

**COSMETIC DEMOCRACIES:  
POLITICAL DEVELOPMENT AND ICTs  
IN POST-COMMUNIST ARMENIA**

A Thesis

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Of

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By

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## **Abstract**

This dissertation attempts to address a fundamental question based on underlying assumptions about the role of technology in the political development of a transitioning, post-communist society (case study: Armenia). The relationship between information and communication technologies (ICTs) and the polity, particularly in developing countries, is a highly dynamic one upon which deterministic thought is often projected without empirical justification. This leads at times to uninformed policy formulation based on conventional wisdoms that use ICT development 'blueprints' for states in which idiosyncratic factors in institutional and bureaucratic settings prevail. Digital or 'e-government' projects are a case in point, and comprise part of what is presented as a rationale for the emergence of 'cosmetic democracies'; these are states in which technological advances related to public sector/institutional reform create a misleading façade for institutions that are fundamentally not transparent or capable of service delivery. This dissertation employs three major levels of analysis, starting with an exploration of the global relationship of technology to political development through multivariate regression analysis techniques for 170 countries. Data used includes the International Telecommunication Union's new 'ICT Digital Access Index' (issued in 2003), as well as recent data from the United Nations Development Program, the World Bank's 'Governance Indicators', as well as Transparency International and Freedom House. Findings include empirical evidence of a chronic overestimation of the impact of ICTs on proxy and aggregate indicators of political development, and a refutation of 'hard' deterministic theories. An ICT Assessment Metric tool is introduced as part of the methodology, providing a template for the organization of qualitative information gathered through an extensive interviewing process at the institutional level. This metric tool is applied to case study work across twenty government institutions in the Armenian government, capturing idiosyncrasies and patterns in capacity development in four major capacity areas. Regional level analysis and context are also provided, with notable emphasis on the role of donor organizations and a presentation of aggregate donor aid flows by country in the post-Communist bloc. Finally, a survey of 400 households in three major cities yields further evidence from the primary constituents of government that the transparency and effectiveness of institutions in the business of public service are in effect sub-optimal. This validates hypotheses that posit the importance of specific kinds of capacity as an intervening variable to the effectiveness of ICT penetration. This dissertation highlights the importance of multi-dimensional analyses and the use of hybrid qualitative and quantitative approaches to ICT work in developing and transitional countries.

Dedicated to the memory of  
my grandmother and teacher,

*Arsiné Mihran Selian*

and to my family



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*One of the challenges of exploring the co-evolution of organizational forms and emergent technologies is to take seriously the expectations triggered by a new technology; taking them seriously does not mean accepting their sometimes wildly exaggerated claims but, instead, understanding the underlying assumptions about technology and society that give rise to them.<sup>1</sup>*

## 1 Introduction

The impact of information and communication technology (ICT) on politics is a broad and new field of study, and its current level of inclusion in the field of political science leaves much to be desired. When thinking about new communication technologies in the modern world, many scholars and practitioners move quickly to ideas about interdependence and globalization. Yet, while technology has been a great facilitator of such phenomena, it is neither their sole driver, nor a one-dimensional catalyst. “While ICTs are crucial to the growth of globalization (of which capitalism is a primary expression), recent technologies are by no means a singular factor.”<sup>2</sup> What makes the information revolution so interesting is that the cost of communication has diminished so appreciably, while the costs of exclusion from it have risen so significantly. At the same time, communication, control and coordination costs across organizational and jurisdictional boundaries have plummeted. The combined trends of Moore’s<sup>3</sup> and

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<sup>1</sup> Vedres Balazs, Laszlo Bruszt, and David Stark, “Organizing Technologies: Genre Forms of Online Civic Association in Eastern Europe” in *Cultural Production in a Digital Age*, ed. Erik Klinenberg. (Philadelphia, PA: The Annals of the American Academy of Political and Social Science 597, 2005), 1-2.

<sup>2</sup> Juliann Emmons Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*, (Albany: State University of New York Press, 2002), 81.

<sup>3</sup> Moore’s law is an observation made in 1965 by Gordon Moore (co-founder of Intel), that the number of transistors per square inch on integrated circuits had doubled every year since the integrated circuit was invented. Moore predicted that this trend would continue for the foreseeable future. In subsequent years, the pace slowed down a bit, but data density has doubled approximately every 18 months, and this is the current definition of Moore’s Law, which Moore himself has

Metcalf's<sup>4</sup> laws – the former a reference to increasing capacity and complexity, the latter a reference to increasing value of network relative to network expansion – are part of the reason why the benefits of ICTs have become so recognizable.

## 1.1 Defining Information and Communication Technologies (ICT)

In order to move beyond the instinct telling us that technology simply impacts politics, it is necessary to identify and to define precisely what we mean when these terms are used. 'Information and communication technology' in this thesis incorporates both the physical telecommunication infrastructure of modern communication networks and the various forms of linkages facilitated by it. According to Ithiel de Sola Pool, 'new communication technologies' were already 'shorthand' for about 25 main devices in the late 70s and early 80s, including cable television, video recorders and discs, satellites, facsimile machines, computer networks, computer information processing, digital switches, optical fibers, lasers, large-screen and high-definition television, mobile telephones and new methods of printing.<sup>5</sup> Thus, the term 'ICT' includes all that bears the mark of digitized information and data, including the packet-switched networks that make the internet, the bits of data that make digital television possible, the IT systems that comprise the backbone of commercial as well as governmental entities from backend database and payment systems to the front end websites, and mobile

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blessed. Most experts, including Moore himself, expect Moore's Law to hold for at least another two decades. (accessed March 24, 2005); available from <http://www.webopedia.com>.

<sup>4</sup> Metcalfe's law states that the "value" or "power" of a network increases in proportion to the square of the number of nodes on the network. If there are  $n$  people in a network, and the value of the network to each of them is proportional to the number of other users, then the total value of the network (to all users) is proportional to  $n \times (n-1) = n^2 - n$ . In Peter J. Denning and Robert M. Metcalfe, *Beyond Calculation: The Next 50 Years of Computing* (New York: Copernicus, 1997).

<sup>5</sup> Ithiel de Sola Pool and Eli M. Noam, *Technologies Without Boundaries: On Telecommunications in a Global Age* (Cambridge, Mass.: Harvard University Press, 1990), 19.

technology. All of the information technologies just noted fall into two principal categories: information processing technologies and communications technologies that transmit and receive the information.<sup>6</sup>

Moving from definition to application, both these ‘hard’ and ‘soft’ technologies, once in place, comprise networks of communication that tie together networks of individuals, enterprises, academic and research institutes, public sector organizations, non-governmental organizations, and the government. As a social scientist, Castells identifies such networks as very old forms of human practice that have taken on a new life in our time by becoming information networks, powered by the Internet.<sup>7</sup> When put in the broader context of political science thinking, “[ICT] can be defined as the totality of means, material and immaterial, mobilized by people for the achievement of a given objective, in the most efficient way.”<sup>8</sup> It is not surprising that this phenomenon has spawned what Castells calls an ‘Internet research generation’.

## 1.2 Research Problem

Communications networks represent a clear catalyst for potential structural change in countries that are grappling with the forces of informatization and globalization, creating by definition an infrastructure through which various types information such as data, voice, video, etc. flows horizontally across social,

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<sup>6</sup> Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*, 59.

<sup>7</sup> Manuel Castells, *The Rise of the Network Society*, 2<sup>nd</sup> ed. (Oxford; Malden, MA: Blackwell Publishers, 2000), 594.

<sup>8</sup> David A. Dyker, *The Technology of Transition: Science and Technology Policies for Transition Countries*, (Budapest: Central European University Press, 1997), 9.

political, and commercial sector boundaries, often with minimal regulation or impediment. The internet, for example, is certainly among the best and latest examples of this phenomenon; it

...necessitates a renegotiation of institutional rules in a more urgent way by destabilizing the balance of forces to which any successful negotiation gives form; by lending itself to the amplification of some forces and not others, the Internet undermines many of the institutionalized accommodations through which stakeholder groups with distinct interests and powers have gotten along.<sup>9</sup>

Moreover, there appears to be considerable room in the literature for the provision of nuance based on regional idiosyncrasy and systemic experience. Do ICTs affect all countries in the same way? Can the process of political transition toward liberal democracy be related consistently to the effects of deploying and using ICTs? Giddens implies such consistency when he states:

In an age increasingly characterized by electronic modes of the storage, collation and dissemination of information, the possibilities of accumulating information relevant to the practice of government are almost endless... Control of information, within modern, pacified states with very rapid systems of communication, transportation, and sophisticated techniques of sequestration, can be directly integrated with the supervision of conduct in such a way as to produce a high concentration of state power.<sup>10</sup>

From the international relations standpoint, Keohane and Nye conclude that "... contrary to the expectations of some theorists, the information revolution has not greatly decentralized or equalized power among states. If anything, it has had the opposite effect."<sup>11</sup> Similarly, the growth of ICTs within states has not, one can argue, necessarily worked to reorganize (i.e., modernize, rationalize)

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<sup>9</sup> "Growing a Democratic Culture: John Commons on the Wiring of Civil Society," in Department of Information Studies. (Los Angeles: University of California), October 8, 1999 [accessed 2001]. Available from <http://media-in-transition.mit.edu/articles/agre.html>.

<sup>10</sup> Anthony Giddens, *Social Theory and Modern Sociology*, (Stanford, Calif.: Stanford University Press, 1987), 309.

<sup>11</sup> Robert O. Keohane and Joseph S. Nye, *Power and Interdependence*, 2nd ed. Harper Collins, 1989), 315.

bureaucratic structures in countries that have been unprepared to absorb or fulfill the full implications of their presence.

### 1.2.1 Research Question

This dissertation asks a question based on a variety of underlying assumptions about the role of technology in society and its concomitant impact on the institutions that govern society. Do ICTs make government institutions more transparent and better able to serve, or can they merely legitimize an undemocratic status quo? More specifically, does increased ICT penetration and its ensuing institutional transformation comprise the ‘necessary infrastructure’ for transparency and effective service delivery for citizens, or not?

This inquiry is as much about the process and context of institutional change as it is about ICTs. It is geared specifically to the context of post-communist states, because they are the few, albeit transitioning, remnants of an alternative political system in existence today.<sup>12</sup> They provide among the most logical of test cases against which one can examine the causal relationship, if any, between technologies and liberal democracy. The collectively stated objectives of democratization in the process of systemic transition, and the mission statements of major international donor organizations active in the post-Communist region responsible for guiding and supporting this process further adds to this intrigue.

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<sup>12</sup> This analysis excludes China as a viable candidate for analysis for several reasons. The smaller states of the former Soviet Union – particularly of the Caucasus – provide a controlled laboratory of smaller territories and populations whose political cultures are still discernibly influenced by the Soviet experience. The legacies of Soviet bureaucracy are still intact in the former republics, carried and preserved in the organizational structures of governmental and public sector institutions. China has been evolving as a communist state within the liberal international order in ways that its post-Soviet counterparts have not since 1990; moreover, the size of its population and the trajectory of its economic growth is not comparable on any level with states like Armenia, whose official population figures at approximately three million people.

