion encountered that

5% of the contributors submitted almost 80% of the posts while the most frequent contributors were the least likely to post messages on the topic (cf. Oates, 2003). In regards to the role of ICT and political participation, DiMaggio et al. (2001) point out that the Internet is critically important, particularly because it is a multi-channel communication medium uniquely capable of integrating social networks and increasing political participation.

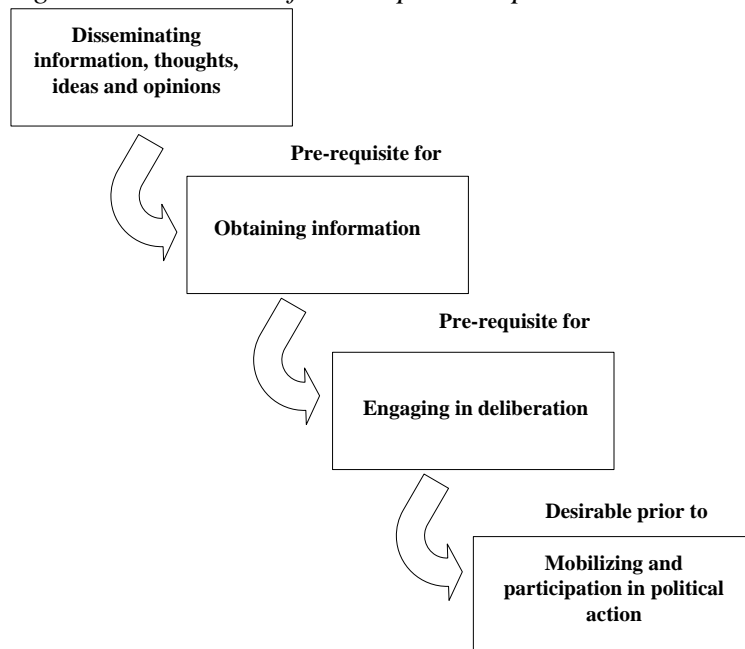
2.1.3 ICTs and Mobilization Structures

ICTs have had an enormous and positive impact on citizens' political participation and mobilization, a phenomenon that could not have been predicted decades ago.

Some scholars point out that the Internet and SMS have the potential to not only strengthen and transform the existing patterns of political participation (Norris, 1999), but may also contribute to political mobilization (Suarez, 2005) and increased collective action (Osborn, 2008). According to (Garrett, 2006) mobilizing structures is referred to the mechanisms that enable individuals to organize and engage in collective action, including social structures or social movement organizations and collective actions with which activists are familiar and able to utilize.

Figure 2.2 shows the role of ICT in political processes. As shown in figure 2.2 disseminating of information is a pre-requisite for information access which in turn is a pre-requisite for citizen engagement in political debate. Citizens who have access to ICTs are more likely to participate in the political process and public debate, "and such debate is desirable prior to political action, whether in an institutionalized form like voting or in a form outside conventional political structures like mass demonstrations" (Oates, 2003:33). ICTs could help a better informed and attentive public (Lau and Redlawsk, 2001) and increase deliberative dialogue by providing new communication links between citizens and their representatives (Oates, 2003) which are necessary for democracy to work effectively.

Figure 2.2: The role of ICT in political process



Adapted and modified from Oates (2003)

While some scholars argue that there is enough evidence to suggest that changes in communication technology may play an important role in influencing electoral behavior (Tolbert and McNeal, 2003), others suggest that parameters such as income, the level of education, and social status correlate with both computer use and political participation (O'Sullivan, 1995; Kenski and Jomini, 2006). Therefore, political communication and participation is likely to be skewed in favor of resourceful individuals and organizations (Rubinyi, 1989).

The role of the Internet in the 2008 U.S. presidential election is evidence of its power to mobilize and engage citizen participation in the democratic process. For example, through the Internet, political parties were able to attract first-time voters in the younger generation, as well as appeal to groups which may be otherwise uninvolved in conventional forms of activism and civic engagement, or feel alienated (Norris, 1999) from mainstream society. According to the Pew Research Center for the People and the Press (Pew Research Center, 2008), the number of Americans who learned about the presidential campaign has increased from 13% in year 2004 to 24% in 2008. Almost 42% of young American adults (age 18-29) reported that the Internet was their main source of campaign information. Social networking sites in particular are important sources of

information and communication for the younger generation, as approximately 67% of young adults actively participate in these communities (Pew Research Center, 2008). In addition, 16% of Americans exchanged e-mails with friends and family regarding candidates and the campaign. According to the Pew report, 14% of U.S. citizens received e-mail messages from political groups or organizations about the campaign; about 8% reported that they visited U.S. political candidates' websites (Pew Research Center, 2008). Established during his campaign, U.S. President Barack Obama maintains his own website, available in English and Spanish, as well as his own YouTube channel. In addition, he was an active presence on social networking sites such as Facebook, Flickr, and MySpace (DigitalNatives, 2008).

ICTs have also played an important role in political protest and mobilization traditionally relied heavily on gathering in the streets to challenge those in power. The Internet is changing this dynamic by promoting the diffusion of protest ideas and tactics efficiently and quickly across the globe through electronic means (Ayres, 1999). Garrett (2006) emphasizes that ICTs change the repertoire of contention, allowing activists to engage in new forms of contentious activity, particularly in online environments, and Doherty (1999) notes that newer radical protest organizations are better placed to exploit new technology. ICTs are used as a means of communication with which street protests can mobilize rapidly and engage in swarm-like challenges, taking simultaneous action on multiple fronts and in multiple ways (Garrett, 2006).

In this context, one of the main advantages of using ICTs is that they have the ability to encourage networking citizens with other activist groups, aid mobilization, and generate collective and cohesive campaigns. Furthermore, ICTs can be used as a component in tactics that can be launched upon a target simultaneously (Pickerill, 2004). Lusoli et al. (2002) point out that different types of political organizations such as political parties, trade unions, pressure groups, and protest networks are using the Internet, e-mail, and SMS to mobilize and re-engage the public.

Bosi (2007) argues that protest participation and mobilization are complex, multifaceted and continuous phenomenon in which individuals' efforts varies significantly across participants in relation to the intensity and type of involvement, the

chosen course of action within the movement, regional contexts, and the stage of development of the movement at the time of their entry.

A well cited example of the above is the Zapatista rebellion from the southern Mexican state of Chiapas consisted of the indigenous Mayan citizens. This movement had successfully used the new media to voice their concerns about the state's neo-liberal policies. While the majority of the Mexican's media sided with the ruling elite, the movement used the Internet for the first time to contact newsgroups, indigenous rights movements, human rights organizations, and other social activist groups to make the world aware of their cause. As a consequence they received increasing attention from the international community (Cooper, 1994; La Botz, 1995; Cleaver, 2000; Gilbreth and Otero, 2001) particularly in form of organized support groups from US, Argentina, Spain, Italy, Germany, Austria, Switzerland, France and Britain.

In September 2007, the world witnessed the citizens of Myanmar protest in the streets against the military junta that has run the country since 1962 (Chowdhury, 2008). The movement that came to be known as the Saffron Revolution caught global attention as bloggers and cyber activists flooded the Internet and social networking sites with grainy pictures and video clips captured by cell phones showing the brutality of the government in cracking down peaceful demonstration and the killing of monks, civilians and journalists (Chowdhury, 2008). Cyber activists and citizens used Internet blogs and mobile SMS as communicative channels between protest groups in order to enact well-organized protests during the movement as a means of demanding political reform (Engdahl, 2007). People around the world watched in horror as the Internet gave them the opportunity to monitor the events and to join the democratic struggle through protests and demonstrations in their respective countries (Chowdhury, 2008).

More recently, the "Green Movement" or the popular movement in Iran started after voters' perceived organized electoral fraud by the Iranian hardliners during the June 2009 election, which resulted in the victory of Mahmoud Ahmadinejad, an unpopular hardliner. After the official announcement that Ahmadinejad was re-elected with 63% of the total ballots, hundreds of thousands compelled to protest in the streets against the results. Thousands of pictures, video clips and text messages captured the momentum in Iran and soon become available on Facebook, YouTube, Twitter as well as the

international news media. As a result, the events captured the attention of millions of people within Iran and across the globe. While the government banned print newspapers and national radio and TV broadcasters from covering the demonstrations, the Internet allowed people to document the events as they occurred as well as to mobilize future rallies and protestations. The use of the Internet as a communication and mobilization media intensified when the government banned the use of the SMS before, during, and after the election. The ban had a severely negative impact not only on the other candidates' ability to monitor the election but also on younger people that used SMS as an effective and efficient communication tool, a phenomenon discussed in the literature as the "demobilizing effect" (Garret, 2006).

Garrett (2006) points out that "the increasing reliance on ICTs in contentious activity also poses a risk for social movements because it creates new opportunities for demobilization efforts. In particular when the network infrastructure and in particular mobile communication system is controlled by governments and their allies" (p. 210).

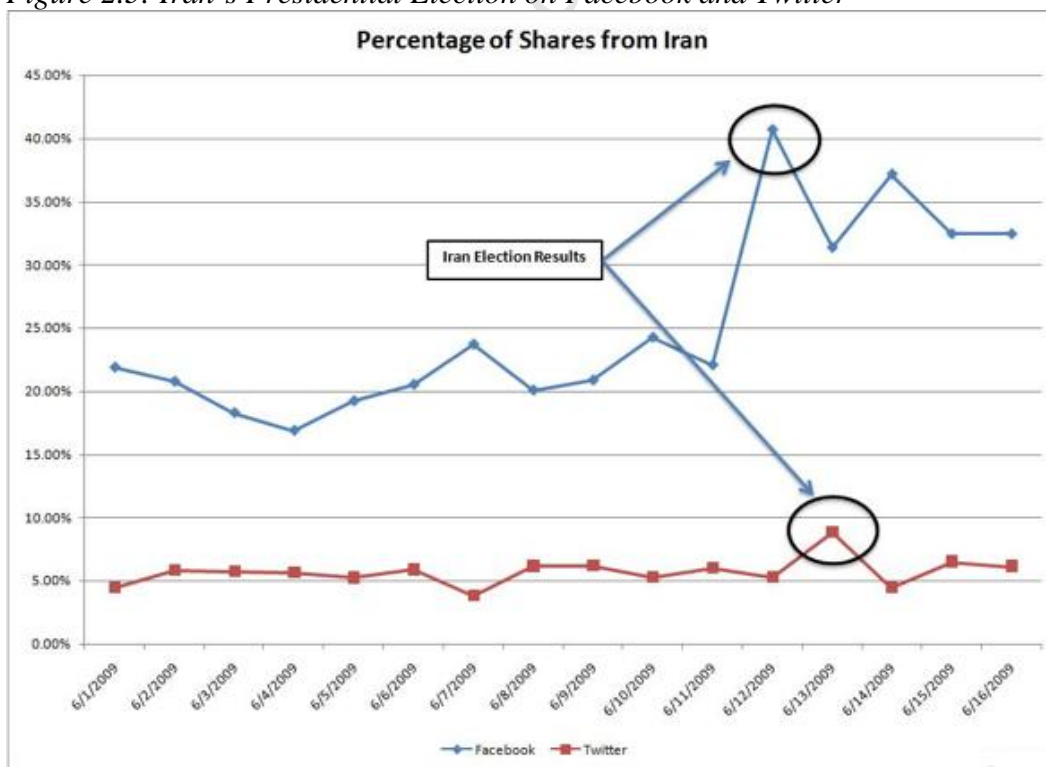
In expressing their dissent with the election results, hundreds of thousands of street protestors across the country have been mobilized using not only traditional means of communication such as face-to-face or telephone conversations, and flyer/poster distribution, but also the social networking sites and blogs for the first time. In addition to 65000 active bloggers in Iran there are more than 150,000 Facebook users in which the young voters make up a huge bloc (Hafezi, 2009). The greens within the social networking sites posted information about the dates, times, and locations of gatherings, and also posted updates to let other users know what occurred during previous events. The increased use of social networking sites in Iran inspired such names as the "Twitter Revolution" (Schectman, 2009) and the "Facebook Revolution" (Foster, 2009). Figure 2.3 shows a dramatic increased in the number of participants in social networking sites such as Facebook and Twitter from Iran discussing the disputed 2009 presidential election.

In a report published in *The Nation*, Berman (2009) wrote: "forget CNN or any of the major American 'news' networks. If you want to get the latest on the opposition protests in Iran, you should be reading blogs, watching YouTube, or following Twitter updates from Tehran, minute-by-minute." For example, Mackey (2009) wrote in his blog *The*

Lede: “Five minutes ago the first message posted today on the Twitter feed Mousavi1388 appeared and it is a call for opposition supporters to attend a rally on Wednesday: Please come to Baharestan Sq. in Tehran tomorrow at 4pm”. Another article posted on Foreign Policy’s web site highlights the important role of bloggers in disseminating and sharing information in aftermath presidential election in Iran: "I learned far more from the blogs... than I did from the newspapers. This isn't because the bloggers are smarter... but because they can aggregate material. They also can engage in full-blown speculation without pretending they aren't" (Ricks, 2009).

The democratic movement of Iran caught global attention, particularly the Iranians in exile who monitored the events taking place in their homeland on a minute-by-minute basis via the Internet. These exiles and the international community witnessed the crackdown of large and peaceful demonstrations and the killing of innocent people on the streets. Thousands of Iranian and other activists around the globe mobilized and participated in large demonstrations in major cities across Europe, US, Canada, Australia and Japan. For the first time, citizens in Islamic countries such as the United Arab Emirates and Indonesia lent their support to the democratic movement of Iran.

Figure 2.3: Iran’s Presidential Election on Facebook and Twitter



Source: *The Standard* (2009)

This thesis argues that the proliferation of ICTs in Iran, which resulted in empowering the Iranian people to voice their desire for democratic change, positively impacts the broader ICT development in the Middle East that started more than a decade ago. However, there is a dearth in the literature to date, in that a thorough investigation and evaluation of the impact of ICTs on democratic freedom in the Middle East, and filling this gap is the primary aim of my research.

2.1.4 The Emancipatory Role of ICTs

The emancipatory capacity of ICTs has been elucidated in *inter alia* by a number of researchers (Ngwenyama, 1991; Hirschheim and Klein, 1994; Ngwenyama and Lee 1997; Klein and Meyers 1999; Silva, 2007; Stahl 2008a, 2008b).

Within the context of Critical Social Theory (CST) Ngwenyama and Lee (1997) point out that the responsibility of researcher is the critique of unjust conditions for emancipation. Hirschheim and Klein (1994) point out that emancipation has two main dimensions: psychological and organizational. While the former requires realizing the full creative and productive potential of individuals, the latter refers to establishing social conditions that encourage effectiveness through organizational democracy, specifically, overcoming existing forms of authoritarianism and social control.

Stahl (2008a, 2008b) argues that authenticity and autonomy are concepts related to the goal of critical research in IS as a paradigm, linked to the individuals' ability to interact with their environment. While the primary interest of emancipation is to help eliminate the causes of unwarranted alienation and domination, and thereby enhance the individual's opportunities to achieve his or her potential, it has also been framed in terms of common interest. The concept of emancipation is of particular importance with regard to development, as development promises the elimination of oppression and alienation, such as a gender digital divide. The emancipatory concerns connected to digital divides can be seen partly as issues for emancipation and CST; therefore, critical research must ensure that its responsibility is making a difference rather than remaining a purely descriptive tradition, like philosophy or social science (Stahl, 2008c). Within CST, criticism does not surrender the search for emancipation simply as a means of academic discourse, but as a qualifier of a never-ending process of both liberation and deferred and

multiple emancipations, which surrender determinisms and inevitabilities in exchange for a conscious remaking of the world (Leonardo, 2004).

To this end, Pillai and Shanta (2008) point out that ICT is certainly a promising sector for the empowerment of poor women, who can become partners in development efforts and strategies in the struggle for women's emancipation. Grimsley, Meehan, and Tan (2005) argue that free access to information is not only a concept of basic human rights as outlined in the United Nations' *Universal Declaration of Human Rights*, it is also a fundamental and necessary source of knowledge which empowers citizens in their communication discourse, mobilization, and participation in decision-making processes.

Guillén and Suárez argue that despite the enormous positive impacts of the Internet in many aspects the Internet was not able to bring about the economic, political, and social improvements predicted by other scholars. They pointed out that "the key theoretical problem with the optimistic prospects lies in the assumption that new technology enables everyone" (p.682). As an optimistic researcher of the role of the Internet in promoting freedom and democracy across the globe and in particular within the context of developing countries, I argue that ICT has been a powerful emancipatory tool in particular in countries such as China, Iran and other Middle East and North African countries where the mainstream media is under heavy governmental control. People in these countries are turning in a larger scale to the Internet and its various social networking sites despite the governments' efforts to stop it and despite the fact that this medium is not yet available to everyone. I argue such an inequality exists in many different aspects of our daily life from access to clean water, health, education and employment to gender and race issues, however, these problems do not prevent people from struggling for a greater social justice around the world. Further more as (Castells, 2001) argues, it is not the lack of access but the strategies that make the digital divide the main barrier to the potential's of the Internet "as a means of freedom, productivity and communication" (p. 247). In this context as Williamson (2004) suggested citizens may acquire basic access to ICTs through various ways including the private ownership, public or community ownership or privately owned access points.

Despite the existing digital divide in countries such as Iran, the scale of the Iranians' presence on the Net indicates not only their participation in democratic process but also

the potentials to organize and mobilize their actions. The "Green Movement" in Iran was much larger in magnitude than what the Zapatista movement has successfully accomplished in more than a decade ago. While the Zapatista movement was able to send messages out by the means of the Internet to get both local and international support for their cause, the 'Green Movement' also inspired millions of people around the world and showed the power of ICTs and in particular the Internet and mobile cell phones in monitoring and reporting events as well as organizing future rallies to challenge the dominant order.

The expansion of online communities and the formation of social networking sites, along with the growing number of websites and blogs belonging to individuals and other socio-political groups or organizations, reflect the fact that ICT has the potential to empower. However, ICT also enables governments to identify citizens who participate in the political process, which can be problematic in societies where democracy is immature or non-existent (Lynch, 2003; Yu, 2004).

2.2 ICT and Economic Freedom

ICT has been viewed and compared with other great innovations such as the steam engine, electricity, and the so-called General Purpose Technology (GPT), since it has had a wide range impacts on business processes, Research and Development (R&D), innovations, and people's daily lives (Aghion and Howitt, 1998; van der Wiel and van Leeuwen, 2004).

The innovation of the microprocessor, which led to the development of mainframes, personal computers, and electronic networks, has positively impacted productivity gains within ICT-producing industries such as hardware, software, and telecom. It has also created opportunities for a wide range of other innovations outside ICT-producing industries, particularly in the banking, automotive, transportation, and aviation industries. Further, it has also had an enormously positive impact on organizational structures in areas such as education, R&D, health (Ko and Osei-Bryson, 2002), and business. For example, ICT enables firms to redistribute their organizational structures in terms of flattening hierarchies, delegating responsibilities, reengineering business processes (such

as introducing just-in-time management), and developing completely new products and services such as e-commerce (van der Wiel and van Leeuwen, 2004).

The declaration of principles at the World Summit on the Information Society (WSIS, 2003) emphasized the link between the proliferation ICTs and socio-economic development. It underlined that ICTs can be powerful tools for increasing productivity, creating jobs, generating economic growth, and increasing international cooperation in areas such as finance, trade, and Foreign Direct Investment (FDI). A growing number of studies support the WSIS perspective in regard to ICT expansion and its impact on socio-economic development. Table 2.2 below summarizes key points discussed in existing literature with regards to ICTs, economic development and growth.

Table 2.2: ICT and Economic Growth, Major topics discussed in some existing literature

Topic	Key arguments	Some examples in existing literature
ICT Investment, economic growth & Productivity	<ul style="list-style-type: none"> • ICTs and labor productivity • ICT investment, production and process innovation • ICT and GDP growth • ICT and productivity in developing vs developed countries 	Dewan & Kraemer (2000); Pohjola (2002); Becchetti et al. (2003); Dedrick et al. (2003); Colecchia and Schrever (2001); van der Wiel & van Leeuwen (2004); Osei-Bryson and Ko. (2004); Indjikian and Siegal 2005; Guislain et al. (2006); Ko & Osei-Bryson (2006)
ICT Investment & economic growth in developing countries	<ul style="list-style-type: none"> • ICT impacts on economic growth in East Asia • The mixed and complex nature of economic development • First-order investment vs. second-order investment • ICT & human development in developing countries 	Pipe (2003); Tan (2004); Yin (2005); Hiong (2006); Quynh (2006); Kane (2007); Ngwenyama et al. (2006); Nwagwu (2006); Walsham & Sundeep (2006); Morawczynski & Ngwenyama (2007)
Economic Freedom and growth	<ul style="list-style-type: none"> • Components of economic freedom • Economic freedom human development & productivity • The state of economic freedom & growth in developing countries 	Vansay & Spindler (1994); De Haan, & Siermann; De Haan & Sturm (2000); De Hanke & Walters (1997); Wu & Davis (1999); Berggren (2003); Gwartney & Lawson (2006); Kapás and Czeglédi (2009)
Democracy & Economic Freedom	<ul style="list-style-type: none"> • Economic freedom is a measure of the quality of a country's institutions. • The conflict, compatibility, and skeptical perspectives • The correlation between democracy and economic freedom 	Sirowy & Inkeles (1990); Alesina & Perotti, (1994); Helliwell (1994); Clague et al. (1996); Lundstrom (2002); Mbaku (2003); Feng (2003); Krieckhaus (2006)
ICT & Economic Freedom	<ul style="list-style-type: none"> • The role of ICT in economic freedom & competition • The connection between ICT , democracy and Economic freedom 	Lunstrom (2002); Mbaku (2003); Gwartney & Lawson (2006); De Haan et al. (2006)

Pohjola (2002) points out that in the late 1990s, many business leaders, investors, journalists, and politicians were firmly convinced that the world economy was undergoing a fundamental structural change driven by both globalization and ICTs. Generally referred to as the “New Economy”, it has been given many names: “post-industrial society,” “information society,” “innovation economy,” “knowledge economy,” “network economy,” “digital economy,” “weightless economy,” and “e-economy,” (Cohen et al., 2000), each of which emphasizes the different aspects of structural change but are also vulnerable to misinterpretation (Pohjola, 2002). However, the core argument of the New Economy is the intensive use, production, and adoption of ICTs, both outputs from ICT-producing industries and inputs into ICT-using industries (Pohjola, 2002).

To date, the empirical literature in this area has focused extensively on explaining the role of ICTs on productivity growth (Dewan and Kraemer, 2000; Pohjola, 2001; Oliner and Sichel, 2000; Schreyer, 2000; Jorgenson, 2003; van Ark and Piatkowski, 2004; Jorgenson and Motohashi, 2005). It is evident that the growth and expansion of e-business, online transactions, and e-government suggests an increased demand for ICT products in domestic and global markets (e.g., Internet, cell phones, satellite and cable televisions, etc.), in turn enabling ICT to become a core component of today’s economic development. It is assumed that ICT expansion will improve the efficiency of the industrial infrastructure of developing countries, enhancing their overall economic performance (Bynjolfsson and Hitt, 2000) and strengthening their competitive capacities in the global market (Indjikian and Siegal 2005; Meng and Li 2002; UNESCO 2006). ICT expansion is also expected to improve the efficiency of governments and enhance the provision of education and health (Braa et al., 2007; Sahay and Walsham, 2006; Silva and Hirschheim, 2007).

2.2.1 ICT Investment, Economic Growth, and Productivity

Scholarly research has argued that investment in ICTs is positively correlated with growth in economic labor productivity and demand for skilled workers. Dedrick et al. (2003) define ICT investment as capital investment in computers and telecommunications, as well as related hardware, software, and services. In the context of

this thesis, *economic growth* represents the rate of change in real output, or GDP, and is measured at the country level, while *labor productivity growth*, or growth in output per worker, is a measure of the efficient use of resources to create value at the firm level (Dedrick et al., 2003). In other words, a more productive firm will generally grow faster, invest more, enjoy higher profitability, experience better cost advantage, and/or produce higher quality outputs than its competitors. Becchetti et al. (2003) point out that there is a positive correlation between telecommunications infrastructure investment and the creation of new products and processes, while software investment has fostered increased demand for skilled workers.

Guislain et al. (2006) argue that ICT has played a vital role in advancing economic growth at regional, national, and global levels, and that there is enormous promise for the future. For example, firms that use e-mail to communicate with clients and suppliers see 3.4 percentage points higher in sales growth as well as \$3,400 in value added per employee; in addition, among firms using ICT, profits are substantially higher. Jorgenson and Stiroh (2000) found that ICT contributed about 13% of the 3.04% in economic growth and 27% of the 1.4% in labor productivity growth in the US over the period 1973-1995. The result of this study is consistent with the claim that “ICT can stimulate labor productivity through the use of ICT in the production process” (van der Wiel and van Leeuwen, 2004: 95). They argue that lower prices for ICT goods and services along with its capabilities in production and process innovation, makes it a very attractive production factor. ICT stimulates labor productivity by providing higher capital intensity per worker also known as capital deepening (van der Wiel and van Leeuwen, 2004).

A study by Colechia and Schrever (2001) on the impact of ICTs on economic growth in nine OECD countries shows that despite differences between countries, ICTs successfully contributed 0.3 to 0.9 percentage points in growth per year during the second half of 1990s; prior to this period, the value was between 0.2 and 0.5 percentage points per year. Empirical studies have revealed similar results in Europe (Cette et al., 2001; van der Wiel, 2001; van Ark, 2001; Daveri, 2002; Kegels et al., 2002; Melka et al., 2002; Piatkowski, 2003). For example, an empirical study conducted by Cette et al. (2001) shows that while the impact of ICTs on economic growth in France was 0.2 percentage

point per year during the period from 1969-1999, this value increased to 0.3 percentage points during the second half of 1990s.

In critically reviewing more than 50 studies published on computers and productivity between 1985 and 2002, Dedrick et al. (2003) concluded that ICT investment had a positive impact on economic growth at national levels and also increased firm productivity. In addition, their study showed that ICT investment had a positive impact on organizational structure, enabling decentralized decision making, job training, and business process restructuring. Another empirical study conducted by Dewan and Kraemer (2000) used panel data from 36 countries (22 developed and 14 developing) for the period from 1985-1993. They found significant differences between developed and developing countries with respect to their structure of returns from ICT capital investments: the returns on ICT capital investments were estimated to be positive and significant for developed countries, but the trend for developing countries was not statistically significant.

2.2.2 ICT Investment and Economic Growth in Developing Countries

While earlier studies on developing countries do not show the significance of ICT investment on economic growth, the results from recent empirical studies are rather mixed and inconclusive (Ko and Osei-Bryson, 2002). For example, ICT investment has played a significant role in economic growth and has increased productivity in emerging economies in the Asia-Pacific region, such as China, Malaysia, Thailand, Vietnam, and the Philippines, due to political and economic reform in the last two decades (Pipe, 2003; Tan, 2004; Tan and Leewongcharoen, 2005; Yin, 2005; Hiong 2006; Quynh, 2006; ITU, 2007b; Kane, 2007). In other developing countries, however, its impact is mixed, and is thus a matter of debate in the literature (Lamberton, 2001; Fielding, 2002; Kneller, 2005; Ngwenyama et al., 2006; Nwagwu, 2006; Von Lubitz and Wickramasinghe, 2006; Walsham and Sundeep, 2006; Morawczynski and Ngwenyama, 2007). This mixed impact is of particular interest in the context of developing countries in the Middle East, which will be discussed in subsequent chapters.

Tan (2004) points out that the current political environment favors the free flow of technology between China and other nations, and that the course of changes in China led

to the loosening of previous restrictions on technology import and export. In turn, as far as technology is concerned, ideological beliefs in nationalism and self-reliance have been abandoned among the Chinese. Among the Asia-Pacific economies, China and Vietnam had the fastest growing ICT economies due to massive ICT investment. In China, for example, ICT became the largest and fastest-growing industry, and attracted the most investors from across the globe. From 1996 to 2005, China's annual telecom investment grew from \$91 billion USD to \$210 billion USD. As a result the telecom revenue in 2005 was \$584 billion USD compared to the 1996 revenue of \$140 billion USD (ITU, 2007b). In addition, China's export of telecommunications equipment increased from \$1.9 billion USD in 1996 to \$24 billion USD in 2004 (ITU, 2007b). There were three main drivers behind the success of the Chinese IT industry: a) the liberalization of investment and trade freedom, which encouraged FDI flow; b) the increased popularity of ICT products and services in both domestic and corporate environments; c) the size of China's market and population, which global ICT providers considered an attractive production environment for investment (Tan, 2004; Yin, 2005).

Thailand's success as one of the world leaders in IT hardware export is related to the extent of FDI inflow into the country, as FDI provided the necessary technology, capital, and skilled human resources to leverage Thailand's IT industry. These factors, combined with government policies for encouraging FDI inflow, were the main drivers behind this success (Tan and Leewongcharoen, 2005).

Walsham and Sundeep (2006), critically reviewing ten research articles dealing with IS in developing countries, concluded that while ICTs are relevant to developing countries, their impacts are complex and change processes are often slow, taking place over a number of years. Nwagwu (2006) argues that while ICTs have had positive impacts in stimulating economic development in many East Asian economies (e.g., Hong Kong, Malaysia, Singapore, South Korea and Taiwan) by enabling these nations to leapfrog stages of economic growth by the means of modernizing their production and services and increase their competitiveness at the global stage, other economies were not able to adapt the new technology into their economic development strategies. Some Sub-Saharan Africa and South Asian countries are among less ICT-developed nations that

were not able to take advantages of the new technological systems and that's why their obstacle to development become cumulative.

Ngwenyama and Morawczynski (2009) argue that while many researchers have emphasized investment in ICT infrastructure are essential to the rapid development of emerging economies, others claim that too much emphasis is placed on ICT expansion as an engine of growth in lieu of attention to human capital, health, and civil infrastructure such as roads, clean water, and electricity. The empirical study by Osei-Bryson and Ko (2004) shows that ICT investments has a positive statistically significant impact on productivity and growth only when it exceeds a threshold value. In other words ICT investment has to surpass some minimum value before it can be expected to have a statistically significant impact on productivity (Osei-Bryson and Ko, 2004).

According to UNCTAD (2006), there is a strong correlation between a country's ICT development, income, and the level of human development as measured by its GDP per capita and the level of education of its citizens. Ngwenyama et al. (2006) suggest that the relationship between investment variables such as ICT, health, and education is rather a complex process and requires more thorough investigation and field studies. Walsham and Sundeep (2006) point out that within the context of developing countries IS projects are rather complex, for example, political instability can impede or delay the maturing of projects. That's why "longitudinal studies, with visits and possibly interventions in field sites taking place on several occasions spaced out over time, are obviously relevant here" (p. 19).

2.2.3 Economic Freedom and Growth

De Haan and Sturm (2000) point out that there is no clear definition of what is meant by economic freedom, however, Gwartney et al. (1999) view economic freedom as a framework within which people can choose how to use their time, skills, and resources. It provides an environment that promises economic growth by reducing obstacles and encouraging innovation. Kapás and Czeglédi (2009) define economic freedom as "a value on a continuum: under perfect economic freedom state coercion concerning individuals' entrepreneurial activities cannot go beyond certain limits, and the only acceptable means is enforcing general abstract rules known beforehand, where rules are understood in

terms of the rule of law” (p.3). Berggren (2003) argues that economic freedom is a composite that attempts to measure the degree to which an economy is a market economy. Gwartney and Lawson (2006) define four main components of economic freedom:

- personal rather than collective choice,
- voluntary exchange coordinated by markets rather than allocation via the political process,
- freedom to enter and compete in markets, and
- protection of persons and their property from aggression by others, including the government.

Several studies investigating the relationship between economic freedom and growth find that economic freedom is important for growth (De Haan and Siermann 1996; De Vanssay and Spindler 1994; Hanke and Walters 1997; Wu and Davis 1999). For example, De Haan and Sturm (2000) argue that economic theory indicates that economic freedom affects incentives, productive effort, and the effectiveness of resource use, since the freedom to choose and supply resources, compete in business, trade with others, and secure property rights are central factors for economic growth.

Leschke (2000) shows that the framework in which the market economy functions and the degree of institutional intervention (Silva and Figueroa, 2002) in the political process are of great importance to the wealth of nations (Berggren, 2003). In another study, Goldsmith (1997) uses the economic freedom index to illustrate that developing countries that better protect economic rights tend to grow faster, have a higher-than-average national income, and have a higher degree of human well-being. Moreover, an empirical analysis conducted by Farr et al. (1998) found robust evidence to support the argument that GDP growth positively influences economic freedom. Other studies also found the casual relationship between economic freedom and GDP growth. Mbaku (2003) argues that incomes as measured by GDP will grow more rapidly and eventually rise to higher levels in a freer economy than those in economies that are less free.

In the following sections, the relationship between democracy and economic freedom on the one hand and ICT and economic freedom on the other will be discussed.

2.2.4 Democracy and Economic Freedom

Haggard and Kaufman (1996) argue that one of the strongest findings in political science is Lipset's (1959) discovery of correlation between measures of economic development and democracy. Other researchers have argued that countries which have a high level of freedom and democracy also possess a higher level of economic freedom (Guillen et al., 2005; Lundstrom, 2005). While much of the empirical literatures in regards to economic growth in developing countries are focused on the impact of ICT investment or the degree of such an investment in conjunction with other infrastructure investments (e.g., roads, health, education) on the economic growth, a less focus and attention have been paid to view economic freedom as a fundamental human rights matter as outlined in the United Nations' *Universal Declaration of Human Rights (UDHR)*. For example the second column of UDHR (Articles 12-17) has paid close attention to the rights of the individuals in civil and political society. In particular, Article 17 emphasizes on the property rights of individuals and/or in association with others.

This research argues that heavy governmental control in business activities and/or elites in the power, in particular the military who are controlling the key industrial and national resources remain not only the main obstacles to economic growth and development in Middle East but also these activities are in violation of UDHR declaration as described above. For example, a powerful fraction of the Iranian military so-called Iran's Islamic Revolutionary Guards Corps (IRGC) has a strong hold on key economic sectors. Wehrey et al. (2009) and Tait (2009) point out that during recent years the IRGC has seen the greatest growth and diversification on key strategic industries and commercial services ranging from dam and pipeline construction, oil, gas and petrochemical industries and automobile manufacturing to financial institutes. The revolutionary guard's recent movement to buy the majority shares (51%) of the Iranian Telecommunications Company (Tait, 2009), makes this key important telecom industry which is Iran's main Internet, mobile cell phone, text messaging and landline service provider, under the control of military. A move that is considered by many as a full scope of influence over Iran's political culture, economy, and society (Wehrey et al., 2009) and as a consequence a drastic increase in monitoring citizens' online activities, in particular the opponents (Tait, 2009).

In the context of Arab nations, however, many of these countries suffer from low economic growth and productivity as well as limited progress in scientific innovation. According to The Economist (2004) while the centralized bureaucracies have had roads and schools built but have failed to spread wealth, channel investment efficiently or foster critical thought. Despite the fact that there is little political and in some extend limited economic freedom, but the Arabs are starting to demand it (The Economist, 2004). In Sub-Saharan Africa the process of attracting foreign direct investment (FDI) from the multinationals which is much needed for the implementation of ICT infrastructure are very slow due to the social, economic and political instability (Nwagwu, 2006). Beside the shortcomings of adequate industrial infrastructure that influence FDI inflow negatively, the magnitude of internal conflicts that disrupt economic activities along with poor national leadership characterized by high corruption in addition to long periods of highhanded military regimes scare away FDI investors from the region (Nwagwu, 2006, p. 177).

Feng's (2003) empirical study shows that political institutions have influence on economic growth. He argues that political repression, political instability, and policy uncertainty all define and constrain an individual's economic decision in marketplace and thereby imposing negative impacts on a nation's economic development.

In regards to institutional democracy and its impact on economic growth Sirowy and Inkeles (1990) summarize three different perspectives that appear in the literature: conflict, compatibility, skeptical. The *conflict perspective* argues that economic growth requires a regime of authorization in order to implement the tough but necessary economic decisions that facilitate rapid economic growth (Huntington, 1968; Hayek, 1976; Evans, 1979; Olson, 1982; Przeworski and Limongi, 1993). This view emphasizes in particular on economic growth in certain autocracies in developing countries and claim these countries were better prepared to create a favorable environment for economic growth for both domestic and foreign companies (Huntington and Dominguez, 1975; Huntington and Nelson, 1976; Evans, 1979). Case studies on Brazil, Chile, Singapore, South Korea, Taiwan, and China support this view (see Lunstrom, 2002; Krieckhaus, 2006). The *compatibility perspective* argues that both democratic and authoritarian regimes are capable of achieving economic growth and expansion (Feng, 2003;

Krieckhaus, 2006), whereas the *skeptical perspective* is doubtful of the existence of a systematic linkage between democracy and economic growth (Alesina and Perotti, 1994; Helliwell, 1994; Clague et al., 1996).

Krieckhaus (2006) points out that many earlier studies favor the *conflict perspective*, most studies conducted during the 1980s favor the *compatibility perspective*, and that recent studies favor the *skeptical perspective*. He concludes that democracy has had a positive effect on economic growth in Africa, but that its impact in other regions, such as Latin America and Asia, is not obvious. Lundstrum (2002) investigated the impact of democracy on economic freedom in four main categories: a) government operations and regulations, b) restraints on international exchange, c) takings and discriminatory taxation, and d) money and inflation. Her empirical analysis, which examined 60 developing countries for the period 1975-1995, shows that while democracy has had a positive impact in the first two categories, its impact on the latter two components was not significant.

The empirical analysis of this study was conducted in 11 Middle Eastern countries from the period 1995 to 2005. It shows that there is a positive correlation between democracy and economic freedom, a finding that will be discussed in subsequent chapters.

2.2.5 ICT and Economic Freedom

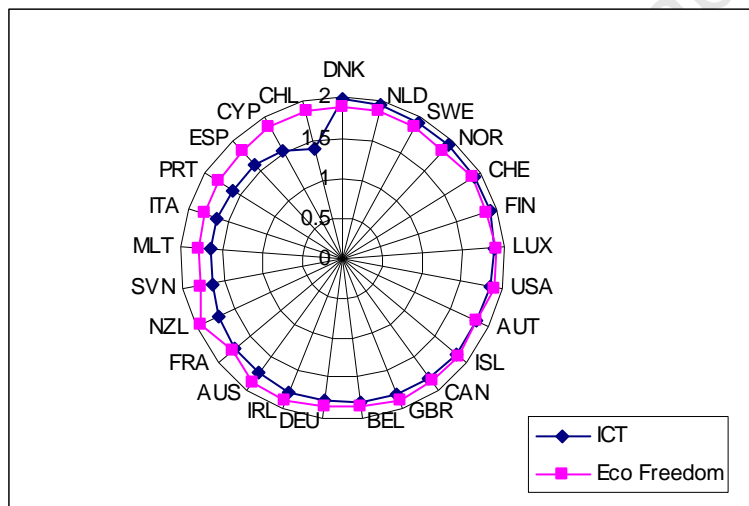
Mbaku (2003) argues that economic freedom is one of the key elements of measuring aspects of the quality of a country's institutions. Gwartney and Lawson (2004) argue that countries with more economic freedom tend to use more technological innovation in their economies, attract more investment and generate a higher productivity. In this context, ICTs can help organizations to effectively and efficiently manage business processes, enhance productivity and competitiveness. According to the 2004 *Economic Freedom of the World* report, there are several reasons to explain why it is reasonable to expect that free economies will grow more rapidly than those that are less free. First, economic freedom implies competition, which leads to higher rates of economic growth, as is widely believed. Second, more liberal economies also provide greater opportunities for entrepreneurial discoveries (see Gwartney and Lawson, 2004). A free market makes it

possible for entrepreneurs to test on the market the possibility of success of an innovative idea. Finally, in a free market, private investment tends to flow toward areas with the highest rate of return (De Haan et al., 2006).

Although there has been an intense interest among international institutions (e.g., ITU, The World Bank, UNCTAD, UNDP) and in the literature in terms of access to and benefits from ICTs on economic growth and productivity at firm, regional, and country levels, little attention has been paid to the potential impact of ICTs on economic freedom in particular within the context of developing countries. Therefore, this thesis intends to fill this gap by analyzing the extent to which ICTs positively influence democracy and economic freedom in Middle East.

Figure 2.4 shows a logarithmic scale graph of normalized ICT and economic freedom values for 25 top democracies for year 2003.

Figure 2.4: ICT and economic freedom for 25 most developed democracies



Source: Orbicom (2005) and Heritage Foundation (2005)

As shown above, there is a strong correlation between ICT expansion and economic freedom on a global scale. This study is interested in investigating the impacts of ICTs on economic freedom in the context of Middle Eastern countries for the period 1995-2005.

Chapter 3: The Philosophical Perspective

In this chapter, I describe the philosophical perspective that informs research. I adopt Burrell and Morgan's (1979) sociological paradigms to situate my approach. To begin, I review the primary ontological, epistemological and human nature assumptions that underpin the four paradigm framework, as well as how these assumptions affect the act of researching.

Rao and Osei-Bryson (2007) point out that there are many definitions of what ontology is and what should be represented in the ontology, however, many scholars agree that it is a formal description of a domain of discourse intended to be shared among different applications and expressed in a language that can be used for reasoning. *Ontology* in this context can be seen as a way of "standardizing the knowledge" (Rao and Osei-Bryson, 2007:371). Broadly speaking, ontology concerns how the researcher views reality. In other words, does the researcher operate with the notion of reality as an objective fact that can be observed, measured, and classified, or, is reality more nuanced and subjective? Burrell and Morgan argue that objectivist ontology, which they label "realism", considers reality to be concrete, tangible, and relatively immutable. In contrast, subjective ontology, referred to as "nominalism", explains reality by assigning concepts, names and labels.

Epistemology deals with knowledge, that is, whether the phenomenon under investigation can be known in the external world or if it can only be known through individual experience. Again, Burrell and Morgan (1979) distinguish between two extremes—the positivist approach (objective) and the anti-positivist (subjective). Positivist epistemology explains and predicts phenomena in the social world by applying natural science approaches in a search for regularities and causal relationships between the objects under investigation. In contrast, anti-positivist epistemology rejects this so-called observer paradigm. Instead, it investigates phenomena from the perspective of individuals who are directly involved. Finally, human nature, or more precisely the role of human agency, is another of Burrell and Morgan's paradigmatic assumptions. In this context, objectivists operate from a deterministic perspective, regarding humans as being acted upon or determined by the situation or environment in which they are located. In

contrast, subjectivists assert a voluntaristic view of human nature, emphasizing autonomy and free will.

3.1 The Dimensions of the Framework

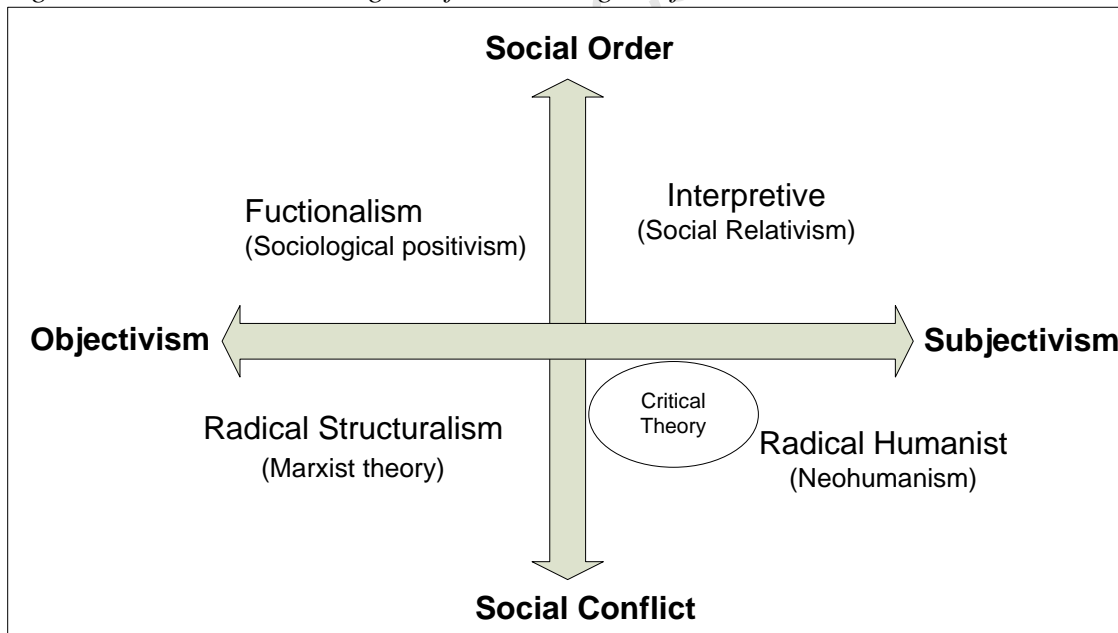
Based on the primary assumptions outlined above, Burrell and Morgan (1979) organize their paradigms on the basis of how reality is theorized and what is knowable. One dimension of the framework is *objectivist versus subjectivist* and the other is *order versus conflict* (see Figure 3.1). The first subsumes the assumptions of ontology and epistemology by addressing the two overarching considerations of objectivity versus subjectivity, while the second addresses society, or the nature of social organization. In broad terms, the objectivist-subjectivist dimension distinguishes between ontologies and epistemologies that either view the social world as broadly similar to the natural world (objectivist) or as more appropriately viewed through the narrower lens of the lived experience of individuals (subjectivist). The second dimension of Burrell and Morgan's social paradigms distinguishes broadly between the polar opposites of social order and social conflict. The social order pole draws on the sociology of regulation that emphasizes a social world characterized by order, stability, integration, consensus, and functional coordination. It attempts to explain why society is maintained as an entity as well as why it tends to hold together rather than fall apart. On the other hand, the social conflict pole draws on the sociology of radical change, emphasizing emancipation, disintegration, change, and coercion. It is concerned with alternatives and possibilities rather than with the acceptance of the status quo. As illustrated by Hirschheim and Klein (1989), these dimensions yield four paradigms when mapped onto one another.

3.2 Four Paradigms of Social Science Research

As depicted in Figure 3.1, Burrell and Morgan combine the two aforementioned dimensions to create four paradigms of social science research. The *radical humanist* (neohumanism) paradigm, or the subjective-conflict model, is concerned with theorizing radical change in society from a subjectivist view of point. Hirschheim and Klein's adaptation of the paradigms emphasizes emancipation and potentiality, focusing in particular on the barriers to emancipation, including "ideology, psychological

compulsions and social constraints” (1999: 1201). The *radical structuralist* paradigm (objective-conflict) views change from an objective standpoint, and emphasizes the role of entrenched economic power in resisting change. The *interpretive* (subjective-order) paradigm (Hirschheim and Klein’s “social relativism”) adopts an explicitly individualistic approach in the consideration of order while the *functionalist* (objective-order) paradigm views adopt an objectivist perspective to explain “the status quo, social order, social integration, consensus, need satisfaction and rational choice” (Goles and Hirschheim, 2000: 253). The functionalist perspective is largely concerned with providing practical solutions to social problems, whereas the objectivist and subjectivist paradigms compete in terms of differences in their methodological approaches. Social scientists operating in the objectivist tradition adopt nomothetic approaches, which emphasize the identification and measurement of relationships and regularities between the various components of social issues.

Figure 3.1: Burrell and Morgan’s four Paradigms of Social Science Research



Adopted from Burrell and Morgan (1979) and Hirschheim and Klein (1989)

Objectivists combine their ontology, epistemology, and view of human agency to create a methodological perspective that treats the social human world as hard, real, and external to the individual, ultimately reducing the world to a series of general laws

through methods such as hypothesis testing. In other words, objectivists strive to understand the world through the specification of general laws. In contrast, the subjectivist tradition emphasizes the role of the individual in the social world, and thus argues for ideographic approaches to the search for answers. Subjectivist methods emphasize the collection of detailed first-hand knowledge about the background and life history of the subject(s) under investigation. Subjectivists aim to understand the world through the subjective lived experience of individuals and reject the notion of generalized social laws.

3.3 Situating My Research within the Four Paradigms

Hirschheim and Klein (1989) note that the “view that these four paradigms capture the whole of sociological and organizational research is not without its critics” (p.1202). Furthermore, Gioia and Pitre (1990) argue that the use of a single research paradigm does not reflect the multifaceted nature of organizational reality in adequate detail and therefore suggest a multi-paradigm perspective able to bridge the dimensions of Burrell and Morgan’s simple two-by-two model. Gioia and Pitre emphasize that using different theory-building approaches will enable researchers to study complex issues more effectively and efficiently. This approach also enhances researchers’ ability to develop methodologies not bound to a single, narrow paradigm (Jensen, 2007).

My research is broadly and primarily anchored in the humanist paradigm, in that it seeks to critique the status quo through the exposure of what I believe are structural contradictions embedded in the social systems of Middle Eastern countries. Through this critique, I intend to illuminate and further facilitate the transformation of alienating and restrictive social conditions. I also address some elements of the structuralist paradigm in order to measure the presence and strength of the components of democracy (including the indices of political rights, civil liberties, economic and press freedoms, which are discussed in the later chapters). From the point of view of measurement, the structuralist approach allows for a comparison of the level of e-democracy in Middle Eastern countries on a global scale. Stahl (2008a) argues that humanist and structuralist paradigms are often collapsed into one paradigm, resulting in the more widely used distinctions of positivism, interpretivism, and critical research (Chua, 1986; Orlikowski

and Baroudi, 1991), which have been applied in various aspects of Information Systems (IS) research (Iivari, Hirschheim and Klein, 1989; Goles and Hirschheim, 2000; Dhillon and Backhouse, 2001).

In the context of my research, I argue that the filtering of the content of ICTs, the Internet in particular, negatively impacts the socio-economic development of the Middle East. The filtering of sites related to civil society groups, NGOs, human rights groups, political organizations, student organizations, women's rights groups, or ethnic and religious minorities in the Middle East has increased during the last decade, contributing to the growing marginalization of these populations. For example, filtering sites related to women's rights has undermined women's ability to participate in socio-political and knowledge-based information exchanges, broadening the gender digital divide in a male-dominated region. Huyer and Mitter (2003) argue that the gender divide has implications for every level of the knowledge society, in that if women are not active participants and contributors to the shaping of the knowledge society, including ICTs, they risk exclusion from the opportunities it presents.

3.4 Critical Social Theory: An Emancipatory Paradigm

This research is critical to the totalitarian means by which ICT develops in the Middle East, particularly in countries such as Iran, Syria, and Saudi Arabia. It argues that such an approach to the development of ICTs not only exclusively serves the political agendas of the elites of interest groups but it also restricts citizens' free participation in democratic discourses concerning matters of mutual understanding. Leonardo (2004) points out that, unlike traditional research disciplines, critical social theory is a multidisciplinary framework with the implicit goal of advancing the emancipatory function of knowledge. Stahl (2008b) points out that critical IS research is a paradigm or worldview that consists of beliefs about physical and social reality (ontology, social relations, and human rationality), knowledge (epistemology and methodology), and the relationship between theory and practice. Ngwenyama and Lee (1997) argue that Critical Social Theorists (CSTs) believe that they cannot be mere observers, and believe that, by their very presence, they influence and are influenced by the social and technological systems they study. Moreover, CST, in contrast to the positivist perspective, posits that there is a

difference between observing nature and observing people, and that inquiry into social activity should focus on understanding the meaning of that activity from within the social context and lifeworld of actors. For CSTs, the researcher's responsibility in a social situation does not end with the development of sound explanations and understandings of that situation, but must extend to a critique of unjust and inequitable conditions from which people require emancipation. Further, Ngwenyama and Lee (1997) emphasize that "unlike positivist perspectives, CST views people not as passive receptacles of whatever data or information [is] transported to them, but as intelligent actors who assess the truthfulness, completeness, sincerity, and contextuality of the messages they receive" (p. 152). Wilson (1997) argues that critical theory denies the purely instrumental rationality of positivist science in Information Systems by making it possible to identify its emancipator nature. It is also important to note that, unlike most interpretive approaches, CST requires the researcher attend not only to the matter of mutual understanding, but also to the emancipation or liberation of organizational actors from false or unwarranted beliefs, assumptions, and constraints. Leonardo (2004) points out that CST represents an expanded set of criticism with the advent of more recent discourses such as postmodernism and cultural studies. He argues that "CST rejects the radical distinction between theory and practice as two separate poles of a dualism [and] does not promote theory for theory's sake, or what Althusser called 'theoreticism', but encourages the production and application of theory as part of the overall search for transformative knowledge" (p.11). Drawing on Walsham, Stahl (2008a) points out that "critical research wants to be practical, but in a specific way, namely to change social practices in such a way that the negative effects of the way society and organizations are run will be minimized" (p. 141). As Ngwenyama (1991) notes "the critical social theory approach was never intended to be an abstract philosophy, it was to bring about real change in the human condition" (p. 276).

Thus, multidisciplinary, knowledge-based Critical Social Theory is related to social theory including race and ethnic theory, cultural theory and sociological theory (Leonardo, 2004). Stahl (2008a) points out that critical research in Information Systems has been developing for at least 20 years. It is often defined as a research 'paradigm', third following positivist and interpretive research (see figure 3.2). Avgerou (2005)

argues that the fact that critical research is “concerned with transformative redefinition of socio-economic circumstances may well be [a] valid concern, indeed a perceived necessity or priority for some critical researchers, particularly those addressing the socio-economic circumstances of many parts of the developing world” (p.104). The goal of CST is to free citizens from “sources of domination, alienation, exploitation, and repression by critiquing the [existing] social structure with the intent of changing it” (Gioia and Pitre, 1990: 588). CST examines the legitimacy of the social consensus on meaning to uncover communicative distortions, and to educate individuals about the ways in which distortions occur (Gioia and Pitre, 1990).

Stahl (2008a) argues that, conceptually, emancipation is closely related to empowerment, but that emancipation is a slightly broader concept as it considers how the individual’s abilities can be developed and how his potentials can be achieved. In other words, emancipation involves psychological as well as organizational issues (Hirschheim and Klein, 1989). Hirschheim and Klein (1994) argue that one of the key values of neohumanism is emancipation. They point out that “in neohumanism, the principal goal of emancipation is the establishment of conditions for human existence that facilitate the realization of human needs and potentials” (p. 87). In particular, emancipation deals with processes for freeing individuals and groups from repressive sources of social and ideological alienation. In this context the neohumanist paradigm embraces not only emancipation and citizens’ empowerment but also it is concerned with the efficiency and effectiveness (i.e., technical concerns) of communication discourse for the purpose of mutual understanding (Hirschheim and Klein, 1994).

As depicted in figure 3.2 two main branches of critical research are conceptual and empirical methodologies. This empirical research deploys both quantitative and qualitative methods in order to investigate the impacts of ICTs on socio-political and economic freedoms. The quantitative method enables me to construct necessary hypothetical models for investigating research questions and setting up appropriate statistical estimations for inquiries. The qualitative method on the other hand helps me to better understand the complex nature of ICT development in the Middle East. In addition, the qualitative nature of this study is an integral part of critical social theory and in particular the Critical Discourse Analysis (CDA) methodology deployed in this thesis.

Central to critical research is the desire to change social reality and promote emancipation (Stahl, 2007). An example of such emancipation as provided by ICTs is the movement in support of women's rights in Iran, initiated by women-run NGOs, women rights' activists, and female bloggers. For example, on June 12, 2006, the "Stop the Violence Against Women" campaign initiated a demonstration in the capital city of Tehran; shortly thereafter, another campaign, called "One Million Signatures Demanding Changes to Discriminatory Laws" followed. Launched on August 27, 2006, One Million Signatures collects these signatures to support a petition addressed to the Iranian Parliament, or *Majlis*, asking for the revision and reform of the current laws that discriminate against women (Tahmasebi, 2008). Tahmasebi (2008) points out that one of the main goals of the campaign is to educate citizens, particularly women, about the negative impact of discriminatory laws on the lives of women and society as a whole. The campaign is concerned with women's rights issues such as marriage, divorce, inheritance, and citizenship², as well as changing the "age of criminal responsibility", which, according to current Iranian Islamic law is eight years and nine months for girls and fourteen years and six months for boys. While the website for the One Million Signatures campaign has attracted many people to its cause and has been supported by websites and bloggers, the website "Change for Equality", which processes the online petition for the campaign, was filtered for the seventeenth time by Iranian officials in November 2008 (Change for Equality, 2008).

When four female college students from Saudi Arabia set up a profile for their heavy metal band Accolade on MySpace, it was considered controversial online activity. Although the band is unable to perform in public because of the conservative Islamic rules of the Kingdom, they challenged the taboos of Saudi Arabia's religious authorities by posting their music online. Thousands of Saudi citizens downloaded the band's single "Pinocchio" from MySpace and other social networking sites such as YouTube. The lead singer of the band has said, "maybe we're crazy [but] we wanted to do something

² According to the Iranian Islamic constitution a woman is only recognized as a citizen once she is a mother (and married). For more information, please visit:
<http://www.change4equality.com/english/spip.php?article41>

different” (cited in Worth, 2008). This is the first time that an all-female rock band in Saudi Arabia created an online presence, a process started a few years earlier in Iran, another religious conservative country. The growing underground music scene in Iran has challenged authorities; for example, the popular underground music group Kiosk (Kiosk, 2007) established their online presence in 2005. Bahmani (2005) points out that the band’s lyrics express the growing frustration in Iran, particularly among the younger generation. A video clip posted on YouTube has attracted almost one million views since 2007. This clip is based on an Iranian underground female rap song; the video is directed towards the political leadership in Iran and describes the repression of young people (Esfandiari, 2007).

Another emancipatory feature of ICTs that helps to convert a single-voice society into a multi-voice digital community is blogging. Blogs provide a platform for the expression of personal thoughts, often using stream of consciousness, and the discovery of intrapersonal and interpersonal characteristics such as self-regard, emotional self-awareness, assertiveness, independence, self-actualization, empathy, social responsibility, and interpersonal relationships. Blogging in the Middle East has fostered an alternative way of accessing free information, disseminating opinions, thoughts, and ideas, and organizing social/political events. Blogging in Iran, for example, has become a new way to practice democracy virtually and a new mass media among the younger generation.

According to Habermas (2006), mass media based on the technology of mass communication constitutes a source of power. However, Hacker and van Dijk (2000) argue that virtual democracy is an attempt to practice democracy without the limits of time, place, or other physical conditions, through the use of ICT. In the context of the Theory of Communicative Action (TCA), Habermas (2001) argues that “every communicative actor has to commit to fulfilling universal claims to validity. Insofar as she participates in communication (i.e., a process of reaching understanding) at all, she can not avoid raising the following claims:

- (i) To express herself intelligibly;
- (ii) To make something understood;
- (iii) To make herself understood in doing so; and
- (iv) To reach a mutual understanding with another” (pp. 136-137).

Once in complete agreement, “which encompasses all four components” (Habermas, 2001), reaching mutual understanding with others can help the individual arrive at other levels of social activity, namely the organization of social actions (Habermas, 1989b). Hacker and van Dijk (2000) argue that ICT enables citizens to address the social, cultural, political, and economic issues that matter to them with regard to institutional politics; if they so desire, citizens can even try to create their own political system and/or organize social actions to bring these issues to the larger public.

This study is critical to the practice of some Middle Eastern countries that view ICT development from the lens of ideology.

3.5 Ideology and ICT Development

Stahl (2007) argues that “ideology is a central concept of critical research in Information Systems as well as critical research in general” (p.39). Ideology, as defined by Mannheim (1931), is an idea system that seeks to conceal and conserve the present by interpreting it from the point of view of the past. In contrast, Fairclough defines ideologies as “representations of aspects of the world, which can be shown to contribute to establishing, maintaining, and changing social relations of power, domination, and exploitation” (as cited in Stahl, 2007). Fairclough also points out that because ideology limits individuals’ ability to perceive the world, individuals are counter forces to the main objective of critical research, namely, emancipation. Hirschheim and Klein (1994) argue that one of the main sources of communication distortions, emanating from the social context, is the information processing bias exerted by authority and other forms of power and ideology. This bias hides privileged interest and power through theoretical constructions such as verbal pictures, portraying a state of affairs as natural and just, and therefore unavoidable, when, in fact, it is not.

Finlayson (2005) points out that Habermas accepts Adorno’s definition of ideology as “socially necessary illusion” or “socially necessary false-consciousness.” Palmer et al. (2001) point out that “Habermas defines ideology as the suppression of generalizable interests in the day-to-day of participants, where systems or groups possessing power operate in rationally indefensible ways

because their power relies on disempowering of other groups, i.e., their principles of behavior are not universalizable” (p. 216). In turn, ideology critique is, in some ways, a critique of the illegitimate operation of power and hegemony in capitalist society (Palmer et al., 2001).

Some Middle Eastern governments restrict access to ICT services such as the Internet and SMS messages under the pretext of Islamic ideology. These governments claim that filtering online content protects national security, defends Islamic religious values, and protects the country from the harmful material distributed on the Internet. However, the most recent research on Internet filtering shows that the censorship imposed is mostly politically motivated which will be discussed in details in upcoming chapters. The filtering of the Internet and other ICT-based communication channels such as e-mails, blogs and SMS make it harder for individuals or even impossible to reach their full potential thus precludes emancipation (Stahl, 2007).

By addressing issues of ideology and emancipation, we enter into the concept of Critical Social Theory (CST) research. Ngwenyama (1991; 1997) argues that the assumptions of CST research are:

- (i) people have the power to change the world;
- (ii) the knowledge of the social world is value-laden;
- (iii) reason and critique are inseparable;
- (iv) theory and practice must be interconnected;
- (v) reason and critique must be reflexive in practice.

Habermas (1989b) argues that “reason takes a partisan position in the controversy between critique and dogmatism, and it gains ground with each new stage of emancipation. With practical reason of this kind, insight converges with an express interest in liberation by means of reflection. A higher level of reflection is equivalent to a step forward in realizing the autonomy of the individual, to the elimination of suffering and the furthering of genuine happiness” (p. 29).

The humanistic feature of this research is based on the concept of democracy and the principals of democratic institutions, presented in chapter 2. I argue that ICTs operate as emancipatory tools and services which support the development of a more open, democratic, secular, and liberal society in the Middle East. ICTs provide the means for

building the capacity to accomplish radical social change, for example, in constitutional and legal arrangements. More specifically, popular movements organized online can effect change in the current constitutional discrimination on the basis of race, gender, or minority ethnicity or religion. This is particularly noteworthy in countries such as Iran and Saudi Arabia, where strict Islamic Sharia laws create an environment in which any criticism of the status quo is treated as a de facto critique against Islam and its values. Johnson (2007) argues that information societies require ICT professionals and researchers in the field of IS to realize and understand the values of democracy and see the connections between their work and the contributions made to the democratic character of the world.

3.6 Research Methods

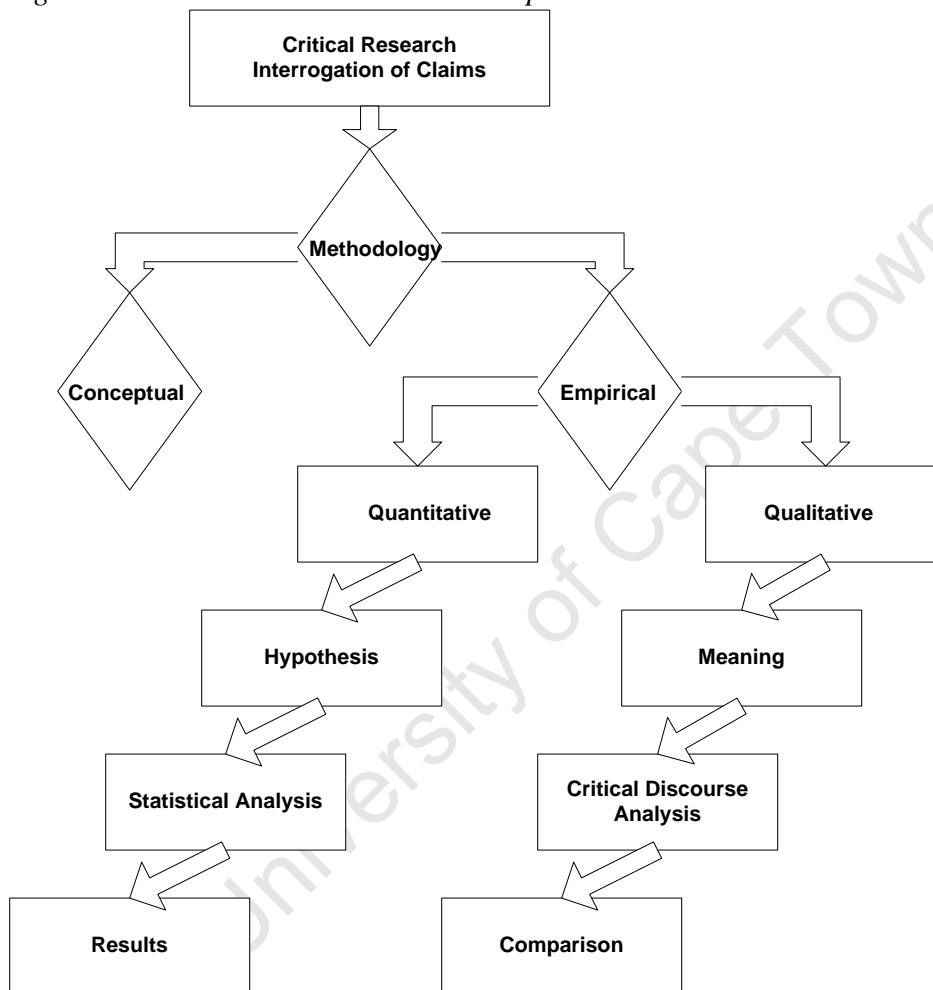
Figure 3.2 below illustrates the multi-method approach to the empirical studies of this thesis. The empirical analysis and specific findings are contained in 5 chapters of the thesis. The quantitative empirical analysis and findings are contained in Chapter 4, 5 and 8. The qualitative empirical analysis and findings are contained in Chapters 6 and 7. I will now briefly discuss the reasons for selecting the specific empirical analysis methods used in the thesis; more detailed discussions of the methods are contained in the chapters where they are used.

Quantitative methods

For the empirical studies of the impact of ICTs on democratic and economic freedoms on both global and regional scales I used three estimation models namely, two-Stage Least Squares (2SLS), three-Stage Least Squares (3SLS) and two-Stage Least Squares with Instrumental Variables (2SLS-IV). The complexity of the quantitative analysis in these studies required the use of economic models involving endogeneity which do not fit into a framework in form of Y-on-X regression (Wooldridge, 2009). The above selected methods (discussed in more detail in Chapters 4, 5 and 8) provide more consistency in regards to parameter estimates compared with other methods such as the standard linear Ordinary Least Square (OLS) regression. For example, the OLS regression method is based on a data fitting approach that seeks to minimize the sum of square residuals. In

other words OLS assumption of constancy is that the model error term is unrelated to the regressors, however, this method is inefficient and in some cases unable to deliver consistent parameter estimates when issues related to omitted variables, or errors in variables, or measurement error in independent variables arises (Wooldridge, 2009).

Figure 3.2: Critical research and the empirical methods used in this thesis



The fundamental assumptions for using SLS estimators are twofold. Firstly the SLS estimation models are robust enough to small changes in conditioning information. Secondly, the SLS estimation models are based on systems of structural equations, where some equations contain endogenous variables among the explanatory variables. In other words, the endogenous variables used in this study are the dependent variables of other equations in the system in which each dependent variable is associated with its own error term.

Qualitative methods

For the qualitative studies of this thesis I used two methods: a) Critical Discourse Analysis (CDA) to interrogate the validity of claims offered by the Middle Eastern governments for ICT content filtering and censorship; and b) hermeneutic content analysis on the blogs to determine their role and contribution to the political and social discourse in the Middle Eastern countries. The CDA empirical analysis and findings are reported in Chapter 6, while the hermeneutic content analysis and findings are reported in Chapter 7.

The main objective of using CDA methodology, presented in chapter 6, is to be able to distinguish between the emphatic pattern in the use of language from the ideological perspectives and its relationship to the restrictions applied on the use of ICT tools and services. In other words CDA allows us to identify the perspective from which a speech or a written text will facilitate mutual understanding among people of different cultures and beliefs (Wei-Hao, 2008) or it is understood as a systematic communicative distortions in which the power relations underlines discourse (Cukier et al., 2008; 2009). Chapter 6 presents a list of the central validity claims and metaphors explicitly stated or implied in the communication discourse (for more detail, please see chapter 6).

Chapter 7 reports on the hermeneutic content analysis of 512 most popular blogs in order to be able to cluster them in a meaningful fashion that is conceptually link them into clusters based on a coding mechanism that captures the meaning of blog activities. In particular chapter 6 was interested in investigating the role of bloggers in the recent events highlighted aftermath the presidential election in Iran. For the coding of blogs and then classifying them in their perspective cluster the ATLAS.ti software was used. The ATLAS.ti software was not able to perform Unicode text search on the Farsi content of the majority of blogs, therefore I had to improvise in using it for the content analysis. However the software allowed me to develop a coding mechanism to construct a top level network view of the Iranian blogosphere.

Chapter 4: Conceptual Framework

To empirically investigate the impact of ICTs on socio-political and economic freedom in the Middle East, a conceptual framework was established based on the model of e-democracy proposed by Clift (2003).

The following sections introduce the e-democracy framework as well as a new index called the “index of e-democracy opportunities.” This index was constructed from a pool of panel data on 146 economies for the period 1995 to 2005. The new index provides a metric to measure the level of e-democracy opportunities in each nation on a global scale. In particular, the position of Middle Eastern countries within this global ranking is in the interest of this thesis. Yet, the impact of ICTs on democracy and economic freedom in the Middle East will be discussed in details in the upcoming chapters.

4.1 E-Democracy Framework

Dahlgren (2005) argues that the Internet extends and pluralizes the public sphere in a number different ways including structures, representation, and interaction. ICTs not only foster the expression of individual interests, but also enhance public dialogue and collaboration among constituents with divergent interests.

Some even believe that these ICT initiatives are creating a new type of political actor called the “digital citizen” (Katz, 1997). While anecdotal evidence is used to argue that ICT expansion has significantly influenced the expansion of freedom and democracy globally, there are few systematic studies on this issue (Kampen and Snijkers, 2003). This study is an attempt to fill this gap in literature. The study uses archival data from 146 counties in different stages of ICT expansion, democracy and economic freedom.

4.1.1 ICT and E-democracy

Numerous studies illustrate the ways in which national and local governmental bodies are employing ICTs to enhance democracy (Dertouzos, 1997; Sussman, 1997; Cigler and Burdett, 1998; Bennett and Fielding, 2001; Bimber, 2001). Mudhai (2003) argues that ICTs have been perceived as a drive to the “third wave” of democratization. Balkin (2004) points out that the digital revolution brings features of freedom of expression to

the forefront of our concern and makes possible for widespread cultural participation and interaction. He identifies cultural participation as a means of citizens' participation in the production of culture, and in the development of the ideas and meanings that constitute them and the communities and sub-communities to which they belong.

Table 4.1: ICT and Democracy, Major topics discussed in some existing literature

Area	Aims	Research inquiry	Some examples in existing literature
ICT	<ul style="list-style-type: none"> • Tools and services 	<ul style="list-style-type: none"> • The role of ICTs in communication discourse 	Hacker & van Dijk (2000); Jankowski & van Selm (2000); Cukier, Ngwenyama, Bauer & Middleton (2008); Stahl (2008b)
E-democracy	<ul style="list-style-type: none"> • Promotion of public participation 	<ul style="list-style-type: none"> • Virtual Democracy vs. virtual Feudalism • Ideology & ICT development 	Mowshowitz's (1992); Hacker & van Dijk (2000); Clift (2003); Dahlgren (2005); Delbridge (2005); Stahl (2007)
Citizens	<ul style="list-style-type: none"> • Participation and mobilization • Personal development 	<ul style="list-style-type: none"> • Empowerment 	Ngwenyama & Lee (1997); Hirshheim & Klein (1998), Katz (1997); Ayres (1999); Bimber (2001); Norris (1999, 2001); Lenihan, (2002a); Suarez (2005); Stahl (2007, 2008a, 2008b)
Government	<ul style="list-style-type: none"> • ICT development, e-government, R&D 	<ul style="list-style-type: none"> • ICT development versus ICT filtering 	Clift (2003); Morrisett (2003); Mercer (2004); Dahlgren (2005)
Media	<ul style="list-style-type: none"> • Independent media 	<ul style="list-style-type: none"> • Media control & censorship versus blogging 	Habermas (1989); Boncheck (1997); Boeder (2000); Alterman (2005); Freedom House (2005); RWB (2008)
ICT providers	<ul style="list-style-type: none"> • Private or public sectors, ICT licensing and regulation 	<ul style="list-style-type: none"> • ICT control versus ICT liberalization 	Meng & Li (2002); Barzilai-Nahon & Barzilai, (2005); Indjikian & Siegal, (2005); UNCTAD (2006); ITU (2005, 2007a, 2009a)
Social groups	<ul style="list-style-type: none"> • NGOs, political organizations, Women rights groups, ethnic and religious minority groups 	<ul style="list-style-type: none"> • Emancipation 	Escobar (1999); Ferdinand, (2000); Chadwick (2003); Norris (2001); Pillai & Shanta (2008)

Table 4.1 summarizes some key points discussed in some existing literature with regards to ICTs and democratic freedoms. Some scholars argue that ICTs has enabled citizen participation in the democratic process by providing e-democracy (Clift, 2003; Coleman, 2003; McCullagh, 2003; Morrisett, 2003; Rushkoff, 2003, Norris, 1999, 2001). ICT tools and services such as the Internet and mobile SMS have enabled citizens to not only participate in democratic process, but also mobilization. The wide spread and usage of the Internet in organizing and mobilizing people around the world have helped individuals and groups to debate and influence issues relevant to political life and increase civic and political participation (Suarez, 2005; Weber et al., 2003; Gilbreth and

Otero, 2001; Norris, 2001; Bennett and Fielding, 1997; Dertouzos, 1997; Sussman, 1997). For example, authorities in Thailand sent SMS messages to over 25 mobile cell phone users encouraging them to participate in election (Thai election, 2006) or in the recent US presidential election about 24% of Americans regularly learned about the presidential campaign from the Internet (Pew Research Center, 2008). These tools and services were also widely used as a means of mobilizing people in political discourses or monitoring the election outcomes. Suarez (2005) points out that SMS had a crucial role for mobilizing people for mass demonstration against government demanding for the truth in 2004's Madrid terrorist attack. It had also a crucial role in mobilizing people during the election campaign. In Iran's presidential elections (2005, 2009) the massive usage of SMS sent by citizens in boycotting the election or to support other candidates frustrated the hardliners who monitored the election and threatened SMS users for revenge (Iranian judiciary, n.d.). In 2009, prior to the presidential election the government of Iran temporarily shut down the entire mobile network system due to the volume of SMS messages exchanged against the hardliner candidate and in support for liberal candidates (ONI, 2009a). These tools and services were also used as a means of monitoring tool for election outcomes around the world. For example, Sierra Leone's election was faced with the challenge of monitoring election outcome in a country that lacks infrastructure and reliable Internet access to transmit election data by conventional means, the election monitoring group used SMS to transmit election data and particularly from their rural areas where there is no ICT infrastructure established (Sierra Leone, 2008). The same monitoring feature of SMS was used in Ghana's election 2008 after the violence and fraud experienced in Kenya, Zimbabwe, and Nigeria (Ghana, 2008).

Balkin (2004) argues that the Internet has enabled people to shape the public opinion by routing around traditional mass media. Sites such as MySpace, Facebook, YouTube, Photobucket are the examples of the power of the Internet in social networking. There are more than 100 million personal profiles on MySpace and Facebook has over 35 million profiles online (Laudon and Traver, 2008) the same phenomena happens with YouTube. YouTube reaches over 73 million people visitors per month just in US (Quantcast, 2008). For example, MySpace and Facebook were media vehicles used by US Candidates in the 2008 US presidential election for mobilizing people especially young people. During his

presidential campaign, the US President Obama had and still has his website, in both the English and Spanish languages, as well as his own YouTube channel. He was actively present in other social networking sites such as Facebook, Flickr and Myspace (DigitalNatives, 2008). These social networking sites are important sources of communication and in particular for the younger generation where approximately 67% of Americans between the ages of 18 to 29 are actively participate in these communities (Research Center, 2008). ICT tools and services are also used for organizing groups and individuals to express their grief and protestation against different social, political and global issues (Norris, 1999; Postmes, 2002; Suarez, 2005). For example, blogs and social networking sites have been effective communication channels for mobilizing masses in street protests aftermath 2009 presidential election, which will be discussed in upcoming chapters.

Some researchers argue that e-government is more responsive, and connects citizens to meet challenges of building a more sustainable society and world (Clift, 2004; Terry, 2005, Savic, 2006). Others argue that although most developed countries have some sort of e-government strategies, there is no clear articulation of the link between the often-stated efficiencies gained in the delivery of government services and strong democracy (cf. Williamson, 2004).

It is clear that, there are many challenges in building appropriate infrastructure for citizen engagement and collaboration. For example some researchers are arguing that while communication technologies facilitate the distribution of political documents and provide a virtual space for citizens to discuss and engage in local political processes, this does not necessarily result in wide spread participation (Cavanaugh, 2000; Watson and Mundy, 2001; Frissen, 2002; Hoff et al., 2003; Hill and Hughes, 1998). Riley (2003) points out that UK Government hopes to use the Internet and in particular e-voting in order to bring youth into the democratic process since their participation in elections was regarded as very low. In other societies, such as Iran and China, mobile telephone and Internet use for political activity has risen dramatically in the last decade, but these governments have responded with stricter controls on ICT (Sohmen, 2001; Lacharite, 2002; Lynch, 2003; Yu, 2004). Further, a troubling dimension of Internet usage concerns the propagation of hate speech and terrorism (Gerstenfeld et al., 2003).

For researchers investigating the relationship between ICT and the socio-political sphere, a key challenge is to understand how ICT expansion affects different groups in the “global village.” To date, studies of the impact of ICT on democracy have focused on examining specific local-social experiments, and while there is a general consensus that ICT has had an impact on democracy globally, systematic studies examining this issue are limited in number (Kampen and Snijkers, 2003). This study is an attempt to fill the gap in literature by investigating ICT impacts on political and economic freedom on a global level.

4.1.2 Components of E-democracy

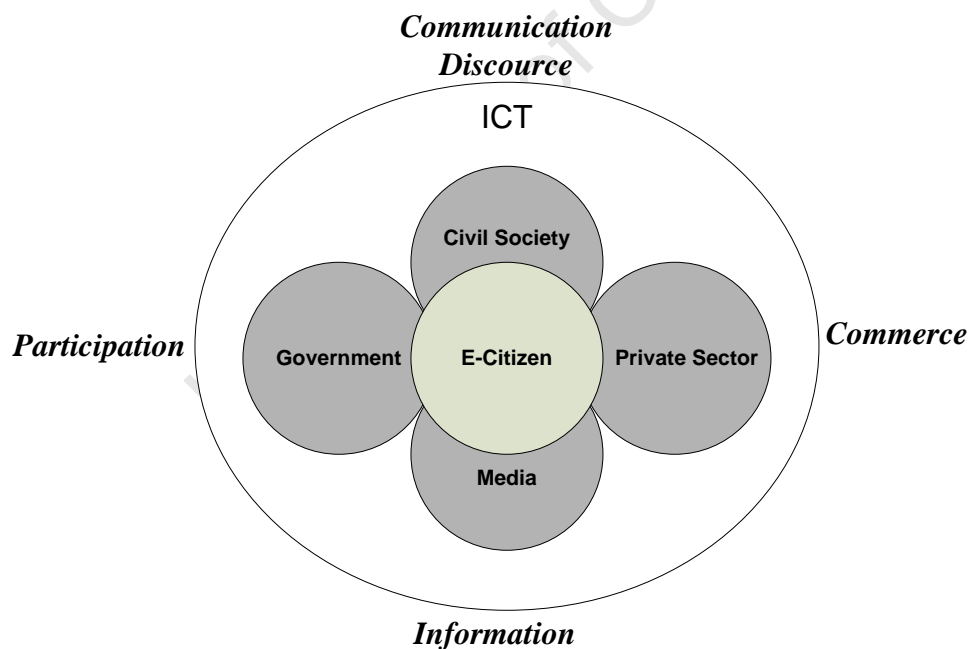
Backus (2001) defines e-democracy as processes and structures that encompass all forms of electronic interaction between the government (elected representatives) and the citizens (electorate) (cf. Savic, 2001). ICTs have enabled citizen participation in the democratic process by making e-democracy possible (Clift, 2003; Coleman, 2003; McCullagh, 2003; Morrisett, 2003; Rushkoff, 2003, Norris, 1999, 2001). According to Oates (2003), ICTs have the potential to allow people to engage in all parts of the political process, namely obtaining information, engaging in deliberation, and participating in decision-making.

This research adapts Clift’s (2003) e-democracy conceptual model as depicted in figure 4.1. Clift (2003) defines e-democracy as the use of ICTs in strategies by “democratic sectors” within the political processes of local communities, states/regions, nations, as well as on the global stage. According to Clift, “democratic sectors” include governments, elected officials, media (including online portals), political parties and interest groups, civil society organizations, international governmental organizations, and citizens.

There are six components that construct the e-democracy model namely: ICT, E-citizens, Government, Civil Society, Media and Private sector. *E-citizens* are the crux of this model, 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, and/or organize social action in form of e-petition, organize social rallies and participate in the

debates and policy dialogues that are shaping global, national and local governance in the emerging information age (Lenihan, 2002a). They use ICTs for creation and dissemination of information, in addition to demanding a more open and democratic society. The explosion of ICT tools and services has also improved communication and interaction among people across the globe and assisted opening up new possibilities for political participation (Castells, 1996; Doostdar, 2004; Drezmer and Farrell, 2004; Yu, 2004). Morrisett (2003) points out that ICTs can be used to enhance the democratic process in form of 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.

Figure 4.1 General Model for investigation, adapted from Clift (2003)



The main objective of *civil society*, such as NGOs, women’s groups, trade unions, human rights groups and political organizations are to use ICTs in the pursuit of ‘good governance’ (Mercer, 2004) and democratic development. In addition, political groups

are able to use ICTs to promote their political agendas, and run online advocacy and political campaigns (Clift, 2003). Norris (2001) points out ICTs may serve multiple internal administrative and organizational functions for parties, linking them horizontally as well as vertically. For example, e-mails can be used to strengthen one-to-one communications and group networks within party organizations as well as link citizens and parties.

Government in this model represents e-government paradigm in which it provides citizens, civil society, private sector and media with extensive access to information electronically to support the functions that a government performs (Lenihan, 2002a). Chadwick (2003) argues that ICTs make it possible to link e-democracy to civil society with e-government at local and national levels. ICTs facilitate new forms of e-government based policymaking process that enshrine some of the important norms and practices of e-democracy (Chadwick, 2003). However, the potential for linking e-democracy in civil society with e-government at the local and national levels is far from straightforward but nevertheless achievable.

Media is another important component of our e-democracy model. 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. Bonchek (1997) points out that the flow of communication determines the direction and the pace of dynamic social development therefore manipulating the flow of information and the creation of knowledge. Ultimately, the media influences individual behavior, social organizations, and political systems. Bentivegna (2006) argues that ICTs signify the power to destabilize the control of the production and circulation of information held by the traditional media. In some societies, the antagonistic relationship between media and government represents a vital and healthy element of a fully functioning democracy (CDG, 1999).

Finally, the *private sector* represents commercially driven-connectivity, software, and technology (Clift, 2003); it is also the main ICT provider and developer. Castells (1996) argues that in the 1980s, a new, increasingly profitable global information economy emerged, enabling firms to generate, process, and apply efficient, knowledge-based information and work as a unit in real time on a global scale. The growth and expansion

of e-commerce and online transactions have enabled ICT to become a core component of economic development. It is anticipated that ICT expansion will improve the efficiency of the industrial infrastructure in developing countries thereby enhancing their overall economic performance and strengthening their competitive capacities in the global market (Meng and Li, 2002; Barzilai-Nahon and Barzilai, 2005; Indjikian and Siegal, 2005; UNESCO, 2006).

4.2 Research Approach

This research is motivated by four general questions: (1) what is the impact of ICT expansion on freedom and democracy around the world; (2) what is the impact of economic freedom on democracy around the world; (3) what is the impact of education on ICT expansion; and finally (4) how systematic filtering has affected the expansion of ICTs. At the center of the model is the dependent variable Political Rights and Civil Liberties (*PRCL*). The intention is to investigate how changes in the variables ICTs and economic freedom (*EF*) correlate with changes in *PRCL*. The UN Universal Declaration of Human Rights defines *PRCL* as the rights to free communication, religious and political participation, and the right to engage in economic activity. However, many scholars equate *PRCL* with constitutional democracy (the right of individuals to elect their governments) and freedom of the press (Pettit, 1999; Sen, 1999; Rose, 1999; Joyce, 2003). Some also argue that constitutional democracy is essential as it provides the basis for and protections of civil liberties and political rights (Lundstrom, 2002; Berggren, 2003; Gwartney and Lawson, 2006). In this study, we do not limit our investigation to countries with constitutional democracy. This is beyond the scope of our study. In this research, we focus on understanding the impact of ICT expansion and economic freedom on political rights and civil liberties globally. As such, *PRCL* is a complex measure of a country's adherence to the basic principles outlined in the UN Declaration on Human rights. Freedom House, an independent non-governmental international organization, which runs regular surveys, compiles data on this measure and ranks countries on various dimensions of *PRCL* (see table 1 Appendix A). The variable *ICTs* is a measure of ICT of four main components of network infrastructure (see table 1 Appendix B). Data on this variable is collected from the International Telecommunications Union (ITU), an agency

of the United Nations organization, and provided to researchers. Variable filtering (*filter*) is a measure of the level of media freedom exercised by citizens of each country. This variable constructed by aggregating two indices published by Freedom House and Reporters Without Border (RWB). The final variable, Education (*edu*) is a measure of adult literacy and educational enrollments for primary through tertiary levels. To investigate the model the following four hypotheses are posited:

H1: *The expansion of ICTs is positively correlated with democracy (PRCL), as ICT expansion increases the level of democracy as measured by PRCL will also increase.*

H2: *Economic freedom is one of the key elements of measuring aspects of the quality of a country's institutions. As the level of economic freedom increases, it positively influences the level of democratic freedom.*

H3: *The increase level of education is positively correlated with the expansion ICTs.*

H4: *Filtering and state censorship of ICT networks is negatively correlated with the expansion of ICTs.*

4.3 Data Collection

For this study the archival data from several sources were collected as follows; (1) Rankings of Political Rights and Civil Liberties from Freedom of House (www.freedomhouse.org); (2) Media Freedom rankings from Freedom House and Reporters Without Borders (www.rsf.org). These institutes are also the main source of data on the degree of filtering and state censorship applied on ICTs. (3) Four main components of ICTs as depicted in table 1 of Appendix B were collected from ITU. The ITU compiles, annually, statistics on ICT investments, infrastructure capacity, traffic, and individual uses of the internet and telecommunication devices and costs. (4) Data on Economic Freedom were collected from Heritage Foundation (HF) and the Wall Street Journal (WSJ). These institutes annually publish statistics in regards to pits and fall of economic across the globe. (5) Data on adult literacy were collected from the UN human development database, UNESCO and ITU. This study collected data on all countries that was able to find complete records of ICTs (*ICTS*), Economic Freedom (*EF*), education

(*EDU*), Political Rights and Civil liberties (*PRCL*) and Press Freedom measures (*FILTER*).

Freedom House and RWB provide valuable information about the level of press freedom experienced by the populace of each country. These indices not only study the degree of state control and censorship on print media but also the information generated and distributed through ICTs such as the Web. Although these indices do not provide detailed information³ regarding the state of filtering and censorship applied on ICTs they do provide a valuable metric for measuring each country's level of freedom of expression. These institutes assign the highest level of press freedom to a country in which the authorities have the highest respect for freedom of expression in the media and there is no intervention in what is published by journalists, bloggers, and other ICT users. At this level, it also assigns a degree of transparency regarding freedom of expression as described by the United Nations' *Universal Declaration of Human Rights*. A score of zero indicates the highest level of freedom of expression (no filtering or state censorship); however, these indices do not consider the amount of data published by citizens despite the existence of censorship and state press-control.

To measure the existing level of institutional democracy within each of the 146 economies in which the governments and legislative representative are elected, the index of Political Rights (PR) was considered. This index comprises three main components: the electoral process, political participation, and the government (see table 1 in Appendix A). On the other hand, the index of Civil Liberties (CL) consists of four main components: freedom of expression, associational and organizational rights, rule of law, and personal autonomy.

Table 4.2: Ranking Scales of Freedom House

Category	Rating Scale	Scores		
		Free	Partly Free	Not Free
Political Rights	1-7	<3	3 to 5	>5
Civil Liberties	1-7	<3	3 to 5	>5

³ OpenNet Initiative provides detailed information regarding the state of filtering of content of ICTs. However, in its current stage, although ONI covers most countries, it does not provide any metrics for measuring the level of filtering and censorship.

On the individual components, Freedom House rates each country's Political Rights and Civil Liberties on a scale from one to seven, where one represents the highest degree of freedom and seven the lowest. Countries that rate an average score of less than 3 (combined PR and CL average) are classified as "Free", those with a rating between 3 and 5 "Partly Free" and a score between 5.5 and 7 are considered "Not Free" (see in table 4.2). A rating scale from one to 100 is used where one indicates the lowest rating of democratic freedom and 100, the highest.

Finally, the economic freedom (EF) index is composed of 10 different indices (see table 1 in Appendix B). In the context of this thesis, the economic freedom index is used to measure the private sector's involvement in socio-economic development. It is also used as a metric to determine the degree of state control and ownership of enterprises, its consumption of economic resources, and the extent to which it intervenes in the economy (Beach and Miles, 2006).

Not only are these indices the cornerstone of any social gathering or political or social activity, they protect individuals from various types of discrimination (religious, gender, race, among others) and protect their individual property rights.

4.4 Analytical Methods

To analyze the impact of ICTs on freedom and democracy as defined by hypotheses H1 through H4, a two-Stage Least Squares (2SLS) estimate was applied on the panel data with endogenous variables *PRCL* and *ICTs*, and exogenous variables Economic Freedom (EF), Education (*EDU*) and Filtering (*FILTER*). Since the ordinary linear regression may produce biased and inconsistent estimates when there are relevant explanatory variables omitted from the model, or when the covariates are subject to measurement error, a 2SLS estimate can help us to overcome this problem. The endogenous variables, in the context of this paper, are the dependent variables of other equations in the system in which each dependent variable is associated with its own error term. In other words, all dependent variables are considered endogenous to the system and are assumed to correlate with the disturbances in the system's equation.

Based on the theoretical model the following 2SLS regression model was constructed where the subscript refers to country i and year t , α_0 and β_0 are contents; $\alpha_1, \alpha_2, \beta_1$ and β_2 are variable coefficients and ε_i, γ_i are error terms.

$$\ln PRCL_{it} = \alpha_0 + \alpha_1 \ln ICTS_{it} + \alpha_2 \ln EF_{it} + \varepsilon_i \quad (1)$$

$$\ln ICTS_{it} = \beta_0 + \beta_1 \ln EDU_{it} + \beta_2 \ln FITER_{it} + \gamma_i \quad (2)$$

Before running the 2SLS regression a series of statistical tests including tests of multicollinearity and heteroskedasticity were applied on panel data. These issues are discussed in detail in the next chapter. Multicollinearity occurs when the independent variables are highly correlated; high multicollinearity may cause a wide swing in the estimate of parameters due to small changes in data (Myers, 1990). To test the panel data for multicollinearity we estimated the Variance Inflation Factor (VIF). Our test shows a VIF value of 1.46 which is far from the critical value of 10 (moderate multicollinearity) or 30 (severe multicollinearity). To test heteroskedasticity issue, the White's test (a special case of the Breusch-Pagan test) for heteroskedasticity was estimated. In addition, the quality of the above model was tested using Akaike's Information Criterion (AIC) and Schwarz information criterion (SIC). According to Akaike's theory, the most accurate model has the smallest AIC value (The MathWorks, 2008). The results of the above tests are reported in table 4.3.

4.5 Findings from Analysis

Table 4.3 reports the results of regression analysis. As indicated, the p -value for all the variables show a value of zero to reject null hypothesis of $(P > |t|) > 0.05$). The model fit statistic, R^2 , for endogenous variables $ICTS$ and $PRCL$ are 0.6193 and 0.4218 respectively.

The reader will notice that in Table 4.3, variables $ICTS$ and EF show positive values for the regression coefficients along with positive correlations with $PRCL$. These values are statistically significant at 0.05 confidence level.

The same relation is true in regards to variable EDU and $ICTS$ (positive coefficient, strong t-value and positive correlation). Thus the results from the regression support the claims described in hypotheses H1, H2 and H3—that ICT infrastructure and Economic

freedom have positive impacts on democracy (as measured by political rights and civil liberties), and the increased level of education (as measured by adult literacy and gross enrollment) has a positive impact on ICT expansion. On the other hand, the variable *FILTER* shows a negative coefficient along with negative t-value and negative correlation with *ICTS*. Again, our regression analysis confirms Hypothesis H4. This value is statistically significant at 0.05 confidence level.

Table 4.3: Parameters of 2SLS regression and test statistics

Endogenous variables: PRCL, ICTS Exogenous variables: EF, EDU, FILTER		Number of observations	1606	
		R-squared PRCL	0.4218	
		R-squared ICTS	0.6193	
		Corr PRCL, ICTS	0.4115*	
		Corr PRCL, EF	0.6555*	
		Corr ICTS, EDU	0.7586 *	
		Corr ICTS, FILTER	-0.5226 *	
Variables	Coefficient	Std. Error	t-Statistic	Prob. t
ICTS	0.126857	0.0199652	6.35	0.000
EF	1.066268	0.050513	38.18	0.000
EDU	2.472888	0.0647688	36.83	0.000
FITER	-0.5787181	0.0425877	-13.59	0.000
Regression Test Validation Statistics				
Root MSE: PRCL (log)	0.3504755	Akaike info criterion	-3.266155	
Root MSE: ICTS (log)	0.4447086	Schwarz info criterion	-3.256102	
Mean VIF	1.46	White Test <i>p-value</i>	[0.000]	

Note: an (*) indicates significance at the 0.01 confidence level.

Hypothesis 1: In our research model, we theorized that since ICTs facilitate social interaction by permitting open and efficient access to information, it is reasonable to expect that this variable will have a significant impact on open discourse and political life. The findings confirm that ICTs is positively correlated with PRCL. Consequently, all other things being equal, greater expansion of ICTs should lead to higher levels of democratic freedom.

Hypothesis 2: In our research model, we theorized that economic freedom is passively correlated with democratic freedoms as measured by PRCL. While some previous studies

have shown that democracy positively affects economic freedom (Haan and Siermann, 1998; Haan and Sturm, 2000; Minier, 1998; Lundstrum, 2002; Feng, 2003) this study, however, has investigated the impacts of economic freedom on the expansion of democratic freedom. For example, the empirical study of Feng (2003) that covers the pooled data from 1975 to 1995 shows that political freedom (as measured by PRCL) Granger-causes economic freedom, however, the reverse relationship was not supported (reported as statistically insignificant). Three main reasons that this study has found economic freedom positively impacts political freedom and this impact is statistically significant can be summarized as follows: 1) this study covers not only a more recent data (e.g., data from 1995 through 2005) but also includes a wider range of countries (in terms of the number of countries under investigation and their regional distributions) in comparison with the previous study conducted by Feng (2003); 2) countries formerly classified as Eastern Bloc (the former communist states of Eastern Europe) along with the economic reforms conducted in other socialist countries such as China and Vietnam (Pipe, 2003; Tan, 2004; Yin, 2005; Quynh, 2006) made enormous contributions to the global expansion of democracy and economic freedoms as discussed later in this chapter; and 3) ICTs have played an important mediating role in the expansion of political and economic freedoms across the globe.

Hypothesis 3: In our research model, we theorized that education is positively correlated with the expansion of ICTs. Further, prior studies have shown that education and democracy are strongly correlated (Dewey, 1952; Page, 1997; Nie and Stehlik-Barry, 1997; Arnot and Dillabough, 2000; Print et al., 2002; Starkey, 2002; Annette, 2003; Osler, 2005a; 2005b). However, while there are many studies that investigate the impact of ICTs on education (Adams, 2000; Aviram and Comay, 2000; Laurillard, 2000; Aviram and Talmi, 2005), only a few studies have investigated the impact of education on the expansion of ICTs (Caselli and Coleman 2001; Kiiski and Pohjola 2002; Balamoune-Lutz, 2003). The findings of this study suggest an important mediating role for education between ICT expansion and democracy, since increases in education are positively correlated with ICT expansion, which in turn is positively correlated with democracy.

Hypothesis 4: In our research model, we theorized that filtering and state censorship of ICTs is negatively correlated with ICT expansion. The findings confirm that filtering of ICT inhibits its expansion, and since ICT expansion is positively correlated with PRCL, we argue that state controls and censorship of ICT networks has a direct negative impact on democracy and freedom of expression. Further, ICT filtering and other forms of information censorship violate the fundamental rights of citizens to free and open communication and interaction.

Figure 4.2: The relationships among core variables

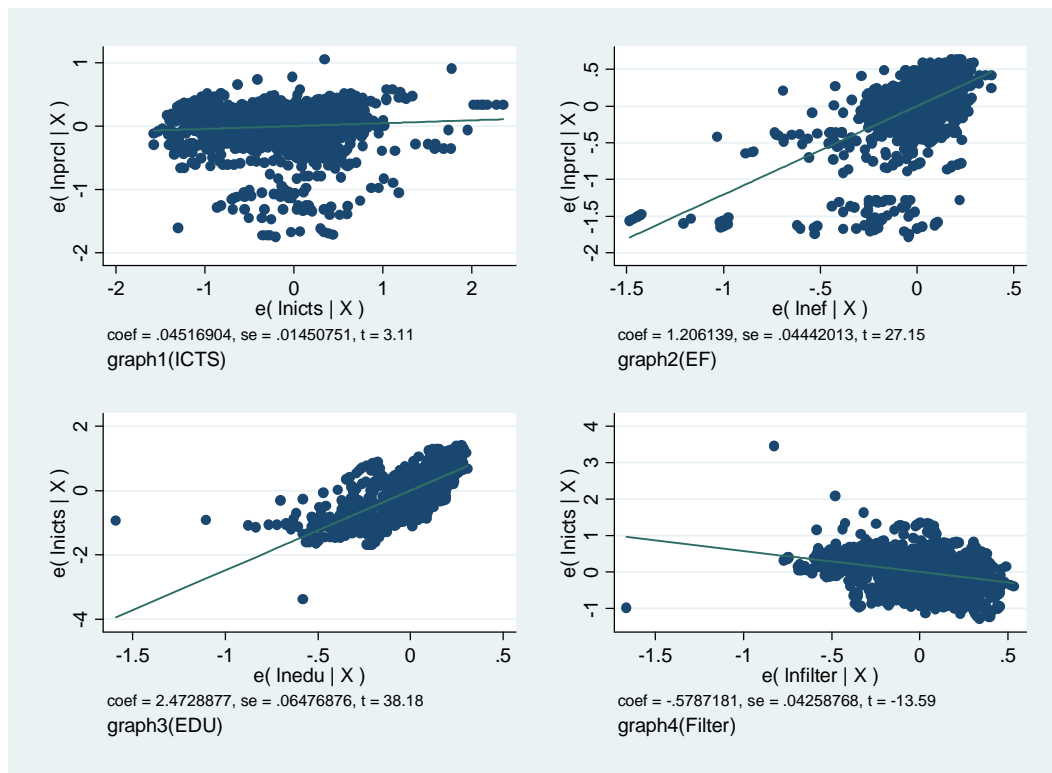


Figure 4.2 above, shows the relationships among variables for all countries in our analysis: (1) graph 1 indicates that countries with a greater level of political rights and civil liberties enjoy greater access to ICTs; (2) graph 2 shows a strong correlation between the increased level of economic freedom and democracy as measured by PRCL (3) graph 3 shows a positive correlation between ICT expansion and the increased level of education; (4) graph 4 shows the negative correlation between filtering and ICT expansion. Further analysis of our data shows that those countries that implement

extensive state censorship and filtering of the content of ICTs are those that have the least developed ICT infrastructure as explained in the next section.

4.6 The Index of E-democracy Opportunities (IEO)

The 2SLS regression analysis also allows us to draw some conclusions about the digital divide in democratic freedoms during the period of study. The analysis also allows us to generate an index ranking for all 146 countries with regard to their e-democracy performances; we call this the *Index of E-democracy Opportunities (IEO)*. This index was generated by aggregating two other sub-indices through the following procedures:

- 1) The Index of Institutional Democracy (IID) was generated by aggregating variables *PR*, *CL*, and *EF* (see Appendixes A and B) as:

$$IID = \left(\prod_{i=1}^k I_{k,t}^{i,j(c)} \right)^{1/k} \quad (3)$$

Where, *I* represents the value of each index *i* for the period of *t*, and *k* denotes the number of variables (for *PR*, *k*=3; for *CL*, *k*=4; for and *EF*, *k*=10). The IID was used as a barometer to help index each country's e-democracy progress from 1995 to 2005 as well as to compare countries to one another.

- 2) Similarly, the ICT Opportunity Index (IOI) was obtained by aggregating variables *ICTs*, *Edu*, and *Filtering* (the positive and negative influences on ICT expansion) as follows:

$$IOI = \left(\prod_{i=1}^n I_{n,t}^{i,j(c)} \right)^{1/n} \quad (4)$$

In this equation, *n* denotes the number of indices within each variable (for *ICTs*, *n*=4; and for *Edu* and *Media*, *n*=2).

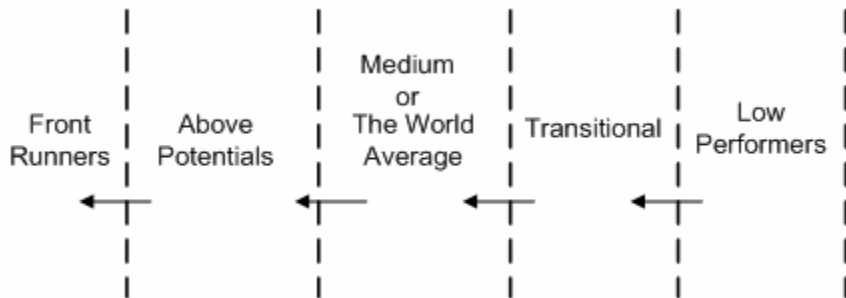
- 3) Finally, the Index of E-democracy Opportunities (IEO) was obtained by aggregating IID and IOI obtained from equations (3) and (4).

Table 1 in Appendix C shows the result of this calculation based on the overall performance of each country.

4.7 ICT and the Democratic Freedoms Divide

It is expected that during the period from 1995 to 2005, countries' e-democracy performances as measured by IEO follow a transitional pattern, as depicted in Figure 4.3. However, the analysis of 146 countries reveals interesting information about their e-democracy performance on both regional and global scales.

Figure 4.3: E-Democracy Transitional Pattern

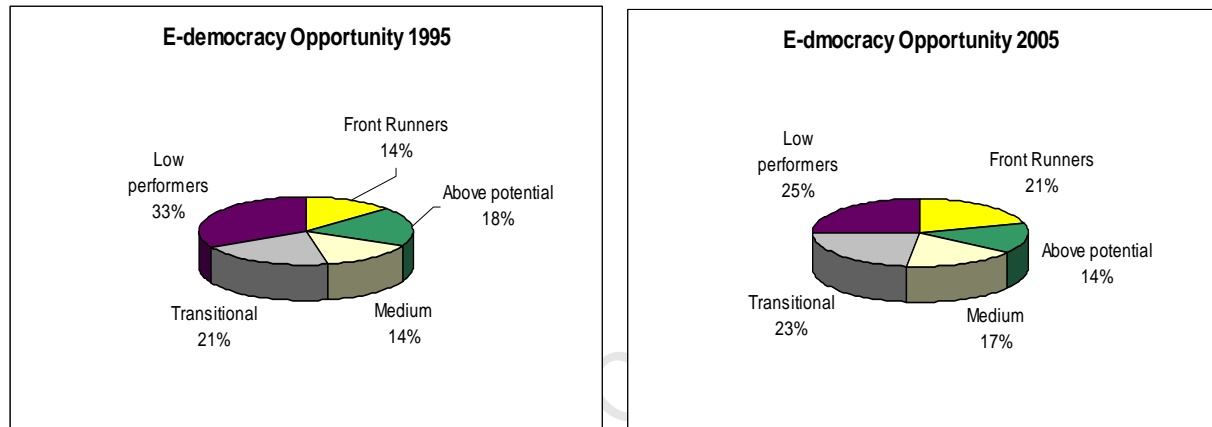


Of the 146 countries, we analyzed five main groupings emerged:

- a) *Front-runners*: countries with high democracy and economic freedom performance, and high ICT expansion; citizens in these countries enjoy also a highest level of freedom on the Net.
- b) *Above potentials*: countries with democracy, economic freedom and ICT indices above the world average; these countries do not impose ICT filtering and state censorship on the content of ICTs for political or ideological purposes.
- c) *Medium*: countries with democracy, economic freedom and ICT expansion around the world average (with different levels of advancements in the above indicators); some of these countries practice ICT content filtering
- d) *Transitional*: countries with democracy, economic freedom and ICT performance below the world average but with potentials to move to a higher category; some of these countries impose heavy ICT content filtering
- e) *Low-performers*: countries that remained in this category during the loop of 11 years despite slightly progress in their ICT expansion and/or in other variables

In general, countries with higher levels of ICT infrastructure tended to enjoy higher levels of democracy and economic freedom. It is not surprising to see that the top democratic nations (such as Scandinavian countries, the UK, Ireland, the Netherlands and others in Europe, along with Canada and the US in North America, and Australia and New Zealand in Oceania) are those nations with highly developed ICT infrastructure whose citizens enjoy the highest degree of e-democracy.

Figure 4.4: Five categories of E-democracy Opportunity Index



As indicated in figure 4.4, we can observe a transitional shift from a lower category to a higher category. For example while 33% of countries were located in the *low-performers* category in 1995, this value decreased to 25% in 2005. The biggest shift was related to the *front-runners* category. While 14% of countries of this study were located in this category in 1995, this value increased to 21% in 2005. Among the newcomers in this category, we can see countries from the former Eastern Bloc such as Estonia, Slovenia, Hungary, Czech Republic and Lithuania, along with other European countries such as Spain, Malta, Cyprus and Portugal. From Asia, those nations with highly developed ICTs such as Japan, Hong Kong and South Korea are placed in this category. Other former Eastern Bloc nations such as Latvia, Slovak Republic, Poland, Croatia, Ukraine and Romania have successfully shifted from lower categories to the *above-potentials* category. Among the Latin America and African nations, countries such as Chile, Uruguay, Costa Rica and Argentina, Mauritius and South Africa had made successful transitions from lower categories into the *above-potentials* category. In addition, China and Vietnam moved from *low-performers* in 1995 to the higher category

namely the *transitional* category in 2005. Among the members of the Organization of the Islamic Conference⁴ (OIC), Kuwait, Bahrain, Turkey, UAE, Qatar and Albania had the best e-democracy performance (*medium* category) over the same eleven-year period with Kuwait and Bahrain as the leading ICT nations in this category. Despite their rankings in the medium category, their contributions to e-democracy opportunities index vary substantially. For example, the main contribution from UAE and Qatar come from their advancements in ICT expansion, educational attainment and in some extent for UAE the economic freedom during the above period; however, their contributions to PRCL were less encouraging.

The results of this study shows that a handful OIC nations is located in the transitional category (despite some differences in their rankings), while other countries such as Iran, Syria, Yemen, Sudan and Libya are positioned in the *low-performers* category. It is also important to note that countries located in the *low-performers* category remained in the same position despite the global success of e-democracy opportunity indices during the last decade. Some of the governments in this category as well as the *transitional* category view ICT development through the lens of ideology, and therefore consider ICT development and access to ICT tools and services a risk to their national security.

As shown in table 1 of Appendix C, none of the Middle Eastern countries are placed in the above-potentials and the front-runners categories within the context of e-democracy. The highly ICT developed nations in the Middle East such as Kuwait, Bahrain, Qatar and UAE along with Jordan are placed in the medium category position with regards to their e-democracy performances. Other Middle Eastern countries are placed in either the *transitional* category, or the *low-performers* category (Iran, Syria and Yemen).