This is true because the antecedent conditions of Soviet bureaucratic and administrative structure were characterized by a set of non-liberal values that still stand in sharp contrast to those that prevail today in the West. When ICTs are brought into a post-communist country, they are deployed *on top* of an existing institutional structure with its own institutional memory; in other words, these structures are not suffering from an overarching lack of basic infrastructure, such as that we find in some African nations. Thus, the task of study here entails an assessment not just of the creative and empowering power of ICTs, but also of the *transformative* power of ICTs. This is related to an underlying philosophical investigation about the neutrality of technology, and whether ICTs can support phenomena antithetical to the principles and values of liberalism, sharing, and innovation that create them.

### 1.2.2 Significance of the Research Question

This research question is important for many reasons. Firstly it challenges the conventional wisdom of deterministic theorists such as Winner, McLuhan, and Barber, that has originated from predecessors like Innis, known as the grandfather of technological determinism, and has developed over the last decades in the works of Lasswell, Schramm and Lerner. Each in their way has supported a theoretical stance whose characterization of technology underemphasizes the importance of capacity and agency in the structure and processes of state institutions to use ICTs effectively. While Barber recognizes that his deterministic theory does not necessarily apply to non-western polities, more nuanced approaches like that of

Rosenau recognize that technology can be shaped by the environment in which it finds itself. This work is a contribution to such more nuanced views in the literature by taking a step closer toward recognizing ways to understand and account for the idiosyncratic capacity or lack thereof in a given institutional environment. The notion of capacity is defined and expanded upon in Chapter 2, and an ICT Capacity Assessment Metric is introduced in Chapter 3. This dissertation thus seeks to elucidate a conceptual ‘missing link’ and the consequences of its absence upon ‘information society’ imperatives that generalize too freely upon the impact of ICTs on society.

In the more practical realm, this question is significant due to the sheer volume of donor/aid funding being allocated to development in the post-communist world: at least \$16.9 billion has been spent in the last two to three years in this region.<sup>13</sup> It is safe to assume that at a minimum half of this is being allotted to various forms of governance and public sector reform, and that the improvement of government institutions today is almost always accompanied by a significant technical/IT component. At the very minimum \$40 million from USAID has been spent on ICT work in the Caucasus in the past two years alone.<sup>14</sup> Assuming that this money is being spent with the objectives of development and democratization

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<sup>13</sup> This number has been compiled by the author through systematic data gathering from the world’s largest functioning donor and aid organizations by region. These include The World Bank (WB), The Organization for Security and Cooperation in Europe (OSCE), The United States Agency for International Development (USAID), The Canadian International Development Agency (CIDA), The European Union and TACIS, and The United Nations Development Program (UNDP), the European Bank for Reconstruction and Development (EBRD), the Eurasia Foundation, and the Open Society Institute (OSI) of the Soros Foundation. This number does not include the resources of the many thousands of NGOs that function in this sphere of activity; these often comprise what some have referred to as the ‘sponge’ that absorbs large portions of this capital flow.

<sup>14</sup> *Information and Communication Technology for Development: USAID's Worldwide Program*, USAID Bureau for Economic Growth, Agriculture and Trade, (Washington DC: USAID, 2004), 24.

in mind, and that technology is at least a critical facilitator, questioning the efficacy of such a process is worthwhile.

This question is also important because present day governmental reform is unlikely to ever jettison a significant ICT component. Certainly, for nation states in the developing world the tasks and challenges of development, beginning with the alleviation of poverty and spanning the full array of critical infrastructure modernization, are innumerable. The question of prioritizing technology among these tasks is thus a serious one; is ICT a necessary investment for government, and has it proven to bring positive change? What is the nature of that change – is it creative or transformative, or both? To use the leapfrogging analogy from telecommunications research<sup>15</sup>, if ICTs reduce transaction costs as organizations evolve toward efficiency, does it make sense to ‘leapfrog’ toward institutions (i.e., with ‘digital government’ capacity) with advanced back-end and front-end technology infrastructure in a societal context that does not justify it? And perhaps most importantly, who benefits from the use of the ICTs? In small countries with limited resources and opaque governmental structures, the question of whether the ends justify the means is difficult to address, because often the catalysts and beneficiaries of institutional change are the elite, and there is little opportunity to transcend formal ‘state’ posturing. This is why it is important to undertake an exploration of what ICTs may bring to the political sphere in a country like

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<sup>15</sup> The phenomenon of ‘leapfrogging’ has emerged as a concept relevant to the telecommunications development of developing countries; the idea is encapsulated by the fact that it is cheaper for those countries lacking in basic communication infrastructure (i.e., copper lines for fixed line telephones) to skip over this step in providing connectivity, and jump rather immediately toward the installation of wireless masts. The underlying assumption of this leap is that it will ultimately cost less to achieve wide-scale societal access.



Armenia, which in many ways typifies the experience of transition, marginalization, and underdevelopment.

### 1.2.3 Geographical Focus

This dissertation will focus specifically on the case of Armenia in its post-communist context, not only because it is a country that faces the gamut of development challenges, but because it is especially well-positioned to be a beneficiary of IT-driven reform. It is limited territorially and economically due to an artificially imposed blockade on its border with Turkey, and faces an effective communication blockade due to its own PTT monopolist, ARMENTEL<sup>16</sup>. With few natural resources, landlocked, and isolated between the west and east, only information that can flow into and out of Armenia at relatively low cost. As a self-proclaimed former ‘Silicon Valley’ of the former Soviet Union, Armenia is a prime candidate for ICT research; in the words of Michael Porter of the Harvard Business

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<sup>16</sup> ArmenTel was originally established in 1995 as a joint venture between the Armenian Ministry of Communications (with 51% share) and U.S. Trans-World Telecom Limited, a group of telecommunication service companies (with 49% share). In the mid-90s, ArmenTel began rebuilding the basic telephone infrastructure for services to major population centers in Armenia; it also invested in GSM and paging services and installed the first stage of a modern network management system, a management information system, and information and billing system. In 1997 the Ministry of Communications appointed Merrill Lynch to advise on the further privatization of ArmenTel; they ran a two-round international public tender for the sale, which was won by Hellenic Telecommunications Organization (known as OTE) in 1998. OTE is a provider of public, fixed switch domestic and international telephony services in Greece, and acquired a 90% stake in ArmenTel for \$142.47 million, buying out Trans-World, with agreements to invest \$300 million in Armenia’s communications network over the next decade, including \$200 million in the first five years. The Armenian government retained a 10% stake, and the license gave OTE exclusive operating rights for 15 years, including five years of exclusive GSM operations. This deal is widely known to have been among the most corrupt transactions in the history of Armenia’s independence; there are allegations around documented reports by former ArmenTel executives charging that senior Armenian government officials received several million dollars in bribes and payoffs from the Trans World Telecom. It is not unreasonable to stipulate that the potential absorptive capacity and social capital intrinsic to a nation state can become moot areas if faced with exogenously imposed barriers to the growth capacity of communications infrastructure. The case of ArmenTel is a case in point. In “Privatization Guide: Armenia” (accessed March 2005); available from <http://www.export.am/Guides/Privatization/> MSDIntInv.htm.

School at an “Armenia 2020” Conference held at the Kennedy School of Government in March 2005, “...communication infrastructure is the most important and strategic issue for this landlocked country with hostile neighbors”.<sup>17</sup> The true modalities of the post-communist experience may be somewhat obscured by the messy process of ‘transition’; nevertheless, an in-depth case study across twenty institutions in Armenia provides an insight into the real world of so-called ‘democratizing ICTs’.<sup>18</sup> Needless to say, the fact that Armenia received nearly \$400 million<sup>19</sup> in development aid from the main global donor agencies between 2003 and 2004 is reason enough to take a closer look at the transparency of its government institutions. If even just 5 percent of these donor projects include a technical component, this means that \$20 million has been spent on some form technology work alone; this number is about half of what we know USAID has expended on ICT work alone.

The potential role of technology as ‘liberalizing catalyst’ in the post-communist bloc is unique and provides an extraordinary foundation for exploring the evolution of organizational forms and interactive technology. The countries of the Caucasus, in particular, are fascinating because they are newcomers to the new liberal international order and to the legacy of liberal democratic value systems. On

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<sup>17</sup> “Global Summit on the Future of Armenia”, Conference at the Belfer Center for Science and International Affairs, Kennedy School of Government, Harvard University, March 8, 2005.

<sup>18</sup> This case study was undertaken in Yerevan, Armenia from June 2004 through December 2004 thanks to an IREX IARO Grant and a research fellowship at the Political Science Department of the American University of Armenia.

<sup>19</sup> This number has been compiled by the author through systematic data-gathering from the world’s largest functioning donor and aid organizations by region. These include The World Bank (WB), The Organization for Security and Cooperation in Europe (OSCE), The United States Agency for International Development (USAID), The Canadian International Development Agency (CIDA), The European Union and TACIS, and The United Nations Development Program (UNDP), the European Bank for Reconstruction and Development (EBRD), the Eurasia Foundation, and the Open Society Institute (OSI) of the Soros Foundation.

a local level, the impact of ICT networks on society and politics can be exemplified in such countries in a variety of ways: from the amelioration of accessibility to resources for educational use, to the automation of financial and commercial services, to the enhancement of the organizational capabilities of local interest groups, to the creation of clusters and linkages through which innovation can take place. Some in Armenia point to examples of such occurrences from a ‘glass half-full’ perspective, viewing them as part of an upward trend toward the realization of information society; others see the reverse, opting rather to view them as a series of ‘one-shot’ unsustainable projects that only serve to fragment an already divided ‘market’.

#### 1.2.4 Hypotheses

This dissertation examines the questions around ICT impact on several analytical levels, starting from global analysis based on aggregated data, moving toward institutional analysis, and ending with an examination of the perceptions of individuals. The foundation of the critique of the conventional wisdom that ICTs positively impact political development must rest on proof that such a positive and significant relationship exists at all. Thus, the dissertation tests the empirical relationship between ICTs and variables measuring democracy (See Chapter 4). Once this is accomplished, more detailed regional and case study work is conducted in order to further critique the prevailing wisdom. The main hypotheses of this dissertation rest on the idea that ICTs are highly dynamic and reflective catalysts that can bring about change and reinforce patterns of pre-existing ‘institutional

dynamics'<sup>20</sup> simultaneously. The central hypothesis of this research is that ICTs can create the emergence of 'cosmetic' democracy, if they are not accompanied by certain necessary conditions; these include requisite supplies of absorptive capacity across governmental institutions, and significant demand for services by the citizenry. For the purposes of this dissertation, a 'cosmetic democracy' is defined as a state in which the trappings of modern institutional transformation are intact, but in which the overarching political culture results in a lack of commitment to transparency and service delivery. A corollary condition to the central hypothesis is that the work of donor organizations<sup>21</sup> can play an important role in the materialization of this divergence between appearance and capacity.

If these hypotheses are proven true through this analysis, there are significant implications of this research that extend beyond the case of Armenia in their impact, specifically in the area of donor-host government relations. One of these implications is the recognition of path dependency, whereby the initial settings of institutions and technology can determine the outcome of development as a process. Douglas North elaborates on this subject, highlighting the important point that path dependency will only allow for incremental changes in response to a multitude of simultaneous stimuli, and that there will likely be no necessary

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<sup>20</sup> The pre-existing 'institutional dynamics' referred to above are characterized by rigid hierarchy, high degrees of centralization, and the pre-bureaucratic institutional conditions referred to in the Literature Review (Chapter 2).