4.8 Virtual Feudalism vs. Virtual Democracy

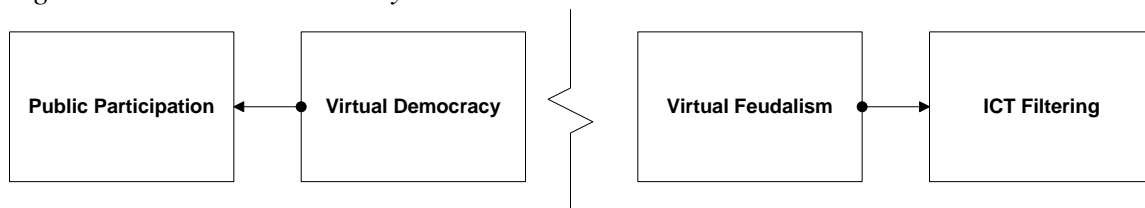
This research uses Mowshowitz's (1992) term of "virtual feudalism" to refer to the reluctance of authoritarian regimes towards the use and development of ICTs and in particular the activities on the Internet. In the context of this research, virtual feudalism is defined as the hegemonic control (Delbridge, 2007) of ICT developments and strategies

⁴ OIC is a solidarity organization of 57 Islamic states (www.oic-oci.org).

by governments. This control is applied to mass communication channels such as the Internet and SMS messaging (see figure 4.5). It controls the monopoly of resources, imposing restrictions on the use of high speed Internet access (The Guardian, 2006) to prevent Internet users from accessing sites and services that require such a connection, or banning SMS messaging as a means of sending out political messages (Iranian Judiciary, n.d.) or banning the use of mobile cell phone cameras (Shihri, 2004). Overall, virtual feudalism imposes the hegemonic control of ICT development in form of institutional and legal arrangements. Virtual feudalism imposes also economic, political, cultural, physical and religious pressure on social groups and individuals (Delbridge, 2007) from the ideological perspectives. While ICTs provide tools and services for increased public engagement in communication discourse, the ideological barriers hinder the progress of such discourse. Habermas (1989b) argues that the critique of ideology is important since it is engaged in removing dogmatism and the traditionalist barriers as well as ideological barriers of any sort that could hinder the progress of communication discourse.

Leiser (2007) argues that the epistemological challenge of power is twofold. On one hand, power has traditionally been associated with formal power that arises from positions of authority. On the other, its informal dimension or indirect authority has been regarded as illegitimate. Stahl (2008c) argues that there are unequal distributions of technology and access to technology, so-called ‘digital divides’ which should be studied in regards to social justice. He emphasizes that on a formal level, justice can be seen as a principle of action that treats entities of the same category in the same way, specifically, “treating equals equally, and unequals unequally” (De George, 1999: 101). It raises the question of who is to be seen as equal, with whom, and on what grounds. Here, different types of justice can be introduced, which focus on different assumptions about which aspects of humans are relevant to the definition of justice.

Figure 4.5: Virtual Democracy vs. Virtual Feudalism



While the ultimate goal of virtual democracy is the promotion of public participation, virtual feudalism in contrast does not allow citizens to access or disseminate free information and communication by applying systematic filtering mechanism on ICT information exchange channels. In this context, it can be argued that those Middle Eastern countries that impose strict control of ICT development by taking the ownership of such development and imposing institutional restrictions on the use of ICTs such as the Internet and mobile SMS in order to filter access to information and block online social networks are indicative of virtual feudalism in one form or another.

4.9 Conclusion

In order to better evaluate the impacts of ICTs on political and economic freedom in the Middle East and in particular the position of countries of this study on a global scale; I realized that I need some metrics to measure such impacts. Since no measures in literature were available assimilating the core variables of this study, the idea of generating the *Index of E-democracy Opportunities* (IEO) based on Clift's (2003) e-democracy model was developed and presented in this chapter.

This chapter has addressed an important issue, namely measuring the impact of ICTs on democratic freedoms by introducing the index of e-democracy opportunities based on a macro-level analysis of archival data. Table 1 in Appendix C shows the five different categories of e-democracy opportunities across the globe. It is not surprising to see that the world's highly developed economies comprise the top list (front-runners) of the e-democracy opportunities index. Citizens in these countries enjoy the highest level of freedom in terms of accessing ICTs and participating in e-democracy processes. The ICT infrastructures in these countries are highly developed, and all actors within the e-democracy framework are actively involved in democratic processes. According to the results of this study, on a yearly basis, 1% of countries on a global scale have improved their positions from a lower category to a higher category of e-democracy.

In contrast, the existing digital divide between the front-runners and low-performers has increased at both regional and global levels during the past decade. It is also important to note that these new "digital activities" mediated by ICT not only include interpersonal communication, public discourse and promotion of free speech but also

'hate speech', religious fundamentalism, fraud, cyberbullying, and terror (Roman, 2005; Barzilai-Nahon and Barzilai, 2005; Gerstenfeld et al. 2003; Weimann, 2005; Aricak et al., 2008).

Some governments have responded by filtering the internet sites and threatening to ban some forms of communication (Zittrain and Edelman, 2003; Harwit and Clark, 2001; Lacharite, 2002). Internet filtering and state censorship on ICT content is a global concern negatively influencing citizens' participation in e-democracy processes, thus increasing the digital divide. That is, the role of ICT infrastructure is to provide access; however, its ability to provide access is dependent on the thoroughfare of information, starting with policymakers, and cascading down to the users. The watershed effects of government policy, political organizations, social groups, the media, the private sector, and e-citizens in some societies have developed tributaries, while in other societies, government policies operate as the main barriers to development. For example, according to Freedom House (2005), ONI (2005), and RWB (2008), substantial Internet content filtering occurs within countries located in the transitional and low-performer categories; however, this practice is not evident with the same intensity among nations in the medium and the higher categories. Countries in the transitional category are in a position to increase their opportunities to practice e-democracy at a higher level. This process is expected to continue in the coming years. While some of the countries within the medium category, including Bahrain and Kuwait have a better chance to move to a higher level of e-democracy ranking, other countries would require enormous efforts in terms of ICT development and socio-political and economic reforms to successfully advance to a higher level of e-democracy category, thereby reducing the gap of their digital divides.

Even though some of the Middle Eastern countries did not have encouraging ranking positions on a global scale in terms of their e-democracy performances, the results of the empirical studies discussed in Chapter 5 show that during the period of 1995 to 2005, ICTs have played a major mediating role in promoting democratic freedoms in this region. This process is expected to continue in the coming years.

Chapter 5: The impact of ICT Expansion on Democratic Freedoms in the Middle East

This chapter analyzes the impact of ICTs on promotion of socio-political freedom in eleven Islamic Middle Eastern countries for the period of 1995 to 2005. The chapter provides a review of political organization and institutes of these countries; and then it discusses two main approaches toward ICT development in the region. This chapter ends with conclusion and discussion about the results of this empirical study.

5.1 Background and Regional Demographics

The Middle East is the birthplace and spiritual center of Zoroastrianism, Judaism, Christianity, and Islam. The name “Middle East” defines a cultural region whose borders are imprecise. Although it is highly arbitrary, the most common geographical definition of the region includes Bahrain, Cyprus, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, the United Arab Emirates (UAE), Yemen, the West Bank and the Gaza Strip. The region has seen periods of both relative tolerance and violence.

Table 5.1: Demographic Data

Country	Land area (Sq. km)	Pop (mil) 2005	Urban %pop 2005	Adult Literacy 2005	GDPP (US\$) 2005	HDI rank 2005	CPI rank 2005	EFR 2005	PRCL 2005	Constitution
Bahrain	665	0.7	96.5	86.5%	\$17,773	41	36	18	PF	Islamic Sharia
Iran	1,648,000	69.4	66.9	82.4%	\$2,781	94	88	147	NF	Islamic Shia
Jordan	92,300	5.5	82.3	91.1%	\$2,323	86	37	41	PF	Monarchy
Kuwait	17,820	2.7	98.3	93.3%	\$31,861	33	45	68	PF	Islamic Sharia
Lebanon	10,400	4	86.6	84.6%	\$6,135	88	83	88	PF	Parliamentary
Oman	212,460	2.5	71.5	81.4%	\$9,584	58	28	53	NF	Islamic Sharia
Qatar	11,437	0.8	97.4	89.0%	\$52,240	35	32	73	NF	Islamic Sharia
Saudi	1,960,582	23.6	81	97.3%	\$13,399	61	70	67	NF	Islamic Sharia
Syria*	185,180	18.9	50.6	80.8%	\$1,382	108	70	143	NF	Influence of Islamic Sharia
UAE*	82,880	4.1	76.7	88.7%	\$28,612	39	30	59	NF	Influence of Islamic Sharia
Yemen	527,970	21.1	26.3	54.1%	\$718	153	103	133	PF	Influence of Islamic Sharia

*The main source of legislation is Islamic jurisprudence

CPI: Corruption Perceptions Index, EFR: Economic Freedom Rank, PRCL: Political Rights & Civil Liberties (PF=Partly Free, NF= Not Free)

Source: UNDP, ITU, Freedom House, Transparency International, The Heritage Foundation

The eleven countries included in this study are listed in Table 5.1 above. Seven of the eleven countries are major oil and natural gas producers located in the Persian Gulf region, namely: Bahrain, Iran, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE. Although it is an important country in the region, Iraq has not been included in this study due to a lack of data. This scarcity of available and reliable information can be attributed to the long history of conflict in Iraq, which has had a devastating impact on its social, economic and political development. Further, Israel was excluded from this study because the country is not classified as an Islamic state and thus its socio-political situation is quite different from other Middle Eastern countries.

The seven countries listed above currently produce more than 18.2 million barrels of crude oil and export more than 30 billion cubic meters of natural gas per day. These countries produced approximately 28 percent of the world's oil in 2005, while holding 55 percent (728 billion barrels) of the world's crude oil reserves. The OECD countries' gross oil imports from Middle Eastern states averaged about 10.4 million barrels per day in 2005, accounting for 31 percent of the OECD's total net oil imports. The U.S. gross oil imports from the region were 2.2 million barrels per day, accounting for 17 percent of country's total net oil imports. Besides oil, the region also has sizeable reserves (2,509 trillion cubic feet) of natural gas, which represent about 41 percent of total proven world gas reserves (EIA, 2008).

The oil and natural gas sectors rely heavily on ICTs that are used in all phases of oil and natural gas production, from prospecting for new reserves to refining and transportation. ICTs provide possibilities for expanding proven crude oil reserves, improving the rate of crude oil extraction from existing wells, and providing additional means to discover new wells (UNCTAD, 2006).

While the eleven countries included in this study share many similarities, they are at different stages in their individual social, economic, and political development. Many of these countries have adopted Islamic Sharia law in the development of legislation and judiciary systems (see Table 5.1). All eleven countries are active members of the Organization of the Islamic Conference (OIC), an inter-governmental body with 57 state members. The OIC aims to promote cooperation and solidarity among Islamic

governments for the purposes of facilitating their progress and safeguarding their economic, social, and cultural interests.

From 1995 to 2005, the average Gross Domestic Product (GDP) of the eleven countries in this study increased by 13.8%. The lowest increase was seen in Yemen (2.9%) and the greatest increase in GDP was in Qatar (33%). This growth can be attributed to the demand for petroleum and natural gas products, the main exports from this region (Saxton, 2006). Using standard measures to compare demographic characteristics, the Human Development Index (HDI) determines whether a country is developed, developing, or underdeveloped by considering, for example, economic factors that affect the quality of life. Countries such as Kuwait, Bahrain, Qatar, and the United Arab Emirates ranked high on the 2006 Human Development Index Report (HDI, 2006), while others such as Iran and Syria ranked low. Despite the increase in the price of oil in Iran, its government was not able to attract foreign investors in oil and natural gas, sectors that are highly dependent on such investment (Saxton, 2006). Yemen and Syria are the poorest countries in the study, rank very low on the HDI at 153 and 106 respectively. As shown in table 5.1, Iran has the largest overall population (68,017,860, reference year 2005), as well as the highest proportion of people under 30 years of age. Life expectancy in these countries averages 73.7 years and adult literacy is high (except for Yemen). Bahrain has the smallest population (688,345), a life expectancy of 74.5 years, and a literacy rate of 86.5%. Sarbib (2002) notes that Arab countries spend a higher percentage of GDP on education than do countries in other regions. As such, in the last two decades, Arab countries have made significant advances in literacy and enrolment rates. For example, in 1995, over 90% of male children and almost 75% of female children were enrolled in primary school. At the secondary level, enrolment rates were 60% for males and 50% for females. Following Latin America, male and female enrolment in universities in Arab countries was higher than enrolment in all other developing regions (Sarbib, 2002).

Throughout the last decade, the ICT infrastructures of the countries listed in table 5.1 have expanded profoundly, and increased Internet access has had a significant effect on the relationship between society and the state. In particular, increased access to information and communication both within and outside local or national boundaries has

created a phenomenon in which political spaces created online have no immediate connection to physical spaces (Mudhai, 2003). Two divergent perspectives have emerged on this issue. The first argues that, in general, ICT enables public participation in democratic and decision making processes and contributes to a more civil society in which political groups, NGOs, ethnic minorities, religious groups, and otherwise silent voices have the opportunity to contribute to discussions on socio-political and economic matters (Ferdinand, 2000; Jankowski and van Selm, 2000; Bimber, 2001, Bennett and Fielding, 2001; Becker, 2001; Clift, 2003; Guillen and Suarez, 2005; Wheeler, 2006). Other scholars argue that ICTs are so-called technologies of freedom and empowerment that may perpetuate imperialism, reinforce disparities, and create undesirable confusion (Main, 2001). Since this study focuses on how ICT expansion has affected democracy and freedom of expression in select Middle Eastern countries, it is important to provide some details on their respective political organizations and governmental systems.

5.2 Political Organization and Government Systems

According to Kamrava and Mora (1998) the Middle East remains an authoritarian strong hold, where various non-democratic political systems and elites in power including the religious establishment have extensive control over various economic resources. Although countries in the Middle East are commonly considered Islamic states, their governmental systems vary greatly. The degree of citizen participation in government also varies widely, as does the degree of religious influence on the government and the population as a whole.

Bahrain is a constitutional hereditary monarchy. Its leadership consists of a Prime Minister as the head of government and a king as head of state. In 1999, a National Charter was instituted which allows political parties and organizations freedom of assembly to operate and organize activities. Formal political parties, however, remain illegal. According to Freedom House (2006), since the government owns all broadcast media, there is limited freedom of expression in broadcast media; however, there is a greater degree of freedom of the press in the print media. Internet access and e-mails are generally unrestricted, although there have been reports that the government monitors e-mail communication (Freedom House, 2006). Bahrain is ranked the freest

economy among 17 countries in the Middle East/North Africa (MENA) region, and its economy is ideal in tax and banking freedom, according to the Heritage Foundation Economic report in 2005. The country was ranked as the world's 19th freest economy in 2005 (Heritage Foundation, 2005).

Iran is a Theocratic Republic consisting of several interconnected governing bodies, with a constitution based on Islamic Shi'a Law. The chief of state holds the lifelong position of Supreme Leader, and is appointed by the Assembly of Experts. The Assembly of Experts maintains the decisive edict in major political, cultural, religious, judiciary, foreign policy, and economic issues. The Expediency Council is a conservative policy advisory body, which represents all major government factions, as well as clerics from the Council of Guardians. The Supreme Leader chooses the members of the Council of Guardians of the Constitution. The secular and democratic opposition parties are illegal in Iran, however since 1987 there has been a steady increase in political activism due to an increase in the number of Islamic moderate political parties and activist groups. The moderate Islamic parties such as the Islamic Participation Front and National Trust and other official opposition parties and groups that sided with the more liberal candidates during the 2009 presidential election were recently banned from political activities (Erdbrink, 2010). In his well known June 19, 2009 speech, the Supreme Leader openly sided with the hardliner candidate, Mahmoud Ahmadinejad, who was named as the winner of the election by the conservative Expediency Council. The government represses both individual and organized freedom of speech by controlling both print and broadcasting media. It has issued gag orders on media coverage of specified events or topics and has successfully blocked broadcasts. The government censors websites by filtering Internet content on the assumption that uncensored content contains socially immoral information and defamatory statements about Iran's religious and/or political leadership.

Jordan is a constitutional monarchy. Upon gaining independence from British rule in 1946, Jordan was primarily ruled by King Hussein (1953-99). In 1989, parliamentary elections were reinstated; since then, economic and political liberalization has developed

gradually. Jordan is not considered to be an oil-producing country and much of its ICT infrastructure has developed as a result of Foreign Direct Investment (FDI). Jordan bears no exceptional economic weaknesses or strengths, but the country does have a low rate of corruption, reputable property rights, and low rates on individual and corporate income tax (Heritage Foundation, 2008).

Kuwait is a constitutional monarchy, with an Amir as chief of state and Prime Minister as head of government. Kuwait, endowed with 96 billion barrels of oil reserves, holds roughly 10 percent of the world's oil supply. According to the Heritage Foundation Economic Freedom Report 2005, the export of oil accounts for nearly 50 percent of Kuwait's GDP and 95 percent of its export revenues. The country is ranked as the second freest economies among 17 countries in the MENA region. Even though formal political parties are forbidden, political gatherings are not considered unlawful. The government of Kuwait allows for some open debate on politics in the press but, because it restricts freedom of assembly, public gatherings require approval. Major newspapers are privately owned but foreign broadcasts and private television channels are transmitted. While a civil law system is in place for public matters, Islamic Law dominates family and personal matters.

Lebanon is a secular republic governed by a unicameral National Assembly or *Majlis Alnuwab*. The chief of state is the President and the head of government is the Prime Minister, both are elected and serve four-year terms. The legal system in Lebanon is independent of the government and is a mixture of Ottoman law, Canon law, Napoleonic code, and Civil law. Legislative acts are not subject to judicial review, and the government of Lebanon does not officially acknowledge Islamic Law. There are many active, legal political parties, including socialist parties, democratic parties, and religious parties such as Hezbollah. There is a partly free press in Lebanon, and freedom of association and assembly is allowed, but there are restrictions on freedom of expression concerning political criticism. While most media are owned by political elites, independently operated television and radio stations do exist. Several conflicts contributed to the destruction of Lebanon's infrastructure, including the 15-year civil war (1976-1991), the involvement of Syria in Lebanon's internal affairs, and the Israeli-

Lebanese war in 2006.

Oman is an absolute monarchy and does not allow formal political parties. Its legal system is based on both English common law and Islamic law. Freedom of expression is allowed, but there are laws prohibiting criticism of the Sultan. Omanis have access to the Internet, but it is censored by the government to prohibit the viewing of political and pornographic content.

Qatar is a hereditary monarchy ruled by an Amir, the chief of state, in conjunction with a unicameral Advisory Council, or *Majlis al-Shura*, composed of a Prime Minister and 35 appointed members. Although a legislative election system is in place, no election has been held since 1970. As a result of a recently established civil law, the legal system is controlled by the Amir. There are no political parties and Islamic law dominates family and personal matters. Qatar is home to various press agencies including the controversial Al-Jazeera News Network and its website generates more than one million hits per day (Alterman, 2005). In 2005, Qatar adopted a new constitution allowing freedom of expression. The government has refrained from overt censorship; however, print and broadcast media content are state influenced and Internet content is censored for pornographic or politically sensitive material.

Saudi Arabia is a constitutional monarchy governed according to Islamic Sharia law. The king is the chief of state, and the Prime Minister is the head of government. The government exercises tight control over state media content and has enforced strict measures to prevent the media from publishing information considered morally or politically offensive. In addition, a recent report suggests that cell phones with cameras are banned (Shihri, 2004). Although there are no political parties or free press in Saudi Arabia, there is a significant amount of political activity by Islamic groups. Saudi Arabia has a strong oil-based economy with strong government controls over major economic activities (Heritage Foundation, 2005).

Syria is a republic under an authoritarian military-dominated regime. Its legal system is based on a combination of French and Ottoman civil law, and religious law is used in

the family court system. The president appoints the vice presidents, prime minister, and deputy prime ministers. Freedom of speech is restricted and defamation of the state image is punishable by law. Media are state-owned and while satellite dishes are illegal, they are generally tolerated.

The **United Arab Emirates (UAE)** is a federal republic comprised of seven emirates, with an elected President as chief of state and a Prime Minister and Vice President as heads of government. The Supreme Council is the highest federal authority of the rulers of the seven emirates. The federal court system in the UAE includes both secular and Islamic law in civil, criminal, and high court matters. There are no political parties in the UAE. The constitution allows freedom of expression; however, a proviso law prohibits pornography as well as criticism and defamation of the state, leadership, and religion.

Yemen is home to one of the oldest centers of civilization in the world. The modern state was established in 1990 when North Yemen and South Yemen united after decades of hostility between the two nations. Yemen is the fastest growing democracy in the Middle East. It is a Presidential republic with a bicameral legislature. Under the constitution, power is shared by an elected President, an elected House of Representatives with 301 seats, and an appointed *Shura* Council with 111 members. The President is the head of state, and the Prime Minister serves as head of government. According to ONI (2007a), the Ministry of Telecommunication and Information Technology (MTIT) is responsible for granting ISP licenses. This body imposes restrictions on the use of Internet services. Both ISPs and the end users must agree upon the government policies as state: “Access to applications which transmit or receive live video or audio, or make similar demands on the capacity of the network, constitutes an unreasonable usage which may affect the performance of the network, and is not permitted” (TeleYemen, n.d.). The Yemeni government applies selective Internet filtering on political content but imposes pervasive filtering on content related to social issues. For example, any message deemed offensive on moral, religious, communal, or political grounds is prohibited and thus cannot be published on or sent to others via the Internet. Despite a promise by the Yemeni president to reform the media laws and abolish imprisonment penalty in publishing offenses, Yemeni journalists and Internet bloggers are subject to violation by

the government, the ruling party, opposition parties, and religious groups alike (ONI, 2007a).

5.3 ICT Infrastructure Expansion in the Middle East

In the late 1990's, governments in the Middle East invested heavily in ICT, enabling them to renew and expand their ICT infrastructures by implementing new technologies. In year 2005, ICT expenditure (on equipment, software and telecom services) in the Middle East was estimated as 5.3% of the countries' GDP. From 1995 to 2005, ICT investment increased from 2% of the region's GDP to over 3% (ITU, 2007b; World Bank, 2005; 2006). Currently, a large portion of investment in ICT expansion comes from oil and gas production and export revenues. Market demand for oil and gas has increased the GDP of oil rich countries which in turn increased investment in ICT infrastructure.

ICT development in the Middle East came in two different forms: oppressive control of ICT development and partial privatization. The oppressive control of ICT development, imposed by governments in Iran and Syria, for example, restricted Internet access to certain areas and limited the development of mainstream media, including radio and television broadcasting. In Iran, the telecommunications sector is considered a key element of national military and economic security, areas considered too important to be privately controlled, regardless of whether that control was domestic or foreign (Moshiri et al., 2004). The recent move by the Iranian military to buy the majority shares of country's telecommunication company (The New York Times, 2009) has provided this influential elite not only a complete control of the Iranian telecom sector but also it has destabilized the future development of ICTs in Iran by undermining free and fair competition in the ICT market. As suggested by Wallsten (1999), competition in the telecom market has a strong correlation with performance improvements. Other scholars emphasize that the digital divide will become even wider when small elite groups control power, resources, and knowledge (Alzouma, 2005).

The second and more liberal approach adopted by countries such as Bahrain, Jordan, Kuwait, Oman, Qatar, and the UAE involves partial privatization of the state-owned telecommunication sector. The privatization of telecommunications in the Middle East

and the role of telecommunications providers in the expansion of ICTs started in the early 1980s with the establishment of Kuwait's Mobile Telecom Company (MTC). Currently operating as Zain, it is the largest private operator in wireless services covering six Middle Eastern countries and 14 sub-Saharan African countries (Zain, 2009). As a move toward simulating investment in non-oil sector, Qatar introduced its partial privatization of the government owned telecommunication (Qtel) in 1998. The Qatari government sold a 45 stake of Qtel to local investors (ArabDataNet, 2002) and since then Qtel has expanded its operation to other countries in the Middle East, North Africa and Asia. Qtel acquired 51% of the Kuwaiti telecom company's shares in 2007 (ITU, 2007a), the majority stake of the Pakistani wireless Internet broadband provider Burraq Telecom (Reuters, 2007), and the majority shares of the Indonesian telecom company Indosat (Budde Research, 2010). It has also expanded its operation in countries such as Iraq, Oman, Saudi Arabia, Tunisia, Algeria, Singapore, Cambodia, Laos and other territories. These operations made up three quarters of Qtel's total revenue in 2008 (Budde Research, 2010). In addition, Qatar's "Al-Jazeera" news network is the most known and controversial television broadcaster in the Arab world.

Other leading Middle East countries introduced their telecom reforms during the last decade. The UAE introduced its telecom (Etisalat) reform in 2000, Bahrain telecom (Batelco) in 2001, Oman telecom (Omantel) in 2004 and Jordan telecom company (JTC) in 2004 (Dahel, 2001; ITU, 2008; ITU News, 2007; American University, n.d.). Etisalat has also expanded its operations not only in domestic market but also to 17 other countries in the Middle East, Asia and Africa placing itself among one of the leading telecom providers across the globe (GulfNews, 2010). In addition, the UAE became one of the most successful ICT developers in the region. Currently the UAE acts as an important network hub to connect to the Internet in the region. In fact many of the region's major digital media companies are based in the UAE including Tejari a major portal for Business-to-Business (B2B) transactions in the region. The country provides also services for 25% of the region's burgeoning Free-to-Air and paid DTH satellite TV channels according to Budde Research (2010). Bahrain, on the other hand, has implemented the most vibrant and liberal telecom reform in the Middle East. The

Bahraini company Batelco was able to expand its operations and investments in other countries such as Kuwait, Jordan, Yemen, Saudi Arabia, Egypt and India.

The most obvious impact of competition and market liberalization on ICT prices⁵ has been observed in the Middle East. According to ITU (2009b), ICT prices have decreased drastically in recent years in the Middle East. The reduction of ICT prices depends on a number of factors including the level of competition, market size, and the operators' cost of providing services as well as their profit margins. In its 2009 report, ITU announced that Singapore had the best ICT prices index in 2008, while Niger was placed in the bottom of the list (150th place). Some Middle Eastern countries such as the UAE, Bahrain and Kuwait were ranked remarkably 6th, 18th and 20th, and Iran's position in the global rankings was at 78th place (ITU, 2009b). In other words on average ICT prices in terms of fixed telephone, mobile cellular calls, and fixed Internet access in Iran is over 10 times more expensive than the neighboring country UAE. In addition while the majority of Internet users in well developed ICT nations in the region (e.g., Bahrain, Kuwait, Qatar and UAE) enjoy a high speed broadband access to the Net, Iran's Internet broadband development is one of the least developed in the Middle East (ITU, 2009b). This is consistent with an earlier study conducted by King et al. (1994) in which it has been argued that telecom privatization will provide not only reduced prices but also increased quality of the services. Other scholars emphasize that the level of private investment is strongly correlated with the degree of institutional democracy within each nation (Pastor and Sung, 1995; Feng, 2003; Narayan, 2008).

A review of data provided by the ITU (2007b) and Orbicom (2005) provides interesting information regarding ICT development in the region. According to both reports, Bahrain, Kuwait, Qatar, and the UAE were able to invest significantly in their ICT infrastructure during the period of 1995-2005 due to a more liberal approach toward ICT development. This investment resulted in a high ICT index on par with developed countries. Table 5.2 below illustrates the increase in telecommunications revenue as a percentage of GDP for selected countries in the Middle East from 1995 and 2005. On

⁵ The new "ICT price basket" index published by ITU is estimated based upon the relative prices on fixed telephony, mobile cellular telephony and fixed broadband Internet services as percentage of countries' average monthly GNI per capita.

average, ICT revenue in the Middle East contributed to GDP by 1.95% in 1995 and 2.98% in 2000; this contribution increased to 3.35% in 2005 and 3.64% in 2007. Jordan and Bahrain had the highest contributions to their GDP, followed by Lebanon.

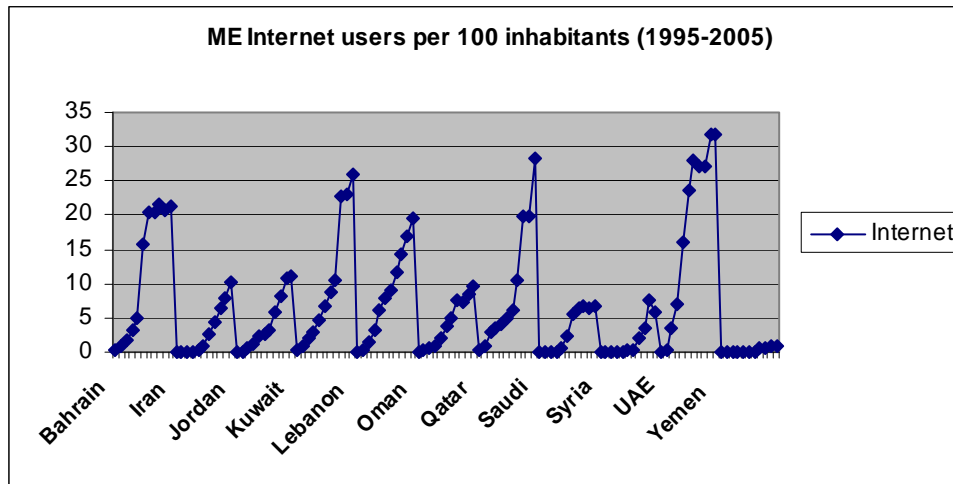
Table 5.2: Telecommunications Revenue

Country	1995	2005
Bahrain	4.15	4.64
Iran	0.67	1.42
Jordan	4.21	8.44
Kuwait	0.89	3.50
Lebanon	1.63	3.70
Oman	1.55	2.41
Qatar	2.04	2.70
Saudi Arabia	1.56	3.20
Syria	1.67	2.81
UAE	2.19	3.11
Yemen	0.88	1.20

Source: ITU (2007a), World Bank (2005/2006)

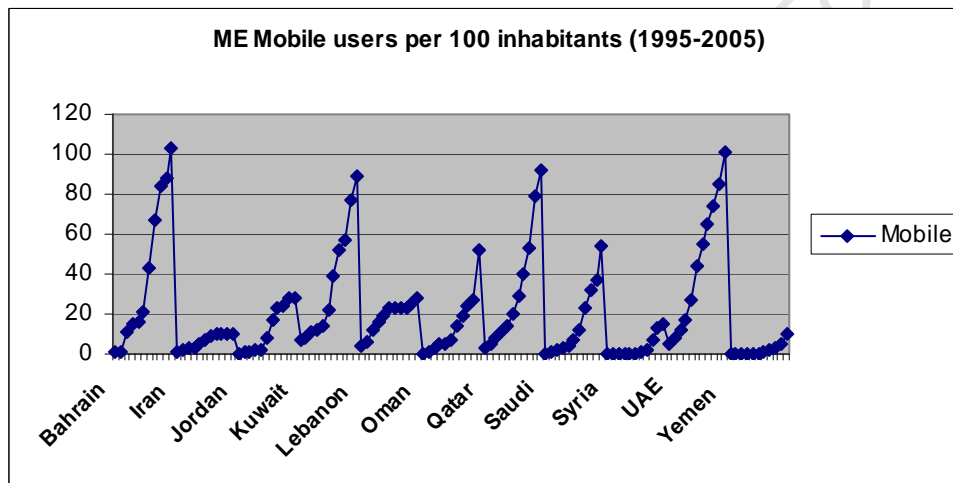
This increase in revenues can be attributed to the unique economic landscapes of both Jordan and Lebanon. Specifically, Jordan and Lebanon are not categorized as oil exporting countries, yet Bahrain recently shifted from being an oil exporting economy to a mixed economy of oil processing and refining, banking and ICT. As a result, the share of its GDP that is categorized as ICT revenue is much higher than that of other Middle Eastern countries, since oil and natural gas productions play a more dominant role in their economies. As a result of increased ICT investment and expenditure in the region from 1995 to 2005, the number of Internet users, and mobile and fixed telephone subscribers per 100 inhabitants increased dramatically (see figures 5.1 through 5.3).

Figure 5.1: The Middle East Internet growth



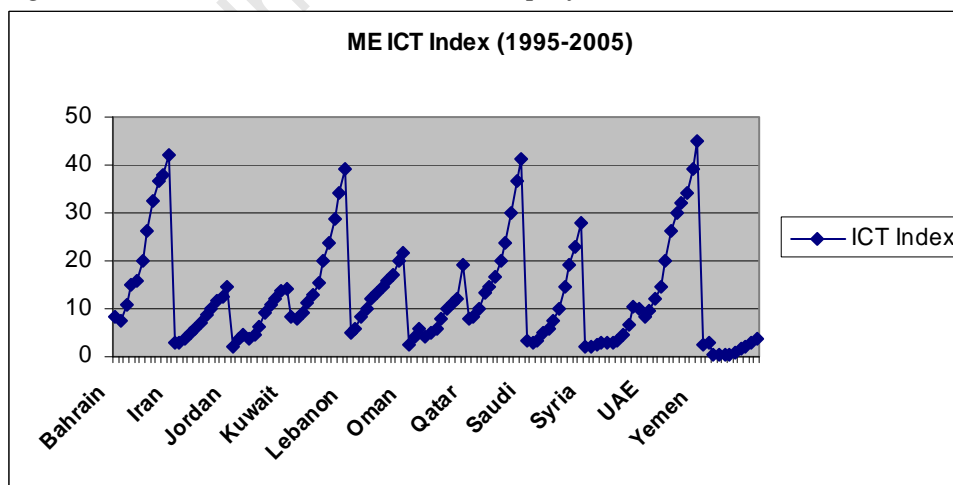
Source: ITU (2007a)

Figure 5.2: The Middle East mobile cell phone growth



Source: ITU (2007a)

Figure 5.3: The Middle East overall ICT performance



Source: ITU (2007a)

5.4 Research Questions and Empirical Analysis of Panel Data

This study is interested in investigating the impact of ICTs on democratic freedoms by raising the following research questions: 1) what does ICT expansion contribute to democratic freedoms in the Middle East; 2) what are the impacts of the determinants of ICTs such as education, ICT investment and GDP per capita on the expansion of ICTs in the region; and 3) What are the impacts of ICT content filtering and institutional resistance on ICT expansion, democratic freedoms? To investigate these questions, the following hypotheses were applied to panel data.

***H1:** ICT positively impacts the promotion of freedom. As the level of ICT expansion increases it will provide tools and services to influence the ability of citizens to participate in the decision making process within a society.*

ICTs in the form of e-mails, SMS messages, weblogs, websites, online meetings, online posting, and online petitions and so on provide so called “E-citizens” (Clift, 2003) with the opportunity to influence decision making processes and voice their opinions, thoughts and ideas about issues of concerns. In other words, ICTs provide citizens with the ability to exercise democracy (Clift, 2003). As the level of ICTs increase, citizens are able to use these tools and services more effectively and efficiently but also to do this in a faster and more timely manner. An earlier empirical study conducted by Kedzie (1997) covering 144 economies shows that there is a strong and statistically significant relationship between the usage of e-mails and the level of democracy as measured by the index of Political Rights (PR), the index of Civil Liberties (CL) published by Freedom House (see also discussion in chapter 4).

***H2:** An educated population is the cornerstone for the usage of ICTs. The more educated the population in each country, the more demand for ICTs will increase, in turn having a positive effect on democratic freedoms.*

There is a positive correlation between access to ICT tools and services and educational attainment. ICTs, such as computer networks and the Internet, can be used for the effective and efficient delivery of education, but a basic level of education is required in order to access network resources like the Internet. In its 2003 report, ITU states that education is a core component of the transition of each country towards

participation in the global information society. Shih et al. (2008) suggest that the presence of human capital with appropriate skills and access to sources of information on how to use technology is crucial for ICT expansion in developing countries. Educated workers more readily adjust to the implementation of new technologies and an educated workforce reduces opposition to social changes associated with the adoption of new technologies (Robison et al., 2002). Shin et al. (2008) point out that the impact of human capital is expected to be greater in developing countries, which are still in the process of creating adequate levels of assets, than in developed countries. Once the levels of education, regarded as a complementary asset to ICT, reach a certain level, the marginal impact of an extra level of education on ICT diffusion may be diminishing.

The empirical evidence on the impact of human capital on ICT development is, however, open to debate. Drawing on a sample of developing and OECD countries, Kiiski and Pohjola (2001) found that the tertiary education has a positive and statistically significant influence on the expansion of ICTs. Similarly, Shih et al. (2008) find that education has a significant effect on ICTs in developing countries. In contrast, Hargittai (1999), Kiiski and Pohjola (2001) and more recently Shih et al. (2008) find that in the case of industrialized countries, education does not seem to influence ICT diffusion. Also, in a sample that included both developed and developing countries, Norris (2000) shows that education does not have a significant influence on ICT diffusion. Contrary to expectations, Balamoune-Lutz (2003) did not find a positive association between ICT diffusion and education for a sample of developing countries. In the context of Middle Eastern countries and the Arab world, Eickelman (2002) argues that the increase in the level of education and the rise of new communication media, among other things, are turning Arab communities into public spheres in which greater numbers of people, not just those in the political and economic elite, have a say in governance and public issues.

This research does not claim that the formal education as described above is the only source of acquiring knowledge in regards to ICTs. Other parameters, for instance, employees' training and/or training provided by various institutions (e.g., government sponsored centers) can help to increase citizens' access and skills in the use of ICT resources. However, these types of data are not available.

H3: ICT investment positively influences the expansion of ICTs.

ICT investment has a direct relationship with ICTs since the expansion of ICTs requires heavy investment not only in network infrastructure but also ICT machinery and software. Investment in ICTs also has a direct positive impact on GDP growth. For example, in the Middle East, ICT revenue contributed to 2.4% of GDP (on average) in 2005. For non-oil-exporting countries, such as Lebanon and Jordan, this impact was more visible. The contribution of telecommunications revenues to GDP in Lebanon and Jordan increased from 3% and 6.7%, respectively, in 2000 to 5% and 7.8%, respectively, in 2005/2006 (World Bank, 2007).

H4: The increase in GDP per capita in each country will increase demand for ICT tools and services.

The assumption that per capita income is a major determinant of the expansion of ICTs is fairly standard in both theoretical and empirical studies (Rogers, 1993; Hargittai, 1999; Norris, 2000; Kiiski and Pohjola, 2002; Balamoune-Lutz, 2003, Dewan et al., 2005). Longitudinal data from developed countries indicate that the adoption and expansion of ICTs are highly correlated with income. Countries with higher per capita income invest more in R&D and hence are better equipped to discover and use advanced information technologies (Hardy, 1980; Norton, 1992; Shih et al., 2008). Beilock and Dimitrova (2003) examine the impact of gross national product (GNP), including the log and exponential forms, the level of civil liberties, infrastructure and regional variables on Internet use in a sample of 105 economies from a dataset published in 2000. They find that GNP is “by far” the most important determinant.

The increase in the price of oil and natural gas contributed to a substantial increase in GDP per capita in the countries in this study. Specifically, the growth in GDP in the Middle East increased by 2.4 fold from 1995-2005 (ITU, 2008). According to UNCTAD (2006) there is a positive correlation between income and demand for ICTs, in that citizens of high income countries tend to have more access to ICT tools and services than citizens of low income countries. The UNCTAD (2006) study also shows that access to ICT services in high income countries is much cheaper than it is in low income countries because these tools and services are more readily available in developed countries. In the

Middle East, increased income in seven of its oil- and natural-gas-producing countries resulted in further government investment in ICT infrastructure as well as an increased demand for such tools and services by citizens and businesses.

In this study, the average per capita income is proxied by the variable *GDP per capita*, as is common in country-level studies of this nature. Consistent with the evidence suggesting the existence of a digital divide (Lu, 2005), we would expect a positive relationship between GDP per capita and all the measures of ICT expansion (see e.g., Dewan et al., 2005; Quibria et al., 2003).

H5: *The intensity of ICT content filtering and state censorship will negatively impact ICT development and, in particular, the Internet in each country and will ultimately impact democratic freedoms.*

While the ultimate objective of ICT investment is the increase of network bandwidth and the increased demand for ICT products (including PCs, the Internet, and mobile phones), the filtering applied on ICT applications have a reverse impact, that is, it not only restricts the bandwidth usage provided by ICT investment but it also restricts free access to information and data exchange among the general population. For example, in a recent move toward filtering of ICTs, the Iranian government banned high speed Internet access to civilians as a move to restrict Western influence. Banning high speed Internet links would limit faster access to information despite having the telecoms facilities, fiber-optic technology and internet infrastructure. As table 1 in appendix D indicates, citizens in 25 of the most developed nations enjoy not only a higher level of ICT access but also a higher level media freedom including online publications compared with the rest of the world, particularly when compared with the Middle East.

H6: *The imposed government intervention (institutional resistance) in economy negatively impacts democratic freedom and thereby the expansion of ICTs.*

Governments' economic intervention through the control of resources and ownership is another measure that negatively impacts democratic freedoms, with a noticeable impact on the expansion of ICTs. The institutional legal environment in a country is also relevant to ICT development because national policies can either enhance or hold back development of a technology, depending on the approach to regulating mechanisms,

privatization, and free competition outlined in such policies. These arguments suggest that economies with free competition in the telecom sector will have higher Internet connectivity than economies with monopolies in this sector of their respective countries (OECD, 1996, 1997a, 1997b, 1998, 1999; ITU, 1997, 1999; Hargittai, 1999). Using a sample of 2001 data from 45 countries and focusing on variables of regulatory regime characteristics and price regulation, Wallsten (2005) finds that countries that tend to have a more formal and controlled regulatory system may be also tend to have fewer Internet users and hosts. Miles et al. (2006) argue that countries must maintain an open environment for business activities since extensive burdensome restrictions provide an environment in which private sectors cannot operate without the fear of bureaucracy and political corruption. Clift (2003) notes that the private sector should not only be able to invest in an ICT infrastructure but also to use ICTs as a means of competitive advantage to conduct business in the form of commercially-driven connectivity, software, technology, e-commerce, online transactions and so on.

5.5 The Panel Data Collection

As discussed in chapter 4 the ICT data is composed of four main indicators such as main telephone lines, mobile cellular phones, Internet users and the number of PCs per 100 inhabitants. These were mainly collected from ITU database. Other indicators in this study, such as the Index of Political Rights (PR), the Index of Civil Liberties (CL) which together construct the index of democracy (*PRCL*), the Press freedom Index, Education (*edu*) Index, Institutional Resistance (*resist*) and GDP per capita (*gdpp*) were collected as follows:

a) Two main variables, namely the Political Rights and the Civil Liberties indices published by Freedom House were used to construct the democracy index (*PRCL*) as a metric to explore the correlation between ICT expansion and the level of political and civil freedoms in the region (see the discussion in chapter 4).

b) To measure the impact of filtering and state censorship on ICT content, the press freedom indices published by Freedom House and RWB and discussed in previous chapter were used (as discussed in chapter 4).

c) The education index (*edu*) in each nation is measured through two indices: adult literacy rates and gross enrolment ratios (e.g., primary, secondary, and tertiary education). In order to emphasize higher education as a means by which to empower the populace in the dissemination of ideas, thoughts, and opinions on blogs, websites, and other forms of ICT-enabled communication, the gross enrolment rates as introduced by Orbicom and ITU (2005) are calculated as:

$$Education = primary + 2 \times secondary + 3 \times tertiary / 6$$

d) Data for GDP per capita (*gdpp*) was mainly collected from ITU and UNDP.

e) The government intervention in economic activities introduced by the Heritage Foundation (HF) and the Wall Street Journal (WSJ) was used to measure the control methods and mechanisms that administer the direction and ownership of resources. This index is composed of the following variables: government consumption as a percentage of the economy; government ownership of businesses and industries; share of government revenues from state-owned enterprises; government ownership of property; and economic output produced by the government. According to HF/WSJ, a score of one indicates the least intervention and a score five indicates the highest intervention. In most countries in the Middle East, economic development, including ICT development, is impeded by government intervention and government-imposed restrictions (Heritage Foundation, 2005). For example, of the 11 countries in this study, countries such as Bahrain, Jordan, Kuwait, and the UAE, rank as “mostly free,” while others, such as Lebanon and Oman, are classified as “mostly unfree.” Some, namely Iran, are classified as “repressed”.

It is also important to note that there is a limitation in freedom of data sources due to the complex nature of each indicator and the limited sources of providers. Therefore, this study does not claim to provide an exact estimation of the variables in use, since precise assessments require multiple, different independent sources and providers.

However, data from the above sources is used as a means of measuring the overall performance of countries in the Middle East with regard to positive and negative aspects of ICTs and democratic freedoms combined with the impact of Internet filtering on such development. In addition, this research does not suggest that the above factors are the only factors that would affect the expansion of democracy and freedom. There are clearly many other factors such as the level of economic development, globalization, social and cultural factors among others that can influence the expansion of democracy and freedom of expression. However, the main objective of this chapter is to investigate the impact of ICTs and other determinates on the expansion of political freedoms in a region of the world that has the worst record on democracy and freedom of expression (RWB, 2005).

5.6 Regression Analysis Method

To empirically assess the effect of ICT development, institutional resistance and ICT content filtering on democratic freedom, a panel of 11 Middle Eastern countries for the period of 1996-2005 was used. The data have a pooled time-series cross section (TSCS) structure that allows us to identify patterns across countries and over time. In the estimates presented below, we capture the link between these variables in a model which can be expressed in the following log-linear form⁶:

$$\ln PRCL_{it} = \alpha_0 + \alpha_1 \ln ICT_{it} + \alpha_2 \ln filter_{it} + \alpha_3 \ln resist_{it} + \varepsilon_{it} \quad (1)$$

where the subscript refers to country i and year t ; ε_{it} is the random error term in the equation, representing the net influence of all unmeasured factors.

A three-stage least squares (3SLS) estimation model was used to test the above equation. In essence this estimation model is a multivariate regression capable of having multiple endogenous regressors. The 3SLS as proposed by Zellner and Theil (1962) is an effective method for systems of structural equations, where some equations contain endogenous variables among the explanatory variables. In this context the endogenous explanatory variables are dependent variables from other equations in the system. As noted by Zellner and Theil (1962), the model is tested in three stages as follows: In stage

⁶ A major advantage of a log-linear model is that the coefficients of the continuous variables (α) amount to elasticities. In other words, the coefficient for each continuous independent variable is the estimated percentage change in the dependent variable associated with a one percent increase in the independent variable, controlling for other factors in the model.

one the simulation processes regression of each endogenous variable on all exogenous variable of the entire system to build the "moment matrix of the reduced-form" (p.54); in stage two it estimates the coefficient of a single structural equation based on the results from the first stage; and in stage three the model is tested by using the resultant matrix of the first two stages. The last stage produces estimates for all coefficients of the entire system (for more details see Zellner and Theil, 1962). Rao (1974) points out that the 3SLS estimator is based on Aitken's generalized least square application after a suitable transformation of a structural equation within the system. Belsley (1998) notes that compared with other linear regressions, 3SLS can be more efficient and provides a relative advantage that increases with the strength of the interrelations among the error terms. In particular, its efficiency arises by exploiting non-zero cross-equation covariation (Belsley, 1998). In addition, as noted by Stoian and Vickerman (2005), 3SLS is an effective method for testing the bi-directional relationship between variables (in our case the endogenous variables such as PRCL, ICT, and filtering) through a single equation estimation method.

The above model investigates how changes in the variables ICT (*ICT*), ICT filtering (*filter*) and institutional resistance (*resist*) correlate with changes in democratic freedom (*prcl*) in the Middle East (e.g., hypotheses *H1*, *H5* and *H6*). On the other hand, the two endogenous variables *ICT* and *filter* are the dependent variables of equations (2) and (3) as follows:

$$\ln ICT_{it} = \beta_0 + \beta_1 \ln edu_{it} + \beta_2 \ln gdp_{it} + \beta_3 \ln invest_{it} + \gamma_{it} \quad (2)$$

The Equation (2) was set up to test hypotheses *H2*, *H3* and *H4* which are the main determinates of ICT expansion. Furthermore, we are interested in investigating the intensity level of ICT content filtering (*H5*) with increased use of four core ICT components: the Internet (*internet*), mobile cell phones (*mobile*), main telephone lines (*tel*), and PCs (*pc*). In particular, the first variable in Equation (3), the *internet*, is of the highest interest.

$$\ln filter_{it} = \lambda_0 + \lambda_1 \ln internet_{it} + \lambda_2 \ln mobile_{it} + \lambda_3 \ln tel_{it} + \lambda_4 \ln pc_{it} + \mu_{it} \quad (3)$$

In estimating the empirical model as depicted in equation (1), two main issues related to linear regressions (as discussed in chapter 4) were our main concerns and therefore required further investigation. These problems were related to multicollinerativity and

heteroskedasticity. As noted by Gujarati (2003), multicollinearity is a problem linked to independent variables that are highly correlated with each other and may cause a wide swing in the estimate of parameters due to small changes in data. To test the multicollinearity issue, the Variance Inflation Factor (VIF) was estimated. The model VIF shows a value of 3.15 which is a value far from VIF's critical values of 10 (moderate multicollinearity) and/or 30 (severe multicollinearity). In addition, this study did not find partial correlation among independent variables (see figure 5.4). Another issue that was addressed was related to the outliers. Extreme points may influence the result of regression. This error occurs in situations where residuals may appear to be a function of independent variables. If a model suffers from severe heteroscedasticity (White, 1980) it may bias standard errors. The above model was tested to ensure that it does not suffer from heteroskedastic error. Table 5.3 shows the result of the White test. In addition, the table shows the results of the Akaike Information Criterion (AIC) and the Schwarz Information Criterion (SIC) tests that are used to measure the model's suitability for statistical estimates.

5.7 Findings and Discussions

Table 5.3 shows the result of a regression analysis with a confidence interval of 95%. The results indicate:

- 1) The regression output shows a p -value lower than 0.05 for all variables related to hypotheses H1 through H6 and therefore, the hypothetical condition to reject the hypotheses if $(H=P>|t|>0.05)$ is fulfilled. Furthermore, the t -values indicate that all variables are statistically significant at a level of 95%.
- 2) The coefficient of variable *ict* shows a positive sign in regards to the endogenous variable *PRCL* indicating its positive impact on democratic freedoms.
- 3) The coefficients of variables of *edu*, *gdpp*, and *invest* show positive values for ICT indicating their positive impact on ICT expansion.

Among the above variables, *gdpp* and *edu* had the strongest impact on ICT expansion with t -values of 11.36 and 10.23 respectively.

4) The coefficients of variable *resist* show negative values indicating its negative impact on democratic freedoms. Furthermore, as shown in table 5.3, variable *resist* has a negative correlation with ICT.

5) The intensity of ICT content filtering has been increased with the increase in the number of Internet users occurring during the period 1995-2005. Variable Internet shows a negative coefficient and its *p*-value is reported as 0.021 indicating that its impact is statistically significant. However, variables *Tel* and *PC* are not statistically significant despite the fact that variable *PC* has a negative coefficient sign indicating its negative relationship with filtering. On the other hand, variable *mobile* shows a positive coefficient sign toward ICT filtering in this regard ICT filtering did not have an impact in the number of cell phone users. On the other hand, during the period 1995-2005 the state filtering and censorship in the region (with exception of Iran) was mainly focused on Internet content and not mobile content, despite the fact that in recent years with increased popularity of mobile Internet and SMS, the filtering restrictions have been applied on mobile content as well. Finally, it is important to note that mobile Internet application has been introduced in the Middle East recently. For example, Zain, one of the most prominent mobile providers in the Middle East, launched its low cost Internet service for mobile devices in late 2009 (Juma, 2009).

The impact of ICT content filtering on mobile Internet is one of the interesting topics for the future research in the Middle East.

Table 5.3 shows the regression results for equations (1), (2), and (3), including regression validation test statistics. Table 5.3 illustrates that ICT expansion (*ICT*) is statistically significant: its coefficient has a positive sign, indicating its positive impact on democratic freedoms (*PRCL*). On the other hand, the variables *filter* and *resist* show negative coefficient signs. These variables are statistically significant, indicating the negative impact of filtering and institutional resistance on democratic freedom. With regard to equation (2), the result of the regression analysis shows that the variables education (*edu*), GDP per capita (*gdpp*) and ICT investment (*invest*) have a positive impact on ICT diffusion. All variables have positive coefficient signs and are statistically significant at a 5 percent level.

Table 5.3: Parameters of three-stage estimation and Test Statistics

Endogenous variables: PRCL, ICT, Filter			Number of observations	121	
			Model R-square	0.332	
Exogenous variables: Resist, Edu, GDPP, Invest, Internet, Mobile, Tel, PC			ICT R-square	0.8369	
			Corr PRCL, ICT	0.2109	
			Corr PRCL, Resist	-0.2335	
			Corr PRCL, Filter	-0.5347	
			Corr ICT, EDU	0.8089	
			Corr ICT, GDPP	0.8004	
			Corr ICT, FILTER	-0.0457	
Hypotheses	Variables	Coefficient	Std. Error	t-Statistic	P> t
H1	ICT	0.2868	0.1148	2.50	0.013
H6	Resist	-0.1953	0.0710	-2.75	0.006
	cons	1.6503	0.3146	5.25	0.000
H2	Edu	1.7390	0.1699	10.23	0.000
H3	GDPP	0.4149	0.0365	11.36	0.000
H4	Invest	0.0448	0.0204	2.20	0.029
	cons	-4.1386	0.2661	-15.55	0.000
H5	Internet	-0.0101	0.0043	-2.32	0.021
	Mobile	0.0041	0.0016	2.52	0.012
	Telephone	0.0029	0.0021	1.39	0.166
	PC	-0.0041	0.0025	-1.65	0.099
	cons	1.4519	0.0305	47.64	0.000
Regression Test Validation Statistics					
Root MSE: PRCL		0.5332	Akaike info criterion (AIC)		-4.3233
Root MSE: ICT		0.1735	Schwarz info criterion (SIC)		-4.1616
Model VIF (mean)		3.15	White's general test statistic : 37.35211 Chi-sq(5)		[0.000]

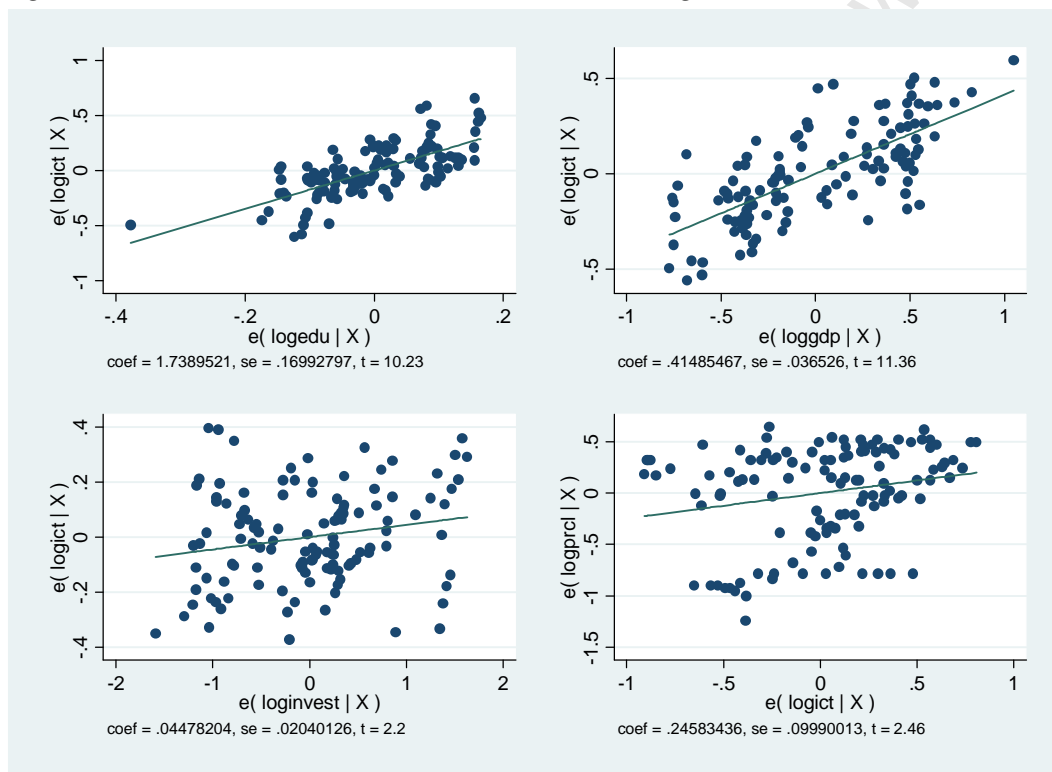
Note: All variables are significance at the 0.05 confidence level

As described in equation (3), further investigation on the impact of filtering and state censorship in the Middle East shows that ICT content filtering has intensified with the increase in Internet users in the region. While Internet filtering has a negative impact on the accessibility of the Internet (e.g., a negative coefficient sign and statistically significant with 95% confidence intervals), its impact on other variables such as cell phones, telephone lines, and the number of PCs, is either statistically insignificant or redundant. In addition, regression test validation indicates that the model is stable, and there are no issues of heteroskedasticity (white test) or multicollinearity. Thus, we can

conclude that from 1995 to 2005, ICT expansion had a positive impact on democratic freedoms in the Middle East, while the Internet content filtering and institutional resistance continue to be the main barriers to the development of ICTs and, ultimately, democratic freedom.

It is not surprising to see that Middle Eastern nations such as the UAE, Bahrain, Qatar and Kuwait, which have the highest level of ICT expansion, also had the highest level of GDP per capita, education attainment as well as ICT investment. Figure 5.4 below shows the positive correlation among variables *ict*, *gdpp*, *edu* and *invest* on one hand and *ict* and *prcl* on the other.

Figure 5.4: The Correlation and statistics data among the main variables

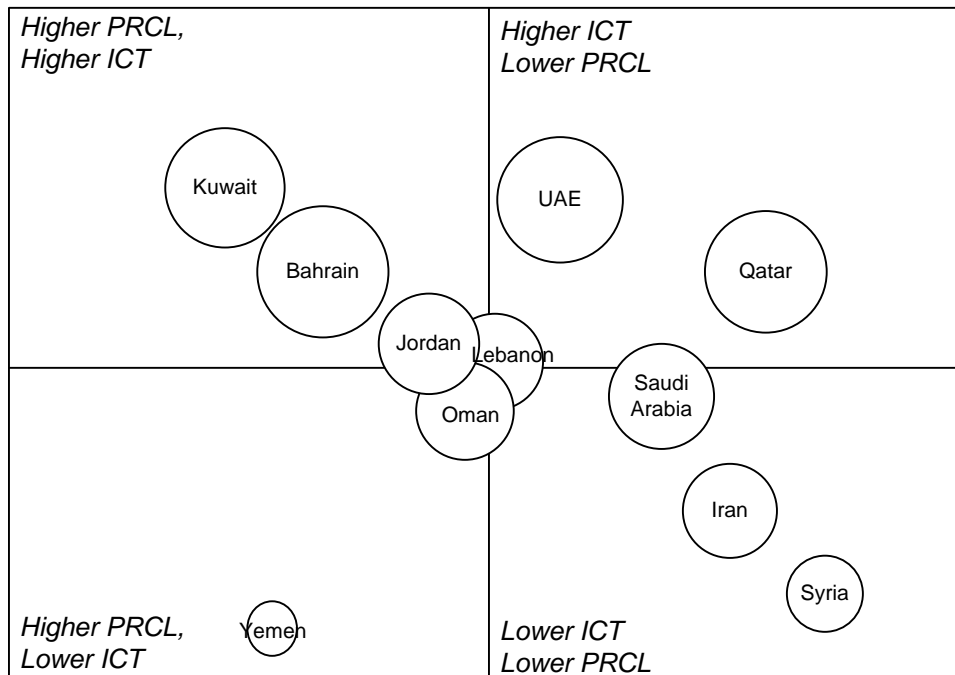


All variables are significance at the 0.05 confidence level

By analyzing the regression outputs, we are able to group countries in the region into four main categories as depicted in figure 5.5. The best performers in terms of ICT development and PRCL are Kuwait and Bahrain. The political freedoms in these countries are evaluated as “Partly Free” by Freedom House. In addition, citizens in these countries enjoy a higher level of media freedom in the region (print and online).

According to Reporters Without Borders' 2005 media freedom report, Kuwait has the best freedom of press not only in the Middle East but across the Arab world. Also, according to ONI's 2005 report, Bahrain does not practice the degree of intensive Internet filtering that has been seen in other Middle Eastern (discussed in chapter 6).

Figure 5.5: The Middle East democratic freedoms vs. ICT expansion



Note: The circles are weighted based on the progress of ICTs in each country. They are also positioned based on each country's level of democratic freedom.

The study of the other two Middle Eastern countries, Yemen and the UAE, are of particular interest. As shown in figure 5.5, while Yemen's democracy index is higher than the Middle East's average (the countries at the centre of figure) this country suffers from a low ICT development. Yemen has also the lowest level of educational attainment in the region. According to a UNDP report (2007), the literacy rate of adult female Yemenis in 2005 was reported as 43%.

In contrast to Yemen, while countries such as the UAE and Qatar enjoy higher levels of Human Development Index (HDI), ICT development and investment, the institutional resistance in these countries, along with extensive Internet filtering, remains the main barriers to democratic freedoms. Among these countries, the UAE has a better chance

joining Kuwait and Bahrain as the most developed nations in the Middle East (in terms of PRCL and ICTs combined).

Among the countries at the center of figure 5.5, Jordan had a better performance in terms of ICT expansion and democratic freedoms. Jordan's investment in telecommunication infrastructure, combined with a lower level of institutional resistance compared to other countries in the region, provided the country a good basis for its future growth in ICTs and better opportunities for the expansion of socio-political freedom in this country.

Finally, countries such as Iran, Saudi Arabia, and Syria had the lowest level democratic freedoms in the Middle East. In addition the level of ICT expansion in Iran and Syria is among the lowest in the Middle East. Despite the fact that countries such as Iran and Saudi Arabia were able to invest in ICT infrastructure between 1995 and 2005, extensive Internet filtering and governmental control of ICT development remain the main barriers for democratic freedoms which will be discussed in the next chapter.

5.8 Conclusion

The empirical analysis of this research shows that ICT developed nations in the Middle East are those countries that were able to liberalize their economy along with socio-political and economic reforms; a process that started in the late 1990's. Citizens in these countries were not only able to enjoy a higher degree of socio-political freedom in the Middle East but also the development of ICT infrastructure occurred at a faster pace and more efficiency. The results of the empirical study show that ICT expansion, measured in terms of (networks, machinery, and software) and access (education and GDP) are positively correlated with democratic freedoms. The study also reveals that education is positively correlated with ICT expansion, which is in turn positively correlated with democracy.

The results of study indicate also that the relationship between ICTs and democracy is conditional on the presence or absence of filtering and institutional resistance. In other words, this research claims that both institutional resistance and ICT content filtering are important predictors when interacting with ICTs. For example, the extensive Internet content filtering and strict governmental control of ICT development not only

undermines the principals of freedom and democracy as highlighted by the United Nations' *Universal Declaration of Human Rights*, it also undermines the future expansion of ICTs. For example, the ban on high speed Internet access in Iran undermines citizens' opportunities and rights for enhanced and reliable access to communication channels (Dutton et al., 2004). It also undermines the future development of broadband network infrastructure and its various applications. For example, delivering educational content to schools and universities requires not only faster network connectivity but also reliable connections. In addition, a ban on high speed networks undermines the development of high speed applications required for e-commerce and/or other forms of communications (Dwivedi and Lal, 2007) that demand such technology (e.g., pictures, video, audio and other web objects).

Government intervention in business activities, including ICT development, is very high in the Middle East in comparison with the rest of the world. For example, according to the *2005 Index of Economic Freedom* published by the HF and WSJ, the index of government intervention in business activities (i.e., institutional resistance) in the Middle East is 1.5 times higher than its world average. In terms of democratic freedom, this is particularly notable with leading countries such as Kuwait. The results of the empirical study show that while citizens in Kuwait enjoy a higher level of ICT expansion and online freedom, the existing level of institutional resistance negatively impacts the future expansion of ICTs and remains one of the main barriers to democratic freedom in this country. Yemen is the only country in the region that its level of educational attainment and ICT development diverged from its level of democratic freedom. It is evident that if policymakers and planners in Yemen increase their investments in education and ICTs, Yemen can overcome these barriers and advance its social and economic development, since ICTs have the potentials to boost the delivery of education, thus overcoming the illiteracy barrier (Ringstaff and Kelley, 2002; UN, 2002). Considering the cost, resources, and the knowledge required for implementing and expanding ICT infrastructure as part of countries strategic planning, it is important to stress that for countries with limited capital and R&D resources such as Yemen (and in some extend Lebanon), policymakers and planners should consider attracting FDI inflow as part of their strategic planning. FDI inflow is an important source of capital and R&D resources particularly for non-oil

exporting countries in the region. Establishing an FDI-friendly environment can attract more investors, from both within region and outside the region. However, since some ICT investors in the region have already acquired the necessary financial resources, knowledge, and expertise required in ICT planning and implementation, their involvement in such development should be considered integral.

Shared social and cultural similarities between regional investors and the host countries are the key factors in boosting such relationships. Investigating such relationships is beyond the scope of this thesis but an interesting topic for the future research in this region. To highlight the importance of FDI inflow into ICT development and the importance of the regional help in this respect, the UNCTAD (2004) report estimated that in the 1990s, more than one-third of the FDI in developing countries originated from other developing countries so-called the “South-South” flows. According to this estimate, South-South FDI flows appear to have grown faster than FDI from high-income countries to developing countries (so-called North-South flows). Since foreign investment can be coupled with particular skills and technologies, facilitating inroads into regional or global supply and marketing chains (UNCTAD, 2004), policymakers in developing countries, particularly in the Middle East, should consider such an investment for their ICT infrastructure development.

Table 5.4: Leading Countries in FDI Outflow: Asia Pacific and the Middle East (South-South)

Rank	Asia Pacific	Index	Rank	Middle East	Index
2	Hong Kong	10.147	10	Bahrain	3.574
13	Singapore	2.808	11	Kuwait	3.168
22	Malaysia	1.281	25	UAE	0.938
41	Indonesia	0.507	48	Qatar	0.336

Source: UNCTAD (2006)

Over the past decade, a noticeable dynamism in foreign investment has come from developing countries themselves, who are emerging as outward investors (UNCTAD, 2004). Table 5.4 above reveals some of the emerging economies in Asia Pacific and the Middle East. It appears that Bahrain, Kuwait, the UAE, and Qatar remain one of the main sources of FDI investment in the region. For example, according to a recent report, the UAE was the largest contributor of FDI in the Islamic world in terms of the number of

projects from 2002 to the beginning of 2007 (Chowdhry, 2007). The geographic proximity and ethnic and cultural ties between regional economies makes South-South investment particularly attractive. Since the cost of acquiring reliable information about foreign markets and transaction costs can be high for relatively small companies from the South, they tend to invest in neighboring countries, where they have established a certain familiarity through trade, or ethnic and cultural ties.

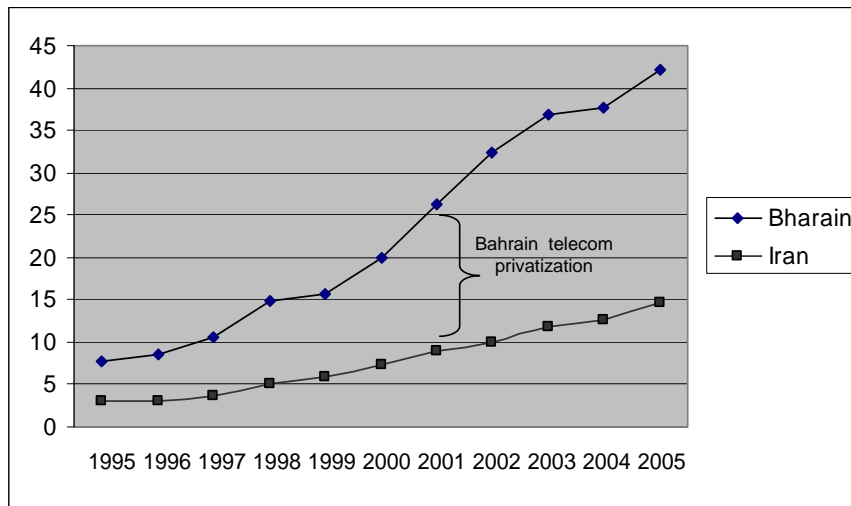
Among the countries of the center of figure 5.5 Jordan and Lebanon are classified as non-oil exporting countries. Jordan's success in ICT development was due to the country's liberalization of telecom sector as well as its friendly environment for FDI inflow in this sector. As a result the telecom sector in Jordan has experienced the greatest return to GDP in the Middle East. In addition the country's political rights and civil liberties indices are higher than the region's mean value allowing Jordan the opportunities to expand its future e-democracy development in a faster rate. Lebanon was also witness to enormous expansions in ICT infrastructure in the past few years. The country showed that it has the potentials to advance in e-democracy processes despite the political turbulences and the regional conflicts that had devastating impacts on not only the country's infrastructures (e.g., damaged roads, bridges, power plants, water supply and telecommunication networks) but also its socio-political developments.

A particular group of countries in the region, including Iran, Syria, and Saudi Arabia, impose the most restrictive control over ICT development and citizens' digital activities. The governments of these countries impose heavy restrictions on ISP licensing and other ICT developments. These countries view ICT development through the lens of national security and ideology. The censorship and state control of ICT development controls citizens' online activities by filtering socio-political content extensively, imposing laws and regulations, surveillance and monitoring, physical restrictions, and extra-legal harassment and arrests (ONI, 2009). The ultimate consequence of such practices is the increased digital divide in the region. According to data provided by ITU (2007a), in year 2005, Iran ranked at 105th place in ICT expansion among 183 economies, while the UAE, Qatar, Bahrain, and Kuwait were ranked at 45th, 46th, 47th, and 57th places respectively. This shows that the digital divide exists at both the regional and global levels. In addition, the consequence of investment in ICT (telecom infrastructure and software) was that

Bahrain, Qatar, and the UAE had an average ICT investment per capita of \$407, \$328, and \$474 between 1995 and 2003 while this ratio for Iran was only \$50 (ITU, 2007a; World Bank, 2006). ICT development in Iran and Saudi Arabia warrants further comparison. Saudi Arabia saw enormous expansion in mobile development due to the establishment of a regulatory telecommunications authority in 2001 (OECD Report, 2002) which oversaw the implementation of partial privatization in mobile cell phone allowing private investors to operate in this country. As a consequence Saudi Arabia's mobile cell phone penetration rate increased to a remarkable 57.6% in 2005, however, Saudi Arabia's Internet growth is not particularly encouraging (12%) due to restrictive government policy in this area. Iran, in contrast, also imposes heavy governmental control on mobile expansion. Its Internet and mobile growth both show very limited growth despite the citizens' demands for services in these areas. The Middle East's digital gap is best illustrated by comparing ICT expansion in Iran and Bahrain. As Figures 5.6 (ICT index) indicates, the digital gap between Iran and Bahrain increased drastically during the period of 1995 to 2005. Two main reasons for this digital gap are: 1) Bahrain implemented partial privatization of its government-owned telecom sector in 2001; and 2) Bahrain implemented a liberal policy toward Internet usage. According to ONI (2005), Bahrain has the lowest level of Internet filtering in the region.

In other issue, countries such as Iran and Syria experienced very poor performance in attracting FDI inflow to their infrastructure development (UNCTAD, 2007). To bridge the gap, Iran and Syria need to intensify investment in their ICT infrastructure, a task that does not seem feasible without involving private investors, which in turn requires constructive socio-political and economic reforms. Governments can create competitive markets that grow faster, cost less, facilitate innovation and respond better to users' needs if they open their telecommunication market through well-designed reforms (World Bank, 2006).

Figure 5.6: ICT Index and the Growth of the Digital Divide between Iran and Bahrain



Source: ITU (2007a)

This study found that there is a strong correlation between education, ICT expansion, and freedom. The usage of ICT tools and services requires users to have access to ICT as well as the capability to acquire a certain level of knowledge in order to use them effectively. People who possess this knowledge (the educated populace) are those who will be able to use, create and disseminate information, and they may demand a more open and democratic society. This study concludes that the governmental intervention in ICT development and heavy ICT content filtering in the Middle East negatively affect the future development of ICTs in the region. The main activities in this sector, such as telecommunication services (tele-providers), are either government owned or controlled, or, the type of licensing and restrictions imposed on businesses in this sector make free and fair competition challenging.

Finally, as discussed above ICTs represent a source for emancipation among the citizens of repressive regimes as evidenced by the growth of websites, blogging, social networking and text messaging. However, these ICTs are heavily filtered in this region. As part of the thesis's investigation into the impact of ICTs on democratic freedoms, it is necessary to examine the justifications offered by authorities for this censorship. Using Critical Discourse Analysis Chapter 6 demonstrates that the authorities' claims fail Habermas's four part validity test and therefore filtering and state censorship is better understood as ideology.

Chapter 6: Internet Filtering and State Censorship in the Middle East: A Critical Discourse Analysis

As discussed in chapter 5, the Internet filtering in Middle East has been intensified with the increased popularity of Internet among citizens of this region. This chapter examines the justifications offered by authorities for filtering and censorship by applying a methodology known as Critical Discourse Analysis (CDA).

6.1 ICT Content Filtering in the Middle East

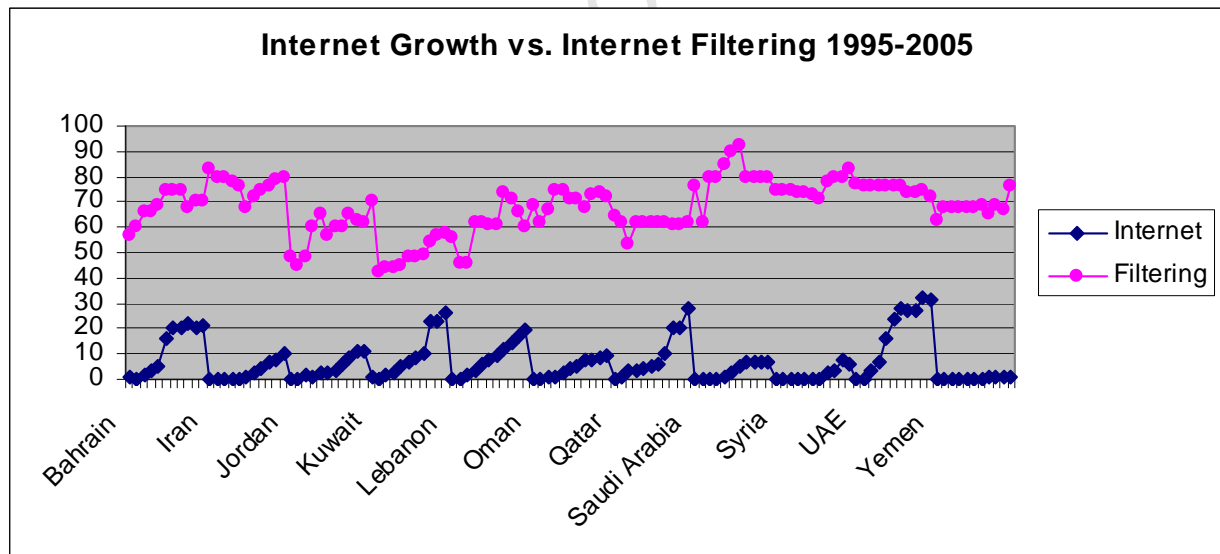
Court and Cotterrell (2004) argue that media freedom would presumably be a key factor in communicating ideas into policy and practice. They also suggest that while autocratic regimes often tend to limit the gathering and communication of evidence and have a weak accountability mechanism, open political systems allow evidence to be freely gathered, assessed and communicated (Court and Cotterrell, 2004). Guillen and Suarez (2005) explain that governmental efforts to control the Internet may include: 1) restricting access by controlling networks and instituting registration requirements; 2) restricting the content by filtering information, blocking forbidden sites, taking disciplinary actions and even virus attacks on banned sites; and 3) threatening to arrest or imprison those who access unauthorized information or use the Internet to organize and mobilize politically (Guillen and Suarez, 2005).

The Internet is used by a broad range of individuals and groups, including political organizations, NGOs, women's rights groups, ethnic minorities, and religious groups, including religious minorities and silent voices who want their messages to reach a broader audience. It is a platform to attract more people to their agendas and programs, since their messages will be banned from publication through official media, as it is heavily controlled by the government.

As discussed in previous chapter Internet content filtering not only imposes a negative impact on ICT expansion, but also it undermines citizens' rights to freedom of expression. For example, the United Nations' *Universal Declaration of Human Rights* emphasizes citizens' right to free communication, religious and political participation, as well as the right to engage in economic activity.

Internet content filtering is commonly practiced by many Middle Eastern governments. In fact as depicted in figure 6.1 with the growth of the Internet in the Middle East, ICT content filtering has also intensified in the region. Figure 6.1 shows the media restriction (print and online) in the Middle East (value 100 indicates the highest restriction, see also table 7.1) plotted against the number of Internet users per 100 inhabitants. As shown, while some countries such as Bahrain and Kuwait had better performances in terms of media freedom and in particular online freedom, other countries such as Saudi Arabia and Iran had intensified their efforts to block citizens' access to free information during the period of 1995 to 2005. To explain such practices some scholars argue that many political and religious leaders in these countries are reluctant to embrace technology that appears to encourage moral turpitude (Ghashghai and Lewis, 2002) and for fear that the Internet is spreading Western political agendas (Shuji, 1997; Shihri, 2004).

Figure 6.1: Internet Filtering vs. Internet Growth



Source: ITU (2007a), Freedom House (2005) and RWB (2005)

Wheeler (2006) argues that in the Arab World, the Internet has the potential to 'create the conditions for free association' while some leaders in the Middle East maintain that preventing pornography and the protection of Islamic values are the main reasons for filtering online content. Hofheinz (2005) states that Internet censorship is a contentious

issue in the region, although not all countries exercise it to the same degree. For example, Iran does not have explicit laws regulating Internet content or require the implementation of filtering technology. Iran uses the country's Press Law to target specific content. The implementation of filtering is mandated, not by law, but by the Telecommunications Company of Iran (TCI), which is run by the Ministry for Information and Communication Technology (ICT). Filtering is further codified through ISP licensing agreements with end users in which users agree not to access "non-Islamic" sites (Villeneuve, 2006). Saudi Arabia is transparent about their control over media content and the extent to which they will exercise control. The government is quite open about the fact that all network traffic going into and out of the kingdom is routed through a central farm of proxy servers (Zittrain and Edelman, 2002).

For example, the 2005 OpenNet Initiative (ONI, 2005) report emphasizes that, with the assistance of some well-known international Internet providers, Iran, Saudi Arabia, and other Middle Eastern countries have implemented an effective filtering mechanism to track millions of users searching for news and information otherwise censored by traditional local media. The systematic filtering not only targets political and religious sites, but also those that promote gender equality and women's rights. The content filtered by the Iranian government, for example, can be organized into six categories: political and religious sites, sites created by minority groups, women's rights websites, sites containing explicit content, and the websites of international organizations such as Amnesty International. The 2005 ONI report on Iran shows that the filtering of websites focused on women's rights is the fourth-highest on the list. According to Wheeler (2006), "any use of the Internet to openly oppose the state is often punished by imprisonment"; thus, any activity that challenges or alters the status quo is also considered a target of filtering. In addition, the Iranian government has implemented strict controls on ICT development, particularly by deterring the expansion of high-speed Internet connections. The government banned high-speed Internet accessibility (Tait, 2006), slowing the country's development and modernization. Most developed nations have either established, or are moving toward establishing, high-speed access to enable Internet-based applications such as e-commerce, e-banking, e-government and other information-based services that require higher speed and more reliable Internet connections. As one of

the leading Iranian female bloggers, in response to the ban on high-speed Internet access for private use, expressed “the authorities want us to be undeveloped” (Tait, 2007).

The 2004 ONI report on Saudi Arabia shows that a sophisticated filtering system allows the government to impose strict controls on the information its citizens can readily access online, and 41% of blocked sites are related to religious conversion and sites with tools to bypass filtering. The King Abdulaziz City for Science and Technology (KACST), a watchdog for ICTs in Saudi Arabia, ordered that all Internet Service Providers (ISPs) restrict access to pornography and gambling sites and block any activities that the government deemed to violate the social, cultural, political, media, economic, and religious values of Saudi Arabia (Teitelbaum, 2002).

The OpenNet Initiative (2007a) investigates four main domains of filtering content: political, social, conflict/security, and Internet tools. Each is divided into five different categories, ranging from *no evidence of filtering* to *pervasive filtering* (see Table 6.1). While Iran and Syria practice pervasive Internet content filtering related to political issues, countries such as Bahrain and Saudi Arabia maintain substantial filtering on this domain. ONI report did not find evidence of political filtering in Oman and social filtering in Jordan. It is important to note that the term ‘*no evidence of filtering*’ does not necessarily mean that the Omani authorities do not block websites and blogs that are politically motivated and are amid to criticize government officials or the political establishment.

Table 6.1: The State of Filtering in the Middle East

FILTERING	No evidence of filtering	Suspected filtering	Selective filtering	Substantial filtering	Pervasive filtering
Political	Oman		Kuwait, Jordan, UAE, Yemen	Bahrain, Saudi	Iran, Syria
Social	Jordan		Kuwait, Bahrain, Syria		Iran, Oman, UAE, Saudi, Yemen
Conflict/Security	Bahrain, Jordan, Oman		Saudi, Syria, UAE, Yemen	Iran	
Internet tools	Jordan		Bahrain	Oman, Saudi, Syria, UAE, Yemen	Iran

Source: ONI(2007a)

For example, according to Oman Telecommunications Company (Omantel) Internet policy “customer shall not carry out any unlawful activities which contradict the social, cultural, political, religious or economical values of the Sultanate of Oman or could cause harm to any third party” (see Omantel Terms & conditions). The same restrictive policies exist in Yemen. According to Yemeni’s Internet service provider TeleYemen’s (Y.net) Internet User Agreement (paragraph 6.2.2) customers shall not use Y.net services for any illegal purposes, nor for sending any message which is offensive on moral, religious, communal, or political grounds, or is abusive, of an indecent, obscene, or menacing character (see TeleYemen). The country has also imposed restrictive policies in regards to web hosting. The end user agreement bans applicants from hosting home pages that deemed to be offensive to moral, religion, communal or political grounds. Teleyemen reserves also the right to monitor the customer home pages in any manner that deems fit (TeleYemen, n.d.). According to Budde Research (2010) Yemen filters even local Arabic websites such as the UAE-based Arab portal Maktoob and the Yemeni news portal YemenPortal.net.

Omantel has also imposed strict policy in regards to Cyber Cafés. It mandates the cyber Café owner to use a proxy that enables the tractability feature to identify the station. The restrictions on Internet cafés have also been reported from other countries in the region. For example Saudi Arabia’s Ministry of Interior in April 2009 ordered Internet cafés to install hidden cameras and provide a record of names and identities of their customers (Noman, 2009). The filtering of Internet content is not limited to local websites and blogs, as it spans other foreign sites. For example, Najibullah (2008) suggests that, along with popular social networking sites such as YouTube and Facebook, Iranian authorities have also blocked access to over 5 million websites, including those related to music, arts, news, politics, and women’s rights issues.

The ONI (2007a, 2009) report on filtering indicates that governments and authorities in the Middle East use different measures to monitor and restrict Internet access and online activities. These measures include laws and regulations, technical filtering, physical restrictions, surveillance and monitoring, and harassment and arrests. The laws and regulations used to control access in the region include press and publication laws, penal codes, emergency laws, anti-terrorism laws, Internet-specific laws, and terms and

conditions for ISPs, and telecommunications decrees. Ultimately, the impact of Internet content filtering is to undermine citizens' opportunities to access information and knowledge and disseminate it in the public sphere (Norris, 2001).

Filtering and restrictions have been applied on other ICTs such as satellite dishes and mobile SMS messages. For example both Iran and Saudi Arabia placed a complete ban on satellite dishes under the pretext that the media could expose their countries to the decadent, corrupt and immoral cultures of the West (Shuji, 1997). While banning satellite dishes has a longer history SMS message filtering is a new phenomenon in the region. In recent years in the SMS service in the Middle East is not only used as a means of cheaper communication but also as entertainment, a means by which to send and receive news messages otherwise prohibited for publication in official print news and broadcast media, and as a forum for social-political debates particularly among the younger generation. The social, religious, and cultural restrictions imposed on youth activities such as those of social gatherings of boys and girls in public spaces, particularly in Iran and Saudi Arabia, made this device an even more popular tool among millions of citizens. According to Iranian officials, an average of 80 million SMS messages is currently exchanged between cell phone users in Iran on a daily basis (Payvand, 2008). This number is of particular importance when compared to the number of SMS messages exchanged in the U.K., the birthplace of commercial SMS (NationMaster, n.d.). On average, each cell phone user in Iran exchanges 2.8 messages per day, which is comparable to the U.K. average of 3 messages per day (ITU, 2008; TextIT, 2008). The popularity of SMS in Iran prompted large Internet service providers to provide free Internet access for the use of SMS exchange (ParsOnline, n.d.). Surarez (2005) argues that mobile cell phones have the potential to mobilize people and impose changes in certain aspects of political activities, including public participation in the political process. For example, during the June 2005 Iranian presidential election, millions of young Iranians sent SMS messages to express that they were boycotting the election or to support the other candidates. The considerable use of SMS messages angered hardliners who then appealed the Ministry of Justice to ban SMS messaging (Iranian Judiciary, n.d.). Currently, the Iranian government has imposed restrictions on SMS use, and new regulations imposed by the Organization of Communications Regulations mandates that any cell phone owner must clear security

checks by the Ministry of Intelligence and Security (MOIS) to receive clearance for using SMS service; however, it is unclear how authorities are able to monitor the 80 million text messages exchanged daily. One possible answer to this question is to take down the entire mobile cell phone network (Foster, 2009; ONI, 2009), which has encountered just hours before the disputed 2009 presidential election in Iran. The fact that young Iranian urban mobile cell phone users have used SMS as a means of a cheaper and yet effective medium to communicate about the campaign, organize street rallies and send out political messages against the hardliner's candidate angered telecom authorities to shut down SMS and mobile systems. The number of SMS messages reached a remarkable high number of 110 millions messages per day (Tehran Times, 2009) of which most messages targeted the hardliner's candidate's Ahmadinejad. The intensity of SMS exchanged has increased in particular after the first live televised debates. Since then SMS messages sent by the liberal candidates' supporters had more colorful political content. Even massive SMS jokes aimed at the hardliner's candidate become very popular among the cell phone users. As Hafesi (2009) pointed out "Hardline backers of Ahmadinejad have complained about the sometimes rude jokes aimed at their leader via text messages and the official IRNA news agency said the Tehran prosecutor's office would crack down on messages offending candidates".

According to Wheeler (2006) any use of ICT to openly oppose the state is often punished by imprisonment. In other words, any activity that alters the status quo is considered a target for filtering. In a recent statement from Iranian officials in regards to the extensive use of blogs, websites and YouTube as well as SMS and Satellite dishes for political, cultural discussions and dissemination of news, thoughts and ideas are branded as destructive tools that are aimed to infuse Western culture into Islamic society (Rafizadeh, 2008b).

6.2 Ideology and Empirical Study: Some Evidence

In order to investigate ideology and its relationship to the restrictions applied on the use of ICT tools and services, and subsequently its negative impact on ICT development in the Middle East, the Critical Discourse Analysis (CDA) was deployed. CDA is a critical methodology used to investigate the use of language and its implications for

emancipation. It interrogates texts to understand the deep structures, systematic communicative distortions, and power relations that underline discourse (Cukier et al., 2008). Dellinger (1995) argues that CDA has turned the study of language into an interdisciplinary tool that can be used by scholars from a variety of backgrounds, including media criticism. Most significantly, it offers researchers the opportunity to adopt a social perspective in the cross-cultural study of media texts. For example, Cukier et al. (2008) use Habermas' discourse theory to validate claims made by popular media in the context of e-learning technology in higher education. Integrating Habermas' Theory of Communicative Action into CDA methodology, the authors interrogate the *comprehensibility*, *truth*, *legitimacy*, and *sincerity* of claims made by popular media. These elements are used to construct a framework for analyzing empirical observations within the context of communication either in the form of speech or text. *Comprehensibility* deals with the pragmatics of language in terms of syntax and symbolic representation, while *truth* is concerned with potential violations of the truth claim. Within the context of Habermasian critical discourse, truth is not the fact that a consensus is realized rather "truth means warranted assertability" (Habermas, 1988, p. xvi).

Further, *legitimacy* addresses the norms and social context embedded in the claim; *sincerity* deals with examining the consistency of the claim (i.e. that what is said is what is meant). Stahl (2007) suggests the importance of focusing on language when investigating the link between ideology and ICTs. For example, metaphors can be employed to advance a particular point of view and obscure, or ignore equally valid alternate perspectives. Metaphors can "take on a life of their own ... [and] be turned into reifications." (p. 40). An example of such a metaphor is the use of the term or idea of "Islamic values" in political agendas. Specifically, linking the technology of the Internet as a whole with the ideology of Islam converts the communication discourse, of which reaching mutual understanding and collaboration (Klein and Huynh, 2004) is essential into a power-dominated communication (Cukier et al., 2008). This power dominated communication emphasizes one-way communication between the ones that command (military or civil authorities) or demand (religious leaders) and the one that should obey (citizen). For example, the justification for filtering the Internet is based on claims that this ICT undermines "Islamic values" by infusing "Western

culture” into Islamic society (Rafizadeh, 2008a) and “spreading obscenity in Muslim society” (Shihri, 2004). This rhetorical approach helps to consolidate power in the hands of the authoritarian elites and disenfranchises the citizenry by justifying the restrictions on access to information and freedom of expression. The same rhetoric is used similarly to constrain a wide array of social content and activities such as music, film, theater, literature and visual arts. Habermas (1989b) points out that “the principle of the dogmatists is represented by faith in things for their own sake: thus an indirect faith in their own self which is dispersed and borne only by objects” (p. 33). Hirschheim and Klein (1994) point out that the psychopathology of human cognition is usually reinforced by certain external social conditions, and that one of the dominant sources of external distortions is the information processing bias exerted by authority and other forms of power and ideology.

CDA methodology is used to investigate the texts of government officials and religious leaders of the Middle East. These texts are used as a legitimate basis for imposing Internet filtering and restricting the use of other ICT tools and services as discussed earlier. In regard to identifying instances of ideology and ICT, Stahl (2007) argues, “if the kind of ideology we are concerned with is the reification of social constructions for the benefit of particular groups, then we need to pay attention to situations where certain groups or individuals are advantaged to the detriment of others” (p. 39). Of particular concern here are instances in which the Islamic religion and its values, respected among citizens of the Middle East, are used to legitimize Internet filtering with the aim of “facilitating gains for certain groups or individuals” (Stahl, 2007: 39). In the following section, the statements published by the Middle Eastern officials and highest religious authority with regard to validity claims concerning ICT content filtering is investigated.

6.3 Validity Claims and CDA Analysis

Calhoun (1999) argues that discourse on validity claims is important since truthfulness, sincerity and rightness drive discourse forward in a cumulative fashion toward "truth and certainty, even if these are only approached asymptotically" (p. 50)

A recent public warning published by the political office of the Revolutionary Guard

of Iran deemed e-mails, search engines, news broadcasting networks and agencies (both foreign and Farsi-based), websites, and social networking sites such as Facebook, to be “Internet imperialism”, “anti-religious”, and “anti-Iranian”, intended to create a “velvet revolution” in Iran. This statement, followed by an earlier warning by Iran’s Minister of Education, the police, and the military, or Revolutionary Guard of Iran, described ICT tools and services such as the Internet, blogs, websites, SMS, and Bluetooth as “destructive [...] tools of media warfare” more dangerous than addiction (Rafizadeh, 2008a; 2008b). In 2004, Saudi Arabia’s highest religious authority has issued an edict banning the use of camera phones, blaming them for “spreading obscenity in Muslim society” (Shihri, 2004). In another verdict the Al-Azhar's Fatwa Committee has recently ruled that according to the shari'a, anyone using Facebook is sinning because Facebook is one of the main reasons for the increased divorce among Muslims (Al-Raya, 2010).

Table 6.2: Questions to identify validity claims

Validity Claims
Comprehensibility: Argumentation and Evidence
C1. Is the communication sufficiently intelligible? C2. Is the communication complete? C3. Is the level of detail too burdensome for the reader or hearer?
Truth: Argumentation and Evidence
T1. What is said about the technology? T2. Are the issues and options clearly defined? L3. What is assumed or implied? T4. What evidence has been provided to support these arguments? T5. Has the relevant information been communicated without distortion or omission? T6. Are there ideological claims which are unexamined?
Legitimacy: Whose Interests?
L1. Who is speaking, who is silent, what are their interests? L2. What is not said about the technology? L3. What is assumed or implied? L4. What is missing or suppressed in the discourse? L5. How are the decisions legitimized? L6. Who is involved? Who is not involved? L5. What are the stakes and interests involved or excluded?
Sincerity: Metaphors and Descriptors
S1. Do metaphors and connotative words promote or suppress understanding? S2. Do metaphors and connotative words create false assurances?

Adapted from Cukier et al. (2008) and Stahl (2007)

Table 6.2 illustrates the CDA framework used in this study to test the validity of claims in texts distributed by government officials and religious leaders, as these texts are used to legitimize the filtering and censorship of online content.

As Table 6.3 illustrates, the authorities' justifications are not comprehensible, truthful, legitimate nor sincere. An example from each category has been used to briefly illustrate our assertions. The *comprehensibility* claim asks *is the communication sufficiently intelligible?* ICTs including various email systems, search engines such as Google and Yahoo, and western news agencies are filtered in the name of preventing revolution. We argue that this is a communication distortion. These claims are not made to achieve mutual understanding nor collaboration. Rather the claims are made in order to justify power dominance. The *truth* claim asks *what arguments and evidence are provided to support a claim?* Authorities claim that ICTs are destructive tools which harm Islamic values. This distortion relies on, for example, misrepresentations of the technologies and a uniform representation of what constitutes Islam (despite the presence of minority traditions). Therefore, the claims are not truthful. The *legitimacy* claim asks *in whose interests* filtering occurs. ICTs are filtered to protect populations from "imperialist" and "western" tools that "threaten national security." We argue that this is a distortion that reflects the power desires of unelected officials particularly the judiciary, religious leaders and the military whose censoring efforts are used to promote their own power at the expense of citizens' freedom. Last, the *sincerity* claim asks how the rhetoric of the claims, especially the *use of metaphors and descriptors*, promotes or undermines understanding. Authorities have claimed that the Internet, blogs, websites, SMS and other forms of ICTs pose more dangers than addiction. This approach obscures the question of the ethics of filtering ICTs by suggesting that ICTs present physical as well as moral dangers to the populace.

Table 6.3: Validity claims and their potential distortions

Guiding Questions to identify Validity Claims		Claims	Potential distortion
Comprehensibility			Confusion
C1.	Is the communication sufficiently intelligible?	Email systems, Yahoo and Google search engines, and news agencies promote "velvet revolution"	Claims are not made to reach mutual understanding with others, nor to collaborate. Claims are made to justify power dominance.
C2.	Is the communication complete?	Anyone using Facebook is sinning because Facebook is one of the main reasons for increased divorce among Muslims	It is one-way communication from the ones that order to the ones that are expected to obey

C3.	Is the level of detail too burdensome for the reader or hearer?	ICTs are anti religious (Islamic Shi'a)	Oppressive for religious minorities (non Islamic Shi'a) and for those with "modern" interpretations of Islam
Truth			Misrepresentation
T1.	What is said about the technology?	ICTs are destructive tools and harmful to Islamic values	ICTs should be adapted to political Islamic Ideology
T2.	Are the issues and options clearly defined?		Falsehoods are presented as fact
T3.	What benefits have been identified and assessed?	ICTs are harmful to Islamic values	Islamic values are the cornerstone of ICT development
T4.	What evidence has been provided to support these arguments?		Citizens' rights to access and disseminate information freely is suppressed
T5.	Has the relevant information been communicated without distortion or omission?		Five million Internet sites, search engines and weblogs are filtered without notice or specific explanation
T6.	Are there ideological claims which are unexamined?	ICTs infuse Western culture and ideology in to the preferred Islamic context	Islamic ideology benefits interest groups in power
Legitimacy			Illegitimacy
L1.	Who is speaking, who is silent, what are their interests?	Internet is an imperialistic tool harmful to national security	Unelected officials, judiciary, military, religious leaders
L2.	What is not said about the technology?	Customers shall not carry out any unlawful activities which contradict the social, cultural, political, religious or economical values	Citizens' rights to freedom of expression
L3.	What is assumed or implied?		ICTs are harmful to Islamic values and Islamic values equal national security
L4.	What is missing or suppressed in the discourse?		Citizens' rights, alternate perspectives
L5.	How are the decisions legitimized?		Decisions are made by illegitimate sources of power (military, unelected officials, religious leaders)
L6.	Who is involved? Who is not involved?		Conservative hardliners and other interest groups in power are involved, however public opinion, especially opposing opinion, is not involved
L7.	What are the stakes and interests involved or excluded?		Excludes human rights activists, ethnic minorities, NGOs, women's rights groups, political parties, young people, religious moderates and religious minorities
Sincerity:			False assurance

Metaphors and Descriptors			
S1.	Do metaphors and connotative words promote or suppress understanding?	Internet, weblogs, websites, SMS and Bluetooth are posing more dangers than addiction	“Addiction” suggests that ICTs are morally if not physically dangerous thus obscuring the questionable morality of filtering ICTs
S2.	Do metaphors and connotative words create false assurances?		“Danger” suggests that state interference is for the good of the population and obscures the dominance of elite interests in suppressing dissent

The use of metaphors and jargons such as “enemies”, “addiction”, “anti religious”, “Internet imperialism”, “velvet revolution⁷”, and “media warfare” are used as a pretext for imposing heavy Internet filtering at a time when the Internet has reached over 21 million users in Iran. A recent report by the Agence France-Presse (AFP, 2008) indicates that Iranian judiciary officials claimed that they have successfully blocked access to over 5 million Internet sites with content they deemed to be “immoral” and “anti-social.” These officials claimed that “enemies” use the Internet to attack “religious identity” and inflict social, political, economic, and moral damage, with a magnitude larger than satellite networks.

According to the APF (2008), Iranian officials have ordered all Internet service providers to block access to political, human rights, and women’s rights-related sites, along with any blogs expressing dissent or containing pornographic and/or anti-Islamic content. However, it is important to note that the logic from which such claims originate is indeed questionable, since viewing content online that is related, for example, to hatred based on race, gender, religious fundamentalism, fraud, child abuse, terrorism, among other things, does not justify filtering sites related to women’s rights activists, religious and/or ethnic minorities, political parties, and NGOs or other marginalized groups. The legitimacy of claims for filtering Internet content to protect Islamic ideology and its values is further investigated by ONI (2007b). According to this report, Iran demands that ISPs fulfill two complementary sets of requirements: first, they must produce content within state-defined objectives; second, they must refrain from producing (state-defined)

⁷ “Velvet revolution” is the term used popularly in the West to describe the non-violent overthrow of the Communist regime in the former Czechoslovakia. A “velvet” or any other kind of revolution is not considered desirable by the elites of any authoritarian regimes. Therefore, this term of western approbation serves as a metaphor for “unislamic” influences in the Middle Eastern context.

“illegal material.” The government of Iran took firm steps to frame regulations to systematize control and management of Internet activity. They simultaneously encouraged ISPs to promote “genuine Islamic culture” while warning against fomenting social discord or encouraging dissent against state interests. For example, sentences between three months and one year are handed to citizens who “undertake any form of propaganda against the state” while leaving “propaganda” undefined (Freedom House, 2008). Similarly harsh measures coupled with heavy self-censorship create an environment in which the governments reinforced by allied clerics are able to overcome all attempts by journalists to exercise their severely limited freedom of action. Criticism of the royal Saudi family and the religious authorities is forbidden, and press offences (printed or/and online) are punishable by fines and imprisonment.

Palfrey (2007) argues that as Internet-censorship and surveillance grow, there is reason to be concerned regarding the implications of these trends for human rights, political activism, and economic development around the world. Iran, Saudi Arabia and other Middle Eastern countries not only filter a wide range of topics, but also block a large amount of content related to those topics, or any critique of status quo that is branded as being on the side of “enemies”. Since the Islamic revolution in Iran, the word “enemy” has been extended to a long list of countries with the primary targets being the USA and Israel. However, the enemies list includes almost any country that opposes the Iranian government’s anti-human rights activities and their apparent nuclear ambitions. Limbert (2008) points out that the government of Iran considers itself surrounded by hostile American, Arab, Turkish, and Sunni forces, all determined to bring about its downfall. Accusations about being agents of “enemies” are normally used to silence critics of the privileged elites – an issue that has been addressed by thousands of bloggers. Finally, ideology is used as a means of self-reinforcement in such a way that interest groups allow themselves to filter any site they feel challenges them, and argue that such filtering and censorship is necessary to protect a moral society from aggressors.

6.4 Combating Internet Filtering Through Proxy Servers

Internet filtering and censorship by Iranian authorities is not going unchallenged. A favorite approach by the more technologically capable members of the Iranian digital

community is to set up proxy servers that bypass filtering systems. The servers are set up both inside and outside of Iran. One of the most active of the anti-filtering groups is an underground group called “Iran Proxy”. “Iran Proxy” describes itself as the first anti-filtering group inside Iran (Boghrati, 2007). The group focuses on introducing and promoting simple but technologically advanced ways of helping Iranian online users effectively skirt web filters. The “Iran Proxy” community has so far created tens of proxy websites with search capability and links to those news websites that are currently being blocked by the Iranian government. The proxies, which get updated constantly and can be e-mailed to users, help surfers to access the restricted pages. Other proxies that are located outside of Iran are actively updating their information to people inside Iran by using among other things e-mails, blogs, websites, radio broadcasting, and SMS.

To measure the impact of the current anti-filtering efforts, as depicted in table 6.4, I reviewed three of the most popular and globally accessed Farsi language websites that were targets of a recent wave of website censorship, namely Gooya.com (Brussels), Roozonline.com (Amsterdam) and Radiofarda.com (Prague).

Table 6.4: The global user access to three Farsi websites

Gooya.com users come from these countries:
55.6% Iran
6.3% Sweden
5.6% Germany
5.1% United States
3.2% Canada
Roozonline.com users come from these countries:
40.5% Iran
10.6% United States
6.6% Germany
6.6% Sweden
6.2% Canada
Radiofarda.com users come from these countries:
16.1% Iran
11.4% Germany
9.0% Japan
8.5% Sweden
8.3% South Korea

Source: Alexa.com (April 12, 2009)

These sites are located outside of Iran and mainly feature news and politics. According to the Internet statistics service called alexa.com, these three sites are mostly accessed from within Iran (see table 6.4), indicating that users from Iran were able to use proxies in order to bypass the imposed filtering on these sites. The same statistics show that other blocked websites including youtube.com, blogger.com, bbc.co.uk/Persian, and amnesty.org are also accessible from Iran. Hassem one of the cybercafé owners in Iran stated: “no matter how hard the authorities try to block access to websites, young Iranians will succeed in circumventing the filter and find their way to the prohibited sites” Najibullah (2007). Corbin (2009) points out when Asieh, a female blogger and women's rights activist attempted to revisit her website it was blocked by the authorities - a normal occurrence. “But, just like her computer savvy Iranian audience, she is a step ahead. She uses filter busters to easily reach her latest posting”.

6.5 Conclusion

The expansion of online communities and the formation of social networking sites, along with the growing number of websites and blogs belonging to individuals and other socio-political groups or organizations, reflect the fact that the Internet has the potential to empower citizens in the Middle East. The Internet can help to foster citizens participating in political decision-making processes such as elections (Oates, 2003), dialogue and consultation between citizens and government, citizens and political parties, and groups of citizens. Through such dialogues, government and social representatives can better understand citizens' needs and citizens can seek to contribute actively with the knowledge they gain (Karamagioli, 2003). Haider (2009) points out that within the context of democratic societies, individuals can freely use the Internet for their own purposes, such as promoting their own cultures and views where these views can be explored in a safe, non-threatening manner. However, in non-democratic countries governments can perceive the Internet as a threat and therefore use all possible mechanisms to filter and censor its content. In this context individuals cannot discuss differing viewpoints thus germinating an underground subversive counter-culture (Haider, 2009). In the context of non-democratic countries such as Iran and Saudi Arabia where genuine representative democracy do not exist and because of the fact that the

countries' socio-political and economic environments are heavily influenced by Islamic Sharia laws - there is little tolerance toward other religions and intellectuals. However, the Internet provides a secular environment. In turn, because web based communication such as blog postings challenge the theocratic system in these countries, Internet content filtering mainly targets the secular and critical websites and blogs.

The level of interference in the online lives of citizens in Iran and Saudi Arabia in particular has been justified by the rhetoric of their political and religious elites that equate Internet filtering with the protection of "Islamic values." This study used Critical Discourse Analysis (CDA) to examine the validity of these claims by the authorities and demonstrated how the imposed restrictions are motivated by Islamic ideology thus failing the four part validity claims test. Internet filtering in these countries undermines the emancipatory aspect of ICTs and replaces them with a power-dominated communicative context. Thus ideology is a more appropriate lens for considering the justifications offered for ICT filtering by the Iranian and Saudi Arabian authorities.

Government censorship drives a wedge in the ability of citizens to communicate and share information thus inhibiting the development of social knowledge within their society. The online communities tend, in the main, to be secular and desirous of increased social and moral liberalization and they are suspicious of their governments' attempts to thwart these instincts (Abootalebi, 2004). Citizens in the Middle East know that there is a larger world beyond their borders where there is free information exchange. They satisfy their desire to participate in this larger context by forming online communities and by persistently and, in many cases, ingeniously thwarting the censors and overcoming the filters. As such, Chapter 7 investigates the emancipatory role of blogging in the Middle East. The next chapter presents also a case study from Iran demonstrating the active role of bloggers in mobilizing masses in the recent political movement the so called the "Green movement". It also investigates the role of the Iranian female bloggers in mobilizing women in Iran for a just and fair society. The findings of Chapter 7 provide more evidence in support of the positive impacts of ICTs on democratic freedoms in the Middle East.

Chapter 7: The Emancipatory role of Blogging in the Middle East

A fundamental requirement for a free society is open communication and unrestricted participation of the citizens in public discourse and decision making. A key impact of ICT expansion in the Middle East from 1995 to 2005 has been the dramatic increase in the number of Internet users in the region, and the emergence of the Internet as a medium of public discourse, political participation and mobilization. The growing number of weblogs and digital communities in the Middle East are evidence of expanding citizen participation in public discourse and political processes. A complete analysis of blogs from each country is beyond the scope of this thesis. However, it is important to provide some analysis of blogs as they are important to understanding the impact of ICT on democracy, especially to public discourse, political participation and mobilization under repressive conditions. In this chapter I will examine some characteristics of blogging and its emancipatory role in Iran. To understand the emancipatory role of blogging in the Middle East, it is important to look at the role of governments and elites and their control of media (print and electronic). In the following I will outline some of the issues of media repression in the Middle East, and present a hermeneutic content analysis about the *Green Movement* in the Iranian blogosphere, and discuss its role in pioneering a space for open political discourse in the context of repression. The Green Movement refers to a series of public protests and demonstrations following the 2009 Iranian presidential election when the Iranian Government of President Mahmoud Ahmadinejad claimed a two-thirds majority victory.

7.1 Media Freedom in the Middle East

Balkin (2004) argues that central to free expression and democracy is access to information. Recent research shows that citizens who have access to ICTs are more likely to participate in political processes (Weare, 2002). In this regard, the role of the state in promoting democracy is to foster freedom of expression and access to information. Theories of political mobilization also assert that open access to information enables citizens to monitor electoral campaigns and government actions (Berry, 1984; Bimber,

2001). However, when it comes to the Middle East, independent media either do not exist or are under heavy governmental control and censorship. According to Freedom House (2005, 2009) and RWB (2005, 2008), the Middle East region has one of the world's lowest levels of media freedom. Although the type of media control and censorship varies in intensity from country to country, mass media in the region is heavily controlled by governments, powerful elites, and religious leaders. In its press freedom ranking report, RWB announced that Iceland and Norway had the best press freedom record in 2008, while Eritrea was placed in the bottom of the list (169th place). Some Middle Eastern countries such as Iran (166th), Iraq (157th), Syria (154th), Saudi Arabia (148th), Yemen (143rd), Jordan (122nd), Bahrain (118th), and United Arab Emirates (111th) had the worst press freedom ranking. Other Middle Eastern countries such as Lebanon and Qatar were ranked at 98th and 79th places respectively. Kuwait had the best press freedom in Arab world (63rd).

Investigating the role of governments and elites and their control of media (print and electronic) is important since the increased popularity of the Internet, and blogging in particular, is argued (RWB, 2004; ONI, 2005, Freedom House 2005, 2009) to be one of the main reasons that citizens, particularly youth, seek unrestrained/uncontrolled access to information and the dissemination of news, thoughts, opinions and ideas.

According to Freedom House, the level of freedom of the media is defined by three environmental parameters: (1) the legal environment, which examines the level of influence laws and regulations have on media content as well as the government's ability and inclination to use these laws and/or their legal institutions to restrict or allow the media to broadcast; (2) the political environment, which refers to the degree of political control over the content of the news; and (3) the economic environment, which includes media structure such as ownership, transparency, costs, etc. Freedom House assigns a pointing scale of 0- 30 to measure each country's legal environment, while the scales of 0-40 and 0-30 are used for measuring the political and economic environments. A total score of 0-30 places a country in the "free" press group, a score of 31-60 in "partly" free, and 61-100 in "not free". Table 7.1 below summarizes recent scores for the countries of this study.