<sup>21</sup> The most active donor organizations in the post-communist region are the Swiss Development Corporation (SDC), The Canadian International Development Agency (CIDA), The UK Department for International Development (DFID), The Organization for Security and Cooperation Europe (OSCE), the European Union TACIS Program, The World Bank, the United States Agency for International Development (USAID), the United Nations Development Program (UNDP), the Open Society Institute (OSI) associated with the Soros Foundation, the Eurasia Foundation, and the European Bank for Reconstruction and Development (EBRD).

convergence toward efficient institutions.<sup>22</sup> Another implication is that findings such as that by the Heritage Foundation and the Wall Street Journal placing Armenia 44<sup>th</sup> (along with France and ahead of Poland) on the ‘Annual Index of Economic Freedom’ (further elaborate in Chapter 6) may be re-interpreted with an eye toward what *really* is happening on the ‘ground’. While such indexes may be based solely on the development of countries’ business climates, it is still helpful to be able to add shades of context to the stark political and cultural contrasts that typify transitioning states.

### **1.3 ICTs, Politics and the State**

Many further reasons justify the relevance of ICT research to the realm of politics. Firstly, ICT networks, and particularly the Internet by virtue of its architecture, tend to be amenable to democratic, participatory political ideologies and ‘open’ liberal economic policies (as opposed to ‘closed’ ones). From a development standpoint, these are important areas of concern for developing countries, since the design of institutions, legal/regulatory frameworks, and policies that govern power structures<sup>23</sup> can all be enhanced by the added functionalities afforded by ICTs. Theoretically, at least, communications networks are mechanisms with the potential to challenge traditional, vertically constructed political power structures that have been largely built upon heretofore strict control

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<sup>22</sup> Douglas North, *Institutions, Institutional Change, and Economic Performance*. (New York: Cambridge University Press, 1991).

<sup>23</sup> Such ‘structures’ include all mechanisms of control used by governments, such as information filtering through press offices, central intelligence bureaus, data mining through surveillance technologies, the physical centralization of public documents in national archives, and the control of various channels of the news media, etc.

of knowledge and information dissemination. The idea of using ICTs for development has become increasingly popularized in articles and conferences, and most recently, due to a United Nations-sponsored World Summit on the 'Information Society'<sup>24</sup>, planned in two phases of Phase I in Geneva in December 2003, and continuing with Phase II in Tunisia in November 2005.

Second, generally the core of sustainable growth and long-term economic success in many developing countries has been said to lie in the area of national systems of innovation – which are comprised of national technological foundations particularly where industrial ones have failed before. Levels of technology integration and adoption can determine a nation's ability to search, acquire, and utilize existing technology advancement from abroad and, when needed, to create indigenous development as part of its absorptive capacity to learn, improve, and develop upon what it has. On the other hand, the adoption of new ICTs reflects a broader – and at times superficial – effort to embrace the values embedded in paradigms of political development. Today, the prevailing paradigm largely orients economies toward liberalization, and the polity toward democratization.

Third, the concept of the 'technology of a nation state' has evolved considerably over the last several decades. It can be defined generally to incorporate the physical telecommunication infrastructure of modern communication networks, as well as the various forms of linkages facilitated by it.

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<sup>24</sup> What tends to happen in such fora is that a disproportionately high emphasis is put on the relationship between ICTs and economic growth, while the interplay between technology and political development is overlooked. While this work by no means is intended to criticize the prioritization of economic growth and related initiatives, it is intended to raise awareness of the importance of ICT infrastructure and the role it may (or may not) play in making the institutions of governance more accessible, accountable, and effective. This is particularly relevant and important to countries that are not predisposed to transparency.

The emphasis on the transformative power of ICTs comes in the wake of several waves of development work, including those of ‘development planning’ in the 1960s, ‘basic needs’ provision in the 1970s, ‘structural adjustment’ projects in the 1980s and ‘good governance’ initiatives in the 1990s. While the academic discourse about the political development and political culture of nation states that began in the 1960s has subsided somewhat in the face of more economically-and market-driven development alternatives, its relevance has endured in some ways. This is evident, albeit in a latent way, through the literature on administrative, institutional and broader public sector reform that features prominently on the agendas of global donor organizations. Underneath the jargon, development specialists are still talking about the modernization of government infrastructure and the capacity for service delivery. New technologies today comprise a critical component of the modernization of polity; yet their significance can be ambiguous if the tendency to resort to simplistic magic or silver bullet theories prevails.<sup>25</sup>

Fourth, ICTs have given a new face to the task of service delivery by governments. Today, governments that are not willing or able to expand their capacity to adopt ICTs successfully are in effect confirming their marginalization in the developing world. It is fair to say that countries with democratic political systems are exploring the possibilities afforded by new technologies. That said, however, “Not all democracies are leaders in the information revolution; but as far

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<sup>25</sup> ‘Magic’ or ‘Silver’ bullet theories are based on communications research on the power of mass media. The idea behind them is that a technology can be so powerful that it can ‘inject’ its messages into a target audience or area and immediately achieve its desired results; thus technology is ascribed a linear, unidirectional quality in which senders send information through specific channels to receivers. The media thus were seen as both channels and indicators of modernization. These ideas were critiqued starting in the 1950s through the 1970s by a number of scholars including Lazarsfeld and Katz, who helped develop the collective challenge to the ‘dominant paradigm’ of that era.

as countries are concerned, most information shapers are democracies. This is not accidental.”<sup>26</sup> Yet, for example, the institutional arrangements and rules that structure the US federal government work against horizontal, boundary spanning arrangements.<sup>27</sup> At the same time, the idea that ICTs and the information revolution will have a leveling effect is often taken for granted.

As [ICT] ... reduces costs, economies of scale, and barriers of entry to markets, it should reduce the power of large states and enhance the power of small states and non-state actors. In practice, however, international relations are more complex than the technological determinism of the new conventional wisdom suggests. Some aspects of the information revolution help the small; but some help the already large and powerful.<sup>28</sup>

### 1.3.1 Transformations in Service Delivery

With the advent of internet technologies, many believe that a paradigm shift has emerged insofar as the potential for service delivery on a mass scale to citizens is to be fulfilled. Technically speaking, unlike the telephone and radio broadcast technologies (point-to-point or point-to-multipoint), newer ICTs in the form of the internet provide an entirely new structure for the flow of bits of information: there is no central node or switch upon which the network depends. The provision of such systems and the information contained within them can yield various outputs – static or interactive with high transactional capacity – depending on a number of variables, including include not only the employment of sophisticated technical programmers, but the presence of significant budget

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<sup>26</sup> Elaine Ciulla Kamarck, Joseph S. Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, (Washington, DC: Brookings Institution Press, 2002), 175.

<sup>27</sup> “Research Issues in Digital Government,” in National Center for Digital Government website, Kennedy School of Government. (Cambridge, MA.), [accessed March 12, 2005]. Available from <http://www.ksg.harvard.edu/digitalcenter/index.php?id=Research&page=research-issues>.

<sup>28</sup> Kamarck, Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, 170.



allocations, institutional commitment, as well as leadership and top-down guidance from the executive branch in government.

This notion of service delivery is a key to understanding the utility and importance of IT in the political marketplace; it is the means by which documents can be managed, workflow can be tracked, and database systems can store the information that should be easily retrievable (first for government employees, and presumably next for citizens). The emergence of more integrated systems through various types of networks like LAN and WAN also helps in many ways to improve efficiency and in some cases, to promote transparency. ICTs take many forms and can transform government interactions with citizens, businesses and other parts of government; however, focus needs to be placed less on the technology *per se* and more on the transformation and reorganization of the functions and interactions that it permits.

Structural reform of the machinery of government has its origins in the technical assistance to public administration offered in the early 1960s, but has re-emerged in recent years as a key element in the reform of governance systems.<sup>29</sup> New ICT-based tools have opened up new possibilities for better coordinating the different branches of government, and forging a more direct link between the citizens and government.<sup>30</sup> In addition to enhancing relations with the public, ICTs in government can also improve the internal working of an administration. Introducing ‘management information systems’ within government departments, for example, can result in improved personnel management, cost reductions and

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<sup>29</sup> “Public Administration Reform Practice Note,” UNDP, May 2004, (accessed February 10, 2005); available from [http://www.undp.org/policy/docs/practicenotes/PAR-PN.doc#\\_Toc67731496](http://www.undp.org/policy/docs/practicenotes/PAR-PN.doc#_Toc67731496).

<sup>30</sup> *ibid.*

improvements in service delivery and government procurement, better management of technical assistance funds and projects, and increased revenue collection. However, technology usage in government does not automatically result in the transformation and re-organization of government functions that need to be part of a larger evolutionary process.

The process by which institutions mature through the use of technology can be examined from a historical perspective in developed countries where investments by bureaucrats in information technology and the automation of back office functions on the administrative side of accounting, payroll, human resources, budgeting, etc. has been present and consistent for decades. Yet, where there is little ‘tradition’ of automation reinforced by a political culture that is lacking in capacity, and relatively low or non-existent ICT penetration,<sup>31</sup> it is critical to approach these questions from a different angle. Static websites tend to emerge from government institutions in an attempt to provide the appearance of modernization in low-ICT-capacity developing countries. Often, the few services that may be offered are not transactional in nature. At best, such initiatives tend to be taken as a result of the work of a few innovative individuals, because rarely is service delivery part of a vision or strategic framework in countries that cannot afford to allocate significant resources to ICT work. This is the main reason why some individual departments in government institutions may be using fully

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<sup>31</sup> Assuming that teledensity can be a reasonable proxy indicator for ICT penetration, it is useful to note that Armenia’s current teledensity average is at 17.84 telephones for every 100 inhabitants. This number is based on the International Telecommunication Union (ITU) indicators for 2003. Relative to its neighbors, Armenia falls below both Azerbaijan’s teledensity of 24.25 and Georgia’s teledensity of 27.97. However, based on scores of the ITU Digital Access Index (2003), Armenia ranks with Georgia (at .37) in the “Medium Access” category of the with a score of .30, compared to Azerbaijan’s .24.

functional networks and optimizing their use of equipment, be it obsolete, or not, while others just next door may remain isolated and paper-driven. If nothing else, it becomes quickly apparent that the application of ICT to the government institutions in a country is a highly complex and painstaking process that must occur from the inside out.<sup>32</sup> Thus, it is important to recognize that in developing, transition countries, the relevance of this historical perspective is diminished. It is likely that there is less of a legacy of ICT investment in developing countries, and therefore that the level of technology usage, particularly for application to more sophisticated processes of automation on the service delivery side of functionality, would be low.

### 1.3.2 ICTs as Decisive Variable

Thus, how critical are ICTs relative to other driving factors of institutional transformation? The answer to this question is complex and defies hasty response. “To regard technology as at once socially autonomous and yet of decisive social consequence is demonstrably wrong. Study after study of the history of technological innovations has shown that they are not socially autonomous, that is technology is intricately intermeshed with economic, political and cultural relationships.”<sup>33</sup>

The reality is that our machines can be given varying characteristics by our machine designers and builders. Technology, within the limits set by nature, is man-made and hence variable on order. If one wants to alter out technologies, the place to look

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<sup>32</sup> This process frequently requires that hybrid solutions (i.e., partial automation) be developed in order for government employees/civil servants, on the one hand, to recognize and execute the services offered by their institution, and citizens, on the other hand, to recognize and utilize the services available to them.

<sup>33</sup> Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*, 81.

is not the molecular structure but the social structure, not to chemistry of materials, but to rules of man, especially the economic rules of who decides on technology.<sup>34</sup>

Put into broader context this elucidates the validity of Immanuel Wallerstein's point that this time of significant transformation in the world has created an opening for the exercise of effective agency, although still within specific structural and cultural contexts. According to Zacher, "... technology as a system functions in an international, even global, setting. But it also operates in the national political and ideological context of the given country. It is this that determines the scope for state intervention, and the existence or otherwise of a strategy of technological development."<sup>35</sup>

## **1.4 The Rise of Digital Government**

### **1.4.1 Defining Digital Government**

The concept of digital government is critical to this dissertation because it represents the ultimate fusion between ICTs and the polity. Digital government, also known as Electronic or E-Government, can be defined as the use of information and communication technologies by government to deliver information and services to its constituents. In spite of the considerable literature on the subject, there is little agreement on good measures for digital government or what should be measured for assessment.<sup>36</sup> Some studies have focused on availability, cost, and quality of ICT networks and equipment. Another stream of research has looked at

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<sup>34</sup> Seymour Melman, "The Impact of Economics on Technology," *Journal of Economic Issues* 9, no. 1 (March 1975): 71.

<sup>35</sup> Dyker, *The Technology of Transition: Science and Technology Policies for Transition Countries*.

<sup>36</sup> T. Carbo and J.G. Williams, "Some Determinants of User Perceptions of Information Quality on the World Wide Web," 2004, *Electronic Journal of e-Government*, Vol. 2, No. 2 pp. 94-105.

digital government as a special case of ICT-enabled business process change.<sup>37</sup>

Most tend to treat the subject matter normatively, implying that it is the desired end-goal of all modern states and political systems to achieve ICT/digital functionality in government. Needless to say, such an objective has implications not only for enhancing organizational capacity, but for issues of control and power aggregation.

#### 1.4.2 Digital Government and Political Systems

In what political context does digital government attain most relevance? As stated earlier, there is no clear consensus on the impact of ICTs on government, thereby indicating the complexity of the interactions and linkages it alters. The ability of a state to conform and integrate with global standards of ICT utilization appears to depend on the nature of its underlying political system. Numerous attempts at deploying networks and systems of digital government are underway in as the most democratic of states around the world (the United States, the United Kingdom, Australia, the European Union). Governments are actively seeking to enhance transparency and the processes through which they govern using digital information management tools (*vis-à-vis* their constituents and themselves). For example, in the US in 2000, a survey was conducted of 3,749 local governments, including 2,899 municipalities above 10,000 in population and 850 counties; governments have learned that having well-considered plans and goals for IT projects can increase the probability of their successful implementation, and that IT

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<sup>37</sup>H. J. Scholl, "E-Government: A Special Case of ICT-enabled Business Process Change," 2003, Proceedings of the 36th Hawaii International Conference on System Sciences, (12 pages).

should fit into the overall strategy of the organization, adding value to the organization's output, and assisting it in reaching its missions and goals.<sup>38</sup>

In contrast, "... in authoritarian regimes, the [use of] the Internet threatens domination by the state over information and communication but at the same time, paradoxically, serves as an instrument of consummate state surveillance and control over society."<sup>39</sup> The various institutions and mechanisms through which society administers and manages itself constitute the nexus upon which the collective benefits of ensuring progress and development are balanced with the struggles for power that have characterized society since time immemorial. The evolution of conflict throughout history is a somber reflection of how new technologies have aided in the spread of antagonisms, as well as the scope and scale of aggression.<sup>40</sup> George Schultz, former US Secretary of State observes, "Totalitarian societies face a dilemma: either they try to stifle these [information and communication] technologies and thereby fall further behind in the new industrial revolution, or else they permit these technologies and see their totalitarian control inevitably eroded."<sup>41</sup> This concept is also described by Fountain as the "perversity of incentives" in the institutional setting, and what Kedzie calls the "Dictator's Dilemma" in the state –

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<sup>38</sup> Patricia Fletcher Diamond, Stephen H. Holden, Donald F. Norris, and International City/County Management Association. *E-Government: Planning, Funding, and Outsourcing*. Washington, DC: International City/County Management Association, 2001, 2.

<sup>39</sup> Fountain, *Building the Virtual State: Information Technology and Institutional Change*, 251.

<sup>40</sup> The use of radio broadcast technologies in the incitement of genocidal violence in Rwanda in 1994 is a case in point. Amy R. West, Lydia Wambugu, "Left to Their Own Devices: The Impact of Informal Information and Communication Networks on Security in the Tanzanian Refugee Camps", Article 19, December 2003. (accessed March 2005); available from <http://www.article19.org/docimages/1788.pdf>.

<sup>41</sup> Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*, 105.

where increased efficiency and political efficacy [brought about by ICTs] are positively related to each other, and negatively related to authoritarian control.<sup>42</sup>

#### 1.4.3 Digital Empowerment of Constituents

Digital government cannot be effective if the notion of interactivity is not incorporated as a highest priority. The exercise of one's rights as a citizen is useless if the information disseminated allows only for retroactive disapproval or support. Key constituencies that might be affected by digital government programs include large stakeholders in the public and private sectors, as well as the individuals that the new technologies are meant to empower. Minority groups may ideally benefit from digital governance programs insofar as the articulation of their causes may positively impact policy agendas that have been heretofore unclear relative to their political and social causes.

The extent to which groups must organize themselves, their agendas, their budgets, and their own political hierarchy for 'online presentation' can add immeasurably to the quality of debate undertaken at high, previously inaccessible levels in the polity. Assessing the relevance, prospect, and quality of digital government work in a transitioning nation is challenging, in part because the absence of prerequisite conditions of an egalitarian polity and the 'safety nets' associated with a functioning 'rule of law' preclude the effectiveness that the new technologies are meant to bring. In other words, in developing countries that are likely plagued by corruption and that are already 'offline' incapable of delivering service, the prospects of achieving effective digital governance is poor. People of

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<sup>42</sup> *ibid.*, 106-109.

the post-communist world have formed their political values in a totalitarian or post-totalitarian regime<sup>43</sup>; unsurprisingly, this legacy has a material impact on their expectations both from themselves, and from their government.

#### 1.4.4 ICTs: The End of Development?

An interesting idea can be explored if one considers for a moment whether digital government, or in other words, ‘democracy online’, is a universally realizable and desirable objective. Francis Fukuyama in *The End of History and the Last Man* in 1992 articulated the parallel idea that liberal democracy and free market capitalism, as the most fundamentally satisfying forms of government and economic organization, represent the final stage of political development. Fukuyama supports the idea that all states that are not presently liberal democracies must justify themselves so as to convey the image that they are moving steadily towards liberal democracy. If one subscribes to this notion, the concept of digital government can be viewed accordingly as the ultimate milestone of institutional modernization and political development. ICTs, in turn, then become the machinery of Fukuyama’s Cold War triumphalism, and the stage is set for guided systemic change all around.

Just as there has been a severe backlash in the last few years to Fukuyama’s predictions, one can argue that the use of ICTs to underpin the principles and functions of liberal democracy may exacerbate existing tensions, or even elicit new ones. This line of thought is associated with the hypothesis and

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<sup>43</sup> Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*, 141.



theory-building exercise of this dissertation. For example, the emergent reactions in the form of organized global terror networks that seek to attack and destroy liberal democracy are active online as well as offline, and the phenomenon of information warfare can serve as evidence supporting this.<sup>44</sup> If the construction of good digital government ‘portals’ becomes a desirable enough status symbol for states aspiring to democratize and modernize, this not only provides evidence that political ideology can be embedded in ICTs, but that their use can become as much of a weakness as a strength.

## 1.5 Conclusion and Dissertation Plan

According to Fountain, an institutional perspective “... alerts us to the fact that government is likely to use the Internet differently from firms in the economy. The development of the virtual state is not likely to resemble the growth of electronic commerce.”<sup>45</sup>

Information technologies and organizational/institutional arrangements are connected reciprocally. Both function in this framework as dependent and independent variables. Each one has causal effects on the other. Institutions

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<sup>44</sup> The explosive spread of the Internet has brought greater vulnerability not only to military and intelligence systems, but to telecommunications systems, railroads, air traffic control centers, power centers, financial data transmissions and any other systems connected by a computer network. Due to the growth of convergence of various types of networks, the possibility to penetrate and access the control facilities or servers of various infrastructure systems has been greatly enhanced. This is particularly the case with communications networks or power grids. The internet makes it possible for attacks to be carried out from thousands of miles away, with the only clear risk to the attacker being the possibility of counter-cyber-attacks. Sabotage of a city's power structure, misinformation on sites or email, company intranets being breached with Trojan horses, funds being stolen from financial institutions, worm viruses deleting dates, Web sites being blasted with digital bombs using denial-of-service (DoS) programs – all are possibilities amidst a wide range of types of attacks. The potential damage is far-reaching, according to information-warfare experts such as James Adams, founder and former CEO of iDefense, a US intelligence consulting firm. “As territory, money, power and economy - all the seeds of war - migrate to the virtual space, so will war itself... [Cyber war] is the virtual equivalent of nuclear deployment.” In Maria Nguyen, “*Def.com1*”, *I.T.News*, August 18, 2001. (accessed February 2005); available from <http://it.mycareer.com.au/news/2001/08/18/FFXPGM55LQC.html?N weeklyT>.

<sup>45</sup> Fountain, *Building the Virtual State: Information Technology and Institutional Change*, 251.

and organizations shape the enactment of information technology. Technology, in turn, may reshape organizations and institutions to better conform to its logic.... Organizational environments reward effectiveness, efficiency, and control over production. Institutional environments reward normative requirements for appropriateness and legitimacy and, in some cases, conformity to procedure, presentation, symbols, and rhetoric.<sup>46</sup>

By sheer virtue of the fact that the most challenging problems in many transition countries are social service-delivery and poverty-related, the need to examine the capacity of government to serve its citizenry is critical. The countries of the post-Communist world, without clear and consistent patterns of market-oriented regulation, liberal political cultures, advanced existing telecommunication infrastructure as signaled by teledensity measures and internet penetration, and consistent 'access' levels, are not candidates for generalization either way. The host of idiosyncratic factors that 'customize' the concept of political effectiveness to their nation states, and color their otherwise generic adaptations of 'democratic' structures, represent a key for understanding what must be addressed and remedied by those charged with policy formulation implantation.

In this dissertation, I seek to explore the major themes and questions presented in this introduction. Chapter 2 will be comprised of a comprehensive literature review, recognizing major schools of thought and theory, contextualizing ICTs in the realm of political development, political culture, and bureaucracy, and identifying gaps in the relevant literature that warrant attention. A foundational element in the chapter will be the writings of Weber, whose view on bureaucracy as a technology of control and an inherently rational, meritocratic hierarchy will provide the theoretical contrast to the findings of the case work.