Table 7.1: The status of media freedom in the Middle East (2005 and 2009 scores)

Country	Legal Environment		Political Influences		Economic Pressures		2005 Score	2009 Score	Status
	2005	2009	2005	2009	2005	2009			
Bahrain	23	24	26	27	22	20	71	71	Not Free
Iran	28	29	33	34	19	22	80	85	Not Free
Jordan	23	21	22	24	18	19	62	64	Not Free
Kuwait	19	18	22	21	16	16	58	55	Partly Free
Lebanon	22	18	23	22	15	16	60	56	Partly Free
Oman	25	25	26	27	21	19	72	71	Not Free
Qatar	17	19	23	24	22	22	62	65	Not Free
Saudi Arabia	29	28	28	29	23	25	80	82	Not Free
Syria	29	29	34	33	20	21	83	83	Not Free
UAE	26	23	24	23	22	23	72	69	Not Free
Yemen	28	26	28	31	20	22	76	79	Not Free
Average	24.45	23.64	25.36	26.82	19.82	20.45	70.55	70.91	

Source: Freedom House (2005, 2009)

As stated above, one of the main reasons that many citizens, particularly youth, of this region seek unrestrained/uncontrolled access to the Internet is to obtain information and to disseminate news, opinions and ideas about life in the region. Among the countries of this study, Saudi Arabia, Syria, and Iran, have the lowest level of media freedom in the Middle East (Freedom House, 2009). For example, in Saudi Arabia there is no constitutional right to freedom of expression (Freedom House, 2005). The Saudi government and the country's religious conservatives see the role of media as educating the masses to promote national unity and to protect man's dignity and rights (Freedom House, 2008). However, they have reduced the role of media to an apparatus for propagating the views of government and the clerics. Any deviation of this practice is punishable by fines and imprisonment (Freedom House, 2008). The situation in Syria is not much different, in 2001 the Press Law was instituted which mandates a code of conduct that prohibits any publication or broadcast deemed harmful to national security, national unity, the president's policy, the Baath Party or the armed forces (Freedom House, 2008; RWB, 2008). In Iran, the governmental control and censorship of media and in particular, the shut down of many reformist and critical newspapers (Rahimi, 2003; Tarock, 2001), drove many citizens to publish censored content online. A prevailing atmosphere of restraint and the practice of self-censoring in mainstream media have instigated the rapid development of weblogs and online communities as means of

acquiring information and open discourse.

7.2 Online Communities

As we rely increasingly on e-mail, e-commerce, and other networked services to manage our daily lives, we are becoming more network-centered. A growing and important aspect of networked life is the online community, which is virtual or digital in nature. Bimber (1998) points out that while conventional communities typically require proximity, in terms of neighborhoods, towns, or even within institutions, the Internet has detached the community from the limitations of proximity. For the purposes of this thesis, the term “online community” is defined, according to Ren et al. (2007) as “an Internet-connected collective of people who interact over time and around a shared purpose, interest, or need”(p. 378). Initially, online communities encompassed newsgroups such as USENET, professionally oriented communities (e.g., engineers), and chat rooms and public communities such as The Globe, Geocities, and Tripod. These communities were concerned with sharing information and ideas and encouraging discussion around matters of concern to group members. In the online communities of today, millions of users engage using accessible, easy-to-use, interactive Web 2.0 tools and services offered by sites such as Facebook, Orkut, Flickr, MySpace, and Windows Live Spaces (formerly MSN Spaces). Quan-Haase and Wellman (2002) argue that ICT has provided a new dimension of conceptualizing community; in this context a community is not solely defined in terms of locality "but as social networks of interpersonal ties that provide sociability, support, information, a sense of belonging, and social identity" (p. 115). Ellison et al. (2007) argue that the Facebook is a good example of the ability of the Internet in the formation and maintenance of social capital. Members of a digital community are not only able to stay connected with members of a physical community but also get connected with others living in long-distance communities.

In 1993, Rheingold presciently wrote that the notion of “community” would evolve as members overcame the lack of physical proximity and engaged in online interaction:

People in virtual communities use text, graphics, voice, and video to chat, engage in intellectual discourse, conduct commerce, exchange knowledge, share emotional support, make plans, brainstorm, gossip, feud, fall in love,

find friends and lose them, play games, flirt, create a little high art, and do just about everything people do in real life. (p. 3)

Members of online communities have varying levels of interaction and participation, which includes posting comments, linking to a blog, uploading pictures, articles, and video clips, and sending voice and SMS messages. Huerta and Navarrete's (2008) study of information exchanges within what they refer to as a Hybrid Transnational Community of Immigrants (HTCI) showed that virtual communities are "successful when members satisfy their needs through the community" (p. 331). These needs range from commenting on and organizing protests concerning political, social, and economic issues, to exchanging basic information or to offer encouragement and recognition. Of fundamental importance to members is the quality of information exchanged, as high quality information is necessary for building and maintaining trust among users (Huerta and Navarrete, 2008).

7.3 Identity and Online Communities

While identity can be defined in many different ways, this thesis is concerned with two particular approaches to identity. First, the notion of identity is used in the same vein as Goffman (1967), a "presentation of self." Specifically, as the "self" is revealed, identity involves "the individual's self-appraisal of a variety of attributes along the dimensions of physical and cognitive abilities, personal traits and motives, and the multiplicity of social roles including worker, family member, and community citizen" (Whitbourne and Connolly, as cited in Ma and Agarwal, 2007: 45). In this manifestation, an identity is a label that an individual chooses to describe his or her relations to other people in terms of ethnicity, race, gender, nationality, history, language, religious beliefs, and so on. This form of identity, or presentation of self, addresses the desire of members of online communities to find compatible virtual communities and gain membership so they can engage in their desired activities. It is this social identity that leads to disclosure and, ultimately, to the satisfaction of the need that prompted joining the community in the first place (Huerta and Navarrete, 2008). In this context, citizens of online communities in the Middle East behave in the same way as any member of the digital universe — they seek to belong and to be acknowledged.

However, identity management is one of the main concerns of Internet users; the empirical study of Zukowski and Brown (2007) found that demographic parameters such as age and the level of education and income influence Internet users' concerns for information privacy. In this context, the second important approach to identity involves the collection of information that can uniquely describe or locate a person (e.g., name, address, telephone or cell phone number, instant message identifier, photo, IP address, etc.), who can then use that information to validate their participation in a virtual community (e.g., a postal code points to a defined geographic area). However, it is also this information that governments can use to track participation and target key individuals, such as opinion leaders (Albrecht, 2006) in virtual communities. As a result, the human desire to present one's authentic self online is undermined by the censorious actions of an authoritarian regime; therefore, virtual community members often adopt anonymous and pseudonymous identities in an attempt to thwart censors. While many cybercitizens adopt multiple identities as a form of self expression, others seek to preserve themselves through the careful management of their online personas. This duality of identity (the authentic self and the self-censored self) is particularly important for Middle Eastern women: while the former permits women to participate in a broader world that better reflects their values (Hitlin, 2003) and their often multiple roles (Huerta and Navarrete, 2008), the latter, more "official" identity leads them to use identity management approaches (e.g., anonymity and pseudonymity). In other words, women in the Middle East suffer not only from being tracked by governments and religious fundamentalists like any other citizen in the region, but also they are under additional pressure because of the expectations within Middle Eastern Islamic culture and the fact that they are operating online in a patriarchal society.

7.4 Blogging in the Middle East

A blog can be defined as an online equivalent of a journal or diary provided by Web 2.0 technology with regular entries (posts) in form of text, audio, video, graphics and/or other web objects. A blogger is an individual (or in some cases a group of web users) that employs blog-publishing tools within an unmanaged space usually provided by a blogging site to express his/her thoughts, ideas and opinions about various topics that

matter to the blogger. Many blogs also have a function that allows visitors to respond to the bloggers' posts (Ferguson and Howell, 2004). Stanyer (2006) points out that the social interaction between blogs occur when blogs provide portability features by linking to other blogs to form a 'web sphere' (Foot and Schneider, 2002) or blogosphere. In other words, the term blogosphere is used to describe the connected universe of blogs (Stanyer 2006). A key impact of ICT expansion in the Middle East during the last decade is the rise of blogging and its role in political participation and mobilization of the citizenry.

Blogging in the Middle East can be viewed as a means of facilitating news reporting, supporting cultural events, broadening the expression of political views and the dissemination of information, thoughts, ideas, opinions, research articles, and engaging millions of people in digital communities and social networking sites. Many blogs facilitate a feature for others to respond to the bloggers' messages (Ferguson and Howell, 2004). These response comments and their subsequent conversion have provided an opportunity for the voiceless to gain both a voice and potentially an audience. Blogging helps to convert a single-voiced society into a multi-voiced digital community. It provides a platform for a variety of modes of personal expression that are not always accessible in repressive societies such as the Middle East. From the perspective of this thesis there are two main dimensions of the Middle Eastern blogosphere require attention: the Arabic blogosphere with its 35,000 bloggers and the Farsi blogosphere with its more 65,000 active bloggers.

The Arabic blogosphere consist primarily of bloggers from the Arabic countries of the Middle East (Etling et al., 2009). This blogosphere comprises the following main clusters: Secular/Reformists, Muslim brotherhood, Islam-focus, English bridge and national clusters of countries such as Kuwait (Arabic and English), Saudi Arabia, Syria, Jordan, Lebanon, Morocco (including the French blogs) and Egypt (cf. Etling et al., 2009). This study has also found traces of the secular/reformist as well as the Islamic-focus clusters within each Islamic Arab nation. In particular the secular/reformist bloggers have a stronger presence in countries such as Egypt, Kuwait, Lebanon and Morocco. Etling et al. (2009) point out that personal life and local issues are the most dominant topics discussed by Arab bloggers. But when writing about politics, these

bloggers tend to focus on issues within their own country and are often critical of domestic political leaders (Etling et al. 2009).

7.5 Background on the Iranian Blogosphere

Iran is among the first countries in the Middle East to have Internet connection availability since 1995. Since then millions of Iranians have been connected to the Net. At the end of 2008 the number of Iranian Internet users exceeded 23 million or 31.37% of the country's total population according to ITU (2009a). The Iranian Internet users soon found the opportunities that the new technology provided them to access free information surf the Net for the latest global and local news and voice their thoughts and opinion about various topics. Which otherwise were not available in the Iranian media or national radio and TV broadcasting due to heavy governmental control. In 2001 the first Farsi blog appeared (Dayem, 2009) and two years later the number of weblogs in Iran exceeded 27000. Bloggers have made Farsi the fourth most popular weblog language after English, Portuguese and Polish in year 2003 (Greenspan, 2003). Since then the number of active bloggers has increased steadily.

The Iranian blogosphere represents the most open, public political discourse given the repressive environment of that country (Kelly and Etling, 2008). According to Sokooti (2002), the challenge to find uncontrolled sources of information turned Iranian citizens to blogs to fill their knowledge gaps. Blogging in Iran has fostered an alternative ways of access to information, dissemination of opinions, thoughts and ideas, and organizing social-political events. Iranian bloggers openly discuss various issues and challenge entrenched interests and the judicial system as a means of social control. These bloggers help mobilize citizens to place social and political pressure on the authorities to overturn or rescind legal decisions. In this way the Iranian blogosphere serves as public discourse media of particularly importance during the massive shut-down of reformist newspapers by the authorities. Kelly and Etling (2008) have categorized the Iranian blogosphere into four major clusters: Secular/Reformist (including the expatriates' blogs), Conservative/Religious, Poetry and Literature, and Mixed Networks. In each category, however, social and political issues are widely discussed, which is perhaps one of the main differences between the Farsi- and Arabic-based blogospheres. Discussions about

politics, social issues, human rights, and women's rights are widely discussed within the Secular/Reformist group as well as in other groups, such as Mixed Networks and Poetry and Literature, but to a lesser extent. The Conservative/Religious comprises mainly of supporters of political hardliners in Iran, and discussions about religious practices, faith and political Islam.

7.5.1 Blogging as Public Political Discourse

Even though Iran is led by a dictatorial theocracy and is without a functioning democracy, bloggers in Iran have used all means of ICT channels available to effectively participate in communication discourse with other citizens. These include social groups, NGOs, political parties and even with moderate Islamic clergy, government officials and other Islamic bureaucracy to discuss various socio-political and economic concerns. Despite the government's attempt to impose a single voice on socio-political affairs in Iran, the Iranian blogosphere has emerged as a powerful platform for open public political discourse. Many Iranian bloggers (mostly inside) use the blogosphere as media for challenging the political ideology of the state and its harsh method of repression. These bloggers ranging from the poetic to the political, use the internet as a medium to communicate their hopes and frustrations at Iran's slow transformation from theocracy to democracy. The Internet provides bloggers the opportunities to use language and other symbols to associate with groups of common interests and to express their opinions and debate conflicting views in the public sphere. As Habermas (1989b) explained "Language is a medium of communication that serves understanding, whereas actors, in coming to an understanding with one another so as to coordinate their actions, pursue their particular aims. In this respect the teleological structure is fundamental to all concepts of action" (p. 155). While some bloggers use pseudonyms to avoid prosecution or other social consequences, others do not. Various issues are discussed openly and brought forward to share with and challenge the elites in power. This culls sympathy and empathy in order to place social and political pressure on government to overturn or rescind legal decisions.

Many bloggers have activated the comments options in their blogs allowing others to comment on their posted articles and converting them to a forum of public discussions.

These responses and their subsequent conversion into a multilateral public discussion have helped the emergence of a multi-voiced society. In a country controlled by Shi'ite Sharia law, where there is little tolerance for dissent the Internet provides a secular environment for communicative interaction. Blog postings have challenged the theocratic system in Iran. A review of two Iranian webhosting servers, namely PersianBlog and MihanBlog (see Table 7.2), during the period of June 6, 2004, to August 5, 2005 shows that 78% of their web postings received responses of one or more comments.

Table 7.2: The categories and number of blogs hosted by two Farsi blog servers

Weblogs	Persianblog	Mihanblog	Percentage
News	666	89	0.85%
Journalism/ Literacy composition	2557	26	2.90%
Trade and commerce/ e-commerce	2312	344	2.98%
History	302	13	0.35%
NGOs	176	0	0.20%
Philosophy & Mysticism	1572	34	1.80%
Islamic religion	2564	77	2.97%
Computer Games	272	69	0.38%
Humorous and Satiric webs	2559	227	3.13%
Literature	5406	241	6.34%
Cinema	991	51	1.17%
Music	1015	530	1.74%
Arts	2314	78	2.69%
Sport	395	121	0.58%
Technology	7202	31	8.12%
Information and Communication Tech	4047	299	4.88%
Health and Medicine	281	9	0.33%
Nature and Environment	302	4	0.34%
Research and Education	6694	142	7.68%
Diary	14115	314	16.21%
Public issues	29600	433	33.73%
Neighboring countries	563	0	0.63%
Total	85905	3132	100.%

These comments and the resulting multilateral discussions about social, political, or cultural issues are slowly but undoubtedly supporting the emergence of a multi-voice society, rather than the current, single voice. As one Iranian blogger explains: “In my previous weblog there was no ‘comments’ section. I mean, I didn’t allow others to voice their opinions. [...] When I enabled the comment section in my new weblog, I began to

find it very interesting. As others commented and I responded, I noticed a gradual change in my real life as well” (Amir-Ebrahimi, 2004). Many bloggers become active in social networking sites such as Twitter and Facebook. Some of these bloggers become opinion makers in these social networking forums and were able to link the group discussions about social, political, economic or cultural issues to their blogs, expanding information sharing to other digital societies (see figure 7.4). Video clips posted on YouTube, whether about cultural events, underground rap music or about captured street protests in Iran have been also linked and discussed in many blogs. Bloggers in Iran have been particularly active and successful in organizing various socio-political events and public demonstrations which will be discussed later in this chapter.

7.5.2 Bloggers and the Democratic Movement of Iran

Iranian bloggers have been active in not only organizing street protests but in setting up various online petitions or open letters directed to government officials, judiciaries, parliament and even the supreme leader of Iran holding them accountable for violations against humanity. Their support of the democratic movement in Iran has been lauded worldwide on social networking sites such as Twitter and Facebook. Many social events organized by Iranian bloggers and other social activists have been confronted harshly by the Iranian hardliners and the military which resulted in mass arrests, abuses and in many cases the loss of human lives. Iranian bloggers are also actively involved in mobilizing international campaigns against human rights abuses in Iran. Thousands of young men and women equipped with cell phone cameras captured events on streets as they occurred prior and after the 2009 presidential election and posted these video clips and pictures to social network sites such as Facebook, and video sharing sites such as Youtube. They have also used cell phones to send text messages and share pictures and videos with others whenever the mobile network was available. It wasn't long before other websites and weblogs ported materials posted on these social networking sites to their sites and created an integrated digital community (see figure 7.4) to collectively inform the world on events in Iran and to garner support for the Iranian democratic movement. These grassroots reporters collaborated with thousands of individuals, social network groups,

and news agencies and used the blogosphere to achieve a level of social and civic engagement never experienced before in Iran and perhaps the world.

Many international intellectuals and academics, politicians, musicians, artists, journalists and other social activists have supported the democratic movement by signing online petitions, speeches and/or interviews with international news agencies calling the Iranian officials accountable for human rights abuses and upon the government to recognize the fundamentals of human rights and to stop arresting, killings and abusing peaceful demonstrators on the streets of Iran. Bloggers belonging to the liberal and secular clusters of the blogosphere along with Iranian grassroots journalists have successfully documented the violation of human rights principals in Iran. They have also discussed and urged transparency in regards to government's spending in various economic projects, massive imports of foreign goods and services particularly from China that have collapsed many local businesses and industries as well as massive financial fraud found among top officials and the top clergy and military establishment. An example of this type of discussion among bloggers (Kodoom, 2009) surrounds the military's control of 50% of the stakes in Iranian telecommunication networks and various billion dollar infrastructure projects such as roads, dams and bridges as well as large oil and natural gas projects. These discourses in the Iranian blogosphere make it an important site for empirical study that could broaden understanding of the impact of ICT on democracy.

Even though the initial design of my PhD study did not include any studies of blogosphere I was compelled to conduct a content analysis of relevant blogs as part of my research.

7.5.3 Women in the Iranian Blogosphere

An in depth analysis of women in the Iranian blogosphere is beyond the scope of this thesis. However, I am compelled to provide a short overview of Iranian women bloggers as they are some of the most successful in the Iranian blogosphere. Fourteen of the fifty of the most popular Iranian blogs are written by women, and four of these use their true identities (Networkedblogs, 2010). Surprisingly (in the context of the Middle East), many active Iranian women bloggers use their real identities despite the high risk of doing so;

among these can be found journalists, women's rights activist, lawyers, engineers and doctors. Although Iran is a male dominated society, there are a growing number of educated women making demands for a constitutional change and gender equality. The Internet has provided a medium for many repressed and marginalized groups, particularly the young and educated of Iran to make their voices heard. In 2003 the number of female internet users in Iran reached 11.5 million, nearly half (49%) of the total Internet users in the country (ITU, 2008). This has been a major impetus for many female weblogs to grow rapidly. A second force is women literacy; from 1999 to 2004 the adult literacy rate for Iranian female increased from 68% to 82.6%, while the male literacy rate increased by only 5.7% from 82% to 87.7%. Since the introduction of the Internet in Iran, Iranian women have used this medium not only as a means of accessing and disseminating information but also as the means of voicing their concerns about discriminatory laws and to participate in public discourse.

While a majority of Iranian women blogs contain socio-political and cultural themes, the diary style, poetry and technology is also popular with them. The desire for equality in employment opportunities is frequently expressed in the blogs of many Iranian women. Larger numbers of Iranian women are enrolled in universities and other educational institutions are filling the ranks of highly qualified specialists in medicine, engineering, social science and ICT. However, equality in employment is elusive, prompting many to become more socio-politically active. As Shirin Ebadi (2008), the 2003 Nobel Laureate has argued, the Iranian women's movement is one of the strongest social movements in the Middle East. Many women bloggers cross the ideological boundaries dictated by the Iranian government and the powerful clerical conservative establishment to demand an end to discriminatory laws against women in their country. Iranian women bloggers were active in organizing the June 12, 2006 Tehran street protest against violations of women's rights in the Iranian constitution. Many of them were arrested for their engagement in the demonstration (Mir-Hosseini, 2006). Despite the brutal crackdown on this demonstration, women succeeded in this cause because of the substantial support they gained in the public and digital spheres. Thousands of pictures and video clips were posted on the Internet as well as on social networking sites supporting the women's movement and condemning the brutality of the police. On

August 28, 2006, following the demonstration and arrests, they launched an online campaign to obtain *One Million Signatures Demanding Changes to Discriminatory Laws* (One Million Signatures, 2006).

Sutton and Pollock (2000) argue that female activists promoting social justice understand the importance of access to and use of new technology. Parvin Ardalan, the Iranian women's rights activist who launched the *One Million Signatures* campaign in 2006 and who is the founding member and editor of *Change for Equality*, said in a recent interview, "Every print magazine for women we had was closed, so we created a new world for ourselves in cyberspace" (Soguel, 2010). For many women's rights activists, the internet offers open lines of communication and a means to reach likeminded individuals, particularly when traditional print media serve as a blockade to the freedom of speech in Iran. Iranian women bloggers were also highly active in the campaigns for redress in the disputed 2009 presidential election. These women bloggers have created strong and supportive global network of bloggers and other social ties through networking sites such as Facebook, Twitter and YouTube, creating an immense presence in the public sphere and democratic discourse in Iran. They talk directly to their peers and the rest of the world about the unjust social conditions of women and girls in Iran. They have achieved a presence on the Internet in spite of the gap between genders and discriminatory laws. This high presence and acceptance in the digital world is quite different than the gender-segregated society of Iran. It is therefore not surprising that Iranian women have adopted the virtual world and online communities to identify with and voice their desire for change. Publishing Internet weblogs has given them a voice to communicate their views on the situation to a national, regional and worldwide audience, and to increase pressure on Iranian policy makers.

7.6 Content Analysis of the Green Movement in the Blogosphere

I will now turn my attention to analysis of the Iranian blogosphere to provide a systematic look at the content of these blogs just after the presidential election of June 12, 2009. The reason for choosing this event and the period following, known as the *Green Movement*, is that it represents a case study of the further evolution of the Iranian blogosphere as an important media of political discourse and participation in the country.

For the empirical analysis of the blogosphere I use hermeneutic content analysis (Ngwenyama and Lee, 1997; Middleton and Cukier, 2006; Cukier et al., 2009). While traditional content analysis is concerned with identifying content of text or text-analogues by frequency analysis (how often specific terms or phrases), the focus of hermeneutic content analysis is in understanding the *meaning* of the text or text-analogue within social and cultural context (Ngwenyama and Lee, 1997; Meyers, 2009). Hermeneutic content analysis uses the search techniques of content analysis and the interpretative techniques of hermeneutics to identify empirical observations of specific themes within the text or text-analogues.

Data Collection

The empirical materials for the hermeneutic content analysis were collected using the URLs of 512 most popular Iranian blogs (measured by the number of hits per day), reported at Alexa.com. The time frame of the sample was selected to cover reports of major events in Iran from June 1, 2009 (the Iranian presidential highlights) until February 11, 2010 (the anniversary of the 1979 revolution). The blogs were located on the following blog servers: blogfa.com which included 13.5% of the pooled blogs, Mihanblog.com (15.1%), Persianblog.ir (17.4%), Blogsky.com (16.6%), Parsiblog.com (14.6%), and Expatriate servers (22.8%). Whenever I encountered a blog I followed the practice of downloading the entire contents in PDF format to another site for a further analysis. This proved to be a useful strategy as over 18% of the blogs were not available at later times due to network connectivity problems or the government imposed filtering. In particular when I tried to access blogs that were critical of the Iranian government I received block warning messages and sometimes URL page errors. Figure 7.1 below shows a typical blocked warning message in Farsi stating; “This blog is blocked because of one of the following reasons: a warrant from the legal authorities; or due to the violation of website's user agreement; or due to dissemination of immoral content or dissemination of contents deemed to violate country's laws”

Figure 7.1: A typical blog filter warring message in Farsi



Another challenge I faced was access and availability of some blogs during periods of heavy traffic following major events in Iran such as: (a) the presidential election of June 12th, (b) the September 18th Quds day, (c) Tehran student demonstration (13-Aban) of November 4th, (d) December 6th Student Day demonstration in major cities across Iran, (e) the December 20th demonstration in Qom mourning the dissident clergy the Grand Ayatollah Hossein Ali Montazeri, (f) the December 27th Ashura demonstration in Tehran and finally, (g) the February 11th, 2010, anniversary of the Iranian Revolution.

Data Analysis

The downloaded PDF documents were imported into ATALS.ti software (version 6) for analysis. ALTALS.ti allowed me for not only the textual content analysis of blogs but also to analyze any web object (e.g., video, audio, picture, graph, banner, poster and so on) that represents a meaning. As Hebermas (2001) mentioned, there is a difference between primitive linguistic expression and non-linguistic gestures and action; “communicative symbols express behavioral expectations and thus remain rooted in a context of action, whereas non-linguistic actions are connected to linguistically interpersonal relations as the fulfillment or non-fulfillment of behavioral expectations” (p. 140). The software assisted with managing the downloaded documents centrally and conducting the hermeneutic content analysis based on the standard bottom-up approach. The encoding mechanism of the ATLAS.ti software supported the coding of each document based on its content and categorizing them into different clusters or categories of blogs (Families in ATLAS.ti terminology). After developing these categories, I linked related categories to branch a higher level category called network (in ATLAS.ti terminology) as depicted in figure 7.2.

The procedure for the hermeneutic analysis and clustering of the content of the blogosphere can be illustrated in the following six steps:

1. A project folder was created using Altas.ti (I refer to this project folder so called Hermeneutic Unit, as Blogosphere,).
2. All web pages in form of PDF were placed in this folder.
3. Each blog was read and assigned two different codes, one was used to identify its cluster (e.g., Liberal, Secular, Mixed and so on) and the other was used to identify its higher level category so-called network (e.g., critical, supportive or others). I devised a coding system around search strings as depicted in table 7.3.

Table 7.3: Some example of codes

Example of codes	Explanation
Greens	supporters of the green movement of Iran
Mousavi	presidential candidates nominated by reformists and liberals against the combat president Ahmadinejad
Basiji	the main groups in helping the military to violently crack down the street demonstrations

4. The search strings within the codes and memos were conducted to search the keywords associated to blogs in order to assist in determining within which category the blog should be placed. The marked text for each blog was used to determine which general category it belongs. Memos⁸ were written about the content of each web page regarding the information provided (e.g., a diary, poetry, sport, political, the number of posts/comments if any)
5. Memos of the content of blogs were updated during the seven major events as discussed above.
6. The codes and memos were exported to Excel software in Comma Separated Value (.csv) format for frequency analysis.

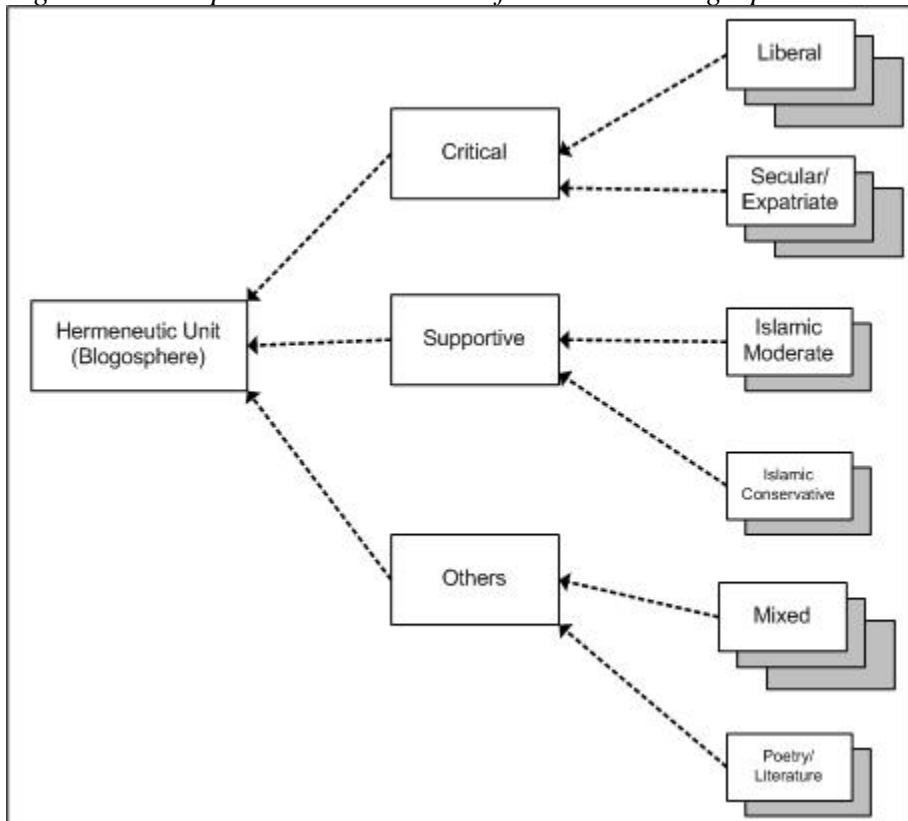
7.6.1 Findings of the Analysis

The three main networks that constitute the Iranian blogosphere were arranged as follows: (a) *critical*, blogs with postings and comments critical to government of Iran; (b) *supportive*, blogs with postings and comments in support of the government and elites in power; and (c) *others* (blogs with postings neither supportive nor critical). The blogs

⁸ It is important to note that a search within the memo area of the project was necessary since they contained other valuable information such as the posted web objects (videos, audios, pictures, hyperlinks, graphs, charts, banners and posters) in support of the green movement. In other words this investigation was not limited to the textual analysis of the content, but the entire blog content as a whole.

placed in these general arrangements were read and organized systematically based on their profiles (e.g., poetry, mixed) and then analyzed with the help of software. As shown in figure 7.2 below, these documents were further categorized into higher groups (networks) based on their meaning content.

Figure 7.2: A top level network view of the Iranian blogosphere



For example blogs in *Liberal* (the opponents of the government and the elites in power) and *Secular* (the opponents of the theocratic system in Iran) clusters were linked into a network group called *Critical* based on a hermeneutic analysis of their content. Some of the blogs were also shuffled to different general categories. For example, a poetry blog was linked to *Critical* after I read the poetry and found that all the poems were critical of the government. In another case a blog of jokes (Mixed cluster) in which all jokes were satire against the government was linked to the *Critical* network. While the categorical analysis reveal the clusters illustrated above which provide topographic view of the structure of the blogosphere in Iran, the hermeneutic content assisted in

determining the content and frequencies of comments posted on these blogs in regards to the Green Movement of Iran.

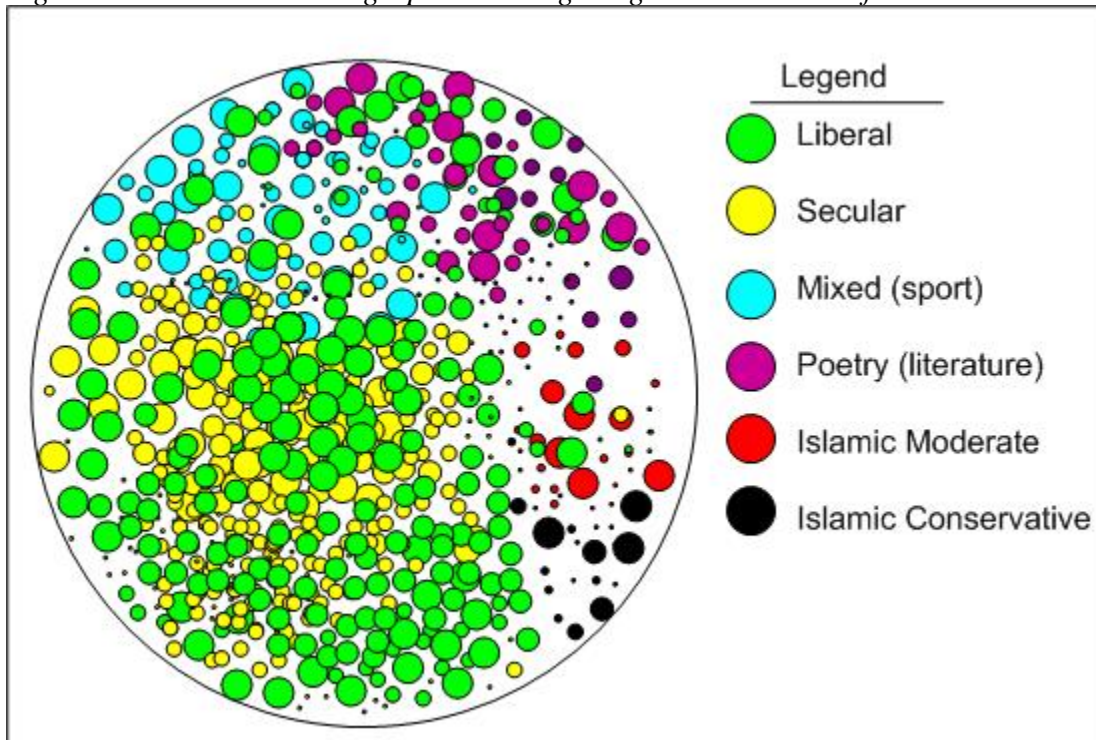
Table 7.4: Clusters and number of blogs

Network Categories	Clusters	Number of blogs
Critical	Liberal	125
	Secular/Expatriate	198
Supportive	Islamic Conservative	20
	Islamic Moderate	30
Others	Poetry/Literature	60
	Mixed	79

Within each cluster there are some popular blogs that received most comments on their posts. These blogs tend also to update their articles more regularly. The colored bubbles in figure 7.3 reflect this. However as far as the objective of analysis of blogs regarding the democratic movement of Iran was concerned, regardless of the category of blogs, the postings/comments supportive of the Green Movement were assigned a green bubble within their respective cluster. A through review of the number of posts and comments of these 512 blogs (see table 7.4) shows overwhelmingly supportive of the Green Movement in Iran and critical to the brutality of the military and the government's reaction to peaceful and legitimate street demonstrations. The number of posts/comments within each cluster in support of the Green Movement was weighted and assigned a unit value in which a green bubble could be considered. The size of the bubbles was dictated by the number of articles and posts. The green bubbles in figure 7.3 show the critical posts and comments in regards to the events in Iran during the above period.

As shown in figure 7.3 except for the Islamic conservative cluster, which is mainly sponsored by the government and the military, other clusters turned Green to show their support for democratic movement of Iran. Even blogs that were not originally designed for political debates such as the Mixed cluster (two main blocks in this cluster are the sport block and the other branded as e-commerce, mainly related to the download of music, digital arts and software) and in some extend the Poetry and Literature cluster became very supportive of the Green Movement and discussed issues related to the event.

Figure 7.3: The Iranian Blogosphere during the green movement of Iran



For example, we have seen many new poems, literature works and articles as a reflection of the events in Iran. Many new songs in the form of short videos were posted or linked to this cluster as well. The sport block of the Mixed cluster was also influenced by the Green Movement in Iran. During the qualifying FIFA World Cup 2010 between Iran and South Korea, six national soccer team players wore green armbands as a means of supporting people for democracy in Iran. This soon became a main topic discussed among sport blogs. Many posts and comments on these blogs show the impact of the green movement beyond the political sphere. In particular young Iranian supporters of soccer clubs took the slogans and signs of the green movement to the stadiums and other sport compounds. The events captured on cell phone cameras posted on sport websites and blogs is an indication of the integration of the Iranian blogs for democratic changes in Iran. Even the Islamic moderates who have a long tradition of governing in Iran were impacted by the events. Many blogs belong to the Islamic moderate domain were critical to the brutal violence of the military against peaceful demonstrators and call upon national unity and respect for basic human rights. These blogs were widely involved in distributing the grand Ayatollahs' fatwa in regards to the violence used against

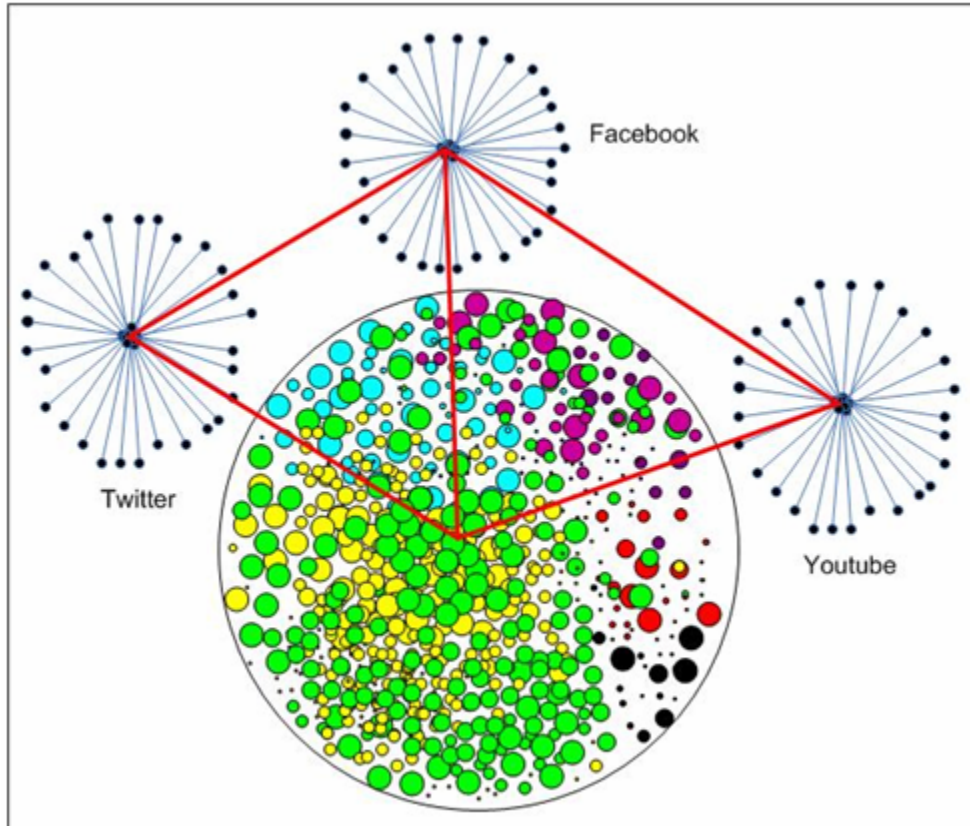
demonstrators as saying that such a code of conduct is un-Islamic. This phenomenon puts the Iranian blogosphere a unique critical position in comparison with other bloggers in the region. Ultimately, the critical blogs became the target of the government's Internet censorship and filtering actions and in some cases the target of cyber attacks, which will be discussed later.

The impact of digital collaboration between grassroots reporters and the Iranian blogosphere on one hand and the Arab blogosphere on the other is in particular of interests of this thesis. It is obvious that the Iranian blogosphere reacted faster and with more ambition to the news and reports collected across the country. Many of these stories reported the events minute-by-minute as they occurred. It was only this phenomenon that made the political color of websites redundant. The supporters of liberal candidates were actively involved in various forms of social networking such as Twitter and Facebook by creating a web of supporters around the green movement. They were also creative in using YouTube to send their messages to the "greens" in Iran before, during and after the election. Figure 7.4 shows the impact of such mutual communication (e.g., posted pictures, video clips, opinions and comment responses from visitors). Both Facebook and Twitter experience the highest level of visitors during the highlights of June 2009 street demonstration in Iran. In addition, the digital community of Iran has been effective in using Internet search engines such as Google to get the latest information about national events. Because the official government-controlled media were banned from reporting the events during the recent presidential election in Iran, Iranian citizens turned to the Internet in order to obtain the latest news and uncensored information. As shown in figure 1 in Appendix E, the keywords most frequently searched by Iranian Internet users were related to the violent and tumultuous aftermath of the election in 2009.

Other blogs in the region were actively involved in reporting Iran's events to their audience. The Arab blogosphere has widely discussed the events including posting of images and video clips/links to source of information as a follow up in events. One interesting cluster is the Lebanon cluster. Due to a long relationship between Lebanese Hezbollah and the Iranian hardliners, the events in Iran were widely discussed on Lebanese weblogs. The opponents of Hezbollah in Lebanon took the opportunity of the event in Iran to launch counter attacks on Hezbollah as the main supporter of the Iranian

regime in Lebanon. In an open letter 90 Lebanese scholars, politicians and social activists signed a statement in support of Iran's Green Movement.

Figure 7.4: The integration of the Iranian blogosphere and social networking sites

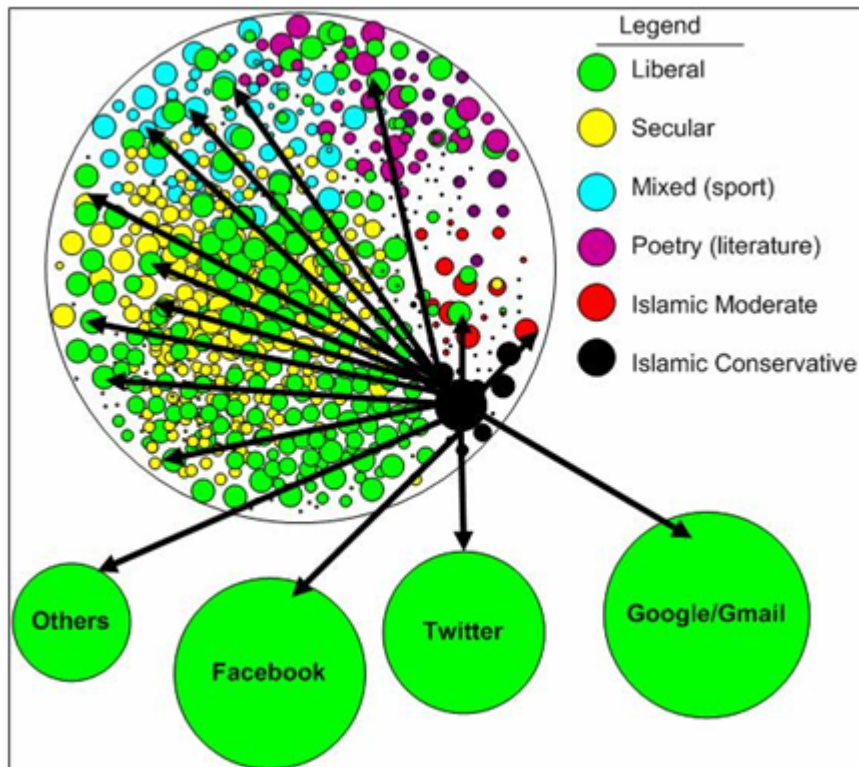


Other Arabic blogs, in particular the Egypt cluster, Kuwait, Qatar and Bahrain and even in the Saudi Arabia cluster (which has a tradition of not becoming openly involved in politics) discussed the events of Iran. For example, a female blogger from Saudi Arabia in regards to the green movement of Iran posted a long list of links to video clips on the Net as saying "with the complete media blackout in Iran, the people in Tehran were able to use services such as YouTube and Facebook to post videos and photographs from the scene. Here's a roundup of the videos from Tehran today" (Fatima, 2009). UAE Arabic, Farsi and English blogs in particular were more involved in reporting the events due to a large number of Iranians living in UAE.

7.7 Iranian Government's Response to Bloggers

The Iranian government responded to the Green Movement blogging in a more systematic way than they had done in the past. Just prior to the June 2009 election, the government launched the “Cyber Army of Iran”, a collection of government sponsored professional hackers, enlisted to conduct attacks on active opposition blogs and websites.

Figure 7.5: Government cyber attacks on the blogosphere and other social network sites



It is difficult to obtain much data on the activities of this Cyber Army. However, the ultimate goal of these cyber counter-activists gathered around the Conservative domain was to take down all opposition blogs and news broadcasters whether domestic or from abroad (see figure 7.5). This group engaged in various systematic cyber attacks against the Green Movement bloggers and any sympathizers during and after the 2009 disputed presidential election. In many instances they were successful in attacking and bringing down the oppositions' servers and/or imposing communication distortion during the highlights of street protests where people needed access to reliable sources of information. In other cases they arrested critical bloggers and other key activists who

were the organizers of digital protest community of Iran. The government sponsored cyber attacks and the arrests of critical bloggers are just a few examples of the pervasive filtering and state censorship practiced in Iran which was discussed in previous chapter.

7.8 Concluding Discussion

Many scholars argue that ICT media and services such as the Internet enable new dimensions of expression and democratic participation (Klein, 1999; Gimmler, 2001; Lynch; 2003; Suarez, 2005). The proliferation of websites, blogs, e-mail, and SMS has improved communication and interaction among people across the globe and has facilitated and assisted in opening new possibilities for political participation (Doostdar, 2004; Drezner, 2004; Yu, 2004). ICT can help to foster citizens participating in political decision-making processes such as elections (Oates, 2003), dialogue and consultation between citizens and government, citizens and political parties, and groups of citizens. Through such dialogues, government and social representatives can better understand citizens' needs and citizens can seek to contribute actively with the knowledge they gain (Karamagioli, 2003). However, in non-democratic countries such as the countries of this study the people's rights to vote and to elect their representatives and government officials have often been neglected. Blogging in the Middle East provided ordinary citizens the opportunity to voice their concerns about various socio-political, cultural and economic issues.

The ultimate result of ICT expansion in the Middle East from 1995 to 2005 was a dramatic increase in the number of Internet users and eventually the use of Internet as a medium for communication discourse. An example of such discourse is the growing number of weblogs and digital communities in the Middle East. The Internet offered the citizens of the Middle East a platform for open discourse and participation in a range of social and political activities including: (1) public political discourse; (2) social networking, organizing and mobilizing for protests; (3) self expression and community building; (4) communication with the outside world. In Particular blogging in the Middle East provided ordinary citizens the opportunity to voice their concerns about various socio-political, cultural and economic issues. This is in particular important in the Middle

East where official news agencies (print or broadcast) are under heavy governmental control. Albeit the imposed single voiced socio-political atmosphere in many of the countries of this study such as Iran and Saudi Arabia, the blogosphere is a multi-voiced environment. Many bloggers have activated the comments options in their blogs allowing others to comment on their posted articles and converting them to a forum of public discussions. In this respect, the multilateral public discussions have helped the emergence of a multi-voiced environment that is vital for communication discourse.

The case study of the Iranian digital community shows that for the Iranian people living in a repressive society the Internet can be viewed as emancipatory communication media. In this country controlled by Shi'ite Sharia law, there are no press freedoms, no freedom to communicate your views or to critique the government, the Internet is one of the only media that citizens can use to voice their concerns in socio-political affairs. While this limited study has focused on blogging, the study showed one dimension of the impact of the Internet on the social and political life of Iranians. Many Iranians use interactive Web 2.0 tools and services offered by sites such as Facebook, Orkut, Flickr, MySpace and Twitter in their everyday interactions. There is a continuing 'cat and mouse' game played by users and the government censorship agents who try to deny access to websites deemed to undermine Sharia law and the "public good". Even non-political blogs such as belonging to Poetry and Literature clusters as well as popular music and culture sites are considered serious threats to the theocratic system of Iran, and subject to filtering and state censorship. On the other hand, conservative blogs supporting the government and blogs of Islamic religious expression are not filtered; they are deemed Cyber-Shia compliant.

The use of the Internet for self-expression and community building while important to many users, are of special importance to women. In Iran (and the other countries in this study) the government and religious fundamentalists enforce a repressive patriarchal society. The Internet offers many women the only space to discuss certain issues. One Iranian woman blogger makes this point clearly: "I could talk very freely about things I could never talk about in any other place, about subjects that are banned... Women in Iran cannot speak out frankly because of our Eastern culture and there are some taboos just for women, such as talking about sex or the right to choose your partner" (Hermida, 2002).

Even though the study was limited to the case study of Iran, lessons learned from the Iranian women's digital movement can provide valuable information and insights to other Middle Eastern women who live under similarly oppressive socio-economic, political and cultural conditions as women in Iran. In this context the rich experiences of Iranian women activists' use of ICTs to make their voices heard will slowly but confidently mobilize people in the Middle East for change. As Rao (2002) points out in a meaningful democracy, the people's voice must be clear and loud- clear so that policymakers understand citizens concerns and loud so that they have an incentive to pay attention to what is said. Bosi (2007) argues that individuals normally engage in collective action to enforce political change. By participating in protest actions they also manifest their own views, gain dignity in their lives, reject the subordination of their identities, and give grounds for pride. In this context the voice of the Iranian digital community was clear and loud enough. Despite bloggers success in engaging people in communication discourse and mobilizing citizens for democratic changes, this research does not conclude that blogging activities have resulted in institutional changes in Iran or other parts of the region. As defined by Stinchombe (1968), institutions are a set of structures in which powerful social actors are committed to some value or interest. In this context the main force for driving institutional changes in a society is power (cf. Silva and Figuero, 2002).

Over time, it will become apparent that the sheer volume of information available to people in the Middle East, especially eagerly consumed by young people, will transform politics (Alterman, 2005) and the outcome will be a new wave of democratization, as authoritarian regimes find it difficult to survive (Ferdinand, 2000). The power of the state to regulate social, economic, and political activities has begun to erode as citizens and other non-state actors, empowered by the Internet, started to create and disseminate information.

As I stated in the introduction of this chapter, although I had not intended to conduct this type of analysis for my PhD thesis the events of June 2009 and my observations of how the Internet was used as a primary media for political participation in the Middle East compelled me to address the issues in some small way. While this short study offers some insights that are relevant to my thesis research on the impact of ICT on democratic freedom, it has some limitations. The analysis focuses on a short period, the Green

Movement. It also has other limitations expected of a short study; only secondary sources were used, blogs and websites. The study was limited to my observations in participating in discourse with the Iranian digital communities around the Facebook and Twitter sites as well as blogging, however, I did not interview bloggers and other grassroots journalists who were active participants in the Green Movement to get firsthand accounts on how they conceived of various uses of ICT in their political activities. Conducting a more systematic study was beyond the scope of my thesis. As such an in-depth analysis of the emancipatory role of blogging in communication discourse and political mobilization in the Middle East could be an interesting research topic for future studies.

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Chapter 8: ICT and Economic Freedom in the Middle East

This chapter investigates the impact of ICT expansion on economic freedom in the Middle East. ICT expansion in the Middle East has been effective not only in the promoting freedom and democracy and bridging the digital divide, but also in promoting economic freedom in a region that is vulnerable to political, social, and global conflict.

8.1 ICT and Economic Development

The World Summit on the Information Society (WSIS) Tunis summit 2005 reaffirmed the declaration of principles emphasized two years earlier at WSIS (2003) summit. World leaders in Tunis summit noted “the importance of removing barriers to bridging the digital divide, particularly those that hinder the full achievement of the economic, social and cultural development of economies and the welfare of their people, in particular, in developing economies” (ITU Tunis Agenda, 2005, sec.10). It is evident that the growth and expansion of e-businesses, online transactions, and e-governments suggests an increased demand for ICT products in domestic and global markets (the Internet, cell phones, satellite and cable television), enabling ICT to become a core component of current economic development. It is expected that ICT will improve the efficiency of the industrial infrastructure in developing countries, enhancing their overall economic performance and strengthening their competitive capacities in the global market (Indjikian and Siegal, 2005; Meng and Li, 2002; Rao and Osei-Bryson, 2007; UNESCO, 2006).

A growing number of studies support the WSIS perspective with regard to ICT and its impact on socio-economic development. Some scholars argue that investment in ICT, particularly in machinery, equipment, and infrastructure, will contribute to economic growth (DeLong et al., 1991; Greenstein and Spiller, 1995; Hamilton, 2000; Roeller et al. 2001; Correa, 2003). For example, Roeller et al. (2001) show that between 1970 and 1990, one-third of Germany’s economic growth could be attributed to an increase in the penetration rate of fixed telephone lines. Hamilton (2000) argues that investment in basic telecommunication in Africa had a positive impact on economic, political, and institutional development.

8.2 ICT Development and Telecom Reforms

Many scholars view telecom reforms and ICT privatization in developing countries as the key catalyst for modernization and expansion of public telecommunications networks (Pisciotta, 1997; Wellenius, 1999; Bortolotti et al., 2002; Gutiérrez, 2003). The World Bank (2006) emphasizes that if governments open their telecommunications markets through well-designed reforms, they can create competitive markets that grow faster, cost less, facilitate innovation, and respond better to user needs, resulting in increased private investment and ICT development. The privatization of telecommunication infrastructure and general ICT also helped to boost foreign direct investment (FDI) — a major source of ICT financing. According to UNCTAD (2006), the latter part of the twentieth century witnessed a global trend away from protected, controlled economies toward open market economies, particularly in telecom sector. In this context the dominant telecommunication policy has favored privatization, competition and independent regulation. Telecom privatization and liberalization promise to deliver economic gains in the form of new and improved products and services, lower prices, increased capital investment spending, increased ICT density (number of main lines, mobile cell phones and Internet per 100 inhabitants) and operating efficiency (ITU, 1997b, 1999, 2007; Ros, 1999; Boylaud and Nicoletti, 2000; D'Souza and Megginson, 2000; Wallsten, 2000; Bortolotti et al., 2002; Kauffmann, 2005).

Other scholars critical of telecom liberalization and privatization point out that deregulation and privatization of the telecom sector in developing countries induce decision-making in this sector that is less accountable to citizens and local communities (Radloff et al., 2004). It is important to note that privatization does not undermine the role of government. A strong and independent regulatory body is an important part of the privatization process. Wallsten (1999) points out that the empirical studies of telecom reforms in Latin America and several African countries have found improvements in sector performance following privatization combined with the existence of a separate regulatory body. An independent regulatory body, in this context, is an external organization established on the basis of legal mandate and its primary activity is to protect the public. This body must have enough resources to audit tele-providers and to

enforce regulations that mitigate any inequity arising from integration and imperfect competition (UNCTAD, 2006).

In addition, this research argues that the state monopoly on ICT in countries such as Iran is not a healthy practice as the government and military officials find they have free hands for imposing filtering and censorship on the Internet and other broadcasting media and to shut down SMS messages and mobile cell phone communication at will. Such a monopoly can be used as a means of political pressure and suppression of citizens' participation in democratic discourse through digital communications networks which has been discussed in more detail in previous chapters.

As discussed in chapter 5, ICT development in the Middle East came in two different forms: oppressive control of ICT development and partial privatization. Those Middle Eastern countries that took a more liberal approach toward ICT development in their economies were able to not only renew and expand their ICT infrastructures; bridging the digital divide with other ICT developed nations but also expand their operations to other regions in Africa and Asia. As a result of such expansion they were able to increase their knowledge and experiences in ICT development and also contribute more to their GDPs in comparison with other countries in the region.

The aim of this chapter is to analyze the extent to which ICT expansion has influenced economic freedom in the Middle East. To this end, the chapter investigates two main issues: a) To what extent has ICT expansion in the Middle East contributed to economic freedom; and b) To what extent differences in educational attainment and institutional resistance to technology have influenced this.