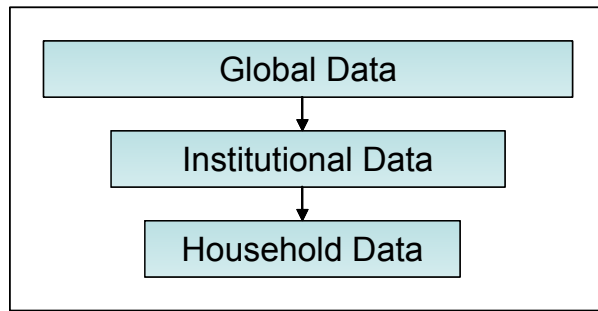
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<sup>46</sup> *ibid.*

Chapter 3 will be devoted to methodology, starting with identification of a research question, a rationale for theory-building and in-depth case study work, the presentation of a hypothesis, and the clarification of dependent and independent variables. An ‘ICT Assessment Metric’ will also be presented; this is the product of a six-month field study in Yerevan, Armenia that was comprised of both a qualitatively-driven interview process including more than seventy personal interviews with IT department staff and specialists in government ministries and donor organizations, and a survey of 400 households in three Armenian cities including the capital. Figure 1-1 below depicts the progression of the analytical lens that is adopted in this dissertation.

Chapter 4 will provide the material of exploratory quantitative analysis, studying the causal relationship and correlation between variables of ICT penetration, and a variety of indexes providing proxy measures around the dependent variable of political development as theoretically defined in Chapter 2, and operationalized in Chapter 3. The statistical analysis using aggregated data from major donor organizations is likely to reconfirm the deterministic view on ‘ICTs and development’ that is espoused in world fora like UN World Summit on the Information Society (WSIS), although what we may gather from more rigorous testing may yield important nuances for future policy work. This analysis will reflect the ICT dynamics as derived from global data on over 170 countries, testing general consistency and trend patterns. It will be based on the use of the ITU Digital Access Index, a new multi-dimensional ICT variable that was developed in 2003 and has not yet been applied to such questions in the literature.

**Figure 1-1: Depiction of a Multi-Layered Research Approach**



Chapter 5 lays the groundwork for an extensive review of the post-communist bloc, its challenges in transitioning toward democracy, accompanied by a close look at the donors responsible for driving ICT and other development initiatives in the region. This is particularly important for providing context for Armenia, an essentially donor-driven nation state. Chapter 6 will be comprised of the detailed “Armenia Case Study” findings supplemented by exhaustive ministry-by-ministry reports in Appendix A. The findings apply the assessment tool introduced in Chapter 3 to a comparative assessment of the various factors that make up the sum total of an institution’s total “ICT capacity”. The assumption is that patterns of very high or low scores for total ICT capacity will yield a basis for rejecting the null hypothesis of the dissertation, thereby disproving the idea that ICTs and institutional transparency and service delivery are unrelated. This will simultaneously provide the ground upon which new theory can be developed. Once the nature of the relationship comes to light, the hypothesis that suggests the emergence of cosmetic democracy will be tested based on survey results discussed in Chapter 7. This will provide insight into what ultimately matters most in a ‘democracy’: the perceptions and opinions of the people about their government.

Should a significant penetration of ICT capacity in government not be

evident, and should the survey responses prove that citizen utilization of these ICTs and their interactions with public sector and federal institutions are low and negative, the grounds for a theory of ICT-induced post-communist ‘cosmetic democracy’ will be laid. This will be based on the presumption that capacity is an important ‘missing link’. Moreover, questions related to discernible structural inertia, as well as the consequences of various constraints on the Armenian government will be examined. The case study work will also address whether there exists evidence of conditions for institutional isomorphism (i.e., the extent to which organizations and people within them conform to normative influences or are coerced by powerful actors to adopt practices).<sup>47</sup>

Several elements introduced through the course of this dissertation will be significant; the first will be based on the ICT Assessment Metric developed in the methodology section, and applied to case work in the Armenian context. This will be bolstered by statistical findings using the ITU Digital Access Index based on global aggregated data, and complemented by survey results gauging household perceptions of ICT and government in the case study country, Armenia. Chapter 8 will conclude the dissertation, reviewing the objectives of the theory-building process, summarizing the findings in the case, offering research implications and prescriptive suggestions for optimizing ICT effectiveness under specific conditions, as well as directions for future research in the complex journey toward democratization.

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<sup>47</sup> Fountain and Lazer, *Research Issues in Digital Government*, NCDG website.

## 2 Literature Review

Before embarking on a study of ICT capacity of institutions in a political system, it is important to focus on a few conceptual areas that govern and affect the role of new technologies in government. My research question will explore how and under what conditions ICTs affect transparency in government, both in terms of citizenry perceptions, and as a product of institutional capacity; this analysis will be undertaken in a specific regional context, and from a variety of qualitative and quantitative perspectives. In order to address my research question, attention must be devoted to theories of communication and of international relations in order to determine a means of approaching political science with an ICT-sensitive lens. This literature review will examine some key concepts within the realm of political science, including the relationship of technology to power in political systems, the concept of political development as process, and the phenomena of political culture. Each of these gives us a sense of how and what technology can accomplish and affect in society and polity, including the nature of the participation that it is said to engender.

[Through the use of ICTs]... information about social reality could ... be made so rich and detailed, policy options could be so clearly defined, the probable outcomes of alternative measures could be so accurately predicted, and the feedback mechanisms from society would be so effective that man could at last bring his full intelligence to bear on resolving the central problems of society.<sup>48</sup>

The overarching theme upon which this analysis is founded is that of development; Inglehart states that development is linked with a syndrome of

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<sup>48</sup> Alan F. Westin, *Information Technology in a Democracy*, (Cambridge, MA.: Harvard University Press, 1971), 1.

predictable changes away from absolute norms, and towards increasingly rational, tolerant, and postmodern values.<sup>49</sup> The extent of the ability of ICTs to enable this movement is a cornerstone of this dissertation. It is also useful to briefly review the utility of systems thinking – as a framework for trying to understanding the impact of ICTs on government (as entity) and on governance (as process). Finally, a review of theories of bureaucracy and organization is necessary – in order to clarify the areas and structures that stand to be most impacted by ICT automation.

In this dissertation, I look specifically at the process of institutional transformation in the context of the transition experience, as well as the associated problems of political culture and corruption that have arisen in the vacuum of the fall of communism. The literature review chapter sets the framework for a hands-on analysis of the impact of modern technology on post-communist states. Which theories tying together communication and development prove to be relevant in modern day? How do ICTs contribute to society? What forms of power and process do they encourage, and how are bureaucratic structures affected? The worldwide explosion of ICT applications and services (driven largely by the private sector), in parallel to the pace of evolution of governmental institutions (in developed and developing countries alike), provides a basis upon which I believe ICT-sensitive political theories should be further examined.

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<sup>49</sup> Lawrence E. Harrison and Samuel P. Huntington, *Culture Matters: How Values Shape Human Progress*, 1<sup>st</sup> ed. (New York: Basic Books, 2000), 80.

## 2.1 Bridging a Gap in the Literature

This research is designed to question and supplement existing literature, countering writings that see Western ‘techno-globalism’ as an inevitable and unassailable force and technology as its great ‘liberalizing’ driver. Those who are proponents of such views tend also to view the free market as a positive and objective transformer, and the information society and e-business scales as useful measures that act in the interest of developing economies. Development is thus seen as a generic destination rather than what Babb calls a “holistic journey that is, ultimately, an expression of people’s unique national vision”<sup>50</sup>. The idea that ICTs are positively transforming relationships between rulers and their citizens is said to be upheld by “utopian techno-revolutionaries”.<sup>51</sup> To an extent, in contrast, this work is intended to supplement literature that has been developed around the competing concept of ‘techno-nationalism’, the view that technology is something to be harnessed for the purpose of acquiring power. This work is part of an inductive, theory-building analysis that attempts to define the specific conditions under which ICTs are able – or not – to bring about more transparent institutions in government. This is underpinned by a corresponding assumption that transparency comes with a willful devolution of power from the executive, upheld by leadership commitment to promoting democratic participation and infrastructure modernization. This research will be developed in further chapters in the context

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<sup>50</sup> Annalee C. Babb, *Small States, the Internet and Development: Pathways to Power in a Global Information Society*, (Ph.D. diss., Fletcher School of Law and Diplomacy, 2003).

<sup>51</sup> Juliann Emmons Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*, (Albany: State University of New York Press, 2002), 35.



of a specific country, on a particular path of political development, and within the confines of a particular political culture.

One thing is certain. A deterministic view on technology is not a very helpful framework for assessing its role, particularly in regions like the Caucasus. Understanding the dynamic of non-western polities requires an approach that transcends such (falsely) intuitive analytical frameworks, and accounts for traits and trends that are embedded deeply within cultural and historical contexts. Joseph Nye states accordingly that, "... analysis need not fall into the fallacy of technological determinism to see that technology is one of the significant causes of social and political change."<sup>52</sup>

For years, debates about the impact of technology have been polarized in two particular camps related to the techno-global and techno-national stances mentioned above. On the one hand, some lean toward Ithiel de Sola Pool's notion of the "technologies of freedom", where information (and power over it) is widely shared, where the technology that has evolved into the Internet has created a system with robust capacity to counter central failure, and where centralization and bureaucracy have not been reinforced.<sup>53</sup> Keohane and Nye point out,

... prophets such as Peter Drucker, Alvin and Heidi Toffler, and Esther Dyson claim that the contemporary information revolution is bringing an end to the hierarchical bureaucratic organization, or is creating the 'disintermediation of government', leading to a new electronic feudalism with overlapping communities and jurisdictions laying claim to multiple layers of citizens' identities and loyalties.<sup>54</sup>

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<sup>52</sup> Elaine Ciulla Kamarck, Joseph S. Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, (Washington, D.C.: Brookings Institution Press, 2002), 3.

<sup>53</sup> Ibid., 9.

<sup>54</sup> Ibid., 161.

Kedzie likewise argues that IT is a significant determinant of democratization, while Baum and Richards each address particular instances of how IT impacts the democratic processes of nation states.<sup>55</sup> Langdon Winner, well-known as a proponent of outright deterministic thinking, argues indeed that technology can be inherently political. Winner asserts that this is true in part because there are some technologies that are particularly linked to a particular social or political system.<sup>56</sup> Pippa Norris on a related note elaborates upon the consequences of the internet on civic engagement, and identifies those mobilization theorists who believe that the net will facilitate and encourage new forms of political activism, including Nicholas Negroponte, Howard Rheingold, and Lawrence Grossman.<sup>57</sup> Writers like Rheingold, however, are aware of the

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<sup>55</sup> Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*, 8.

<sup>56</sup> A technology like a nuclear power plant, with the high risk involved in plant failure leading to a highly centralized method of producing power and the need for security to protect from theft and sabotage, is an inherently authoritarian technology. This does not mean that a nuclear power plant cannot work in a democracy, just that it concentrates power in a few. Similarly, the distributed, interlinked nature of the electrical distribution system is far more democratic in nature. The other way in which technology can be political is in its creation. Langdon believes that “[m]ost changes in the content of everyday life brought on by technology can be recognized as versions of earlier patterns.” There are, however, technologies that are fundamentally new and affect broader patterns. He suggests two necessary questions when society is confronted with such a technology. We frequently focus on the first question which is essentially the “yes/no” debate of new technology: should we build it or not. Winner cautions that this debate may not really get at the heart of the issue. More basically, we should also examine the specific features of a new technology, looking for ways in which the little, seemingly innocuous pieces can come together in very politically deterministic ways. Winner concludes that “[b]y far, the greatest latitude of choice exists the very first time a particular instrument, system, or technique is introduced.” Therefore, it is then that tough questions should be asked about the effects of technology on society. This question is asked insufficiently in most cases. Though he objects to what he sees as the mis- and over-use of the word “revolutionary,” when used appropriately, it has important implications. Computers, he argues, are like other “vast, but largely unconscious experiments in modern social and technological history...”. Langdon Winner, *The Whale and the Reactor: A Search for Limits in an Age of High Technology*, (Chicago: University of Chicago Press, 1986), 200.

<sup>57</sup> Kamarck, Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, 60.

importance of informed populations and the dangers of cooptation and corruption inherent to 'virtual communities'.<sup>58</sup>

On the other hand, there are those who suggest that the net will strengthen, as opposed to transform, existing patterns of political participation; these reinforcement theorists include Owen, Davis, Murdock, Golding, Hill and Hughes.<sup>59</sup> Lawrence Lessig, for one, falls more in this pessimistic camp with his belief that forms of control are embedded in the operational codes that govern cyberspace, and that until we comprehend the antidemocratic potentials therein, we are likely to "sleep through the transition from freedom into control."<sup>60</sup> Marxist critiques from theorists like Webster point out the reinforcement of existing access inequalities through the role of information technology in international politics, which in turn have an influence international political processes and outcomes.<sup>61</sup>

Taken to its extreme, some have "...believed that the computers and communications technology of the third information revolution would ... have the effect of further enhancing central governmental control. George Orwell's vision of 1984 is still widely feared."<sup>62</sup> Jenkins and Thorburn believe that there will not be a single decisive 'moment' when the Internet emerges as a force in our national politics; instead, the use of ICTs will be decentralized, unevenly dispersed and the effects some have ascribed to their democratic impulses are likely to appear first not

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<sup>58</sup> Howard Rheingold, *The Virtual Community: Homesteading on the Electronic Frontier* (Cambridge: MIT Press, 2000), 8.

<sup>59</sup> *Ibid.*, 60.

<sup>60</sup> Lawrence Lessig, "The Laws of Cyberspace", 1998 (accessed February 2005); available from <http://www.lessig.org>.

<sup>61</sup> Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*, 9.

<sup>62</sup> Kamarck, Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, 8.

in electoral politics, but in cultural forms (i.e., in a citizenry less dependent on official voices of expertise and authority).<sup>63</sup>

While perhaps neither of these views is easily transposed and relevant to the complexity of political life in the post-communist world today, it is difficult to interpret the impact of technology as a neutral one. Rosenau believes that technology is neutral, but that its use is shaped by the environment in which it finds itself.<sup>64</sup> Orlikowski seems to find a compelling middle ground, known as ‘soft determinism’, wherein the impacts of ICT are moderated by human actors and organizational contexts. While she rejects the ‘technological imperative’ model and the ‘strategic models’ – the former for detracting from the significance of human agents, and the latter for overemphasizing them – she cites research by Zuboff that shows a reasonable compromise between the two. Zuboff discusses that the way a technology is deployed and appropriated depends on social and economic forces beyond managerial intent. Orlikowski also refers to the work of Barley in 1986 on the model of technology as a trigger for structural change, based on a longitudinal field study examining the role of technology as an intervention between human agents and organizational structure. Orlikowski says that Barley posits a role for technology as material trigger, occasioning certain social dynamics that lead to structuring consequences.<sup>65</sup> Orlikowski thus posits her own theory of structuration (inherently dynamic and grounded in human action) as a social process that

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<sup>63</sup> Introduction to “The Digital Revolution, the Informed Citizen, and the Culture of Democracy.” In Henry Jenkins and David Thorburn, eds., *Democracy and New Media* (Cambridge: MIT Press, 2003).

<sup>64</sup> James N. Rosenau and J. P. Singh, *Information Technologies and Global Politics: The Changing Scope of Power and Governance*, (Albany, NY: State University of New York Press, 2002), 7.

<sup>65</sup> Wanda J. Orlikowski, “The Duality of Technology: Rethinking the Concept of Technology in Organizations”, *Organization Science*, 3, no. 3, Focused Issue: Management of Technology (Aug. 1992): 402.

involves the reciprocal interaction of human actors and structural features of organizations. She goes on to elaborate upon a recursive notion of technology - what she calls the 'duality of technology'- that describes how it is created and changed by human action, yet also used by humans at the same time.<sup>66</sup> Her understanding of ICTs as 'interpretively flexible' opens a door to the idea that something inherent to institutions allows for technology to be a function of the different actors and socio-historical contexts inherent to its development and use.<sup>67</sup> I agree with her theoretical positions and find that they support my argument for the importance of integrating capacity as a key component of ICT-enabled change.

### 2.1.1 Communication Theories

It is helpful to begin this review with communication theories that help to explain the potential depth and breadth of the role of ICTs in the economy and polity of nation states. H.A. Innis, a communications theorist of the 1950s, recognized that transportation and communication technologies played a central historical role in the development of hegemonic world political systems.<sup>68</sup> Innis' central focus is the social history of communication media, whereby a key to social change is found in the development of communication media. Innis also applies the economic concept of communication 'monopoly' to include culture and politics; if a society or country is considered to have a network of communications systems, it is evident that there are key junctures or points where significant information is stored, and from where transmission to other parts of the system is facilitated.

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<sup>66</sup> Ibid., 405.

<sup>67</sup> Ibid.

<sup>68</sup> Harold Adams Innis, *The Bias of Communication* (Toronto: University of Toronto Press, 1951).

Theorists like Michel Foucault have demonstrated that individuals or groups who control access to such points wield great power.<sup>69</sup> However, Foucault and Innis, both, would see such tendencies of centralization as a means of eventually promoting instability (or conflict) in a given system. On the other hand, Karl Deutsch, another theorist at the nexus of international relations/communications theory, would disagree, given that an extrapolation of his views on communications leads to a vision of a ‘single community of humanity’ as communication networks becomes more ‘dense’ (i.e., from tribes to nations to regions to supra-nations).<sup>70</sup> This is not far from McLuhan’s idea about a “global village”.<sup>71</sup> Deutsch also identified a process whereby the formation of community is accompanied by a marked increase in the percentage of internal communications; his well known metaphor of communication as the nerves of government is highly salient to this dissertation.<sup>72</sup> Fountain mentions a similar metaphor when she states that, “[IT]... affects production, coordination and control – the nervous system of government.”<sup>73</sup> Ogburn meanwhile acknowledges technology as a contributive factor toward political centralization, writing in 1937 that, “... the centralizing tendency of government seems to be worldwide, wherever modern transportation and communications exist.”<sup>74</sup> This idea has been carried to its ideological extreme

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<sup>69</sup> Michel Foucault and Colin Gordon, *Power/Knowledge: Selected Interviews and Other Writings, 1972-1977*, 1st American ed. (New York: Pantheon Books, 1980).

<sup>70</sup> Karl Wolfgang Deutsch, *The Nerves of Government: Models of Political Communication and Control*, (New York: Free Press, 1966), 316.

<sup>71</sup> Marshall McLuhan, *Understanding Media: The Extensions of Man*, 1<sup>st</sup> ed. (New York: McGraw-Hill, 1964), 67.

<sup>72</sup> Deutsch, *The Nerves of Government: Models of Political Communication and Control*, 316.

<sup>73</sup> Kamarek, Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, 137.

<sup>74</sup> William Fielding Ogburn, “The Influence of Inventions on American Social Institutions in the Future,” *American Journal of Sociology* 43 (November 1937): 370.

by some theorists like Friedrich and Brzezinski, who believed that totalitarianism itself, could not have been possible without the mass communications that accompanied the second industrial revolution.<sup>75</sup> Febvre in 1935, stated “... technological activity cannot be taken in isolation from other human activities. It is deeply embedded in them, and it responds to their activity, individual and collective.”<sup>76</sup> Hence the difficulty in isolating the causal effects of communication technologies. According to Nye, the “... overall effects are not always democratizing. In some cases, such as Iran, the technologies of the second information revolution merely changed the nature of the autocracy.”<sup>77</sup>

It is also helpful to elucidate the terminology by which many seminal works in the literature are guided; the ‘first’, ‘second’ and ‘third’ communications revolutions, respectively. The first occurred through the development of the telegraph in the 19<sup>th</sup> century, facilitating point-to-point communication that transcended distance for the first time. The second revolution came with the emergence of radio and satellite technology, allowing for signals to be instantaneously transmitted around the globe, transcending cables and wires and allowing for broadcasting to multipoint recipients. The third revolution, including the internet and the development of networking, heralds interactivity as its core component, and offers now a combination of point-to-point and broadcasting

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<sup>75</sup> Carl J. Friedrich and Zbigniew Brzezinski, *Totalitarian Dictatorship and Autocracy* (Cambridge: Harvard University Press, 1956), 346.

<sup>76</sup> Lucien Febvre, “Reflexions Sur L’Histoire des Techniques,” *Annales d’Histores Economique et Sociale* 7 (1935): 531-5.

<sup>77</sup> Kamarek, Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, 8.

capabilities that some believe decentralize the core (to use Wallerstein's terminology) and empower the periphery.

### 2.1.2 International Relations Theories

Taking a step back for a moment from ideological conceptions of communication technology in society, it is also important to look at what can be learned from classical international relations (IR) theories. Traditional realist IR theories tend to explain the notion of 'power dynamic' of political systems in more black and white terms: as forged by a constant zero-sum struggle between entities for limited resources, for the protection of national interest and territorial sovereignty, and for the expansion of various economically, politically or culturally-based ideologies. Such classical theories as exemplified by the likes of Thucydides, Locke, and Waltz, however, can not account for the role of new technologies and their unprecedented impact on the organization and positioning of prominent major players in a political system. They are not predisposed to examine the tools that serve to propagate perceptions of powerful entities; they are interested in examining the qualities of powerful entities in and of themselves. At best, they may consider that actors will seek to gain control of these tools for cyberspace much as they accumulate guns and tanks. Needless to say, the advances of the communications revolutions have been highly and effectively leveraged for the purposes of war, and in some cases as a means by which to generate or exacerbate conflict.<sup>78</sup>

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<sup>78</sup>The use of ICTs in a manner exceptionally detrimental to the security of a state is best exemplified in the case of Rwanda in 1994, where NGO human rights organizations and UN officials asserted publicly that radio transmissions were used to incite ethnic tension and murder on a mass scale. This



Interestingly, networks of agency or communication, in contrast to traditionally perceived (measurable) comparative advantages of nation states (i.e. in the form of military power, strategic alliances, industrial power) in the Hobbesian ‘war of all against all’, are much more difficult to evaluate in terms of their impact on internal or external balance of power. There is no ammunition to count, hardware to classify; knowledge is as intangible as it can be limitless. Networks create – through trans-border, intangible agglomerations of data and ‘knowledge’ – a plethora of new strengths and weaknesses to be considered in the competitive arena of political systems. Hobbes also taught us that without a solid institutional framework that sets the terms of interaction, people are condemned to a life of fear and insecurity; for want of an appropriate institutional structure, social interaction breeds hostility and strife.<sup>79</sup> Certainly, Hobbes could scarcely have imagined the potential for the disintermediation of these interactions through modern technological phenomena.