8.3 Estimation Framework

The main objective of this chapter is to analyze the impact of ICT on economic freedom (EF), controlling for the effect that other variables may have on the dependent variable. Drawing on previous literature (Gwartney, Lawson and Holcombe, 1999; De Haan and Sturm, 2000; Lundstrom, 2002; Mbaku, 2003), this section discusses these variables in more detail. We analyze four determinants of economic freedom: Political Rights and Civil Liberties (PRCL), economic growth, regulation, and, most importantly, ICT.

According to the digital divide report conducted by UNCTAD (2006), there is a strong correlation between a country's development in ICT, its income, and the level of human development as measured by its GDP per capita and the level of education of its citizens. For example, a person living in a high-income country is 22 times more likely to be connected to the Internet than a person in a low-income country. ICT and the Internet in particular, is extremely expensive in low-income countries. The cost of Internet access in a low-income country is 150 times the cost of a comparable service in a high-income nation. In addition, literacy remains a pervasive barrier to access, particularly for developing nations, as it is the core component of accessing and using ICT, specifically the Internet. In addition, we argue that there is a correlation between the degree of institutional democracy and economic freedom, which will be discussed later in this section. Ngwenyama et al. (2006) and Morawczynski and Ngwenyama (2007) found that complementary investments in healthcare, education, and ICT significantly affect human development measures in five West African countries. However, Ngwenyama et al. (2006) suggest that the relationship between the investment variables (ICT, health, and education) is complex and requires more sophisticated statistical analysis than ordinary regression. The empirical study conducted by Ko and Osei-Bryson (2006) shows that investment in ICTs can maximize productivity when such an investment is integrated with investments in non-IT labor and non-IT capital.

Generally, there are two categories of investments. First-order investments address the immediate needs of individuals. Resources in this class are allocated toward the provision of food, clothing, and housing as well as the improvement of healthcare or primary and secondary level education (Servon, 2002). On the other hand, second-order investments are meant to create opportunities for people to escape conditions of poverty and marginalization (Morawczynski and Ngwenyama, 2007). They include investment in ICT, post-secondary education and/or economic literacy (Morawczynski and Ngwenyama, 2007). Brown et al. (2007) argue that it is expected that ICTs and in particular the Internet will have positive educational benefits for disadvantaged sectors of South African society, living primarily in high density urban and rural areas where there is poverty, lack of resources, and lack of educational facilities. A recent study by Gholami et al. (2010) revealed that second-order investments also have an impact on

measures of human development, and suggest that national policymakers should not undermine the importance of investment in areas such as ICT. Their findings imply that the central focus on ICT as a resolution to development will not always bring the results that the promoters of ICT for Development (ICT4D) are expecting unless they are also accompanied by complementary investments in healthcare, and, most importantly, in education.

It is important to note that while other parameters such as the degree of FDI in economic activities, the existence of infrastructure (e.g., roads, transportation, and water supply), the cultural climate, and the level of industrialization may directly or indirectly impact economic freedom in each country, analyzing these impacts is beyond the scope of this research.

Economic Freedom

In this study, the Economic Freedom Index is the dependent variable. As discussed in earlier chapters, this index, obtained from The Heritage Foundation (HF) and The Wall Street Journal (WSJ). The index establishes a benchmark by which to gauge a country's prospects for economic success. This index is composed of ten factors: trade policy; fiscal burden of the government; monetary policy; capital flows and foreign investment; banking and finance; wages and prices; property rights; informal market activity; regulation; and economic intervention.

Information and Communication Technology (ICT)

The growing number of e-businesses worldwide is an indication of ICT's role in boosting businesses and enabling economic growth. Additionally, it is assumed that ICT expansion will contribute to improvements in the provision of basic social services, help to boost economic development, improve the efficiency of governments, and enhance the provision of education and health (Braa et al., 2007; Sahay and Walsham, 2006; Silva and Hirschheim, 2007). In other words, ICT expansion is expected to improve efficiency and increase access to knowledge and expertise (Rao and Osei-Bryson, 2007). The empirical analysis provided by Guislain et al. (2006) indicates that firms in developing countries that use ICTs are 5.1% more profitable, have 1.2% more employment growth,

reinvest 6% more, and retain \$3,400 more in value-added productivity per worker than enterprises that do not use ICT or have limited access to ICT.

As mentioned in previous chapters, Gwartney and Lawson (2006) define four main components of economic freedom: “1) the right to trade with others; 2) the right to enter and compete in the business and/or occupation; 3) the right to keep what a person earns; and 4) the institutional protection of property right” (p.7). Given its various applications, ICT can have a direct positive impact and influence on the first two components of economic freedom, as described by Gwartney and Lawson (2006), since ICT, by nature, is a global concept. Specifically, ICT provides a bridge that links local communities on a global level by supplying businesses with tools and services to help them enter into the global market, but also effectively and efficiently enhance their productivity and competitiveness and/or create new forms of business that lead to increased visibility, which may have been unprecedented a decade ago. ICT is also crucial to sustainable poverty reduction in developing countries, because it makes a country’s economy more efficient and globally competitive, improves health and education services, and creates new sources of income and employment for poor people. In addition, ICT enhances social inclusion and promotes more effective, accountable, democratic government, especially when combined with effective freedom of information and expression (Guislain et al., 2006). Others argue that there are other factors, many of which are institutionally determined and should be present if investment in ICTs is to lead to growth (Andonova, 2006).

In today’s information society, jobs and education are directly related to ICT. Countries with low ICT penetration may fall behind the rest of the world and may thereby be excluded from the numerous potential economic and social benefits of ICT deployment (Gillward, 2005). Illiteracy is a fundamental barrier to participation in knowledge societies (Mansell, 1998). Countries with unlimited access to the Internet and other ICT products can develop their economies to compete better globally (Warshauer, 2002). As Raji et al. (2006) point out India has systematically invested in educating a qualified workforce to produce high-quality software, an engine of the ICT-driven global economy. ICT has the potential to provide employment opportunities for those appropriately trained to leverage jobs in this sector, which range from data entry to

software creation, to running business centers and maintaining machinery such as handsets, VSAT, PCs, and cables (Raji et al, 2006).

Political Freedom and Economic Growth

Several scholars have argued that political freedom has a direct, positive impact on economic freedom and growth (Przeworski and Limong, 1993; Sen, 1999; De Haan and Sturm, 2000; Lundstrom, 2002; Berggren 2003; Feng, 2003; Fink et al. 2003; Guillén and Suárez, 2005; Soper et al., 2006). A common idea expressed in this literature is that political freedom is a precondition for economic freedom (Sen, 1999), as it enables citizens to engage in economic activity and participate in the process of economic expansion through choice of employment; it also gives them the right to own property and establish businesses. Griswold (2004) points out that a large body of empirical research has found that economic freedom is a key indicator to increased prosperity, particularly among the emerging nations. He notes that recent empirical studies have shown that economic freedom promotes growth, prosperity, and other positive outcomes. In this context, economic freedom has intrinsic value and is inextricably linked to democracy and other freedoms (Griswold, 2004). In contrast, however, Farr et al. (1998) did not find a statistically significant correlation between political freedom and economic freedom.

Recent research also suggests that a bi-directional relationship exists between political and economic freedom (Guillén and Suárez, 2005; Miles et al., 2006). De Vanssay et al. (2004) find evidence to suggest that governments that are more accountable to the people are more likely to adopt policies that promote and support economic freedom. The authors argue that economic freedom leads to economic growth, and that economic growth leads to political freedom. In a similar vein, Thies (2007) shows that political and economic freedom are positively correlated and that there is strong evidence to suggest that political freedom contributes to greater economic freedom, but only weak evidence to support the claim that economic freedom causes political freedom. In addition, there is strong evidence to suggest that both political and economic freedom foster economic growth.

Economic Growth

According to the 2004 Economic Freedom of the World Report, there are several explanations as to why it can be expected that free economies will grow more rapidly than those that are less free. First, economic freedom implies competition, and competition is widely believed to lead to higher rates of economic growth. Second, more liberal economies also provide greater opportunities for entrepreneurial discoveries. A free market makes it possible for entrepreneurs to test innovative ideas and to determine whether they can impact the market. Finally, in a free market, private investment tends to flow toward areas with the highest rate of return (De Haan and Sturm, 2006).

Several studies investigate the relationship between economic freedom and growth and find that economic freedom is important for growth (Hanke and Walters, 1997). Leschke (2000) shows that, in particular, the framework within which the market economy functions and the degree of institutional intervention (Silva and Figueroa, 2002) in the political process are of great importance for the wealth of nations. In another study, Goldsmith (1997) uses the economic freedom index to illustrate that developing countries that protect economic rights more effectively tend to grow faster, have a higher average national income, and have a higher degree of human well-being. Moreover, an empirical analysis conducted by Farr et al. (1998) found robust evidence to support the claim that GDP growth positively affects economic freedom. Table 1 in Appendix F shows the 20 nations with the highest economic freedom and their related *per capita Gross Domestic Product* (GDPP). As shown, there is a strong positive correlation between the growth of GDPP and the expansion of economic freedom. In addition, figure 1 in Appendix F shows this correlation on a global scale.

Regulation

Achieving high levels of economic growth requires an accommodating legal and economic environment as well as reforming the rules and regulations that govern the strategic interaction of participants in the political arena. In this light, economic growth requires developing regulations, such as the definition and enforcement of property rights, control of inflation and government expenditures, as well as federalism and redistribution (Khalil et al., 2007). Barro (1997) finds that economic regulations best

explain differences in growth across economies. Similarly, Rodrik (2000) suggests that successful market-based economies need efficient regulations that will: protect property rights; defend the rule of law and fight against corruption; provide appropriate roles for the regulation of products, factors, and financial markets to offset the sources or cost of market failure; and support macroeconomic stabilization, including protecting the value of money, ensuring a sustainable fiscal and monetary balance, and promoting social unity and strength. The findings of Gwartney and Lawson (2003) emphasize that economic freedom requires that governments refrain from activities that interfere with personal choice, voluntary exchange, and the ability of individuals to enter into and compete in labor and product markets. More recently, Khalil et al. (2007) estimate the impact of economic and institutional determinants on economic growth and find that these factors can explain more than 80% of the changes in economic growth in OECD countries.

With respect to the relationship between regulations and ICT expansion, many reports focusing on the digital divide note that promoting competition and Internet-friendly regulatory policies is an important component of addressing this issue (e.g., International Labor Office, 2001). For example, Petrazzini and Guerrero (2000) highlight the potential importance of regulation on Internet development in Argentina. In particular, they attempt to explain Argentina's progression from having the lowest Internet penetration in Latin America in 1993 to having the highest rate of penetration in 1999. The authors find that regulatory intervention is integral in a non-competitive market, with the government mandating large reductions in the price of leased lines and the creation of a special local dialing scheme for calls to connect to the Internet. Brown et al. (2007) found that the liberalization of South Africa's telecommunication network offered by the electronic communications act (policy directives) had a positive impact in increasing competition and innovation in the telecommunications industry. Using data from a recent survey of telecommunications regulators in 44 developing countries, combined with publicly available information from the ITU and the World Bank, Wallsten (2005) measures the effects of regulation in Internet development. He finds that the regulation of Internet Service Providers (ISPs) correlates with worse outcomes. In particular, countries that require ISPs get formal approval before they begin operations have fewer users and hosts, and ISP price regulation correlates with higher prices for subscribers. Assuming a causal

relationship, the impact of these regulations is substantial: ISP entry barriers reduce the number of Internet hosts and users by about half, while price regulations may triple ISP connection prices. These results suggest that the regulatory policies of developing countries can have a significant impact on the digital divide.

It is also important to note that government intervention is necessary to shape a fair and secure environment, protect private property and the value of money, enforce contracts, and promote competition (Feulner, 2008); however, government intervention in the supply of products and services corrodes freedom—and the first freedom affected is economic freedom. Guislain et al. (2006) point out that the government's main role is to provide a sound policy framework, regulate markets with failures, and support additional service provision where markets do not achieve economic and social objectives. Kirkpatrick et al. (2006) argue that institutional intervention is needed to create a control mechanism for the provision of revenues and costs of privatized utility firms, while, at the same time, establishing regulatory credibility among investors. Additionally, King et al. (1994) point out that institutional intervention is essential to promote a generation of knowledge and sustain the production of innovation in the field of ICT. The provision of scientific and technical knowledge is fundamental to either produce or use innovations. Institutions can intervene in ICT in areas such as R&D, education, and health, among others (Leiser and Eugenio, 2002).

Educational Attainment

Economists have traditionally been optimistic about the contribution of education to economic development. In formal models, a central role is often assigned to the accumulation of human capital, particularly in the recent literature on endogenous growth. For instance, in his pioneering contribution to the endogenous growth literature, Lucas (1988) emphasizes human capital accumulation as an alternative source of sustained growth. Lucas distinguishes between two main sources of human capital accumulation, namely, formal education and “learning by doing.” Nelson and Phelps (1966) also describe growth as driven by human capital accumulation, which, in turn, affects a country's ability to innovate and/or catch up with more advanced countries. Differences in growth rates across countries are thus primarily due to differences in

human capital stocks. In this context education is the cornerstone of today's knowledge economy and the creation of Knowledge Management Systems (KMS). Rao and Osei-Bryson (2007) argue that KMS is extremely important for organizations, primarily because it helps to manage key organizational resources, intellectual capital, and provides potentials for competitive advantage. The results of empirical cross-country studies on the determinants of educational attainment on economic growth have been largely consistent with the abovementioned view. Barro (1991) and Mankiw et al. (1992), among others, find that a variety of educational indicators show the expected positive effect on output levels. During the second half of the 1990s, however, a new set of empirical papers produced disappointing results in terms of the effects of schooling on aggregate productivity (e.g., Benhabib and Spiegel, 1994; Caselli et al., 1996).

Research conducted over the last few years confirms that the negative results found in the previous literature can be largely attributed to deficiencies in the data used in earlier studies. Studies that make use of improved data sets on attainment or allow for measurement errors find that increased levels of education do indeed have a substantial impact on productivity growth (Cohen and Soto, 2007; De la Fuente and Doménech 2001; 2006).

As mentioned earlier, recent research suggests a bi-directional relationship between political freedom and economic freedom exists (Guillén and Suárez, 2005; Miles et al., 2006; Thies, 2007). Educational attainment may also affect the level of political and economic freedom. For example, citizens that are more educated may be more aware of the benefits of freedom and in turn demand more freedom. Thus, following Barro (1999), we can hypothesize that citizens who have a higher level of educational attainment will demand a higher level of economic freedom from their countries. The empirical analysis of Stroup (2007) examines the interaction of political and economic freedom on measures of health and education in society. The results imply that greater economic freedom consistently enhances these welfare measures.

As mentioned in previous chapters several studies emphasize the importance of education in accessing ICT as well as its important role in technology adoption. In their study, Kiiski and Pohjola (2002) show that tertiary education has a positive and statistically significant influence on ICT expansion in both developing and OECD

countries. Using data on computer equipment imports, Caselli and Coleman (2001) find that secondary education also influences technology adoption.

8.4 Research Model

In order to empirically assess the effect of ICT on economic freedom, a panel of 11 Islamic, Middle Eastern countries for the period 1995-2005 has been used. In the estimates presented in the following, we capture the link between ICT and economic freedom with the following reduced form equation:

$$\ln EF_{it} = \alpha + \beta_1 \ln ICT_{it} + TX_{it} + \varepsilon_{it} \quad (1)$$

In this equation, the subscripts refer to the country (i) and year (t) under study. This study assumes that the index of economic freedom (EF) depends on the ICT index (ICT) and a number of control variables (X), which, according to the previous literature, may be related to the index of economic freedom. The control variables included in our study include: the annual average growth rate of GDP per capita (Farr et al., 1998), an index of government regulations (Gwartney and Lawson, 2003), the political and civil liberties index as a proxy for democracy (see Sen, 1999; De Haan and Sturm, 2000; Lundstrom 2002; Berggren, 2003) and an index of educational attainment. Finally, ε is the error term.

The above equation was used as a model for detecting and summarizing data patterns in a more efficient manner than simple stratified analyses. We should also be aware that these advantages may involve a higher risk of bias (Greenland, 1989). Cameron and Trivedi (2009) mention that the fundamental assumption for consistency of least-square estimation method is that the model error term is unrelated to the regressors and if this condition fails the ordinary least-squares (OLS) estimator falls into an inconsistent state therefore can no longer be given a causal interpretation. In this context, a particular problem in estimating (1) is that, GDP growth may be correlated with the error term (Farr et al., 1998), which in turn renders the OLS estimator biased and inconsistent. To overcome this endogeneity problem we use an *instrumental variable* (IV) estimation method called *two-stage least squares* (2SLS-IV) (see Wooldridge, 2002). Cameron and Trivedi (2009) point out that “IV methods are more widely used in econometrics than in

other applied areas of statistics” (p.171). As noted by Schmidt (1990) the instrument set is the set of predetermined variables within the system, and “this instrument set is the same for each equation” (p.389). One of the challenges of applying IV method, however, is to obtain valid instruments correlated with the endogenous variable (growth of GDP per capita) but uncorrelated with the error term. We use the natural reserves of oil and gas, the number affected by natural disasters, and other exogenous variables as instruments for the growth rate of GDP per capita in the first stage. The oil and gas reserves data are taken from the Energy Information Administration while the disaster data comes from the Emergency Disaster Database managed by the Centre for Research on the Epidemiology of Disasters at Université Catholique de Louvain.

To assess the importance of educational attainment and the role that regulation plays in moderating the relationship between ICT and economic freedom we estimate the following equation:

$$\ln EF_{it} = \alpha + \beta_h Hi \ln ICT_{it} + \beta_l Lo \ln ICT + TX_{it} + \varepsilon_{it} \quad (2)$$

In this equation, Hi is a dummy variable that takes the value of 1 if the country has an index of educational attainment (or regulation, depending on the specification) equal to or above the median value for the sample; otherwise, it takes a value of zero. On the other hand, Lo is a dummy variable that takes the value of 1 if the country has an index of educational attainment (or regulation) below the median value for the sample; otherwise, it takes a zero value. These dummies (Hi , Lo) are then interacted with the ICT variable.

8.5 Data Sources and Descriptive Statistics

We used a varied number of data sources to collect the variables of interest for this study. We obtained the index of Economic Freedom (EF) and the index of regulation from the Heritage Foundation (HF) and the Wall Street Journal (WSJ). We collected the majority of the ICT and educational attainment data from ITU, Orbicom, and the World Bank. The growth rate of GDP per capita was obtained from the United Nation Common Database, while the Political Rights and Civil Liberties indexes were collected from the Freedom House. In the following, we provide a more detailed definition of these indices.

The Economic Freedom Index

As discussed above the Economic Freedom Index is composed of ten factors introduced by The Heritage Foundation (HF) and The Wall Street Journal (WSJ). For the purpose of this study, in order to measure the impact of the enforced restrictions applied on business activities, the regulation index was removed from the above list and was added as one of the main control variables in our regression model. The other nine indices were grouped together to construct the economic freedom index. Each one of the ten factors is graded using a scale from 0 to 100, where the value 100 represents maximum freedom.

ICT Index

As discussed in chapter 5 the ICT index is composed of four main ICT components namely: the number of fixed telephone lines, Internet users, mobile cell phone subscribers, and PC owners per 100 inhabitants. Data was collected from the ITU database for the period 1995 to 2005.

Regulation

The HF and WSJ regulation index was used as a measure to analyze the impact of regulation, namely, the enforced restrictions on businesses in the private sector through taxation, licensing, and/or bureaucratic corruption, applied to the ICT industry by Middle Eastern governments. The HF and WSJ indexes assigned a rating, where 1 indicates the least regulated and 5 indicates the most regulated.

Educational Attainment

To construct the educational attainment index and emphasize the influence of higher education on the use and development of ICTs the education index introduced by ITU and Orbicom (2005) and discussed in detail in chapter 5 was considered.

Annual Growth Rate of GDP per Capita

Actual GDP per capita data was obtained from the UN Common database. While most of the research in this area suggests that economic freedom does make a significantly

positive contribution to growth (Barro and Sala-i-Martin, 1995; Gwartney et al., 1996; Islam, 1996), there is also a possibility, as noted by Barro and Sala-i-Martin (1995), of an inverse relationship running from growth to economic freedom, that is, that richer countries can afford better institutions (La Porta et al., 1999).

The Index of Political Rights and Civil Liberties (PRCL)

The PRCL index is composed of two main indicators, Political Rights (PR) and Civil Liberties (CL), introduced by Freedom House (please see chapter 5). While this classification provides a sound metric that presents an overall review of the world's progress towards democracy, it obscures the details of the annual performance of civil liberties and political rights within the context of each country. For our estimation purposes, this index was inverted.

Table 8.1: Descriptive Statistics by Country (1995-2005)

Country	Economic Freedom	ICT	GDP growth	Regulation	PRCL	Education
			Mean (Standard deviation)			
Bahrain	3.95 (0.07)	2.97 (0.62)	0.06 (0.07)	0.5 (0.32)	2.85 (0.13)	4.76 (0.01)
UAE	3.75 (0.07)	3.06 (0.59)	0.06 (0.1)	0.8 (0.19)	2.88 (0.04)	4.84 (0.28)
Kuwait	3.67 (0.05)	2.8 (0.57)	0.07 (0.15)	0.88 (0.21)	3.06 (0.05)	4.6 (0.08)
Oman	3.59 (0.03)	1.91 (0.6)	0.06 (0.1)	0.95 (0.2)	2.86 (0.05)	4.18 (0.29)
Jordan	3.55 (0.04)	1.88 (0.64)	0.04 (0.03)	1.1 (0.0)	3.12 (0.11)	4.65 (0.12)
Lebanon	3.51 (0.05)	2.47 (0.48)	0.07 (0.07)	1.2 (0.15)	2.9 (0.0)	4.74 (0.04)
Qatar	3.49 (0.04)	2.86 (0.57)	0.12 (0.15)	1.39 (0.0)	2.8 (0.06)	4.65 (0.04)
Saudi Arabia	3.49 (0.04)	2.1 (0.83)	0.05 (0.1)	0.95 (0.2)	2.66 (0.0)	4.47 (0.06)
Yemen	3.25 (0.04)	0.22 (0.86)	0.08 (0.08)	1.33 (0.12)	2.92 (0.06)	4.04 (0.12)
Syria	3.21 (0.03)	1.35 (0.6)	0.05 (0.06)	1.13 (0.35)	2.66 (0.0)	4.36 (0.13)
Iran	3.08 (0.05)	1.92 (0.57)	0.04 (0.09)	1.49 (0.12)	2.79 (0.04)	4.54 (0.04)
Total	3.5 (0.24)	2.14 (1.01)	0.06 (0.10)	1.07 (0.33)	2.86 (0.15)	4.53 (0.28)

Note: All variables, with the exception of the growth rate of GDP per capita, are expressed in logs.

Table 8.1 above reports some descriptive statistics on the key variables employed. The countries are in order of their average index of economic freedom (from the highest to the lowest freedom). Specifically, Bahrain, the UAE and Kuwait benefit from, on average, higher indices of economic freedom, ICT, democracy, and educational attainment than the total average. In addition, they have a lower index of regulation than the other Middle Eastern countries. On the other hand, Iran, Syria, and Yemen rank below the total average with respect to indices of economic freedom and ICT and are above the total average with respect to regulation. Iran and Syria also rank below the total average with respect to democracy while Yemen and Syria show lower levels of education than the total average.

8.6 Empirical Results

Table 8.2 presents the results of estimating equation (1), in which we assess the relationship between ICT and economic freedom. Column (1) presents the estimates of a baseline model, excluding ICT as a predictor. Judging by the adjusted R^2 , including ICT (column 2), the baseline model significantly improves our ability to predict economic freedom. Columns (2) and (3) show the coefficient estimates by using OLS with heteroskedasticity-consistent standard errors, while columns (4) and (5) are estimated using a 2SLS-IV approach in order to overcome the potential endogeneity of GDP growth. In each case, a set of time dummy variables has been included and excluded respectively in the regression.

The results show the following: the estimated coefficient on ICT is positive and statistically significant across all specifications, which indicates a positive relationship between ICT and economic freedom. This result is in line with the findings of Ott and Rosser (2000), who concluded that the Internet offers great potential to economic freedom in Africa. Additionally, while the estimated coefficient for democracy indicates its positive impact on economic freedom, conversely, the estimated coefficient for regulation indicates a negative impact on economic freedom. The human capital variable as well as the growth rate of GDP per capita shows the expected signs, but they are statistically insignificant.

Table 8.2: The Impact of ICT on Economic Freedom (OLS and 2SLS -IV, 1995-2005, 11 countries)

	(1)	(2) OLS	(3)	(4)	(5) 2SLS-IV
ICT		0.101*** (0.013)	0.100*** (0.018)	0.066* (0.039)	0.101*** (0.026)
GDPG	0.299** (0.117)	0.053 (0.106)	0.199 (0.160)	1.011 (0.961)	0.176 (0.817)
Regulation	-0.499*** (0.041)	-0.489*** (0.036)	-0.503*** (0.049)	-0.537*** (0.059)	-0.502*** (0.056)
Education	0.261*** (0.045)	0.019 (0.036)	0.013 (0.036)	0.099 (0.096)	0.012 (0.057)
PRCL	0.350*** (0.078)	0.341*** (0.065)	0.342*** (0.066)	0.302*** (0.098)	0.343*** (0.066)
Year Dummies	No	No	Yes	No	Yes
<i>Number of observations</i>	121	121	121	121	121
<i>Adj. R²</i>	0.695	0.787	0.782	0.658	0.782
Hansen J-test				[0.257]	[0.141]

Note: The dependent variable is the log of the economic freedom Index. PRCL is the index of Political Rights and Civil Liberties. The robust standard errors in parenthesis and probabilities in brackets are * $p < .10$, ** $p < .05$, *** $p < .01$

These results are consistent across the different specifications. To assess the validity of the instrument set in the 2SLS-IV approach, the p -value for the Hansen test of over-identifying restrictions is reported in columns (4) and (5). In all regressions, the p -values of the Hansen over-identifying restriction test indicate that the instruments are valid.

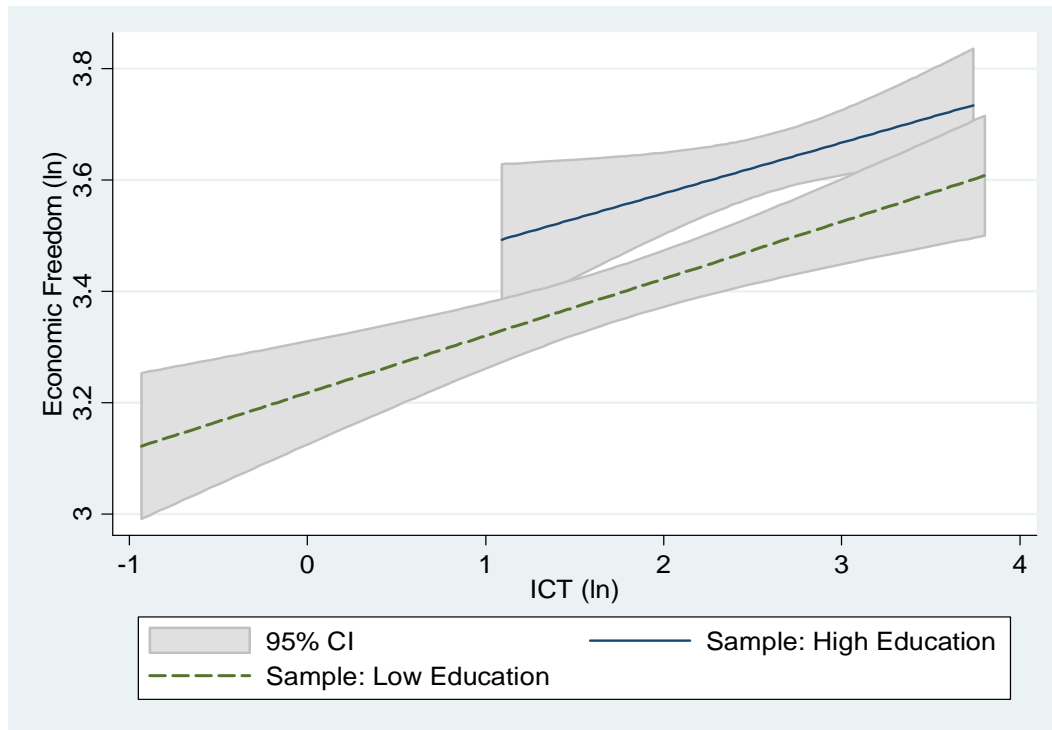
The Importance of Education and Regulation

To capture the role that education plays in the relationship between ICT and economic freedom, the sample was divided into two groups depending on the educational attainments with respect to the median country for each year. Values of the index of education below the median comprise the “low education” sample, while values equal or above the median comprise the “high education” sample.

Figure 8.1 shows the fitted value of the relationship between ICT and economic freedom for both samples, with their respective 95% confidence intervals. Although the relationship between ICT and economic freedom is positive for both samples of countries, the countries with higher levels of education see a greater benefit from ICT.

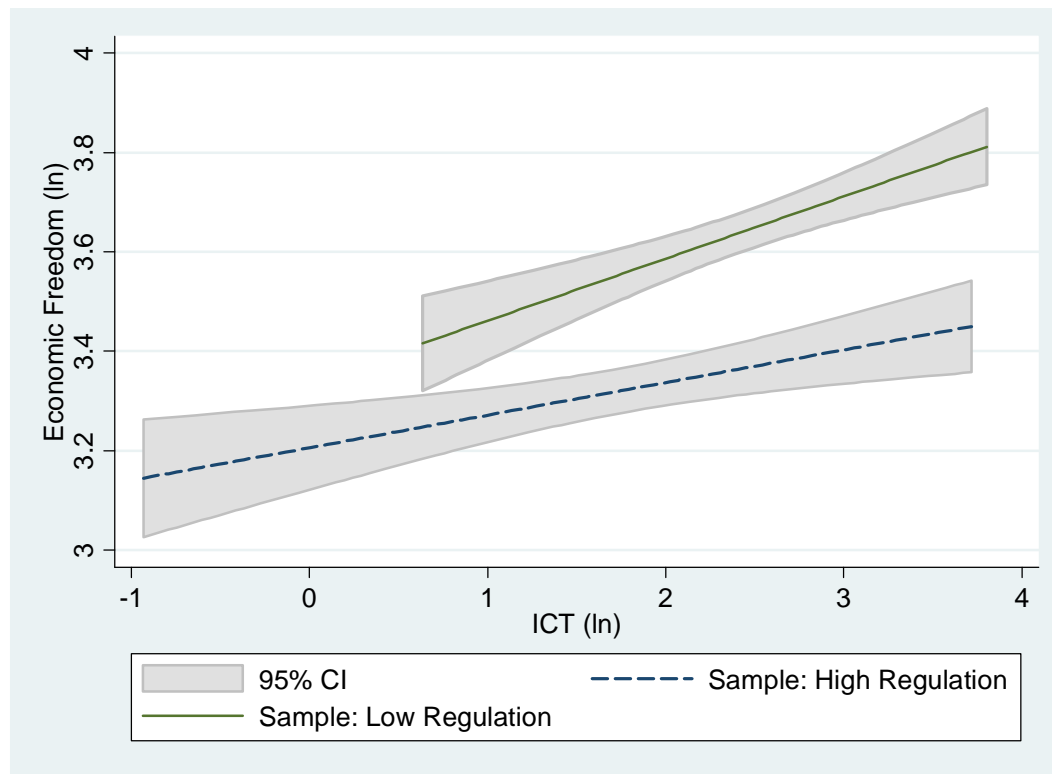
The difference between the two samples, with the exception of extreme values, is statistically significant.

Figure 8.1: Education, ICT and Economic Freedom



The same procedure was applied to the Regulation Index in order to analyze the extent to which government intervention (Walsham et al., 2007) influences the relationship between ICT and economic freedom in the Middle East. Figure 8.2 below shows the fitted value of the relationship between ICT and economic freedom for the sample of countries with both low and high indexes of regulation, with their respective 95% confidence intervals. For both samples of countries, the relationship between ICT and economic freedom is positive. Nevertheless, countries with a lower regulation index obtain, statistically, a much higher benefit from ICT than those with a high index of regulation.

Figure 8.2: The Regulation Index, ICT, and Economic Freedom



To complement the previous analysis, table 8.3 provides the results of estimating equation (2) using 2SLS-IV, while columns (1) and (2) provide the results obtained by analyzing the role that education plays as a moderator of the relationship between ICT and economic freedom, with and without time dummies. The estimated coefficient on the interaction of the *Hi* education dummy variable and ICT is positive and larger than the estimated coefficient for *Lo_ICT*. In the table below, the difference between the two variables is statistically significant at 5%, as reported by the *t*-ratio test at the bottom of the table. Thus, it can be inferred that countries with a higher educational attainment benefit more from ICT expansion than other Middle Eastern countries. Conversely, countries with relatively low educational attainment benefit less from ICT expansion than countries ranked in the middle or high groups. Therefore, although education does not seem to have a direct impact on economic freedom, it has an indirect impact through its impact on ICT.

Table 8.3: Importance of Education and Regulation
(2SLS- IV, 1995-2005, 11 countries)

	(1) Role of Education	(2)	(3) Role of Regulation	(4)
Lo_ICT^a	0.062*** (0.013)	0.045*** (0.015)	0.103*** (0.013)	0.105*** (0.020)
Hi_ICT^a	0.082*** (0.011)	0.070*** (0.013)	0.088*** (0.016)	0.096*** (0.019)
GDPG	0.067 (0.101)	0.153 (0.156)	0.061 (0.107)	0.204 (0.162)
Regulation	-0.489*** (0.035)	-0.540*** (0.047)	-0.456*** (0.042)	-0.477*** (0.068)
Education	0.045 (0.049)	0.042 (0.046)	0.036 (0.036)	0.020 (0.036)
PRCL	0.362*** (0.083)	0.324*** (0.086)	0.322*** (0.064)	0.333*** (0.066)
Time Dummies	No	Yes	No	Yes
<i>N</i>	121	121	121	121
Adj. R²	0.774	0.776	0.788	0.780
T-test (Hi_ICT=Lo_ICT)	[0.112]	[0.075]	[0.156]	[0.481]
Hansen J test	[0.064]	[0.053]	[0.304]	[0.236]

Notes: The dependent variable is the log of the economic freedom index. Robust standard errors are in parenthesis and probabilities are in brackets. *** is significant at 1%-level, ** is significant at the 5%-level, * is significant at the 10%-level. Sample size=100 observations. Hi and Lo are dummy variables indicating whether the country ranks above (Hi) or below (Lo) the median of educational attainment for columns (1) and (2) and of the government intervention index for columns (3) and (4) for a given year.

Similar results are obtained for the regulation variable, as shown in table 8.3. Countries in which the level of regulation is relatively high benefit less from ICT than other countries. The difference in terms of the impact of ICT between countries that are not highly regulated and those that are, is highly significant, as reported by the *t*-ratio test at the bottom of the table. Therefore, regulation seems to have a direct negative effect on economic freedom, but also an indirect effect hindering the benefits of ICT. The results of this study show that there is a significant and positive link between the growth and expansion of ICT and economic freedom in the Middle East. Moreover, while dissimilarities exist between the countries included in this study in terms of their level of socio-economic and political development, education and the growth of GDP have had a

positive impact on ICT expansion in the region while regulation impedes such development.

8.7 Conclusion

Various studies have shown that ICT expansion is correlated with the level of national wealth, resources for technology investments, human capital (Bontis, 2004), openness to trade (Addison and Heshmati, 2003; Balamoune-Lutz, 2003; Gholami et al., 2006), and degree of government intervention in business activities (ITU 1997, 1999; Hargittai, 1999; Salmenkaita and Salo, 2002). Sciadas (2006) argues that empirical evidence widely supports and accepts that the diffusion and appropriate utilization of ICT not only presents enormous opportunities for economic and social development, but that its absence seriously threatens the existing and sizeable gaps that exist between the 'haves' and 'have-nots'. In addition, the issue of the digital divide occupies the area of overlap between economic, social and cultural matters, and it is at the heart of the information society. Nwagwu (2006) illustrates the close statistical relationship between the expansion of information technology, productivity, and competitiveness for countries, regions, industries, and firms, as well as the importance of education in general and technical education in particular for the design and productive use of the new technologies .

The results of this study indicate that there is a significant and positive link between the growth and expansion of ICT and economic freedom in the Middle East. Additionally, the results show that both education and regulation moderate this relationship. Countries whose citizens have higher levels of educational attainment can see greater benefit from ICT. This result is also consistent with the findings by Gholami et al. (2010), who find that education enhances the effects of ICT upon development in developing countries. Moreover, countries that impose a higher level of institutional resistance on business activities see less benefit from ICT development. In addition, countries that experienced a higher level of economic freedom tended to have a liberal approach toward ICT development. For example, Bahrain, Jordan, the UAE, Qatar and Kuwait were able to liberalize their telecommunications systems, and elevated the impact of ICT on economic freedom by expanding the breadth and depth of their

telecommunications systems. This expansion strengthened the ICT infrastructure of these countries with increased speed and efficiency. Guislain et al. (2006) argue that during the last two decades, liberalization, competition, and the resulting increase in private investment have driven the development of telecommunications infrastructure and ICT in general.

Other countries, namely Syria and Iran, were not able to expand their ICT infrastructure at the same pace, as government regulation and intervention hindered not only the growth and development of their ICT infrastructure but also undermined countries' advancement toward economic freedom. Buchner (1988) argues that if governments are concerned about maintaining an oppressive and non-democratic position on ICT development, they might intentionally limit ICT dissemination. In addition, it is important to note once again that non-oil exporting countries, such as Lebanon, Syria, and Yemen, with limited investment capital need to create a friendlier environment for attracting FDI investors to their ICT infrastructure. Privatization, competition and independent regulatory bodies are not only key components of economic freedom but also technological advances.

Many other factors need to be explored in order to have a broader analysis of the expansion of ICT in the Middle East. The results of this study do not claim that education and institutional resistance are the sole enhancers and barriers of the impact of ICT on economic freedom, nor was that the intention. Other factors include not only other technological constraints, such as the restriction of Internet access and/or content filtering, but also cultural constraints and restrictions as part of religious beliefs and convictions, as well as the influence of social systems and political philosophies. Murphy (2006) emphasizes that different cultures have different priorities, for example, political influences and the 'ebb and flow' of social demands/needs that govern the acceptance and resistance to ICT. The results of this study support the hypothesis that the influence of education and the degree of government regulation in the Middle East, through the regulation and deregulation of the development and expansion of ICT infrastructures, has a direct impact on the viability of ICT and ultimately on economic freedom. Subsequently, governments are instrumental in the social and economic growth and development of their countries.

In terms of ICT and economic development, policymakers in the region as well as planners and decision makers in the private and public enterprises should consider ICT expansion from the perspective of acquiring R&D and knowledge-based services in order to create an environment that supports new business opportunities, enhances productivity, improves access to information, improves administration as well as product management quality control, and facilitates collaboration with other companies (Kuwayama, Ueki, and Tsuji, 2005). For example, in 2003, the UAE initiated the construction of “Free Trade Zones”, tax-free zones to all companies participating in the community, including Dubai’s “Internet City” (TBS Journal, 2001). This community is currently the host of major, international, ICT-based corporations. Bontis (2004) points out that research and development is a key parameter in the nation’s future intellectual wealth, or so-called renewal capital. This significance comes from the direct relationship between the success of a country’s future development and the effectiveness of its R&D sector.

Chapter 9: Contribution, Reflections and Future Study

The motivation of this research was to develop an understanding of ICT expansion is impacting on democratic freedoms in the Islamic countries of the Middle East. The research was designed as a set of empirical investigations into three dimensions of democratic freedoms: (a) political rights and civil liberties; (b) economic freedom; (c) freedom of communication and freedom of the press. In this chapter, I will explain the main challenges I encountered in conducting this research. I will also summarize the contributions of this research to the field of IS, and in particular, ICT for development. Finally, in the closing section of this chapter I will outline some potential for future research.

9.1 Research Challenges

Since a traditional questionnaire study was not appropriate for empirically interrogating the questions of this thesis, initiating a non-traditional research study was not as straightforward as other information systems research. For conducting the projects of this study I had to decide on using archival data. I encountered four main challenges of finding appropriate data providers, conflicting reports, measurement methods and statistical analysis techniques.

The first challenge was the limited number of reliable data sources for various indicators of this study. While data providers of this study are among the most respected and well-cited within the research community (e.g., Freedom House, Heritage Foundation, ITU, UNCTAD, UNDP, World Bank), there were some gaps in data for Middle Eastern countries. Some scholars have also pointed to these types of difficulties when studying countries outside the western nations (Feng, 2003; Vega-Gordillo and Alvarez-Arce, 2003). Freeman (2002) argues that indices provided by the Fraser Institute, Heritage Foundation/WSJ, and Freedom House for measuring how a given economy is performing in regards to an ideal competitive system have their own weaknesses in the sense that they ignore the complex nature of relationships among variables. Still other have criticized the indices of Political Rights and Civil Liberties provided by Freedom House stressing that the weighting scores of countries and the mechanisms used for such

weightings are subject to debate (Minier, 1998; Durham, 1999; Freeman, 2002; Feng, 2003; Vega-Gordillo and Alvarez-Arce, 2003).

The second issue was related to the conflicting reports on scores and values of indicators for some of the Middle Eastern countries of this study. This was in particular challenging since the number of countries of this study was limited to eleven countries. The ultimate problem of using different measurements could have had unpredictable outcomes. To overcome the problem it was necessary to continually check newer versions of the ITU databases for revised statistics. Table 9.1 gives some examples of revisions to data in the ITU database between 2006 and 2009. While these variations on provided data may not have major impacts on the regression analysis and empirical results covering global studies, it could have unpredicted outcomes when the number of countries in study is limited, or when changes in variables are small, and/or when the selected regression methods are not appropriate. To illustrate, in table 9.1 there is a difference of 5.88 units of cell phone users (per 100 inhabitants) for Saudi Arabia between ITU's 2006 and 2009 reports. Within the context of the Middle East this difference is important because it is almost 1.8 times larger than the total number of Yemen's cell phone users per 100 inhabitants in year 2003. The impact of these variations was resolved by choosing robust regression methods which are not sensitive to these variations.

Table 9.1: Mobile cellular telephone subscribers per 100 inhabitants

Mobile cellular telephone subscribers per 100 inhabitants (year 2005)	ITU report 2006	ITU report 2007	ITU report 2009
Iran	10.39	12.89	12.03
Saudi Arabia	54.12	57.64	60.00

Source: ITU World Telecommunication/ICT Indicators (2006; 2007; 2009a)

The third challenge was related to finding the best measurement method for evaluating the level of economic freedom in each country. Two organizations, Heritage Foundation and the Fraser Institute provide indices for economic freedom on a global scale. While the Heritage Foundation had rankings for most of the Middle Eastern countries in this study, unfortunately, the Fraser Institute had a less complete set of data. In order to conduct a robust empirical analysis I used data from multiple sources, whenever they

were available. This provided a better measure of the performance of each country in regards to the variable in question. For example since data for Press Freedom for the Middle Eastern countries were available from two independent sources namely the Freedom House and Reporters Without Borders, I used the aggregated values to measure the level of Press Freedom.

Finally, the fourth challenge that I confronted which took considerable amount of time to resolve was the selection of suitable robust regression methods. The selection of a regression method that provides robust results (low sensitivity to small changes of variables) is crucial when working with archival data. After reviewing papers on statistical methods published in premier journals and testing different regression methods I realized that I needed to use different but interrelated regression methods (2SLS and 3SLS) for the different studies presented in chapters 4 and 5. In addition, due to the complex nature on the impact of ICTs on economic freedom the best regression method was 2SLS-IV (IV=Instrumental Variable). As discussed in chapter 8, IV method is more widely used in econometrics than in other applied areas of statistics. The reason for selecting this method was to ensure that the endogenous variable (growth of GDP per capita) was not correlated with the error term.

As described above, this study does not claim that it has provided an exact estimation of the variables (PRCL, EDU, etc); precise assessments require multiple independent sources, which in all cases were not available. The existing data from the standard international databases along with the selected regression methods (2SLS, 3SLS, and 2SLS-IV) are used as a means of measuring the overall performance of countries in the Middle East with regard to positive and negative aspects of ICTs and democratic freedoms combined with the impact of Internet filtering on such developments.

9.2 Contributions of the Research

While there are many empirical studies of the impact of ICTs on social, political and economic development for other developing regions, such as Asia-Pacific, Latin America, and Africa, there are relatively few studies of the Middle East. The main contribution of this research has been to expand knowledge about the impact of ICT

expansion in this region. This study makes seven key contributions to the body of knowledge and our understanding of how ICTs impact socio-political and economic developments.

First, this thesis investigated the relationship between the global expansion of ICT and the level of democracy within each nation. The study analyzed the archival data on 146 countries from 1995 to 2005, which was the period-of-time of explosive global ICT expansion. Some important findings of this study are: (a) there is a growing digital divide in democratic freedoms among countries; (b) in spite of rapid ICT expansion in some countries, internet filtering is having a significant impact on democratic freedoms and digital divides. While there are many thoughtful attempts made to “quantify” and “qualify” the global digital divide with different conceptual frameworks, sets of variables and methodologies (e.g., Norris, 2001; Wong, 2002; Tipton, 2002; Grubestic and Murray, 2002; Brown and Licker, 2003; Oyelaran-Oyeyinka et al., 2003; Dutton et al., 2004; Barroso and Martinez, 2005; Dewan et al., 2005; Guillén and Suárez, 2005; Lu, 2005; Cava- Ferrerueta et al., 2006; Yap et al., 2006; Dwivedi and Lal, 2007; Hitt and Tambe, 2007; La Rose et al., 2007; Picot and Wernick, 2007; Robertson et al., 2007; Zhao et al., 2007; Trkman et al., 2008; Howick and Whalley, 2008; Stahl, 2008c), this study developed and tested a new model for measuring each country’s progress in terms of democratic freedom on a global scale. I call this model the *Index of E-democracy Opportunities (IEO)*. The IEO model is useful for the future research since it provides a metric to quantify the progress of countries in the context of e-democracy. In addition this study shed light on the notion of global digital divides by considering major determinates discussed in literature to explain such divides from the perspectives of e-democracy and in particular the position of the Middle Eastern countries in this global ranking.

The *second* contribution is related to the impact of ICTs on social freedom and political democracy in the Middle East. Using a set of regression analyses, this study developed and tested a set of theoretical models for analyzing the impact of ICT expansion on the eleven Middle Eastern countries. The results show a reduction in the

digital divide between this region and other developed countries, and that ICT expansion has had a positive impact on promoting democracy and freedom of expression in this region which suffers most from political, social and global conflicts (Freedom House, 2006; Reporters Without Borders, 2005). By applying appropriate theoretical models (discussed in chapters 5 through 9) this empirical study was able to locate three different approaches in regards to ICT development in the Middle East: a) countries that view ICT development through the lens of economic implications; b) countries that view ICT development from the lens of national security and Islamic ideology; and c) countries that view ICT development not only from the lens of economic development but also as a vehicle for social integration. In this context this research addresses an important topic and presents marginal but significant contributions to theory and practice.

The *third* contribution addresses the impacts of ICTs on economic freedom which have been largely overlooked in the development literature that has focused more on the bi-directional relationships between democracy and economic freedom. This study developed and tested a theoretical model for assessing the impact of ICT expansion on economic freedom in the eleven Islamic Middle Eastern countries. Very few studies in economic, managerial, industrial and information systems journals discuss the impacts of ICTs on socio-political and economic freedoms. In this regard, this research is unusual. The results of this study indicate that there is a significant and positive link between the growth and expansion of ICTs and economic freedom in the Middle East - in particular those Middle Eastern countries that were successful in liberalizing their ICT infrastructure. Not only were these countries more successful in bridging the digital divide but they were also able to incorporate ICTs in their economic development strategies.

Fourth, while the results of many empirical on the impact of education on ICT expansion are inconclusive (see Hargittai, 1999; Norris, 2000; Kiiski and Pohjola, 2001; Balamoune-Lutz 2003; Shih et al., 2008), a few studies have found a positive impact of education on the expansion of ICTs on both global and regional levels. The results of the empirical studies of this thesis show a strong positive and statistically significant

relationship between education attainments and the expansion of ICTs (see Chapters 5 and 8). In this respect this thesis contributes to the body of knowledge.

Fifth, this study shows that ICTs represent a source for emancipation among the citizens of the Middle East. The increased number of bloggers in the Middle East and their emancipatory roles in communication discourse (discussed in chapter 7) is an indication of the power of ICTs on four major components of democracy namely communication, accountability, transparency and participation (see figure 2.1). The study demonstrated that the blogospheres in the Middle East and in particular in Iran have been effective communication channels among citizens in a time that critical and liberal newspapers were restricted and the official media (print and broadcasting) are under heavy governmental control. By applying the hermeneutic content analysis, the study was able to demonstrate the positive impacts of bloggers in Iran in participating in democratic movement and mobilizing citizens in communication discourse.

Sixth, In particular this thesis shed light on the role of ICTs in empowering women in a gender segregated region such as the Middle East in their struggles for a more just and fair society. As argued by Trauth and Howcroft (2006) while the positivist epistemology is mainly focused on discovering whether and where there are gender differences in ICTs; and the interpretive studies are focused on understanding how these gender differences come about through the context and observations; the objective of critical research is to investigate why gender inequality exist by challenging the power relations for the purpose of emancipation. The study has not only found the role of ideology in discriminating and limiting women's participation in educational and occupational attainments in societies such as Iran, but also it demonstrated the power of Internet (e.g., services such as social networking site and blogging) in emancipating and mobilizing women for a better and just society.

The *seventh*, the contribution of this study is the critical interrogation of justifications offered by authorities for imposing ICT content filtering and state censorship. While previous studies applied Critical Discourse Analysis (CDA) for interrogating validity

claims for technology selection and implementation within institutions of democratic countries (see Cukier et al., 2008; 2009 and Stahl, 2007), this study was among the few studies to apply this methodology to analyze policy claims in non-democratic countries. The results of this study show that filtering and state censorship the Middle Eastern countries is justified through the lens of ideology which ultimately undermines not only citizens' rights to create, access, utilize and share information and knowledge but also the future development of ICTs. This thesis argues that ICT filtering is imposed to serve the political agendas of small but powerful Islamic elites in order to undermine citizens' capacities to pursue their democratic goals. In this respect this study contributes to the body of knowledge and our understating about the extent to which the Critical Social Theory in general and the CDA methodology in particular can be applied to interrogate ideological claims and to emancipate actors in the context of non-democratic societies.

9.3 Future Research and Remarks

The empirical studies of this thesis were mainly focused on understanding how the relationships between ICT expansion and other parameters influence socio-political and economic freedom within the context of the Islamic Middle Eastern countries. This study was limited to a group of variables such as education, GDP per capita, institutional resistance, and filtering. However, it excluded other parameters that may directly or indirectly impact such an expansion. For example, this study did not investigate the role of political (in)stability on freedom and democracy and/or the expansion of ICTs. As a region, the Middle East has suffered from many regional and global conflicts. As discussed before, during the last three decades regional conflicts have had devastating social, political, and economic impacts on many countries of this region and on the region as a whole. The UNCTAD (2007) report pointed out that these conflicts constitute major risk factors toward social and economic development. In addition, the activities of violent extremists and religious fundamentalists in the region have intensified during the last two decades. As discussed earlier ICTs provide tools and services for increased citizens' participation in communicative discourse and political involvement. The study of blogging has also shown how the Internet can function as a public sphere (Hurrell, 2005), give a voice to the voiceless, and engage more people in political dialogues about the

matters of concern. It would also be interesting to investigate how the Internet could provide a medium for public discourse on other issues such as peace, security, stability, the reduction of terrorism and violent religious fundamentalism. The younger generation particularly bloggers in the region have spoken out against violence. For example, Etling et al. (2009) point out that terrorism is one of the main issues discussed among many bloggers in the region. However, when discussing terrorism, Arab bloggers are overwhelmingly critical of violent extremists. More research is needed in this area, particularly with regards to two countries: Iraq and Afghanistan.

In the Middle East, the role of bloggers is becoming more and more important as many traditional media outlets are operating under strict government controls. It is also imperative that future research illuminate the role of ICTs as an empowering media in women's rights in the region. Huyer and Tatjana (2003) argue that ICTs have potentials for the empowerment of women by providing them access to knowledge and the opportunities to involve in decision-making processes and exercise instances of power. This study has also illustrated the role of ICTs in empowering women (cf. Chapter 7). Although it was limited to the case of Iran, the lessons learned can provide valuable insights for studying the role of ICT in the women's movement in other Middle Eastern countries.

Measuring the efficiency of ICT usage is another interesting area for future research. While investigating ICT efficiency in the Middle East was beyond the scope of this thesis, the results of this study show that a through investigation in this area can contribute to better understating of the expansion of digital communities in the Middle East despite governments restrictions. It can also be argued while data provided by the international agencies such as ITU provide a good basis for understanding the pits and falls of ICT development across the region, measuring ICT efficiency opens up further opportunities for research in ICT resource management particularly in the area of economic, social and political developments.

Finally, it is important to note that future research should investigate the potential causal relationships among the variables of this study. This can enrich our understanding of how the degree of economic freedom and democracy, for example, impact ICT expansion in the long run. Similarly, future research may apply a more dynamic approach

by linking the current level of IEO index to prior IEO levels. Another direction for potential research is to conduct an extended analysis of the relationship between ICT expansion and R&D to successfully enter into the global market within the notion of FDI outflow, particularly the importance of South-South outflow; a tendency that has already started in the Middle East.