In contrast, more liberal theoretical perspectives on IR would support the idea that with the advancement in the power of broadcast communications and information dissemination tools has grown an increasing appreciation for the impact of “agency” on “structure” in political systems. This idea is compelling, although potentially limited in its ability to accommodate for what is the perpetuation of a

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took place in a country wherein the inadequacies of basic information infrastructure provided a stark contrast to the highly systematic and synchronized manner in which ethnic extermination was perpetrated. Extremists from the military, the government, and business communities were responsible in this case for the widespread use of broadcasted communications to achieve their political aims. In many ways, this case became a hallmark example of the dilemma posed to the international community vis-à-vis the rights of sovereign states under international law and justifications for radio jamming.

<sup>79</sup> Axel Hadenius, *Institutions and Democratic Citizenship* (Oxford, UK; New York: Oxford University Press, 2001), 131.

fundamentally unequal ‘status quo’ in particular countries and societies. Numerous studies (Said (1978), Mowlana (1985), Deutsch (1963), among others) on the impact of media representations and communications on public opinion and on policy-making attest to the importance of this element in political theory. Technology (and the dissemination of information it makes possible) lies at a crucial interface between the key actors in civil society, and it has vital implications for relationships that comprise the foundations of political governance, as well as of economic growth and of social change. Some, like Dahl, hearkening back to techno-globalist thinking, believe that the liberal vision of the future hinges on the premise that increased communication spreads liberal principles and supports democratic change.<sup>80</sup>

One point unites these theories: the fact that there are ‘winners’ and ‘losers’ in complex political systems, both international and national. This fact, lamented by dependencia-school theorists and confirmed by Hobbesians, presents the background for what is today called the “Digital Divide”. “Digital Divide”, for some, is a normative term, indicating a pre-disposition to the idea that one group of states is going about development in the ‘right’ direction and by the ‘right’ means. This ‘divide’ between ‘haves’ and ‘have-nots’ has arguably been in existence since time immemorial, but which through the construction of various global networks (i.e. via physical telecommunications infrastructure and innovation systems), has become even more discernible due to the gaping ‘holes’ on the world map of communications facilities and technology innovation/creation activity. (See

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<sup>80</sup> Seyla Benhabib, *Democracy and Difference: Contesting the Boundaries of the Political* (Princeton, N.J.: Princeton University Press, 1996), 336-339.

Appendix D for Network Map created by Hewlett Packard and Novell) This terminology is often juxtaposed with what Hoselitz terms the ‘primitive’ (traditional) and the ‘modern’ (legal-rational), when referring to the nature of bureaucracy in the developing world.<sup>81</sup>

As a result, a new and growing area has emerged in the sphere of international development activities. The United Nations World Summit on the Information Society, the first phase of which took place in Geneva in December 2003, is testament to the importance of technological issues to development problems. “Digital Divide” jargon has thus been elevated and popularized extensively as a result. Unfortunately, the mere observation of a “digital divide”, beyond identifying a parallel problem that already exists in many other spheres (i.e., education, health), does little to enrich the realm of knowledge about the problems of the developing world. Realist theories offer a harsh status quo to a system which is unlikely to change due to its deep roots in an unforgiving portrait of human nature, while liberal theories tend to offer a balm that has an equally unforgiving ideological slant associated with how institutions and media should function in a neo-liberal world. Where the conditions are not ripe for the emergence of functioning capital markets, institutions, and democratic processes, such theories remain merely marginal. For some in the business of development, they reinforce a certain determinism vis-à-vis the objectives of ‘what must be accomplished’ that can override the realities ‘on the ground’. This happens only at the expense, of

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<sup>81</sup> Joseph LaPalombara, Carl Beck, Social Science Research Council, Committee on Comparative Politics, *Bureaucracy and Political Development* (Princeton, NJ: Princeton University Press, 1963), 13.

course, of those who are meant to be the beneficiaries of western donor organizations.

In contrast, among the most compelling and relevant of classical theoretical perspectives on international relations is the theory of constructivism – as elaborated by Alexander Wendt.<sup>82</sup> This school of thought emerged to fulfill a theoretical gap that theorists found with traditional neo-realist or neo-liberal rationalist thought, which proved unable to predict the dynamics of interstate relations in Hedley Bull's anarchical society.<sup>83</sup> The fundamental principle of constructivist social theory is that people act toward objects, including other actors, on the basis of the meanings that the objects have for them. Constructivism thus presents a theoretically and philosophically informed perspective, rooted in sociology, on the study of international relations. The state is viewed as a social actor whose behavior is driven by rules, norms and institutions, in what is an inherently relational system. According to Wendt, identities are the basis of interests, which in themselves are dynamic and contingent upon the forms of defining social (or other) experience. In light of the above assertions, an institution can be said to be a stable structure, endowed with a set of identities and interests.

These tend to be codified in a series of formal rules and norms, but are also a function of the extent to which actors share collective knowledge about these rules and norms. In terms of theoretical underpinning, the constructivist approach lends itself well to explanations of the impact of ICTs, which to some extent can be

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<sup>82</sup> Alexander Wendt, *Social Theory of International Politics* (Cambridge; New York: Cambridge University Press, 1999), 429.

<sup>83</sup> Hedley Bull, *The Anarchical Society: A Study of Order in World Politics* (New York: Columbia University Press, 1977).

perceived as the main tools facilitating the information flow that determines how actors in political systems define themselves. ICTs also help to determine how those actors relate to their peers in their respective ‘issue spaces’. This is particularly well supported by work done by Richard Rogers at the University of Amsterdam, with his mappings of issue networks based on hyperlink analysis on the internet.<sup>84</sup> (See Section 6.4 of Chapter 6)

In Ruggie’s terms, social constructivism is about human consciousness and its role in international life, the capacity and will of people to take a deliberate attitude towards the world. This in turn gives rise to social facts that depend on human agreement that they exist (i.e., property rights). “Constructivists contend that not only are identities and interests of actors socially constructed, but also that they must share the stage with a whole host of other ideational factors emanating from people as cultural beings.”<sup>85</sup> As they are a reflection of collective accumulated knowledge about their existence, institutions are equivalent to more than the sum of their parts. In other words, institutions are more than just about cooperation, just as shared norms can be more than about relative power. Therefore, theoretically at least, collective action and effective governance can take place in a variety of circumstances beyond the expected ‘presence of an active threat’. When a nation declares its independence and its statehood, it does not

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<sup>84</sup> “Issuecrawler.net: Scenarios of use for NGOs and other researchers,” in Govcom.Org, Amsterdam, The Netherlands 2003 (accessed March 2005); available from [http://www.govcom.org/scenarios\\_use.html](http://www.govcom.org/scenarios_use.html). A mapping of issue networks based on “ICTs” in Armenia is available in Appendix D. The picture conveys the outcome of hyperlink analysis based on content across websites related to ICTs in Armenia, and beautifully captures the marginalization between local .am domains and their donor/international organization counterparts. The premise of this analysis is based on the idea that if their websites do/do not link, this is indicative of the broader dynamic of the issue space.

<sup>85</sup> J. Ruggie, “What Makes the World Hang Together? Neo-utilitarianism and the Social Constructivist Challenge,” *International Organization* 52, no. 4 (Autumn 1998).

become a state – and does not have a ‘self’ or a meaning *per se*, until it interacts with other states. Contrary to the realist or neo-realist approach to international politics that stresses the overwhelming importance of perceived national interest, “... governance [itself] is typically associated with a constructivist approach, in which rules as regimes are viewed as [the] key ingredients for stabilizing international relations.”<sup>86</sup> The meanings in terms of which action is organized are thus derived from interaction, which above all, is a critical byproduct of the adoption of ICT in the public sector.

ICTs and the way that they are conventionally put to use give new institutions the chance to define themselves and their purpose relative to their constituents. In the context of ICT use in actual government, the main branches of government in a democracy are responsible for articulating their purpose and their service to the citizenry. If one sees ICTs as the means by which mutually understood agendas and objectives of various governmental ministries are clarified, for example, this adds a layer of nuance to conceptions of who or what holds power in a country, and why. This also has significant implications for the process of democratization and the objectives of power de-centralization in post-communist countries.

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<sup>86</sup> Goran Hyden and Julius Court, “Governance and Development: Trying to Sort out the Basics,” in United Nations University, April 5 (accessed February 2005); available from <http://www.unu.edu/p&g/wgs/Governance%20and%20Development.doc>.

## 2.2 ICTs and Systems Frameworks

As aforementioned, much of the technology policy literature that addresses the impact of ICTs on society is geared toward the sphere of economic growth and development. The collective gains to be derived from technological progress are often evaluated in the context of economic growth models; for example, models such as the Harrod-Domar and Solow attempt to deconstruct the variables intrinsic to the development process for the purpose of explaining why it is possible in certain places and not in others. Solow, in particular, put strong emphasis on technological change as a determinant factor of growth.<sup>87</sup> The traditional views of growth accounting theory (through the work of development economists like Rostow, Ruttan, Jorgenson, Romer, and Solow) postulate that sustainable growth can best be achieved through technological improvement in the urban and rural sectors of an economy. Economic growth cannot be sustained merely by high input utilization without adequate productivity increase, and thus innovation and upgrading are keys to a country's growth, equity and competitiveness. Often, the goal is to determine that which is imitable across national boundaries in order to apply 'blueprints' for success when possible; across the board, technology investment, as a critical factor, is seen to be a key to economic development.<sup>88</sup> Far less work has been done on linking technology capacity development with advancement in the realm of political development and

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<sup>87</sup> William Russell Easterly, *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*, (Cambridge, Mass.: MIT Press, 2001), 45.

<sup>88</sup> David C. Mowery, "Economic Theory and Government Technology Policy," *Policy Sciences* 16, no. 1 (1983): 27-43.

systemic change - insofar as institutions of governance are concerned. Which is not to say, however, that blueprints have not been created.

There are some valuable lessons to be learnt from applying these concepts of growth and development to the political realm. For example, the concept of a National Innovation System (NIS) is a useful one; first used by Chris Freeman in the late 80s, it helped to depict and interpret the performance of Japan in the post-war period. Freeman defined a system of innovation as the network of institutions in the private and public sectors whose activities and interactions initiate, import, modify and diffuse new technologies in a country's economy.<sup>89</sup>

Most of these studies of various kinds of 'innovation system' in the industrialized countries have one thing in common: they examine the structure and functioning of inter-organizational systems that *already exist*. Very much less attention has been given the process whereby these systems emerge and develop in industrializing countries, and how that process may influence the pattern of dynamic assimilation of technology.<sup>90</sup>

It is reasonable to assert that the potential for synergistic coalescence to take place between technology and institutions in government is largely dependent upon the existence of some baseline innovation in a country. Nelson's 1993 NIS work defined the main components that interact and collaborate through linkages: firms and industrial research labs, universities and research communities, government labs, government sponsored support of Industrial R&D, and entrepreneurs who contribute to the development and diffusion of R&D.<sup>91</sup>

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<sup>89</sup> Christopher Freeman, *Technology Policy and Economic Performance: Lessons from Japan* (London; New York: Pinter Publishers, 1987), 155.