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References

- Abootalebi, A. (2004). Iran's Struggle for democracy continues: An evaluation of twenty-five years after the revolution. *Middle East review of International Affairs Journal*, 8(2), p. 38-47.
- Adams, S. (2000). Computer-based Cooperative, Collaborative and Individual Learning: a report of research, in K. E. Sparks and Simonson M. (Eds.) *22nd Annual Proceedings of Selected Research and Development Papers*. Long Beach: The National Convention of the Association for Educational Communications and Technology.
- Addison T. and A. Heshmati (2003). "The New Global Determinants of FDI Flows to Developing Economies: The Impacts of ICT and Democratization", WIDER Discussion Papers.
- Agence France Presse (2008). "Iran blocks access to over five million websites". Available at: <http://newsx.com/story/35611> (accessed January 25, 2009).
- Aghion, P. and Howitt, P. (1998). On the macroeconomic effects of major technological
- Albrecht, S. (2006). Whose Voice is Heard in Online Deliberation? A study of participation and representation in political debates on the Internet, *Information, Communication & Society*, 9(1), 62-82.
- Alesina, A. and Perotti, R. (1994). The Political Economy of Growth: A Critical Survey of Recent Literature. *World Bank Economic Review*, 8(1994), 351-371.
- Al-Raya (2010). "Al-Azhar Fatwa Bans Facebook", Available in English from: http://www.thememriblog.org/blog_personal/en/24434.htm (accessed March 30, 2010).
- Alterman, J.B. (2000). The Middle East's Information Revolution, *Current History*, 99(633), 21-26.
- Alterman, J. B. (2005). IT comes of age in the Middle East: Focus on IT and diplomacy. *Foreign Service Journal*, 82(12), 36-43.
- Alzouma, G. (2005). Myths of Digital Technology in Africa Leapfrogging Development?, *Global Media and Communication*, 1(3), 339-356.
- American University (n.d.) "Information Technology in UAE: Liberalization and Deregulation". Available at: <http://www.american.edu/carmel/lr2962a/liberal.html> (accessed December 5, 2008)
- Amir-Ebrahimi, M. (2004). "Bad Jens, Iranian Feminist Newsletter". Available at: <http://www.badjens.com/rediscovery.html> (accessed April 26, 2008)
- Andonova, V. (2006), Mobile Phones, the Internet and the institutional environment, *Telecommunication Policy*, 30(2006), 29-45.
- Annette, J. (2003). Community, politics and citizenship education, in: Lockyer, A., Crick, B. & Annette, J. (Eds) *Education for Democratic Citizenship: issues of theory and practice*, Aldershot: Ashgate, 139-148.
- ArabDataNet (2002). "Qatar: Beyond Oil and LNG". Available at: <http://www.mafhoum.com/press4/125E15.htm> (accessed May 29, 2007).
- Aricak, T., Siyahhan, S., Uzunhasanoglu, A., Saribeyoglu, S., Ciplak, S., Yilmaz, N., and Memmedov, C. (2008). Cyberbullying among Turkish Adolescents. *CyberPsychology & Behavior*, 11 (3), 253-261.
- Arnot, M. and Dillabough, J. A. (2000). *Challenging democracy : international perspectives on gender, education and citizenship*, London: RoutledgeFalmer.

- Avgerou, C. (2005). Doing Critical Research in Information Systems: Some Further Thoughts, *Information Systems Journal*, 15, 103-109.
- Aviram, A. and Comay, O. (2000). "From 'Computers in the Classroom' to the Critical Radical Adaptation of Educational Systems to the New Emerging ICT Culture", in Proceedings of the EDEN Fourth Open Classroom Conference, Barcelona, Spain, November 19-21
- Aviram, A. and Talmi, D. (2005). The Impact of Information and Communication Technology on Education: the missing discourse between three different paradigms, *E-Learning*, 2(2), 161-191
- Ayres, M. J. (1999). From the Streets to the Internet: The Cyber-Diffusion of Contention, *The ANNALS of the American Academy of Political and Social Science*, 566(1), 132-143
- Backus, M. (2001). "E-Governance and Developing Countries – Introduction and Examples. Research Report No. 3", April 2001. International Institute for Communication and Development (IICD), The Netherlands.
- Bahmani, B. (2005). "The revolution is here." Available at: <http://www.iranian.com/BruceBahmani/2005/July/Kiosk/index.html> (accessed June 5, 2007).
- Baliamoune-Lutz, M. (2003). An analysis of the determinants and effects of ICT diffusion in developing economies. *Information Technology for Development*, 10(3), 151-169.
- Balkin, M. J. (2004). *Digital Speech and Democratic Culture: A Theory of Freedom of Expression for the Information Society*, *New York University Law Review*, 79 (1), 1-55.
- Bandari, R. (2008). "Iran's Virtual Crackdown." Available at: <http://www.opendemocracy.net/blog/2008/05/23/irans-virtual-crackdown> (accessed April 11, 2009).
- Barnes, H. and Kasse, M. (1979). *Political Action: Mass Participation in Five Western Democracies*. Sage, Beverly Hills.
- Barrell, R., and Pain, N. (1997). Foreign direct investment, technological change, and economic growth within Europe. *Economic Journal*, 107(445), 1770–1786.
- Barro, R. and Sala-i-Martin, X. (1995). *Economic Growth*, New York: McGraw- Hill.
- Barro, R.J. (1999). Determinants of Democracy, *Journal of Political Economy*, 107(6), 158-183.
- Barro, R.J. (1991). Economic Growth in a Cross Section of Countries, *The Quarterly Journal of Economics*, 106 (2), 407-443.
- Barro, R.J. (1997). *Determinants of Economic Growth: A Cross-Country Empirical Study*, Cambridge MA: MIT Press.
- Barroso, J.L.G and Martinez, J. P. (2005). "The geography of the digital divide: broadband deployment in the Community of Madrid", *Univ Access Inf Soc*, 3, 264-271.
- Barzilai-Nahon, K. and Barzilai, G. (2005). Cultured Technology: The Internet and Religious Fundamentalism, *Information Society*, 21(1), 25-40.
- Beach, W. and Miles, A.M. (2006). Explaining the Factors of the Index of Economic Freedom, 2006 Index of Economic Freedom, The Heritage Foundation and Wall Street Journal.
- Becchetti, L., Paganetto, L. and D. A. Bedoya (2003). "ICT Investment, Productivity and Efficiency: Evidence at Firm Level Using a Stochastic Frontier Approach", CEIS Tor Vergata - Research Paper Series, 10(29).

- Beck, N. and Katz J.N. (1995), What to do (not to do) with time-series cross-section data, *American Political Science Review*, 89, 634–47.
- Becker, T.(2001). Rating the impact of new technologies on democracy, *Communications of the ACM*, 44(1), 39-43.
- Beilock, R. and D. V. Dimitrova (2003). An exploratory model of inter-country Internet diffusion, *Telecommunications Policy*, 27(3-4), 237-252.
- Belsley, D. A. (1998). Two- or three-stage least squares? *Computer Science in Economics and Management*, 1(1), 21-30.
- Benhabib, J. and Spiegel, M. (1994). The Role of Human Capital in Economic Development: Evidence from Aggregate Cross-Country Data. *The Quarterly Journal of Economics*, 34, 143-173.
- Benkler, Y. (2006). *The Wealth of Networks: How Social Production Transforms Markets and Freedom*, Yale University Press.
- Bennett, D. and Fielding, P. (1997). *The Net Effect: How Cyberadvocacy is Changing the Political Landscape*, Merrifield: e-Advocate Press.
- Bentivegna, S. (2006). Rethinking Politics in the World of ICTs, *European Journal of Communication*, 21, 331-343.
- Berggren, N. (2003). The benefits of economic freedom: A survey, *The Independent Review*, 8(2), 193–211.
- Berman, A. (2009). “Iran's Twitter Revolution.” Available at: <http://www.thenation.com/blogs/notion/443634> (accessed June 17, 2009)
- Berry, J. (1984). *The Interest Group Society*. Boston: Little, Brown.
- Bimber, B. (1998). The Internet and Political Transformation: Populism, Community, and Accelerated Pluralism, *Polity*, 31(1), 133-160.
- Bimber, B. (2001). Information and political engagement in America: The search for effects of information technology at the individual level, *Political Research Quarterly*, 54(1), 53-67.
- Boghrati, N. (2007). “Proxy Battle To Counter Internet Filtering.” Available at: <http://www.rferl.org/articleprintview/1077785.html> (accessed August 22, 2007)
- Bonchek, S. M. (1997). “From Broadcast to Netcast: The Internet and the Flow of Political Information”, PhD Thesis in the subject of Political Economy and Government, Harvard University, Cambridge.
- Bontis, N. (2004), National Intellectual Capital Index: A United Nations initiative for Arab Region, *Journal of Intellectual Studies*, 5(1), 13-39
- Bortolotti, B., D'Souza, J., Fantini, M. and Megginson, W.L. (2002). Privatization and the sources of performance improvement in the global telecommunications industry, *Telecommunications Policy*, 26, 243-268.
- Bosi, L. (2007). Social Movement Participation and the “Timing” of Involvement: The Case Of The Northern Ireland Civil Rights Movement, *Conflicts and Change*, 27, 37–61.
- Boylaud, O. and Nicoletti, G. (2000). “Regulation, Market Structure and Performance in Telecommunications”, Economics Department working paper No. 237, Paris, Organization for Economic Cooperation and Development.
- Braa, J. Hanseth, O. Heywood, A. Mohammed, W. and Shaw, V. (2007). Developing Health Information Systems in Developing Countries: The Flexible Standards Strategy, *MIS Quarterly*, 3(12), 381-402.

- Brown, I., Collins, T., Maleka, B., Morrison, D., Muganda, N., and Speight, H. (2007). Global Diffusion of the Internet XI: Internet Diffusion and Its Determinants in South Africa: The First Decade of Democracy (1994-2004) and Beyond, *Communications of the Association for Information Systems*, 19(2007), 142-182.
- Brown, I., and Licker, P. (2003). Exploring differences in internet adoption and usage between historically advantaged and disadvantaged groups in South Africa, *Journal of Global Information Technology Management*, 6(4), 6-26
- Brücher, H. and Baumberger, P. (2003). Using mobile technology to support eDemocracy. Proceedings of the 36th Annual Hawaii International Conference on System Sciences, Hawaii.
- Buchner, B. (1988). Social control and the diffusion of modern telecommunication technologies: A cross-national study, *American Sociological Review*, 53(3), 446-453.
- Budde Research (2010). "Qatar - Telecoms, Mobile, Broadband and Forecasts." Available at: <http://www.budde.com.au/Research/Qatar-Telecoms-Mobile-and-Broadband.html&r=51> (accessed March 8, 2010)
- Burrows, R. Nettleton, S., and Pleace, N. (2000). "Can public policy widen participation in cyberspace? Networks, interests and initiatives in North-West England", Proceedings of DIAC 2000 Conference Shaping the Network Society, Seattle.
- Calhoun, C. (1999). *Critical Social Theory: Culture, History, and Challenge of Difference*, Oxford: Blackwell Publishing.
- Cameron, C. A. and Trivedi, K. P. (2009). *Microeconometrics Using Stata*, Texas: Stata Press Publication.
- Carnaby, P. and Rao, S. (2002). Information is the currency of democracy: A New Zealand perspective, *Library Management*, 8(9), 401-406.
- Caselli, F., and Coleman, W.J. (2001). Cross-country technology diffusion: The case of computers, *American Economic Review*, 91, 328-335.
- Caselli, F., Esquivel, G. and Lefort, F. (1996). Reopening the convergence debate: a new look at cross-country growth empirics, *Journal of Economic Growth*, 1(3), 363-89.
- Castells, M. (1996). *The rise of the network society*. Oxford: Blackwell.
- Castells, M. (1997). *The Power of Identity: The Information Age: Economy, Society and Culture*, Volume II, Oxford: Blackwell.
- Castells, M. (2000a). Materials for an exploratory theory of the network society, *British Journal of Sociology*, 51(1), 5-24.
- Castells, M. (2000b). *The Rise of the Network Society*, (2nd ed.). U.S.: Blackwell Publishing.
- Castells, M. (2001). *The Internet Galaxy*, Oxford: Oxford University Press.
- Cava-Ferreruela, I. and Alabau-Muñoz, A. (2006). Broadband policy assessment: A cross-national empirical analysis, *Telecommunications Policy*, 30 (8-9), 445-463.
- Cavanaugh W. J. (2000). E-Democracy: Thinking About the Impact of Technology on Civic Life, *National Civic Review*, 89(3), 229-234.
- CDG (1999). "Center for Democracy and Governance: The Role of Media in Democracy: A Strategic Approach." Available at: http://www.usaid.gov/our_work/democracy_and_governance/publications/pdfs/pnace630.pdf (accessed June 11, 2006)
- Cette, G., Kokoglu, Y. and Mairesse, J. (2000). The Diffusion of Information and
- Chadwick, A. (2003). Bringing E-Democracy Back. In: Why it Matters for Future Research on E-Governance, *Social Science Computer Review*, 21, 443-455.

- Chadwick, A. and May, C. (2003). Interaction between states and citizens in the age of the Internet: 'e-government' in the United States, Britain and the European Union, *International Journal of Policy, Administration and Institutions*, 16(2), 271-300.
- Change for Equality (2008). "Defense of Women's Rights Not Allowed!" Available at: <http://www.changeforequality.info/english/spip.php?article399> (accessed November 25, 2008).
- Chowdhry, S. (2007). "Foreign Direct Investment (FDI) on the Rise in OIC Economies." Available at: http://www.dinarstandard.com/current/OIC_FDI040907.htm (accessed April 22, 2008).
- Cigler, A. and Burdett, L. (1998). *Interest Group Politics*, 5th Edition, Congressional Quarterly Press, Washington.
- Cleaver, H. (1998). "The Zapatistas and the International Circulation of Struggle: Lessons Suggested and Problems Raised." Available at: <http://www.eco.utexas.edu/Homepages/Faculty/Cleaver/lessons.html> (accessed April 8, 2006).
- Cleaver, H. (2000). "The Zapatista Effect: The Internet and the Rise of an Alternative Political Fabric." Available at: <http://www.uff.br/mestcii/cleaver.htm> (accessed September 25, 2007).
- Clift, S. (2003). "E-Democracy, E-Governance and Public Net-Work." Available at: <http://www.publicus.net/articles/edempublicnetwork.html> (accessed January 8, 2006)
- Clift, S. (2004). "E-Government and Democracy: Representation and Citizen Engagement in the Information Age", report prepared for United Nations – UNPAN/DESA, 2003, World Public Sector Report
- Cohen, D., Soto, M. (2007). Growth and human capital: good data, good results, *Journal of Economic Growth*, 12(1), 51-76.
- Colecchia, A and Schreyer, P. (2001). ICT investment and economic growth in 1990s: is the United States a unique case?, STI Working Papers 2001/7, OECD, Paris.
- Coleman, S. (2003). "The Future of the Internet and Democracy: Beyond Metaphors, Towards Policy, in OECD", 2003, Promise and Problems of E-Democracy: Challenges of Online Citizen Engagement, Paris: OECD, 143-162.
- Cooper, M. (1994). *Spreading Hope for Grassroots Change*, Westfield: Open Magazine Pamphlet Series.
- Corbin, J. (2009). "Iran: Rap, blogs and the political mix." Available at: http://news.bbc.co.uk/2/hi/middle_east/8088042.stm (accessed June 9, 2009).
- Correa, L. (2003). "The Economic Impact of Telecommunications Diffusion on UK Productivity Growth", Working Paper 492, Department of Economics at Queen Mary, University of London.
- Court, J. and Cotterrell, L. (2004). "What Political and Institutional Context Issues Matter for Bridging Research and Policy? A Literature Review and Discussion of Data Collection Approaches", UK, London: Overseas Development Institute.
- Cukier, W., Ngwenyama, O., Bauer, R. and Middleton, C. (2008). A critical analysis of media discourse on information technology: preliminary results of a proposed method for critical discourse analysis, *Information Systems Journal*, 19, 1-22.
- Cukier, W., Hodson, J., and Ryan, M. P. (2009). A Critical Discourse Analysis of Amazon.com's Rise in the Media 1995-2008, in proceedings of the 2009 World Congress

- on Privacy, Security, Trust and the Management of e-Business, August 25-27, Saint John, New Brunswick, Canada.
- D'Souza, J. and Megginson, L. W. (2000). Sources of Performance Improvement in Privatized Firms: A Clinical Study of the Global Telecommunications Industry, Working paper, University of Oklahoma, Norman, O.K.
- Dahel, R. (2001). Telecommunications privatization in Arab countries: An overview, Arab Planning Institute Available at: <http://www.arab-api.org/wps/wps0107.htm> (accessed May 5, 2008).
- Dahlgren, P. (2005). The Internet, Public Spheres, and Political Communication: Dispersion and Deliberation, *Political Communication*, 22, 147-162.
- Danowski, J. (1991). Organizational Media Theory. In Anderson, A. J. (ed.) *Communication Yearbook*, vol. 14, Newbury Park, CA: Sage.
- Davenport C. (2007). State Repression and the Domestic Democratic Peace. New York/Cambridge, UK: Cambridge University Press.
- Daveri, F. (2002). The New Economy in Europe, 1992-2001, *Oxford Review of Economic Policy*, 8(3), 345-362.
- Dayem, A. M. (2009). "Attempting to Silence Iran's 'Weblogistan'", The Nieman Report, Summer 2009. Available at: <http://www.nieman.harvard.edu/reportsitem.aspx?id=101480> (accessed September, 22, 2009).
- De George, R. T. (1999). *Business ethics* (5th Ed.), Upper Saddle River, NJ: Prentice Hall.
- De Haan, J., and Siermann, C. L. J. (1996). New Evidence on the Relationship between Democracy and Economic Growth, *Public Choice*, 86 (1), 175-98.
- De Haan, J. and Sturm, J.E. (2000). On the relationship between economic freedom and economic growth, *European Journal of Political Economy*, 16(2), 215-241.
- De Haan, J. and Sturm, J.E. (2006). How to Handle economic freedom: Reply to Lawson, *Econ Journal Watch*, 3(3), 407-410.
- De la Fuente, A. and Doménech, R. (2001). Schooling data, technological diffusion and the neoclassical model, *American Economic Review Papers and Proceedings*, 9(12), 323-327.
- De la Fuente, A. and Doménech, R. (2006). Human capital in growth regressions: how much difference does data quality make? *Journal of the European Economic Association*, 4(1), 1-36.
- De Vanssay, X., and Spindler, Z. A. (1994). Freedom and Growth: Do Constitutions Matter? *Public Choice*, 78, 359-72.
- De Vanssay, X., Hildebran, V. and Spindler, Z.A. (2004). "Institutional Foundations of economic freedom: A time-series cross-section analysis". Independent Institute working paper 51.
- Dedrick, J., Gurbaxani, V. and Kenneth L. Kraemer, K. L. (2003). Information Technology and Economic Performance: A Critical Review of the Empirical Evidence, *ACM Computing Surveys*, 35(1), 1-28.
- Delbridge, R. (2007). Explaining Conflicted Collaboration: A Critical Realist Approach to Hegemony, *Organization Studies*, 28(9), 1347-1357.
- Dellinger, B. (1995). "Views of CNN Television News: A Critical Cross-Cultural Analysis of the American Commercial Discourse". Available at <http://users.utu.fi/bredelli/cda.html> (accessed November 18, 2008)

- DeLong, J.B. and Summers, L.H. (1991). Equipment Investment and Economic Growth, *Quarterly Journal of Economics*, 106(2), 445-502.
- Dertouzos, M. (1997). *What Will Be: How the Information Marketplace Will Change our Lives*, San Francisco: Harper.
- Dewan, S. and Kraemer, K. (2000). Information Technology and Productivity: Evidence from Country Level Data, *Management Science*, 46(4), 548–562.
- Dewan, S., Ganley, D. and Kraemer, K.L. (2005). Across the Digital Divide: A Cross-Country Multi-Technology Analysis of the Determinants of IT Penetration. *Journal of the Association for Information Systems*, 6(12), 409-432.
- Dewey, J. (1952). *Democracy and Education: an introduction to the philosophy of education*. New York: Macmillan.
- DigitalNatives (2008). “An Analysis of the 2008 U.S. Presidential Election Based on Camphone-Video Broadcasts.” Available at: <http://blogs.law.harvard.edu/digitalnatives/2008/11/26/in-the-moment-an-analysis-of-the-2008-us-presidential-election-based-on-camphone-video-broadcasts/> (accessed May 10, 2009)
- Doherty, B. (1999). *Change the world via e-mail*. New Statesman: xviii-xix.
- Doostdar, A. (2004). The Vulgar Spirit of Blogging: On Language, Culture, and Power in Persian Weblogestan. *American Anthropologies*, 106(4), 651-662.
- Drezner, D.W., Farrell, H. (2004). “The power and politics of blogs”. American Political Science Association Annual Conference
- Durham, B. J. (1999). Economic Growth and Political Regimes, *Journal of Economic Growth*, 4, 81–111.
- Dutton, W., Gillett, S.E., McKnight, L., and Peltu, M. (2004). Bridging broadband Internet divides: reconfiguring access to enhance communicative power. *Journal of Information Technology*, 19, 28-38.
- Dwivedi, Y., & Lal, B. (2007). Socio-economic determinants of broadband adoption, *Industrial Management & Data Systems*, 107(5), 654-671.
- Ebadi, S. (2008). “The Iranian Women’s Movement is the Most Vibrant Movement in the Middle East.” Available at: <http://www.we-change.org/english/spip.php?article336> (accessed September 20, 2008).
- EIA (2008). “Performance Profiles of Major Energy Producers 2007”, Office of Energy Markets and End Use, U.S. Department of Energy, Washington.
- Eickelman, D. (2002). Bin Laden, the Arab Street and the Middle East’s Democracy Deficit, *Current History*, 101(651), 36-39.
- Ellison, N. B., Steinfield, C., Lampe, C. (2007). The benefits of Facebook "friends:" Social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), 1143–1168.
- Engdahl, W. F. (2007). “Myanmar's “Saffron Revolution””: The Geopolitics behind the Protest Movement, Centre for Research on Globalization.” Available at: <http://www.globalresearch.ca/index.php?context=va&aid=7072> (accessed March 19, 2010)
- Erdbrink, T. (2010). Iran bans the country's two remaining official opposition parties, Available at: <http://www.washingtonpost.com/wp-dyn/content/article/2010/04/19/AR2010041903636.html> (accessed April 22, 2010).

- Escobar, A. (1999). Gender, place and networks: a political ecology of cyberspace. In W. Harcourt (Ed.), *Women@internet: creating new cultures in cyberspace*, London: Zed.
- Esfandiari, G. (2007). "Internet video tells leaders to 'Leave The Youth Alone'." Available at: <http://www.rferl.org/featuresarticle/2007/08/29da6771-bb8b-4896-a8c4-738cf37c1679.html> (accessed April 8, 2007).
- Etling B., Kelly, J., Faris, R., and Palfrey, J. (2009). Mapping the Arabic Blogosphere: Politics, Culture and Dissent, Available at: http://cyber.law.harvard.edu/publications/2009/Mapping_the_Arabic_Blogosphere (accessed December, 9, 2009).
- Evans, P. (1979). *Dependent Development: The Alliance of Multinational, State and Local Capital in Brazil*, Princeton: Princeton University Press.
- Eveland, W. R., Marton, K., & Seo, M. Y. (2004). Moving beyond "just the facts"—The Influence of Online News on the Content and Structure of Public Affairs Knowledge, *Communication Research*, 31(1), 82-108.
- Fairclough, N. (2003). *Analyzing Discourse – Textual Analysis for Social Research*. London, U.K: Routledge.
- Farr, W.K., Lord, R.A. and Wolfenbarger, J.L. (1998). Economic freedom, political freedom, and economic well-being: A causality analysis, *Cato Journal*, 18(2), 247-262.
- Fatima (2009). "Round-up of June 20-August 1 Protests in Iran from YouTube, Mideast Youth Thinking Ahead." Available at: <http://www.mideastyouth.com/2009/06/20/round-up-of-todays-protests-in-iran-from-youtube/> (accessed September 24, 2009)
- Feng, Y. (2003). *Democracy, Governance, and Economic Performance: Theory and Evidence*. Cambridge, MA: MIT Press.
- Ferdinand, P. (2000). The Internet, Democracy and Democratization, London: Frank Cass.
- Ferguson, R. and Howell, M. (2004). "Political Blogs: Craze or Convention?" *Hansard Society*, London, Available at: <http://www.hansardsociety.org.uk/blogs/downloads/archive/2007/07/27/political-blogs-craze-or-convention-july-2004.aspx> (accessed June 12, 2009).
- Feulner, J. E. (2008). 2009 Index of economic freedom, The Heritage Foundation.
- Fielding, D. (2002). Health and Wealth: A Structural Model of Social and Economic Development, *Review of Development Economics*, 6(2002), 393-414.
- Finlayson, J.G. (2005). *Habermas: A Very Short Introduction*. Oxford: Oxford University Press.
- Fink, C., Mattoo, A., and Rathindran, R. (2003). An assessment of telecommunications reforms in developing countries, *Information Economics and Policy*, 15, 443-466.
- Fiske, S. T., and Taylor, S. E., 1991. *Social Cognition*, 2nd Edition, New York: McGraw-Hill.
- Fitzpartick, T. (2000). *Building the virtual state: information technology and institutional change*. Washington, D.C.: Brookings Institute.
- Foley, P., Alfonso, X. and Al Sakka, M. (2006). Information sharing for social inclusion in England: A review of activities, barriers and future directions, *Journal of Information, Communication and Ethics in Society*, 4(4), 191-203
- Foot, K. A. and Schneider, S. M. (2002). Online action in campaign 2000: An exploratory analysis of the U.S. political Web sphere, *Journal of Broadcasting & Electronic Media*, 46(2), 222-244.

- Foster, P. (2009). "Iran election: state moves to end 'Facebook revolution'" Available at: http://technology.timesonline.co.uk/tol/news/tech_and_web/article6497569.ece (accessed June 15, 2009).
- Frazier Institute (2008). *Economic Freedom of the World: 2008 Annual Report*, Vancouver: Economic Freedom Network.
- Freedom House (2005). "Freedom in the World." Available at: <http://www.freedomhouse.org/template.cfm?page=363&year=2005> (accessed March 15, 2007)
see also: <http://www.freedomhouse.org/template.cfm?page=251&year=2005>
- Freedom House (2006). "Countries at the Crossroads 2006: Country Report – Bahrain." Available at: <http://freedomhouse.org/modules/publications/ccr/modPrintVersion.cfm?edition=7&ccprage=31&ccrcountry=111> (accessed June 18, 2007)
- Freedom House (2008). "Map of Press Freedom" Available at: <http://www.freedomhouse.org/template.cfm?page=251&year=2008> (accessed April 20, 2009) see also: http://www.freedomhouse.org/uploads/fop08/FOP_Iran.pdf
- Freedom House (2009), "Freedom of the Press. Edition 2009" Available at: <http://www.freedomhouse.org/template.cfm?page=16> (accessed June 24, 2009)
See also: Freedom on the Net, www.freedomhouse.org
- Freeman, R. (2002). Institutional Differences and Economic Performance among OECD Countries, CEP Discussion Papers.
- Frissen, P. H. A. (2002). "Representative democracy and information society - A postmodern perspective", Information Polity 7, IOS Press.
- Gamson, A.W. (1992). *Talking Politics*, Cambridge. Cambridge University Press.
- Garrett, R. K. (2006). Protest in an Information Society: A Review of Literature on Social Movements and New ICTs. *Information, Communication and Society*, 9(2), 202-224.
- Gerstenfeld, P. B., Grant, R. D., Chiang, C. (2003). Hate Online: A Content Analysis of Extremist Internet Sites, *Analyses of Social Issues and Public Policy*, 3 (1), 29–44.
- Ghana (2008). "SMS Critical in Election Monitoring in Ghana." Available at: <http://mobileactive.org/sms-critical-election-observation-ghana> (accessed January 2, 2009).
- Ghashghai, E. and Lewis, R. (2000). *Issues Affecting Internet Use in Afghanistan and Developing Countries in the Middle East*, Santa Monica CA: RAND Corp.
- Gholami, R., Añón Higón, D., Hanafizadeh, P., Emrouznejad, A. (2010). Is ICT Key to Development?, Forthcoming in *Journal of Global Information Management*, 18(1), forthcoming.
- Gholami, R., Lee, S. T. and Heshmati, A. (2006), The Causal Relationship Between Information and Communication Technology and Foreign Direct Investment. *The World Economy*, 29 (1), 43–62.
- Gibson, R. K., Ward, S. (2002). Virtual Campaigning: Australian Parties and the Impact of the Internet, *Australian Journal of Political Science*, 37(1), 99 - 129.
- Gilbreth, C. and Otero, G. (2001). Democratization in Mexico: The Zapatista Uprising and Civil Society, *Latin American Perspectives*, 28(4), 7-29.
- Gillward A. (2005). "Towards an African E-Index Household and Individual ICT Access and Usage Across 10 African Countries", Human Development Report, UNDP.

- Gimmler, A. (2001). Deliberative democracy, the public sphere and the internet, *Philosophy & Social Criticism*, 27(4), 21-39.
- Gioia, A. D. and Evelyn, E. (1990). Multiparadigm Perspectives on Theory Building, *Academy of Management. The Academy of Management Review*, 15(14), 584-602.
- Goffman, E. (1967). *Interaction Ritual: Essay on Face-to-Face Behavior*. New York: DoubleDay.
- Goldsmith, A.A. (1997). Economic Rights and Government in Developing Countries: Cross-National Evidence on Growth and Development, *Studies in Comparative International Development*, 32(2), 29-44.
- Greenland, S. (1989). Modeling and Variable Selection in Epidemiologic Analysis, *American Journal of Public Health*, 79(3), 340-349.
- Greenspan, R. (2003). "Blogging by the Numbers." Available at: <http://www.internetnews.com/stats/article.php/2238831> (accessed May 24, 2007)
- Greenstein, S.M. and Spiller, T.P. (1995). Modern Telecommunications Infrastructure and Economic Activity: An Empirical Investigation, *Industrial and Corporate Change*, 4(4), 647-665.
- Grimsley, M., Meehan, A., and Tan, A. (2005). Designing for Social Inclusion: *Computer Mediation of Trust Relations Between Citizens and Public Service Providers, People and Computers XVIII — Design for Life*, London: Springer
- Griswold, D.T. (2004). "Trading Tyranny for Freedom: How Open Markets Till the Soil for Democracy". Trade Policy Analysis 26 (January), *Cato Institute*. Available at: <http://www.freetheworld.com/papers/Griswold.pdf> (accessed May 12, 2008).
- Gross, R.D. (2003). "Civil Society Rejects Official WSIS Declaration of Principles." Available at: http://www.ipjustice.org/WSIS/Civ_Soc_WSIS_Declaration.html (accessed June 18, 2005)
- Grubestic, T. and Murray, A. (2002). Constructing the divide: Spatial disparities in broadband access. *Regional Science*, 81, 197-221.
- Guillén, M. F., Suárez, L. S. (2005). Explaining the Global Digital Divide: Economic, Political and Sociological Drivers of Cross-National Internet Use, *Social Forces*, 84(2), 681-708.
- Guislain, P., Qiang, Z.C., Lanvin, B., Minges, M. and Swanson, E. (2006). "Information and Communication for Development", *Global Trends and Policies*, The World Bank.
- Gujarati, D.N. (2003). *Basic Econometrics*. New York: Mc-Graw-Hill/Irwin.
- GulfNews (2010). "Etisalat tops 100m subscribers." Available at: <http://gulfnews.com/business/general/etisalat-tops-100m-subscribers-1.583787> (accessed March 15, 2010).
- Guillen, M.F. and Suarez, S. (2005). Explaining the Global Digital Divide: Economic, Political and Sociological Drivers of Cross-national Internet Use, *Social Forces*, 84(2), 681-708.
- Gutiérrez, L. H. (2003). Regulatory governance in the Latin American telecommunications sector, *ScienceDirect*, 11(4), 225-240
- Gwartney, J, Lawson, R. and Block, W. (1996). *Economic Freedom of the World: 1996 Annual Report*, Vancouver: The Fraser Institute.
- Gwartney, J. D., Lawson, R. A., and Holcombe, R. G. (1999). Economic Freedom and the Environment for Economic Growth, *Journal of Institutional and Theoretical Economics*, 155 (4), 1-21.

- Gwartney, J., Lawson, R. (2003). The concept and measurement of economic freedom, *European Journal of Political Economy*, 19(3), 405-430.
- Gwartney, J., Lawson, R. (2004). *Economic Freedom of the World: 2004 Annual Report*, Vancouver: The Fraser Institute.
- Gwartney, J., Lawson, R. (2006). *Economic Freedom of the World: 2006 Annual Report*, Vancouver: The Fraser Institute.
- Habermas, J. (1989a). *The Structural Transformation of the Public Sphere*, Cambridge: The MIT Press.
- Habermas, J. (1989b). *On Society and Politics: A Reader edited Steven Seidman*. Boston: Boston Press.
- Habermas, J. (2001). *On the Pragmatics of Social Interaction: Preliminary Studies in The Theory of Communicative Action*. Cambridge : The MIT Press.
- Habermas, J. (2006). Political Communication in Media Society: Does Democracy Still Enjoy an Epistemic Dimension? The Impact of Normative Theory on Empirical Research, *Communication Theory*, 16 (2006), 411–426.
- Hacker, K. and van Dijk, J. (2000). *Digital Democracy, Issues of Theory and Practice*, Sage, Thousand Oaks.
- Hafezi, P. (2009). “Iranian moderate candidate criticizes Facebook ban.” Available at: http://www.telecommagazine.com/NewsGlobe/article.asp?HH_ID=AR_5312 (accessed May 28, 2009)
- Hagen, M. (2000). Digital Democracy and Political Systems. In Hacker and Dijk (Eds.) *Digital Democracy, Issues of Theory and Practice*, Thousand Oaks: Sage, 54-69.
- Haggard, S. and Kaufman, R. (1996). *The Political Economy of Authoritarian Withdrawals, In The Political Economy of Democratic Transitions*, Princeton: Princeton University Press, 27.
- Haider, A. (2009). “What Happens After the Click? Role of Internet Information in Shaping Democratic Values”, Proceedings in the 15th Americas Conference on Information Systems (AMCIS), 6-9 August 2009, San Francisco, CA, AIS Electronic Library (AISeL), Available at: <http://aisel.aisnet.org/amcis2009/377> (accessed January, 16, 2010)
- Hale, M., Musso, J. and Weare, C. (1999). Developing digital democracy: evidence from Californian municipal web pages. In B. N., Hague & B. D., Loader (Eds.). *Digital Democracy: Discourse and Decision Making in the Information Age*, London: Routledge, 96-115.
- Hamilton, J. (2000). “Institutions, Competition and the Performance of Telecommunications Infrastructure in Africa”, PURC working paper, University of Florida, Gainesville.
- Hanke, S., and Walters, S.J.K. (1997). Economic Freedom, Prosperity, and Equality: A Survey. *Cato Journal*, 17(2), 117–46.
- Haan, J. de, and Siermann, C. L. J. (1998). Further Evidence on the Relationship between Economic Freedom and Economic Growth, *Public Choice*, 95(3/4), 363–80.
- Haan, J. de, and Sturm, J. (2000). On the Relationship between Economic Freedom and Economic Growth, *European Journal of Political Economy*, 16(2000), 215–41.
- Hanssen, G. S. (2008). E-communication: Strengthening the Ties between Councillors and Citizens in Norwegian Local Government? *Scandinavian Political Studies*, 31(3), 333-361.

- Hardy, A. (1980). The role of the telephone in economic development, *Telecommunications Policy*, 4, 278–286.
- Hargittai, E. (1999). Weaving the Western Web: Explaining differences in Internet Connectivity among OECD Economies, *Telecommunications Policy*, 23, 701–718.
- Harwit, E. and Clark, D. (2001). Shaping the Internet in China: Evolution of Political Control over Network Infrastructure and Content, *Asian Survey*, 41(3), 377-408.
- Helliwell, J. F. (1994). Empirical Linkages between Democracy and Economic Growth, *British Journal of political Science*, 24(1994), 25-48.
- Heritage Foundation (2005). 2005 Index of economic freedom, The Heritage Foundation and Wall Street Journal.
- Heritage Foundation (2008). 2008 Index of economic freedom, The Heritage Foundation and Wall Street Journal.
- Hermida, H. (2002). “Web gives a voice to Iranian women.” Available at: <http://news.bbc.co.uk/2/hi/science/nature/2044802.stm> See also: http://www.iranian.ws/cgi-bin/iran_news/exec/view.cgi/2/2705 (accessed July 7, 2006)
- Hill, K. A. and Hughes, J. E. (1998). *Cyberpolitics: Citizen Activism in the Age of the Internet*, Lanham, MD: Rowman & Littlefield.
- Hiong, G. (2006). “Digital Review of Asia-Pacific 2005/2006: Singapore”, Available at: <http://www.digital-review.org/> (accessed June 11, 2007).
- Hirschheim, R. and Klein, H. (1989). Four Paradigms of Information Systems Development, *Communications of the ACM*, 32(10),1199-1216
- Hirschheim, R. and Klein, H.K. (1994). Realizing Emancipatory Principles in Information Systems development: The case for ETHICS, *MIS Quarterly*, 18(1), 83-109.
- Hitlin, S. (2003). Values as the Core of Personal Identity: Drawing Links between Two Theories of Self, *Social Psychology Quarterly*, 66(2), 118-137.
- Hitt, L., and Tambe, P. (2007). Broadband adoption and content consumption, *Information Economics and Policy*, 19(3-4), 362-378.
- Hoff, J., Löfgren, K. and Torpe, L. (2003). “The state we are in: E-democracy in Denmark”, Information Polity 8, IOS Press.
- Hofheinz, A. (2005). “The Internet in the Arab World: Playground for Political Liberalization.” Available at: http://www.fes.de/ipg/IPG3_2005/07HOFHEINZ.PDF (accessed August 19, 2006).
- Howick, S., and Whalley, J. (2008). Understanding the drivers of broadband adoption: the case of rural and remote Scotland. *Journal of the Operational Research Society*, 59(10),1299-1313.
- Huerta, E. and Navarrete, C. (2008). Identity Meanings and Online Interactions of Hybrid Transnational Communities of Immigrants Proceedings of the Fourteenth Americas Conference on Information Systems, Toronto, ON, Canada August 14th-17th 2008
- Huntington, S. P. (1968). *Political Order in Changing Societies*, New Haven: Yale University Press.
- Huntington, S. P and Nelson, J. (1976). *No Easy Choice: Participation in Developing Countries*. Cambridge: Harvard University Press.
- Huntington, S.P. and Dominguez, J.I. (1975). Political development, In: Greenstein, F.I. and Poldby, N.W. (Eds.), *Handbook of Political Science*, vol. 3, Macropolitical Theory, Reading, Mass: Addison-Wesley.

- Hurrell, C. (2005). Shaping Policy Discourse in the Public Sphere: Evaluating Civil Speech in an Online Consultation. *Electronic Journal of e-Government*, 3(2), 67-76.
- Huyer, S. and Mitter, S. (2003). "ICTs, Globalisation and Poverty Reduction: Gender Dimensions of the Knowledge Society. Part I. Poverty Reduction, Gender Equality and the Knowledge Society: Digital Exclusion or Digital Opportunity?" Gender Advisory Board, UN Commission on Science and Technology for Development (UNCSTD). Available at: http://www.idrc.ca/uploads/user-S/10859366311partI_ICT_Mitter_Huyer.pdf (accessed May 3, 2007)
- Huyer, S. and Tatjana S. (2003). "Overcoming the Gender Digital Divide: Understanding ICTs and their Potential for Empowerment of Women", INSTRAW Research Paper Series No. 1
- Indjikian, R. and Siegal, D.S. (2005). The impact of investment in IT on economic performance: Implications for developing countries, *World Development*, 33(5), 681-700.
- International Labor Office 2001. World Employment Report 2001: Life at Work in the Information Economy. Geneva: International Labor Organization.
- Internet World Stats (2007). "World Internet Users and Population Stats". Available at: <http://www.internetworldstats.com/stats.htm> (accessed October 9, 2007).
- Iranian judiciary (n.d.). "Iranian judiciary threatens SMS campaigners." Available at: <http://www.iranmania.com/News/ArticleView/Default.asp?NewsCode=32749&NewsKind=Current%20Affairs> (accessed December 4, 2008)
- See also: http://www.textually.org/textblog/mt_search.php?IncludeBlogs=1&search=Iran
- Iran Statistical Yearbook (2002/3). Islamic Republic of Iran: Management & Planning Organization.
- Islam, S. (1996). Economic freedom per Capita Income and Economic Growth. *Applied Economic Letters*, 3, pp. 595-97.
- ITU (1997). International Telecommunications Union, World telecommunication development report 1996/97: Trade in telecommunications. Geneva: ITU.
- ITU (2005). World Telecommunication Indicators, ITU publication, v1.01.
- ITU (2007a). World Telecommunication/ ICT Indicators, Geneva: ITU Publication.
- ITU (2007b). Measuring The Information Society 2007: ICT Opportunity Index and World Telecommunication/ICT Indicators, Geneva: ITU Publication.
- ITU (2008). "International Telecoms Intelligence ITU news magazine. ICT in Qatar." Available at: <http://www.itu.int/itu-news/manager/display.asp?lang=en&year=2006&issue=02&ipage=1CTinQatar&ext=html> (accessed 5 May 2008); See also: Oman telecommunications market intelligence report 2006/2007.
- ITU (2008). World Telecommunication/ICT Indicators Database 2008, 12th Edition.
- ITU (2009a). World Telecommunication/ICT Indicators 2009, Geneva: ITU Publication
- ITU (2009b). Measuring the Information Society: The ICT Development Index, Geneva: ITU Publication.
- ITU News (2007). "Qtel agrees to acquire control of Wataniya telecom , ITU Regularity Newslog." Available at: <http://www.itu.int/ituweblogs/treg/Qtel+Agrees+To+Acquire+Control+Of+Wataniya+Telecom.aspx> (accessed April 18, 2008)
- ITU Tunis Agenda (2005). Tunis Agenda for the Information Society, World summit on the information society, Tunis.

- Jankowski, N., and van Selm (2000). The promise and practice of public debate in cyberspace. In Hacker, K. and van Dijk, J. (Eds.), *Digital Democracy: Issues of Theory and Practice*. London: Sage, 149-165.
- Jenkins, H. and Thorburn, D. (2003). *Democracy and New Media*, Cambridge: MIT Press.
- Johnson, D. G. (2007). Democracy, Technology, and Information Societies, In Goujon, P., Lavelle, S., Duquenoy, P., Kimppa, K., Laurent, V. (Eds.), *The Information Society: Innovations, Legitimacy, Ethics and Democracy*, Boston: Springer, pp. 5-16.
- Jones, A. (2001). Wired world: Communications technology, governance and the democratic uprising. In: F. Webster (ed.), *Culture and politics of the information age*. London: Routledge, 145-163.
- Jorgenson, D. W. (2003). Information Technology and the G7 Economies, *World Economics*, 4(4),139-170.
- Jorgenson, D. W., and Motohashi, K. (2005). Information Technology and the Japanese Economy, *Journal of the Japanese and International Economies*, 19 (4), 460-481.
- Jorgenson, D. W., and Stiroh, K. J. (2000). Raising the Speed Limit: U.S. Economic Growth in the Information Age, *Brookings Papers on Economic Activity*, 1, 125-211.
- Joyce, P. (2003). *The Rule of Freedom: Liberalism and the Modern City*, London: Verso.
- Juma, A. (2009). "Zain launches mobile internet services." Available at: <http://www.dailynews.co.tz/home/?n=5641&cat=home> (accessed March 4, 2010).
- Jupp, B. and Six, P. (2001). Divided by Information? *The 'digital divide' and the implication of the new meritocracy*. London: Demos.
- Kalathil, S. and Boas, T.C. (2003). *Open Networks, Closed Regimes: The Impact of the Internet on Authoritarian Rule*. Washington, DC: Carnegie Endowment for Peace.
- Kampen, J. K. and Snijkers, K. (2003). Democracy. A critical Evaluation of the Ultimate E-Dream, *Social Science Computer Review*, 21 (4), 491-496.
- Kamrava, M. and Mora, F. O. (1998). Civil society and democratisation in comparative perspective: Latin America and the Middle East, *Third World Quarterly*, 19(5), 893 - 915.
- Kane, T. (2007). Economic Freedom in Five Regions, In Kane, T., Holmes, K.R. and O'Grady A. M. (Eds.), *2007 Index of Economic Freedom*, Washington, D.C.: The Heritage Foundation and Dow Jones & Company, Inc., Available at: www.heritage.org/index (accessed June 12, 2008).
- Kapás, J. and Czeglédi, P. (2009). "Economic Freedom and the Process of Economic Growth: An Empirical Analysis Based on a New Measure", in proceedings of 13th annual Conference of the International Society for New Institutional Economics, Berkeley, June 18-20.
- Karamagioli, E. (2003). The role of ICT in strengthening United Nations–civil society relations, *Journal of International Communications*, 11(2). Available at: <http://www.internationalcommunicationsjournal.com> (accessed June 28, 2009).
- Katz, J. (1997). The Digital Citizen. *Wired*, 5(12), 86-82.
- Kauffmann, A. (2005). Telecommunications, Trade and Growth: Gravity Modeling and Empirical Analysis for Easter Europe and Russia, In: Broadman, G. H., Paas, T. and Welfens, J. P. (Eds.), *Economic Liberalization and Integration Policy*, Springer, New York, 300-331.
- Kedzie, C.R. (1997). *Communication and Democracy: Coincident Revolutions and the Emergent Dictator's Dilemma*, Santa Monica, CA: RAND Publication.

- Kegels, C., van Overbeke, M. and Van Zandweghe, W. (2002). "ICT contribution to economic performance in Belgium: preliminary evidence – Revision of WP 7-02," Brussels: Federal Planning Bureau Working Paper 8-02.
- Kelly, J. and Etling, B. (2008). "Mapping Iran's Online Public: Politics and Culture in the Persian Blogosphere." Available at: http://cyber.law.harvard.edu/publications/2008/Mapping_Irans_Online_Public (accessed June 18, 2009)
- Kenski, K. and Jomini, N. (2006). Stroud Connections Between Internet Use and Political Efficacy, Knowledge, and Participation, *Journal of Broadcasting & Electronic Media*, 50(2), 173 - 192.
- Keohane, R. and Nye, J.S. (2000). Introduction, In J.S. Nye and J.D. Donahue (eds.), *Governance in a Globalizing World*, Washington, DC: Brookings Institution, 1-44.
- Khalil, A.F., Kwon, H.H., Lall, U., Miranda, M.J., and Skees, J.R. (2007). ENSO-based index insurance for floods: Statistical risk analyses and application to Peru. *Water Resource Research*, 43(10), Manuscript 2006WR005281.
- Kiiski, C. and Pohjola M. (2002), Cross country diffusion of the Internet, *Information Economics and Policy*, 14, 297–310.
- King, J.L., Gurbaxani, V., Kraemer, K.L., McFarlan, F.W., Raman, K.S., Yap, C.S. (1994) Institutional factors in information technology innovation, *Information Systems Research*, 5(2),139-169.
- Kippen, G. and Jenkins, G. (2003). The Challenge of e-democracy for Political Parties, in Aster, H. and Axworthy, T. (Eds.), *Searching for the New Liberalism: Perspectives, Policies, Prospects*, Oakville, ON: Mosaic Press, 321-354
- Kirkpatrick, C., Parker, D., Zhang, Y. (2006). Foreign direct investment in infrastructure in developing countries: does regulation make a difference? *Transnational Corporations*, 15(1), 143-171.
- Klein, H. K. (1999). Tocqueville in Cyberspace: Using the Internet for Citizen Associations, *The Information Society*, 15(4), 213-220.
- Klein, H. K. and Myers, M., D. (1999). A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems, *MIS Quarterly, Special Issue on Intensive Research*, 23(1), 67-93.
- Klein, H.K. and Huynh, M.Q. (2004). The critical social theory of Jürgen Habermas and its implications for IS research in J. Mingers and L. Willcocks (Eds.) *Social Theory and Philosophy for Information Systems*, Wiley, Chichester, UK, 157-237.
- Kneller, R. (2005). Frontier Technology, Absorptive Capacity and Distance, *Oxford Bulletin of Economics and Statistics*, 67(1), 1–23.
- Ko, M. and Osei-Bryson, K-M. (2002). "An Exploration of The Impact of Information Technology Investments in the Healthcare Industry: A Regression Splines Based Analysis", In Proceedings of 8th Americas Conference on Information Systems, August 9-11, Dallas, Texas, USA.
- Ko, M., and Osei-Bryson, K. M. (2006). Analyzing the impact of information technology investments using regression and data mining techniques, *Journal of Enterprise Information Management*, 19 (4), 403-417.
- Kodoom (2009), "A Financial subsidiary of Iranian Revolutionary Guard Corp buys controlling stakes, worth \$8 Billion, in Iran's Telecommunication Company", Available

- at: <http://features.kodoom.com/en/iran-politics/a-financial-subsiidiary-of-iranian-revolutionary-guard-corp-buys-controlling/v/1295/>
- Kriekhaus, J. (2006). Democracy and Economic Growth: How Regional Context Influences Regime Effects, *British Journal of Political Science*, 36(2006), 317-340.
- Kuwayama, M., Ueki, Y. and Tsuji, T. (2005). *Information Technology for Development of Small and Medium-sized Exporters in Latin America and East Asia*, Chile, The United Nations Publication.
- La Botz, D. (1995). *Democracy in Mexico: Peasant Rebellion and Political Reform*, Cambridge, MA: South End Press.
- La Porta, R. and Lopez-de-Silanes, F., Shleifer, A. and Vishny, R.. (1999). The Quality of Government. *The Journal of Law, Economics and Organization*, 15 (1), 222-279.
- La Porte, C., Pochet, P. and Room, J. G. (2001). Social benchmarking, policy making and new governance in the EU, *Journal of European Social Policy*, 11(4), 291-307.
- La Rose, R., Gregg J.L., Strover S., Straubhaar J. and Carpenter S. (2007). Closing the Rural Broadband Gap: Promoting Adoption of the Internet in Rural America, *Telecommunications Policy*, 31, 359-360.
- Lacharite, J. (2002). Electronic decentralisation in China: A critical analysis of Internet filtering policies in the People's Republic of China, *Australian Journal of Political Science*, 37(2), 333-346.
- Lamberton, D. M. (2001). An Information Infrastructure for Development, *Prometheus*, 19 (2001), 223-230.
- Lau, R., and Redlawsk, D. P. (2001). Advantages and Disadvantages of Cognitive Heuristics in Political Decision Making, *American Journal of Political Science*, 45, 951-971.
- Laudon, C. K. and Traver, G. C. (2008). *E-commerce: Business, Technology, Society*, NJ: Pearson/Prentice Hall.
- Laurillard, D. (2000) The Impact of Communication and Information Technology on Higher Education, in: Scott, P. (Ed.), *Higher Education Redformed*, London: Routledge.
- Leiser, S. (2007). Epistemological and theoretical challenges for studying power and politics in information systems, *Information Systems Journal*, 17, 165-183.
- Leiser, S. and Eugenio, F.B. (2002). Information technology; Communications technology; Internet; Chile, *Information Technology & People*, 15(1), 8-25.
- Lenihan, D. G. (2002a). "Realigning Governance: From E-Government to E-Democracy, OECD Discussion Paper, for the Public Sector Management division's E-Government Working Group", Centre for Collaborative Government
- Lenihan, D. G. (2002b). "E-government, federalism and democracy: The new governance. Centre for Collaborative Government", Ottawa, Canada
- Leonardo, Z. (2004). Critical Social Theory and Transformative Knowledge: The Functions of Criticism in Quality Education, *Educational Researcher*, 33(6), 11-18.
- Leschke, M. (2000). Constitutional Choice and Prosperity: A Factor Analysis. *Constitutional Political Economy*, 11(3), 265-79.
- Limbert, W. J. (2008). "Negotiating with the Islamic Republic of Iran Raising the Chances for Success—Fifteen points to Remember, United States Institute of Peace." Available at <http://www.usip.org/pubs/specialreports/sr199.pdf> (accessed November 24, 2008).
- Lin, N. (2001). Social capital: A theory of social structure and action, *Connections*, 22(1), 28-51.

- Lipset S.M. (1959). Some Social Requisites of Democracy: Economic Development and Political Legitimacy, *American Political Science Review*, 53, 69-105.
- Loader, B. (1998). *Cyberspace Divide*. London: Routledge.
- Lu, M. (2005), Digital divide in developing economies, *Journal of Global Information Technology Management*, 4(3), 1-4.
- Lucas, E. R. (1988). On the Mechanics of Economic Development, *Journal of Monetary Economics*, 22, 3-42.
- Lundstrom, S. (2002). The effect of democracy on different categories of economic freedom, *European Journal of Political Economy*, 21(4), 967-980.
- Lusoli, W., Ward, S., and Gibson, R. (2002). Political organisations and online mobilisation: different media: same outcomes? *New review of information networking* , 8, 89-107.
- Lynch, M. (2003). Beyond the Arab Street: Iraq and the Arab Public Sphere, *Politics & Society*, 31(1), 55-91.
- Ma, M. and Agarwal, R. (2007). Through a glass darkly: information technology design, identity verification, and knowledge contribution in online communities, *Information Systems Research*, 18(1), p. 42-67
- Mackey , R. (2009),” June 23: Updates on Iran’s Disputed Election”, The Lede. Available at: <http://thelede.blogs.nytimes.com/2009/06/23/latest-updates-on-irans-disputed-election-4/> (accessed June 30, 2009)
- Main, L. (2001) . The Global Information Infrastructure: Empowerment or Imperialism?. *Third World Quarterly*, 22(1), 83-97
- Mankiw, G., Romer, D. and Weil, D. (1992). A Contribution to the Empirics of Economic Growth, *Quarterly Journal of Economics*, 107 (2), 407-437.
- Mannheim, K. (1931). *Ideology and Utopia*, New York: Harcourt, Brace and World.
- Mansell R. (1998). “Knowledge Societies: Information Technology for sustainable Development”, United Nations Commission on Science and Technology for Development, Oxford University press. New York, USA.
- Mbaku, J. M. (2003). Entrenching Economic Freedom in Africa, *Cato Journal*, 23(2), 217-225.
- McCullagh, K. (2003). E-democracy: potential for Political Revolution? *International Journal of Law and Information Technology*, 11(2), 149-161
- Mercer, C. (2004). Engineering civil society: ICT in Tanzania. *Review of African Political Economy*, 31 (99), 49-64.
- Melka, J., Mulder, N., Nayman, L. and Zignago, S. (2003). “Skills, Technology and Growth is ICT the Key to Success? An Analysis of ICT Impact on French Growth”, Working Papers 2003-04, CEPPII research center.
- Meng, Q. and Li, M. (2002). New Economy and ICT development in China, *Information Economics and Policy*, 14(2), 275-295
- Middleton, C. A. and Cukier, W. (2006). Is Mobile Email Functional or Dysfunctional? Two Perspectives on Mobile Email Usage, *European Journal of Information Systems*, 15(3), 252-260.
- Miles, A.M., Holems, R.K. and O’Grady, A.M. (2006). *The 2006 Index of Economic Freedom*, Washington, DC: The Heritage Foundation.
- Minier, J. A. (1998). Democracy and Growth: Alternative Approaches, *Journal of Economic Growth*, 3, 241-266.

- Mir-Hosseini, Z. (2006). "Is time on Iranian women protesters' side? Middle East Report Online" Available at: <http://www.merip.org/mero/mero061606.html> (accessed October, 7, 2007)
- Morawczynski, O. and Ngwenyama, O. (2007). Unraveling the Impact of Investments in ICT, Education and Health on Development: An Analysis of Archival Data of Five West African Countries Using Regression Splines, *Electronic Journal of Information Systems in Developing Countries*, 29(5), 1-15.
- Morrisett, L. (2003). Technologies of Freedom?. In: Jenkins H. and Thorburn D. (eds), *Democracy and New Media*, Cambridge: MIT Press, 21-31.
- Moshiri, S. Gholami, R., and Lee, S. (2004). ICT and Productivity of the Manufacturing Industries in Iran. *Electronic Journal of Information Systems in Developing Countries*, 19(4) 1-19.
- Mowshowitz, A. (1992). Virtual feudalism; a vision of political organization in the information age, *Information and the Public Sector*, 2, 213-31.
- Mudhai, O.F. (2003). "Methodological Issues in the Study of Digital Media and Perceptions of Civil Society in Urban Kenya and Zambia", Background Paper, IT & Civil Society Research Network, US Social Science Research Council, Available at: www.ssrc.org/programs/itic/publications/civsocandgov/okoth_fredrick_mudhai.pdf (accessed July 8, 2007).
- Murphy, E. (2006). Agency and space: the political impact of information technologies in the Gulf Arab states, *Third World Quarterly*, 27(6), 1059 -1083.
- Myers, R.H. (1990). *Classical and modern regression application*, 2nd edition, CA: Duxbury press.
- Myers, M.D. (2009). *Qualitative Research in Business & Management*, London: Sage Publications.
- Najibullah, F. (2007), "Iran: Internet Cafes shut down in drive against un-Islamic Behavior", Available at: <http://www.rferl.org/content/Article/1079274.html> (accessed May 30, 2008)
- Narayan, P. K. (2008). An econometric model of the determinants of private investment and a CGE model of the impact of democracy on investment and economic growth in Fiji, *International Journal of Social Economics*, 35 (12), 1017 – 1031.
- NationMaster(n.d.). "Vodafone GSM". Available at: http://www.nationmaster.com/encyclopedia/Airwide-Solutions#cite_note-2 (accessed December 1, 2008).
- Nelson, R., and Phelps, E. (1966). Investment in humans, technological diffusion, and economic growth, *American Economic Review: Papers and Proceedings*, 51 (2), 69-75.
- Networkedblogs (2010). "Top 50 Blogs in Iran". Available at: <http://www.networkedblogs.com/network/iran/> (accessed April 1, 2010)
- Neuman, W. R., and Pool, I. S. (1986). The Flow of Communications into the Home, In Sandra J. Ball-Rokeach, S. J. and Cantor, M., (Eds.) *Media, Audience, and Social Structure*, Beverly Hills: Sage, 71-86.
- Neuman, W. R., Just, M. T and Crigler. A. N. (1992). *Common Knowledge: News and the Construction of Political Meaning*. Chicago: University of Chicago Press.
- Neyestani, M. R., (2006). Cultural and religious identities in era of information and communications globalization. *Turkish Journal of International Relations*, 4(4), 33-39.
- Ngwenyama, O. and Allen S. Lee, A (1997). Contextuality of Meaning, *MIS Quarterly*, 21(2), 145-167

- Ngwenyama, O., Andoh-Baidoo, F.K., Bollou, F. and Morawczynski, O. (2006). An Empirical Analysis of five West African Countries from 1997-2003, *Electronic Journal of Information Systems for Developing Countries*, 23(5),1-11.
- Ngwenyama, O.K. (1991). The critical social theory approach to information systems: problems and challenges. In H.E. Nissen, H.E., H.K. Klein and R. Hirschheim, R. (Eds.) *Information Systems Research: Contemporary Approaches and Emergent Traditions*, North Holland, Amsterdam: The Netherlands, 267–280.
- Nie, H. N.; Junn, J. and Stehlik-Barry, K. (1997). Education and Democratic Citizenship in America, *American Journal of Education*, 105(4), 446-457.
- Noman, H. (2009). “Restriction on Internet use in the Middle East on the rise: Internet cafés in Saudi must install hidden cameras.” Available at: <http://opennet.net/blog/2009/04/restriction-internet-use-middle-east-rise-internet-caf%C3%A9s-saudi-must-install-hidden-came> (accessed May 25, 2009).
- Norris, P. (1999). Who Surfs? New Technology, Old Voters and Virtual Democracy in the 1996 and 1998 US Elections, In Kamarck, E. (Ed.) *Democracy.com?*, Cambridge: Hollis.
- Norris, P. (2000) Global Governance and Cosmopolitan Citizens, In Nye, J.S. and Donahue, J.D. (Eds.), *Governance in a Globalizing World*, Washington, DC: Brookings Institution, 155-177.
- Norris, P. (2001). *Digital Divide? Civic Engagement, Information Poverty & the Internet in Democratic Societies*, New York: Cambridge University Press.
- Norris, P. (2006). Democratic divide? The impact of the Internet on parliaments worldwide, *Journal of Communication*, 56(1), 218-219.
- Norton, S. (1992). Information costs, telecommunications, and the microeconomics of macroeconomic growth, *Economic Development and Cultural Change*, 41, 175–196.
- Noveck, B. S. (2000). Paradoxical partners: electronic communication and electronic democracy. *Democratization*, 7(1), 18-35.
- Nwagwu, E. W. (2006). Integrating ICTs into the Globalization of the Poor Developing Countries, *Information Development*, 22(3), 167-179.
- O'Sullivan, P. B. (1995). Computer networks and political participation: Santa Monica's teledemocracy project, *Journal of Applied Communication Research*, 23(2),93 - 107.
- Oates, B. J. (2003). The potential contribution of ICTs to the political process, *Electronic Journal of e-Government*, 1(1), 33-42.
- OECD (1996). “Information infrastructure convergence and pricing: The internet”. Paris.
- OECD (1997a). “Global Information Infrastructure, Global Information Society”, (GII-GIS): Policy Requirements
- OECD (1997b). “Global information infrastructure, Global information society”, (GII-GIS): Policy recommendations for action. Paris.
- OECD (1998). “Internet tra\$c exchange: Developments and policy”. Paris: OECD
- OECD (1999). “Building infrastructure capacity for electronic commerce leased line developments and pricing”. Paris: OECD.
- OECD Report (2002). “Telecom privatization and learnings in the Kingdom of Saudi Arabia OECD Global Conference on Telecommunications Policy for the Digital Economy”, Dubai, United Arab Emirates, January 2002. Available at: <http://www.oecd.org/dataoecd/52/17/1810617.pdf> See also: Telecommunications in the Middle East www.mideastlaw.com/article_telecommunications_in_the_middle_east.html (accessed 25 April 2007)

- Oliner, S.D., and Sichel, D.E. (2000). The Resurgence of Growth in the Late 1990s: Is Information Technology the Story? *Journal of Economic Perspectives*, 14(4), 3-22.
- Olson, M. (1982). *The Rise and Decline of Nation: Economic Growth, Stagflation and Social Rigidities*, New haven: Yale University Press.
- Osler, A. (2005a). Education for democratic citizenship: new challenges in a globalised world, in: A. Osler & H. Starkey (Eds.) *Citizenship and language learning: international perspectives*, Trentham : Stoke-on-Trent.
- Osler, A. (2005b). Looking to the future: democracy, diversity and citizenship education, in: A. Osler (Ed.) *Teachers, human rights and diversity: educating citizens in multicultural societies*, Trentham: Stoke-on-Trent.
- Omantel Terms & condition (n.d.). "Terms & condition." Available at: <http://www.omantel.net.om/policy/terms.asp> See also: <http://www.omantel.net.om/services/business/internet/preapprovaleng.pdf>
- One million signatures (2006). "Demanding changes to discriminatory laws." Available at: <http://www.we-change.org/english/spip.php?article18> (Accessed November 8, 2006).
- ONI (2005). "Internet filtering in Iran in 2004-2005: A country study." Available at: <http://www.opennetinitiative.net/studies/iran/> see also: <http://opennetinitiative.net/bulletins/004/> ; <http://opennet.net/research/regions/mena> ; <http://opennet.net/research/profiles/bahrain> ; <http://opennet.net/studies/saudi/> (accessed 28 September 2007)
- ONI (2007a). "Country Profile: Iran", available at <http://opennet.net/research/profiles/iran> see also Country Profile: Saudi Arabia, available at: <http://opennet.net/research/regions/mena> (accessed January 29, 2008).
- ONI (2007b). "Country Profiles." Available at: <http://opennet.net/research/profiles> (accessed June 30, 2009).
- ONI (2009). "Cracking Down on Digital Communication and Political Organizing in Iran", Available at: <http://opennet.net/blog/2009/06/cracking-down-digital-communication-and-political-organizing-iran> (accessed June 16, 2009)
- Orbicom (2005). *From The Digital Divide To Digital Opportunities: Measuring Infostates for Development*, Montreal: Claude-Yves Charron,
- Orlikowski, W.J. and Baroudi , J.J. (1991). Studying information technology in organizations: Research approaches and assumptions, *Information Systems Research*, 2(1), 1-28.
- Osborn, M. (2008). Fuelling the Flames: Rumour and Politics in Kibera, *Journal of Eastern African Studies*, 2(2), 315-327.
- Osei-Bryson, K-M. and Ko, M. (2004). Exploring the relationship between information technology investments and firm performance using regression splines analysis, *Information & Management*, 42 (2004), 1-13.
- Ott, D. (1998). Power to the People: The Role of Electronic Media in Promoting Democracy in Africa, *First Monday*, 3(4).
- Ott, D., and Rosser, M. (2000). The electronic republic? The role of the Internet in promoting democracy in Africa. *Democratization*, 7(1), 137-155.
- Oyelaran-Oyeyinka, B. and Kaushalesh L. (2003). The internet diffusion in Sub-Saharan Africa: A cross-country analysis, *Telecommunications Policy*, 29, 507-527.
- Page, M. (1997). Pluralistic citizenship: a reference for citizenship education, *Canadian Ethnic Studies*, 29(2), 22-31.

- Palfrey, J. (2007). "Survey of Government Internet Filtering Practices Indicates Increasing Internet Censorship First Year of Global Survey Examines 41 Countries by Political, Social and National Security Filtering". Available at: http://cyber.law.harvard.edu/newsroom/first_global_filtering_survey_released (accessed November 12, 2008).
- ParsOnline (n.d.). "Free SMS: send messages to any mobile telephone in Iran". Available at: <http://sms.parsonline.net/login.php> (accessed November 25, 2008).
- Pastor, M., and Sung, H. J. (1995). Private Investment and Democracy in the Developing World, *Journal of Economic Issues*, 29(1), 223-243.
- Payvand (2008) "Iranians send 80 million SMS per day". Available at <http://www.payvand.com/news/08/nov/1242.html> Accessed November 29, 2008.
- Percy-Smith, J. (1996). Downloading democracy? Information and communication technologies in local politics, *Policy and Politics*, 24(1), 43-56.
- Petrazzini, B.A., and Guerrero, A. (2000). Promoting Internet Development: The Case of Argentina, *Telecommunications Policy*, 24 (2), 89-112.
- Pettit, P. (1999). *Republicanism: A Theory of Freedom and Government*, revised edition, Oxford, Oxford University Press.
- Pew Research Center (2008). "The Pew Research Center for the People & the Press", Available at: <http://people-press.org/report/384/internets-broader-role-in-campaign-2008> See also: <http://www.pewinternet.org/Press-Releases/2009/The-Internet-and-Civic-Engagement.aspx> (accessed May 11 2009).
- Piatkowski, M. (2003). "Does ICT Investment Matter for Output Growth and Labor Productivity in Transition Economies?" TIGER Working Paper Series, No. 47, Warsaw.
- Pickerill, J. (2004). Rethinking political participation: Experiments in internet activism in Australia and Britain. In: Gibson, R., Roemmele, A. and Ward, S. (Eds.) *Electronic Democracy: Mobilisation, Organisation and Participation via new ICTs*, London: Routledge.
- Picot, A., and Wernick, C. (2007). The role of government in broadband access. *Telecommunications Policy*, 31(10-11), 660-674.
- Pillai, P. and Shanta, M. (2008). "Promotion Among Poor Women: How can we Make it Happen? Some Reflections on Kerala's Experience", Center For Development Studies, Working Paper 398. Available at: www.cds.edu (accessed December 20, 2008).
- Pina, V., Torres, L. and Acerete, B. (2006). Are ICTs promoting government accountability?: A comparative analysis of e-governance developments in 19 OECD countries, *Critical Perspectives on Accounting*, 18, 583-602.
- Pipe, G. R. (2003). Vietnam Promotes ICT to Accelerate Development, I-WAYS, *The Journal of E-Government Policy and Regulation*, 26(1), Amsterdam: ISO press.
- Pisciotta, A.A. (1997). Global Trends in Privatisation and Liberalisation. In W. Melody (ed.) *Telecom Reform: Principles, Policies and Regulatory Practices*, Lyngby: Den private Ingenirrfond, Technical University of Denmark.
- Pohjola, M. (2001). Information Technology and Economic Growth: A Cross-country Analysis, In M. Pohjola (ed.), *Information Technology, Productivity, and Economic Growth: International Evidence and Implications for Economic Development*.
- Postmes, T. (2002). Collective Action in the Age of the Internet: Mass Communication and Online Mobilization, *Social Science Computer Review*, 20(3), 290-301.
- Print, M., Ornstrom, S. and Nielsen, H.S. (2002). Education for democratic processes

- in schools and classrooms, *European Journal of Education*, 37(2), 193-210.
- Przeworski, A. and Limongi, F. (1993). Political regimes and Economic Growth, *Journal of Economic Perspective*, 7(3), 51-69.
- Putnam, R. D. (1993). *Making democracy work: Civic traditions in modern Italy*, Princeton, NJ: Princeton University Press.
- Putnam, R. D. (1996). The strange disappearance of civic America. *The American Prospect*, 24, 34-48.
- Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*, NY: Simon & Schuster.
- Quan-Haase, A., & Wellman, B. (2004). How does the Internet affect social capital? In Huysman, M. and Wulf, V. (Eds.), *Social Capital and Information Technology*, Cambridge, MA: MIT Press.
- Quantcast (2008). "YouTube Monthly Traffic." Available at: <http://www.quantcast.com/youtube.com> (accessed December 19, 2009).
- Quibria, M. G., Ahmed, S. N., Tschang, T. and Reyes-Macasaquit, M.-L. (2003). Digital Divide: determinants and policies with special reference to Asia, *Journal of Asian Economics*, 13, 811-825.
- Quintelier, E. and Vissers, S. (2008). The Effect of Internet Use on Political Participation: An Analysis of Survey Results for 16-Year-Olds in Belgium, *Social Science Computer Review*, 26(4), 411-427.
- Quynh, N. (2006). "Digital Review of Asia-Pacific 2005/2006: Vietnam" Available at: <http://www.digital-review.org/> (accessed January 18, 2007).
- Radloff, J., Primo, N. and Munyua, A. (2004). "The Role of Information and Communication Technologies in the Development of African Women", Association for Progressive Communications (APC). Available at: <http://www.apc.org/en/pubs/manuals/gender/africa/role-information-and-communication-technologies-de> (accessed May 19, 2008)
- Rafizadeh, S. (2008). "Passdaran Warns About a Velvet Internet Revolution". Available at: http://www.roozonline.com/english/archives/2008/11/passdaran_warns_about_a_velvet.html (accessed 24 November 2008).
- Rafizadeh, S. (2008b). "SMS and Weblogs are Destructive". Available at: http://www.roozonline.com/english/archives/2008/06/sms_and_weblogs_are_destructiv.html (accessed September 15, 2008).
- Rahimi, B. (2003). Cyberdissent: The Internet in revolutionary Iran, *Middle East review of International Affairs (MERIA) Journal*, 7(3). Available at: <http://meria.idc.ac.il/journal/2003/issue3/jv7n3a7.html> (accessed 5 April 2007)
- Raji, M.O., Ayoade, O.B., Usoro, A. (2006). The prospects and problems of adopting ICT for poverty Eradication in Nigeria, *Electronic Journal of Information Systems in Developing Countries*, 28(8), 1-9.
- Rao, L. and Osei-Bryson, K. M. (2007). Towards defining dimensions of knowledge systems quality, *Expert Systems with Applications*, 33 (2007), 368-378.
- Ren, Y., Kraut, R. and Kiesle, S. (2007). Applying Common Identity and Bond Theory to Design of Online Communities, *Organization Studies*, 28(3), 377-408.
- Reuters (2007). "Qatar Telecom, Saudi partner buy Pakistan telco." Available at: <http://www.reuters.com/article/idUSL2556063720070425> (accessed April 18, 2008)

- Rheingold, H. (1993). *The Virtual Community: Homesteading on the Electronic Frontier*, Reading, Massachusetts: Addison-Wesley.
- Ricks, T. E. (2009). "Iran and the blogs", available at: http://ricks.foreignpolicy.com/posts/2009/06/17/iran_and_the_blogs (accessed June 17, 2009)
- Riley, C. G. (2003). "The Changing Role of the Citizen in the E-Government & E-democracy Equation", Commonwealth Centre for e-Governance, September, 2003. Available at: <http://www.electronicgov.net> (accessed April 8, 2007)
- Ringstaff, C. and Kelley, L. (2002). "The Learning Return On Our Educational Technology Investment: A Review of Findings from Research", WestEd. Available at: http://www.wested.org/online_pubs/learning_return.pdf (accessed December, 10, 2008).
- Robison, K.K., and Crenshaw, E.M. (2002). Post-industrial transformations and cyber-space: A cross-national analysis of Internet development. *Social Science Research* 31, 334–363.
- Robertson, A., Soopramanien, D., & Fildes, R. (2007). Segmental new-product diffusion of residential broadband services, *Telecommunications Policy*, 31(5), 265-275.
- Rodrik, D. (2000). "Institutions for High-Quality Growth: What They are and How to Acquire Them". NBER Working Paper No. W7540.
- Roeller, L. and Waverman, L. (2003). Telecommunications Infrastructure and Economic Development: A Simultaneous Approach, *American Economic Review*, 909-923.
- Rogers, W. H. (1993). Regression standard errors in clustered samples, *Stata Technical Bulletin*, 53, 32-35.
- Ros, J. A. (1999). Does Ownership or Competition Matter? The Effects of Telecommunications Reform on Network Expansion and Efficiency, *Journal of Regulatory Economics*, 15, 65-92.
- Rose, N. (1999). *Powers of Freedom: Reframing Political Thought*, Cambridge: Cambridge University Press.
- Rushkoff, D. (2003). Open Source Democracy: How Online Communication is Changing Offline Politics, DEMOS, London, Available at: www.demos.co.uk/media/opensource democracy
- RWB (2004). "Internet Under Surveillance", Available at: http://www.rsf.org/rubrique.php3?id_rubrique=433
- RWB (2005). Press Freedom Index 2005. Available at: http://en.rsf.org/press-freedom-index-2005_549.html See also: Third Annual Worldwide Press freedom Index 2005 (accessed November 10, 2007).
- RWB (2008). Reporters Without Borders: Annual Worldwide Press Freedom Index, Available at: http://www.rsf.org/article.php3?id_article=24025 see also: http://www.rsf.org/article.php3?id_article=15201 (accessed October 10, 2008)
- Sæbø, Ø., Rose, J. and Flak, S. L. (2008). The shape of eParticipation: Characterizing an emerging research area, *Government Information Quarterly*, 25, 400–428.
- Sahay, S., and Walsham, G. (2006). Scaling of Health Information Systems in India: Challenges and Approaches, *Information Technology for Development*, 12(3), 185-200.
- Salmenkaita J. and Ahti Salo, A. (2002), Rationales for Government Intervention in the Commercialization of New Technologies, *Technology Analysis & Strategic Management*, 14(2), 183 – 200.
- Sarbib, J.L.(2002). *Building Knowledge Societies in the Middle East and North Africa*, Knowledge for Development, Oxford: Oxford University Press.

- Savic, S. (2006). "E-GOVERNANCE: Theoretical foundations and practical implications." Available at: www.dobrica.savic.ca/pubs/egovernance_foundations.pdf (accessed January 20, 2008).
- Saxton, J. (2006). Joint Economic Committee, Research Report #109-31.
- Schectman, J. (2009). "Iran's Twitter Revolution? Maybe Not Yet." Available at: http://www.businessweek.com/technology/content/jun2009/tc20090617_803990.htm (accessed June 18, 2009)
- Schmidt, P. (1990). Three-Stage Squares with Different Instruments for Different Equations, *Journal of Econometrics*, 43(1), 389-394.
- Sciadas, G. (2006). "Digital Review of Asia-Pacific 2005/2006: Vietnam." Available at: <http://www.digital-review.org/> (accessed May 20, 2007)
- Sen, A. (1999) Democracy as a Universal Value, *Journal of Democracy*, 10(3), 3-17.
- Servon L.J. (2002). *Bridging the digital divide: Technology, Community and Public Policy*, Malden, Mass: Blackwell.
- Shih, E., K. L. Kraemer and J. Dedrick (2008). IT Diffusion in Developing Economies: Policy Issues and Recommendations, *Communications of the ACM*, 51 (2), 43-48.
- Shihri, A. (2004). Saudi edict bans mobile phone cameras, http://www.usatoday.com/tech/world/2004-09-30-saudi-phone-ban_x.htm (accessed February 12, 2009)
- Shuji, H. (1997). The Internet and Middle East Studies, *Japanese Institute of Middle Eastern Economies*, 10(36), 93-116.
- Silva, L. (2007). Epistemological and theoretical challenges for studying power and politics in information systems, *Information Systems Journal*, 17(2), 165-183.
- Silva, L., and Figuero, E. (2002). Institutional intervention and the expansion of ICTs in Latin America: The case of Chile, *Information Technology & People*, 15(1), 8-25.
- Silva, L. and Hirschheim, R. (2007). Fighting Against Windmills: Strategic Information Systems and Organizational Deep Structures, *MIS Quarterly*, 31(2), 327-354.
- Sierra Leone (2008). "SMS as a Tool in Election Observation." Available at: <http://mobileactive.org/sms-tool-election-observation> (accessed April 3, 2009).
- Sirowy, L. and Inkeles, A. (1990). The Effects of Democracy on Economic Growth and Inequality; A Review, *Studies in Comparative International Development*, 25 (1990), 126-157.
- Smith, A. (2009). "The Internet and Civic Engagement." Available at: <http://www.pewinternet.org/Press-Releases/2009/The-Internet-and-Civic-Engagement.aspx> (accessed November 10, 2009).
- Snellen, I. (2001). ICT:s, bureaucracies and the future of democracy, *Communications of the ACM*, January.
- Soguel, D. (2010). "Iran: Women Online Brave Heavy Web Surveillance". Available at: <http://www.wluml.org/node/6171> (accessed April 8, 2010).
- Sohmen, P. (2001). Taming the Dragon: China's Efforts to Regulate the Internet, *Stanford Journal of East Asian Affairs*, 1(1), 17-26.
- Sokooti, S. (2002). "Voice of Iran? Political Pawn? Iran's Reformist Press". World Press, Available at: <http://www.worldpress.org/mideast/0122iran.htm> (accessed June 15, 2008).
- Solop, F. I. (2000). "Digital Democracy Comes of Age in Arizona: Participation and Politics in the First Binding Internet election", Presented at the 2000 Annual Meeting of the

- American Political Science Association, Washington, D.C. August 31- September 3, 2000.
- Soper, D.S., H. Demirkan, M. Goul and Louis. S. R. (2006). "The impact of ICT expenditures on institutionalized democracy and foreign direct investment in developing economies", Proceedings of the 39th Annual Hawaii International Conference on System Sciences (HICSS'06).
- Stahl, C. B. (2007). "Privacy and Security as Ideology", IEEE Technology and Security Magazine, Spring 2007, 35-45.
- Stahl, C. B. (2008a). The ethical nature of critical research in information systems, *Information Systems Journal*, 18(2), 137-163.
- Stahl, B. C. (2008b). "Empowerment Through ICT: A Critical Discourse Analysis of The Egyptian ICT Policy", Proceedings of the Eighth International Conference on Human Choice and Computers (HCC8), IFIP TC 9, Pretoria, South Africa, September 25-26, 2008.
- Stahl, B. C. (2008c). Social Justice and Market Metaphysics: A Critical Discussion of Philosophical Approaches to Digital Divides", in: Tan, F. (Ed.): *Global Information Technologies: Concepts, Methodologies, Tools, and Applications*. Information Science Reference, New York: Hershey, 3328-3344.
- Stanyer, J. (2006). Online campaign communication and the phenomenon of blogging An analysis of web logs during the 2005 British general election campaign, *New Information Perspectives*, 58(5), 404-415.
- Starkey, H. (2002). Language teaching, citizenship, human rights and intercultural education, in: A. Swarbrick (Ed). *Modern foreign languages in secondary schools*, London: RoutledgeFalmer, 95-111.
- Stinchcombe, A. L. (1968). *Constructing Social Theories*, Chicago, IL: University of Chicago Press.
- Stoian, R. C. and Vickerman, R. (2005). "The Interplay between Foreign Direct Investment, Security and European Integration: The Case of the Central and Eastern European Countries", Proceedings in Academy of International Business Annual Meeting , Quebec, Canada, Available at: <http://kar.kent.ac.uk/9873/> (accessed January 8, 2008).
- Stroup, M.D. (2007). Economic freedom, Democracy, and the Quality of Life, *World Development*, 35(1), 52-66.
- Suarez, S. (2005). "Mobile democracy: Text messages, voter turnout, and the 2004 Spanish general election". Prepared for Annual Meeting of the American Political Science Association, September 1-4.
- Sussman, G. (1997). *Communication, technology and politics in the information age*, Sage: Thousand Oaks.
- Sutton, J. and Pollock, S., 2000. Online Activism for Women's Rights, *Cyberpsychology & Behavior*, 3(5), 699-706.
- Tait, R. (2006). "Iran bans fast internet to cut west's influence." The Guardian. Available at: <http://www.guardian.co.uk/technology/2006/oct/18/news.iran> (accessed November 8, 2007).
- Tait, R. (2009). "Revolutionary Guards buy 51% stake in Iran's telecommunications company", Available at: <http://www.guardian.co.uk/world/2009/oct/07/revolutionary-guards-iran> (accessed November 3, 2009).

- Tan, Z. (2004). Evolution of China's Telecommunications Manufacturing Industry: Competition, Strategy and Government Policy, *Communication & Strategies*, No 53.
- Tan, F. and Leewongcharoen, K. (2005). Factors Contributing to IT Industry Success in Developing Economies: The Case of Thailand, *Information Technology for Development*, 11 (2), 161-194.
- Tarock, A. (2001). The muzzling of the liberal press in Iran, *Third World Quarterly*, 22(4), 585-602.
- TBS Journal (2001). "Dubai Media City Prepares for Next Phase, No. 5." Available at: <http://www.tbsjournal.com/Archives/Fall01/dubai.html> (accessed April 19, 2010).
- Tehran Times (2009). "SMS messages rise to 110 million a day amid presidential campaigns". Available at: http://www.tehrantimes.com/index_View.asp?code=196452 (accessed December 8, 2009)
- Teitelbaum, J. (2002). Dueling for Da'wa: State vs. Society on the Saudi Internet, *Middle East Journal*, 56, 2, 222-239.
- TeleYemen (n.d.). "Y.net the Main ISP of Yemen: Terms & Conditions". Available at: <http://www.y.net.ye/support/rules.htm> (accessed April 8, 2009)
- Terry, F. (2005). "From e-Government to Online Deliberative Democracy", In Proceedings Oxford Internet Institute, Summer Doctoral Program 2005, Chinese Academy of Social Sciences, Chinese Academy of Social Sciences, Beijing, China, Available at: www.publicus.net/e-government
- TextIT(2008). "The Q2 2008 UK Mobile Trends Report". Available at: http://www.text.it/mediacentre/press_release_list.cfm?thePublicationID=6F5A90F5155-F4C0-992D5F8DDAF2BDCA (accessed November 29, 2008).
- The Economist (2004). "Freedom calls, at last?; Arab democracy", 371, Iss. 8369, 56, London, April 3.
- The MathWorks (2008). "Akaike Information Criterion for estimated model". Available at: <http://www.mathworks.ch/access/helpdesk/help/toolbox/ident/ref/aic.html> (accessed May 25, 2008).
- The New York Times (2009). "Revolutionary Guard Buys Stake in Iran Telecom." Available at: <http://dealbook.blogs.nytimes.com/2009/09/28/revolutionary-guard-buys-stake-in-iran-telecom/> (accessed November 28, 2009).
- The Standard (2009), "Data: Iranians mostly using Facebook to share information during crisis". Available at: <http://www.thestandard.com/news/2009/06/17/data-iranians-mostly-using-facebook-share-information-during-crisis> (accessed June 18, 2009)
- The World Bank (2006). "Global Trends and Policies - 2006 Information and Communications for Development". Available at: www.worldbank.org/ic4d
See also: Information and Communications for Development 2006, Global Trends and Policies. (accessed November 8, 2007).
- Thai Election (2006). "SMS Messages in Use in the Thai Election". Available at: http://mobileactive.org/sms_in_Thai_election_06 (accessed June 13, 2008).
- Thies, C.F. (2007). The Relationship between Political and economic freedom Reconsidered, *Journal of Private Enterprise*, spring, 2007.
- Tipton, Frank (2002). Bridging the Digital Divide in Southeast Asia. *ASEAN Economic Bulletin*, 19(1), 83-99.
- Tolbert, C. and MacNeal R. (2003). Unraveling the Effects of the Internet on Political Participation? *Political Research Quarterly*, 56(2), 175-185.

- Trauth, E., and Howcroft, D. (2006). Critical empirical research in IS: an example of gender and the IT workforce, *Information Technology & People*, 19(2), 273-292.
- Trkman, P., Jerman-Blazic, B., and Turk, T. (2008). Factors of broadband development and the design of a strategic policy framework, *Telecommunications Policy*, 32(2), 101-115.
- Tsagarousianou, R., Tambini, D. and Bryan, C., (1998). *Cyberdemocracy: Technologies, Cities and Civic Networks*, London: Routledge, 1-17.
- UNCTAD (2004). "South-South Investment Flows - A Potential for Developing Country Governments to tap for Supply Capacity Building", Background Paper No. 3 prepared by the UNCTAD secretariat, Doha, Qatar, December 5-6. See also: The United Nations Conference on Trade and Development: E-Commerce and Development Report 2004. Available at: http://www.unctad.org/en/docs/ecdr2004_en.pdf (accessed April 22, 2007)
- UNCTAD (2006). *The Digital Divide Report: ICT Diffusion Index 2005*, New York and Geneva, 2006. See also: UNCTAD, Information Economy Report 2006, The Development Perspective and; World Investment Report 2006: FDI from Developing and Transition Economies: Implications for Development, UNCTAD Handbook of Statistics 2006-07.
- UNCTAD (2007). *World Investment Prospects Survey 2007-2009*. New York and Geneva: UN Publication.
- UNDP (2006). "Human Development Reports, Statistics of the Human Development Report." Available at: <http://hdr.undp.org/en/statistics/> see also, http://hdr.undp.org/en/media/hdr05_complete.pdf (accessed March 20, 2007)
- UNDP (2007). "Human Development Report 2007/2008." Available at: <http://hdr.undp.org/en/reports/global/hdr2007-2008/> (accessed January 8, 2009)
- UNDP (2008). "Human Development Indices." Available at: <http://hdr.undp.org>
- UNESCO (2006). "UNESCO Institute for Statistics ICTs and Education Indicators." Available at: http://www.itu.int/ITU/ict/partnership/material/ICT_Education_Paper_Nov_2006.pdf (accessed October 19, 2007)
- United Nations (2008). *e-Government Survey: From e-Government to Connected Governance*, New York: UN publication.
- United Nations (2010). "Draft report of the Working Group on the Universal Periodic Review Islamic Republic of Iran", ANNEXV, United Nations General Assembly Human Rights Council Working Group on the Universal Periodic Review Seventh session Geneva, February 2010.
- van Ark, B. (2001). "The renewal of the old economy: an international comparative perspective, technical report", OECD, Paris.
- van Ark, B., and Piatkowski, M. (2004). Productivity, innovation and ICT in Old and New Europe, *International Economics and Economic Policy Productivity*, 1(2/3), 215-246.
- van der Wiel, H. (2001). "Does ICT boost Dutch productivity growth?" CPB Document No. 016.
- van der Wiel, H. and van Leeuwen, G. (2004). ICT and Productivity, in G. Gelauff, L. Klomp, S. Raes and T. Roelandt (Eds.), *Fostering Productivity: Patterns, Determinants and Policy Implications*, Elsevier Science.
- Varakin, L. (2003). "International Telecommunication Academy Position Paper on the Global Information Society", WSIS-03/GENEVA/CONTR/005-E.

- Vega-Gordillo, M. and Alvarez-Arce, L. J.(2003). Economic Growth and Freedom: A Causality Study, *Cato Journal*, 23(2), 199-215.
- Verba, S. and Nie, H. N. (1972). Participation in America. Harper and Row, New York.
- Verba, S., Schlozman, L and Brady, B. E. (1997). The Big Tilt: Participation Inequality in America, *The American Prospect*, 8 (32), 74-80.
- Verclas, K. (2006). "SMS Messages in Use in the Thai Election." Available at: http://mobileactive.org/sms_in_Thai_election_06 (accessed November 10, 2008).
- Villeneuve, N. (2006). The Filtering Matrix: Integrated Mechanisms of Information Control and the Demarcation of Borders in Cyberspace, *First Monday*, 11, 1, http://firstmonday.org/issues/issue11_1/villeneuve/#v2 (accessed April 10, 2009)
- Von Lubitz, D. and Wickramasinghe, N. (2006). Healthcare and technology: the doctrine of network-centric healthcare. *International Journal of Electronic Healthcare*, 2 (2006), 322-344.
- Walsham, G. (1995). The Emergence of Interpretivism in IS Research, *Information Systems research*, 6(4), 376-394.
- Walsham, G. and Sundeep, S. (2006). Research on Information Systems in Developing Countries: Current Landscape and Future Prospects, *Information Technology for Development*, 12 (1), 7-24.
- Walsham, G., Robey, D., and Sahay, S. (2007), Foreword: Special Issue on Information Systems in Developing Countries, *MIS Quarterly*, 31(2), 317-326.
- Wallsten, S. J. (1999). "What's Happening with Telecom Reform in Africa and Latin America." Available at: http://www.cipe.org/publications/ert/e32/e32_4.pdf (Accessed June 12, 2008).
- Wallsten, J. S. (2000). "Telecommunications Privatization in Developing Countries: The Real Effects of Exclusivity Periods", working paper, Stanford University, Palo Alto.
- Wallsten, S. (2005). Regulation and Internet Use in Developing Countries, *Economic Development and Cultural Change*, 53(2), 501-23.
- Ward, S. and Vedel, T. (2006). Introduction: The Potential of the Internet Revisited, *Parliamentary Affairs*, 59(2), 210-225.
- Warshauer, M. (2002). Reconceptualising the digital divide, *First Monday*, 7, 7. www.firstmonday.org/issues/issue7-7/warshauer/index.html (accessed July 8, 2009).
- Watson, R. T. and Mundy, B. (2001). A strategic perspective of electronic democracy, *Communications of the ACM*, 44(1), 27-30.
- Weare, C. (2002). The Internet and Democracy: The Causal Links Between Technology and Politics, *International Journal of Public Administration*, 25(5), 659-691.
- Weber, L. M. and Bergman, J. (2001). "Who Participates and How? A comparison of Citizens Online and the Mass Public", Presented at the Annual Meeting of the Western Political Science Association, March 15-17, 2001, Las Vegas, Nevada.
- Wehrey, F., Green, J. D., Nichiporuk, B., Nader, A., Hansell, L., Nafisi, R and Bohandy, S. R. (2009). *The Rise of the Pasdaran Assessing the Domestic Roles of Iran's Islamic Revolutionary Guards Corps*, Santa Monica, CA: RAND Publication.
- Wei-Hao, L. (2008). "Identifying Ideological Perspectives in Text and Video, PhD Thesis CMU-LTI-08-008", Language Technologies Institute, School of Computer Science, Carnegie Mellon University Pittsburgh.

- Weimann, G. (2005). How modern terrorism uses the internet, *Journal of International Security Affairs*, 8. Available at: http://www.allacademic.com/meta/p92053_index.html (accessed July 20, 2009)
- Wellenius, B. (1999). Mitigating Regulatory Risk in Telecommunications (Note No. 189), In *Public Policy for the Private Sector*. Washington, D.C.: The World Bank Group.
- Wellman, B. (1999). The network community. In B. Wellman (Ed.), *Networks in the global village*, Boulder, CO: Westview, 1- 48.
- Wheeler, D. (2006). “Empowering publics: Information technology and democratization in the Arab World—lessons from Internet cafés and beyond”, Oxford Internet Institute, Research Report, 11.
- Wheeler, M. (1998). Democracy and the Information Superhighway, *Democratization*, 5(2), 217-248.
- Whitbourne, S. K. and Conolly, I. A. (1999). The developing self in midlife, In: Willis, S. I. and Reid, J. D. (Eds.), *Life in the Middle: Psychological and Social Development in Middle Age*. New York : Academic Press, 25-45.
- White, H. (1980). A Heteroskedastic-consistent Covariance Matrix Estimator and a Direct Test of Heteroskedasticity, *Econometrica*, 48 ,817-838.
- Williamson, A. (2004). Getting ready for eDemocracy: A five-stage maturity model for Community ICT, The Australian Electronic Governance Conference, Melbourne, Victoria, Centre for Public Policy, Victoria.
- Wong, P. (2002). ICT production and diffusion in Asia Digital dividends or digital divide? *Information Economics and Policy*, 14, 167-187.
- Wooldridge, J. (2002). *Econometric Analysis of Cross Section and Panel Data*, Cambridge: MIT Press.
- Wooldridge, M., J. (2009). *Introductory Econometrics: A Modern Approach*, 4th Edition, South-Western Cengage Learning Publication.
- World Bank. (2005). Financing information and communication infrastructure needs in the developing world: Public and private roles.
- World Bank. (2006). Information and communications for development, global trends and policies.
- World Bank (2007). World Bank Development Indicators (WDI) CD-ROM
- Worth, F. R. (2008). “A Saudi girl group that dares to rock”, International Herald Tribune. Available at: <http://www.ihf.com/articles/2008/11/24/mideast/saudi.php> (accessed November 27, 2008).
- WSIS (2003). Declaration of Principles, Building the Information Society: a global challenge in the new Millennium, WSIS-03/GENEVA/DOC/4-E. Available at: <http://www.itu.int/wsis/docs/geneva/official/dop.html> (accessed August 10, 2005).
- Wu, W. and Davis, O.A. (1999). Two Freedoms, Economic Growth and Development: An Empirical Study. *Public Choice*, 100, 39-64.
- Yap, A., Das, J., Burbridge, J., Cort, K. (2006). A composite-model for e-commerce diffusion: integrating cultural and socio-economic dimensions to the dynamics of diffusion, *Journal of Global Information Management*, 14 (3), 17-36.
- Yin, X. (2005). China, in Kuwayama, M., Ueki, Y. and Tsuji, T. (eds.), *Information Technology for Development of Small and Medium-sized Exporters in Latin America and East Asia, Chile*, United Nations Publication.

- Yu, H. (2004). "The Power of Thumbs: The Politics of SMS in Urban China", *Graduate Journal of Asia-Pacific Studies*, 2(2), 30-43.
- Zain (2009). "The Zain Group." Available at: <http://www.zain.com/muse/obj/lang.default/portal.view/content/About%20us> (accessed December 18, 2009).
- Zellner, A. and Theil, H. (1962). Three-Stage Least Squares: Simultaneous Estimation of Simultaneous Equations. *Econometrica*, 30(1), 54-78.
- Zembylas M. and Vrasidas, C. (2005). Globalization, Information and Communication Technologies, and the Prospect of a 'Global Village': Promises of Inclusion or Electronic Colonization? *Journal of Curriculum Studies*, 37(1), 65-83.
- Zhao, H.X., Kim, S., Suh, T.W. and Du, J. J. (2007). Social institutional explanations of global internet diffusion: a cross-country analysis, *Journal of Global Information Management*, 15 (2), 28-55.
- Zittrain, J. and Edelman, B. (2002). "Documentation of Internet Filtering in Saudi Arabia", Berkman Center for Internet & Society Harvard Law School, Available at: <http://cyber.law.harvard.edu/filtering/saudi-arabia/> (accessed April 12, 2006).
- Zittrain, J. and Edelman, B. (2003). Internet filtering in China, *IEEE Internet Computing*, 7(2), 70-77.
- Zukin, C, Keeter, S. and Andolina, M. (2006). *A new Engagement? Political Participation, Civic Life, and the Changing American Citizen*, Oxford University Press.
- Zukowski, T., Brown, I. (2007). "Examining the influence of demographic factors on internet users' information privacy concerns", Proceedings of the 2007 Annual Research Conference of the South African Institute of Computer Scientists and Information Technologists on IT Research in Developing Countries, Port Elizabeth, October 2-3, No.226, 197-204.

Appendix A:

Table 1: Components of Political Rights and Civil Liberties

Political Rights			
Electoral Process	Political Participation	Government	
Head of State and/or Head of Government elected through free and fair elections.	Individuals have the right to organize into political parties and to seek electoral office in an open and fair system.	Freely elected representatives determine the policies of the government.	
Legislative representatives are elected through free and fair elections.	Is there a realistic possibility for the opposition to increase its support or gain power through elections?	The government free from pervasive corruption.	
Are there fair electoral laws, equal opportunity to campaign, fair polling, and honest tabulation of ballots?	People's political choices are free from domination by military, foreign powers, totalitarianism religious hierarchies, economic oligarchies, or other dominant groups.	The government accountable to the electorate between elections, and does it operate with openness and transparency.	
	Ethnic, religious, and other minorities have reasonable self-determination, self-government, autonomy, or participation through informal consensus in the decision-making process.	For traditional monarchies that have no parties or electoral process, does the system provide for consultation with the people, encourage discussion of policy, and allow the right to petition the ruler?	
Civil Liberties			
Freedom of Expression	Associational and Organizational Rights	Rule of Law	Personal Autonomy
There is a free and independent media and other forms of free cultural expression.	There is freedom of assembly, demonstration, and open public discussion.	There is an independent judiciary.	There is personal autonomy. Citizens' right to travel, choice of residence, or choice of employment are protected. System is free of extensive political indoctrination.
There are free religious institutions, and there free private and public religious expression.	There is freedom of political or quasi-political organization including political parties, civic organizations, ad hoc issue groups, etc.	The rule of law prevails in civil and criminal matters. Police is under direct civilian control.	Citizens have the right to own property and establish private businesses. Private business activity is not influenced by government officials, the security forces, or organized crime.
There is academic freedom, and the educational system is free of extensive political.	There are free trade unions and peasant organizations or equivalents, and there is effective collective bargaining.	There is protection from police terror, unjustified imprisonment, exile, or torture, whether by groups that support or oppose the system and there is freedom from war and insurgencies.	There are personal social freedoms, including gender equality, choice of marriage partners, and size of family.
There is open and free private discussion.	Professional and other private organizations are free.	Population is treated equally under the law.	Are there equality of opportunity and the absence of economic exploitation?

Source: Freedom House

Appendix B:

Table 1: Components of E-democracy

Measurements (variable)	Components
Institutional Democracy (PRCL)	Political Rights
	Civil Liberties
Economic freedom (EF)	Trade policy
	Fiscal burden of government
	Monetary policy
	Capital flow and foreign investment
	Banking and finance
	Wages and prices
	Property rights
	Informal market activity
	Regulation
	Economic Intervention
ICT (icts)	Main telephone lines per 100 inhabitants
	Internet users per 100 inhabitants
	Cell phones users per 100 inhabitants
	Personal Computers per 100 inhabitants
	Internet hosts per 1,000 inhabitants
Freedom of the Press (Filter)	
Education (edu)	Gross enrolment <ul style="list-style-type: none"> ○ Primary ○ Secondary ○ Tertiary
	Adult literacy rate

Appendix C:

Table 1: Five categories of Index of E-democracy Opportunities (IEO)

Front Runners	Above Potentials	Medium	Transitional	Low Performers
Sweden	Latvia	Brazil	Georgia	Ethiopia
United Kingdom	Israel	Kuwait	Philippines	Ivory Coast
Netherlands	Barbados	Panama	Lebanon	Iran
Australia	Singapore	Bahrain	Tunisia	Nigeria
Luxembourg	Slovak Republic	Mexico	Armenia	Gambia
Switzerland	Poland	Belize	Gabon	Zambia
Canada	Bahamas	Turkey	India	Tanzania
United States	Chile	UAE	Namibia	Cambodia
New Zealand	Greece	Qatar	Paraguay	Congo
Iceland	Bulgaria	Dominican Rep.	Oman	Tajikistan
Austria	Croatia	Mongolia	Venezuela	Uganda
Norway	Uruguay	El Salvador	Kazakhstan	Yemen
Denmark	Mauritius	Colombia	Fiji	Malawi
Finland	Costa Rica	Thailand	Indonesia	Benin
Belgium	Jamaica	Albania	Guatemala	Mozambique
France	Ukraine	Peru	Nicaragua	Bangladesh
Germany	Malaysia	Trinidad & Tobago	Sri Lanka	Togo
Hong Kong, China	Argentina	Guyana	Kyrgyzstan	Pakistan
Ireland	Romania	Jordan	Saudi Arabia	Cameroon
Japan	South Africa	Ghana	Lesotho	Syria
Korea Republic		Moldova	Honduras	Rwanda
Estonia		Botswana	Morocco	Cuba
Italy		Ecuador	Djibouti	Nepal
Spain		Russia	Algeria	Angola
Malta		Bolivia	Kenya	Mali
Slovenia			Belarus	Niger
Cyprus			Egypt	Haiti
Hungary			China	Central African Rep.
Czech Republic			Madagascar	Comoros
Lithuania			Senegal	Zimbabwe
Portugal			Vietnam	Burkina Faso
			Mauritania	Guinea
			Swaziland	Sudan
				Libya
				Chad
				Lao P.D.R.
				Myanmar

Appendix D:

Table 1: Top 25 democracies sorted by Media Freedom (reference year 2005)

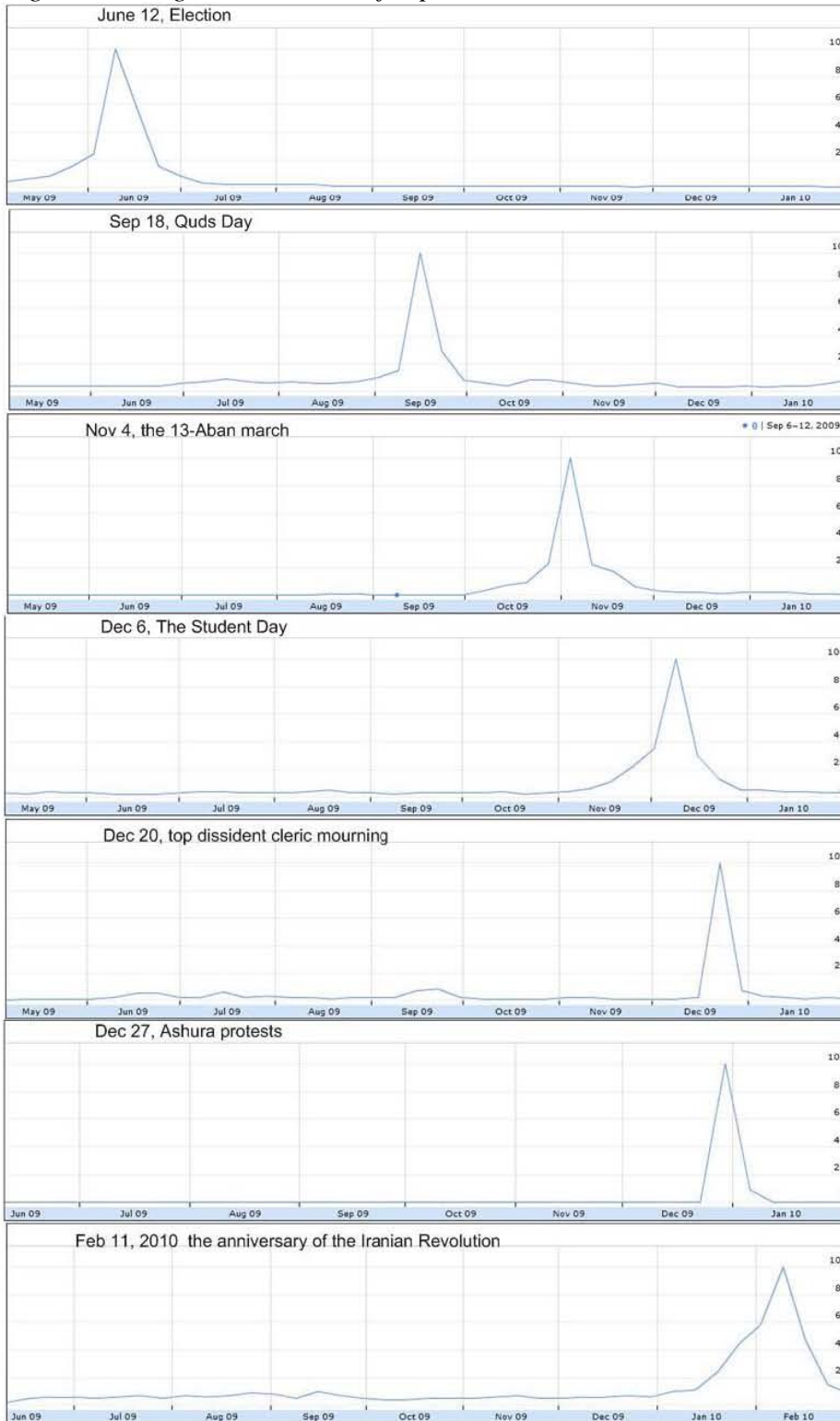
Country	PR	CL	Status	Media Freedom	Internet	Tel	Mobile
Denmark	1	1	Free	9	77.32	61.81	100.59
Finland	1	1	Free	9	72.65	40.43	100.49
Iceland	1	1	Free	9	85.85	65.55	95.73
Sweden	1	1	Free	9	81.36	62.15	100.41
Netherlands	1	1	Free	10	79.10	46.58	97.04
Norway	1	1	Free	10	79.88	45.49	102.57
Belgium	1	1	Free	11	57.57	46.03	92.22
Lithuania	1	1	Free	11	34.34	23.45	127.43
New Zealand	1	1	Free	11	62.72	42.06	85.88
Switzerland	1	1	Free	11	68.23	69.21	91.85
Portugal	1	1	Free	12	32.04	40.14	108.54
Ireland	1	1	Free	14	37.29	49.01	101.98
Germany	1	1	Free	15	64.89	66.49	96.19
Canada	1	1	Free	16	67.92	56.17	52.67
Estonia	1	1	Free	17	59.18	32.82	107.31
United Kingdom	1	1	Free	17	66.37	56.54	108.65
United States	1	1	Free	17	67.97	57.86	70.36
Australia	1	1	Free	18	63.25	49.62	90.32
Malta	1	1	Free	18	38.48	50.21	80.48
Slovenia	1	1	Free	18	46.81	40.79	87.91
France	1	1	Free	19	42.87	55.25	78.82
Austria	1	2	Free	20	55.02	45.42	105.26
Japan	1	1	Free	20	66.92	45.55	75.70
Hungary	1	1	Free	21	37.16	33.89	92.48
Slovak Republic	1	1	Free	21	50.20	22.23	84.30

Source: Freedom House, ITU

Note: A lower value for PR, CL and Media indicates a higher freedom

Appendix E:

Figure 1: Google search on Major post election events in Iran



Appendix F:

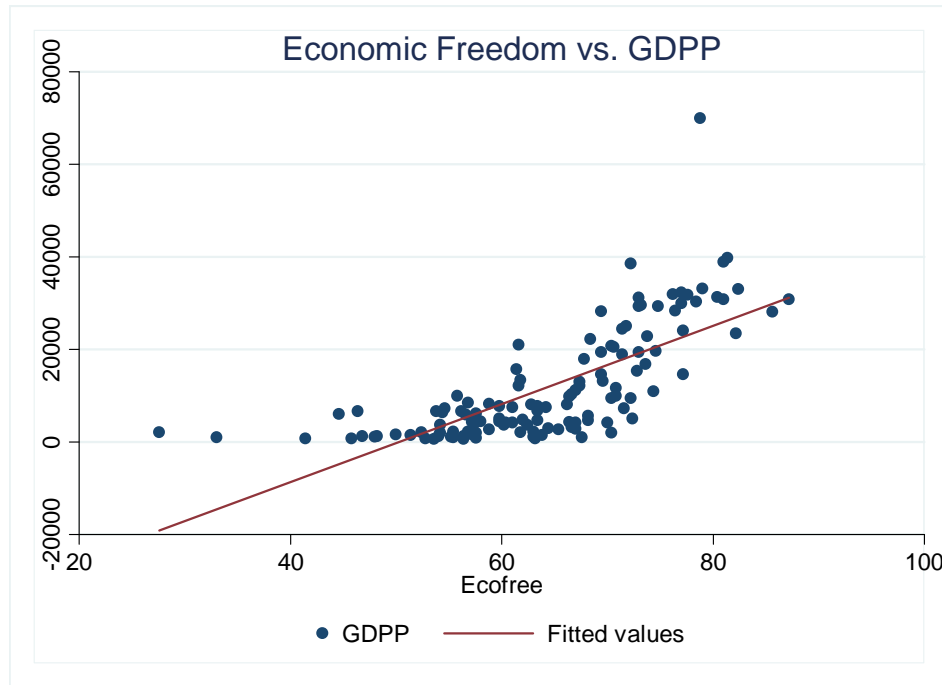
Table 1: Top 20 Countries in Terms of Economic Freedom

Country	Economic freedom	GDPP	HDI Rank
Hong Kong	89.2	\$25,592	21
Singapore	84.8	\$26,893	25
Switzerland	83.3	\$49,351	7
New Zealand	82.6	\$26,664	19
United Kingdom	81.0	\$36,509	16
Canada	80.6	\$34,484	4
Ireland	80.2	\$48,524	5
Chile	79.3	\$7,073	40
United States	79.0	\$41,890	12
Australia	78.6	\$37,175	3
Estonia	78.5	\$9,733	44
Iceland	78.2	\$53,290	1
Denmark	77.7	\$47,769	14
Finland	77.5	\$36,820	11
Germany	76.9	33,890	22
Netherlands	76.7	\$38,248	9
Austria	76.4	\$37,175	15
Slovak Republic	75.9	\$8,616	42
Cyprus	75.6	\$20,841	28
Norway	75.1	\$63,918	2

Source: Frazer Institute & UNDP (reference year 2005)

The Economic freedom index is rescaled to 100

Figure 1: The Relationship Between Economic Freedom and Per Capita GDP for 130 Countries



Source: Frazer Institute (*economic freedom of the World: 2008 Annual Report*) & UNDP (reference year 2005)