<sup>90</sup> David A. Dyker, *The Technology of Transition: Science and Technology Policies for Transition Countries* (Budapest: Central European University Press, 1997), 77.

<sup>91</sup> Richard R. Nelson, *National Innovation System: A Comparative Analysis* (New York: Oxford University Press, 1993), 541.



According to Freeman, the intellectual forefather of the NIS concept was Friedrich List, who attempted to account for the productive capacity of a nation by delineating the importance of national institutions linked with education, training, as well as national infrastructure. An NIS is ‘national’ in the sense that it is included within the borders of a nation; ‘innovation’ is defined as the process by which key entities adopt new technologies; and ‘system’ encompasses all those entities whose relationships and dynamism affect performance and productivity. These characteristic descriptors, when super-imposed upon the sphere of government and political system in this thesis, can be useful. The term ‘innovation’ in the realm of polity tends to be ascribed some inescapably teleological characteristics, associated with the objectives of donor work -which are often quite clearly defined by the term ‘democratization’. The exercise of considering NISs across countries is interesting because it helps elucidate the point that much of what such frameworks actually capture is actually based on idiosyncratic (national) elements (i.e., to do with social capital and culture). An important aspect of such frameworks of analysis is that they are systemic models; in other words, they are dynamic and contingent upon the flows of information that facilitate technology flow from player to player – at both macro and micro levels.

John Sterman’s system dynamic approach offers a practical method for solving complex problems with nonlinear outcomes by looking at the ‘big picture’ to understand feedback and side effects.<sup>92</sup> System dynamic analysis is comprised of a set of conceptual tools that enable us to understand the structure and dynamics

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<sup>92</sup> John Sterman, *Business Dynamics: Systems Thinking and Modeling for a Complex World* (Boston: Irwin/McGraw-Hill, 2000), 982.

of complex systems over time, such as one finds in business and other social systems.<sup>93</sup> It has been used to address practically every sort of feedback system, and is a rigorous modeling method that enables analysts to build formal computer simulations of complex systems and use them to design more effective policies and organizations. Indeed, in the real world, everything is connected to everything else; fixing problems in one place will create side effects and chains of trouble in other areas. Aoki and Rosenberg also pinpoint interaction and feedback as the central feature of the process of innovation.<sup>94</sup>

Jane Fountain reflects on parallel thoughts in *Investing in Innovation* by using ‘social capital’ as a term to explain “... the ‘stock’ that is created when a group of organizations develops the ability to work together for mutual productive gain.”<sup>95</sup> The idea of such a stock that can subsequently flow and impact other variables is itself an inherently systemic notion, and the concept of social capital actually identifies the structure created from collaborative effort. This structure thus includes well-functioning partnerships, consortia, and networks, and capital is located both in the sharable resources held by individual institutions in a network and in the overall relationships between institutions in a network. Fukuyama

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<sup>93</sup> Several software packages are designed to support system dynamics modeling, including ithink, Powersim, and Vensim. The utility of this methodology is the way in which it allows one to map a simplified version of the real world, as well as conduct an analysis of various “what-if” scenarios. This methodology allows for an examination of what structures in the real world cause a given observed behavior, and what behavior a structure in the real world can produce. One can ask questions about policy insights – coming up with new policy, or realizing that a suggested policy won’t work, through the development of causal loop diagrams.

<sup>94</sup> Masahiko Aoki, and Nathan Rosenberg, “The Japanese Firm as an Innovating Institution”, *Center for Economic Policy Research - Stanford University* 106 (September, 1987).

<sup>95</sup> Jane E. Fountain, “Social Capital: A Key Enabler of Innovation” in Lewis M. Branscomb and James Keller, *Investing in Innovation: Creating a Research and Innovation Policy that Works* (Cambridge, Mass.: MIT Press, 1998), 516.

describes it as, “created spontaneously all the time by people going about their daily lives”<sup>96</sup>.

## 2.3 ICTs and Governance

Barber argues that the idea that ICTs could be used to increase and enhance direct democracy is an overly simplistic one when put into the context of non-western, transitioning political systems.<sup>97</sup> And yet, a prevailing conventional wisdom appears to have emerged in the literature, wherein the practical application of new technologies is expected to yield broader heightened accountability, public/private institutional responsibility, and transparency in the form of reinforcing feedback mechanisms. This conventional wisdom is echoed by similar expectations that communications technologies empower people and reduce the power of the state.<sup>98</sup>

Transparency, accountability, and good governance (TAGG) [have become] central to the industrialized world’s foreign policy. TAGG does for politicians what early detection does for tumors. Our bodies evolved immune systems that tackle tumors at an early stage. Mostly, they terminate the nasty ones without our conscious knowledge.... Advanced societies mimic these processes in the maturity of their political, social and economic checks on the excesses of malevolent citizens.<sup>99</sup>

These ideas are embedded in the governance indicators created by Kraay and Kaufmann for World Bank analysis. Their definition speaks directly to the potency of the status quo, and includes both the element of *capacity* of the government to effectively formulate and implement sound policies, and the

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<sup>96</sup> Harrison and Huntington, *Culture Matters: How Values Shape Human Progress*, 103.

<sup>97</sup> Benjamin R. Barber, *Strong Democracy: Participatory Politics for a New Age* (Berkeley: University of California Press, 1984), 320.

<sup>98</sup> Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*, 35.

<sup>99</sup> Dele Jones, “Banish the Bugs From the System,” *Global News Wire*, December 31, 2000, 80.

perception of citizens of the institutions that govern economic and social interactions among them.<sup>100</sup> The World Bank defines governance as an ‘exercise of political power to manage a nation’s affairs’; the term itself was first mentioned in a World Bank report in 1989 on Africa.<sup>101</sup> It is thought to be comprised of three components – systemic (i.e., a system of political and socioeconomic relations currently reflected in democratic capitalist regimes), political (i.e., wherein a state enjoys legitimacy and authority, derived from democratic mandate and built on traditional notion of separated powers and a pluralist polity), and administrative (i.e., characterized by efficient, open accountable and audited public service which has the bureaucratic competence to help design and implement appropriate policies). Governance appears to be a function not only of basic human nature competing for power and control, but also of the characteristics of ‘herds’ and social group dynamics that serve to frequently reinforce top-down power hierarchies, particularly in developing countries. Humans themselves are governed by historically consistent social archetypes of self-interest such as those discussed by Mancur Olson.<sup>102</sup>

Insofar as one is convinced by the adage that ‘connectivity is productivity’,<sup>103</sup> one can forge a tentative link between the role of ICTs and their relationship to effective governance and institutional growth. Jane Fountain points

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<sup>100</sup> “Governance Matters III: Governance Indicators for 1996-2002,” in The World Bank, Washington DC June 30 (accessed March 2005); available from <http://www.worldbank.org/wbi/governance/pdf/govmatters3.pdf>.

<sup>101</sup> World Bank, *Sub-Saharan Africa: From Crisis to Sustainable Growth - A Long-term Perspective Study*, (Washington DC: World Bank, 1989).

<sup>102</sup> Mancur Olson, *The Logic of Collective Action; Public Goods and the Theory of Groups* (Cambridge, Mass.: Harvard University Press, 1965), 176.

<sup>103</sup> This is a phrase featured prominently in the work and research of Mr. Iqbal Quadir, founder of Bangladesh’s GrameenPhone initiative, and guest lecturer at the Kennedy School of Government at Harvard University.

out the intrigue of the structural transformation taking place between and among government agencies, stemming from the range of potential new organizational arrangements that ICTs can facilitate.<sup>104</sup> There are fundamental changes taking place in the way that bureaucracy works due to advanced information processing that political science does not currently account for. “One of the chief effects of advances in information technology on bureaucratic organization has been the ability to structure information using information systems rather than through strict delineation of role and organizational subunit.”<sup>105</sup>

### 2.3.1 Incentives and Objectives of Governance

As far as governance is concerned, it is a relatively intuitive task to identify the ideal objectives that political and social institutions ought to aim for in order to be considered ‘progressive’: secured rights of private property (in order to encourage saving and investment) and personal liberty, enforced rights of contract, providing stable and responsive governments that are capable of accountability to publicly known rules of law, provision of redress in situations of transgression, and reduced government claims on social surpluses.<sup>106</sup> In order for institutions to be able to deliver such services, it has become important for them to develop their capacity to operate cross-functionally, and to manage information effectively by using databases and other electronic communication and networking tools. According to Fountain,

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<sup>104</sup> Kamarck, Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, 118.

<sup>105</sup> Ibid., 121.

<sup>106</sup> David S. Landes, *The Wealth and Poverty of Nations: Why Some Are So Rich and Some So Poor*, 1<sup>st</sup> ed. (New York: W.W. Norton, 1998), 217-218.

The ability to place information and computing power at the operational levels of a hierarchy while making results rapidly transparent at upper levels underlies current capacity to devolve decision-making to operational personnel. Thus, ‘empowerment’, often viewed from the perspective of human relations, may be understood as a structural (and cultural) artifact of technological advancement.<sup>107</sup>

Acquiring an understanding of the incentives for various types of governance can help greatly in explaining the way communications technologies, in particular, are leveraged from place to place. Academic jargon like ‘information revolution’ and ‘the internet’ conjure images of immediacy and speed that at times come perilously close to clouding the fact that it is how technologies are used (or substituted for) and not what is in their inherent design and functionality that matters. Indeed, according to Nye, the term “... ‘information revolution’ refers to the dramatic decrease in the costs of computers and communications and the effects that has on the economy and society”<sup>108</sup>; there is no inherent reference here to ideologically-driven functionality.

### 2.3.2 The Processes of Governance

An examination of the processes of governance can be tied to the notion of capacity for collective action; ICTs facilitate this action, and in so doing play a role in the accumulation of social capital and the expansion of Fukuyama’s ‘radius of

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<sup>107</sup> Kamarck, Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, 121.

<sup>108</sup> Ibid, 7.

trust'.<sup>109</sup> The link between governance and social capital lies also in Hayek's definition of social capital as the "... extended order of human cooperation"<sup>110</sup>. As Mancur Olson envisaged it, collective action involves authority, concerted action, and the resultant institutions; it is about identifying (and ultimately fulfilling) the needs and capacities of a state.<sup>111</sup> The social networks that are facilitated through improved access to new technologies create the structure for information flow, and hence themselves become the foundation for networks of governance. This is an inherently constructivist approach. According to Rosenau, ICTs allow for diffused and disintermediated forms of authority to emerge, for concerted action to take place, and for institutional creation or reinforcement, if indeed the right conditions are present.<sup>112</sup> "Governance can hardly be uncomplicated or purely path dependent in a multi-actor, multi-issue world, in a state of flux. [It] ... takes place at both informal and formal levels and may be top-down, bottom-up, or both."<sup>113</sup> For Rosenau, it is a "... system of rule that is as dependent on inter-subjective meanings as on formally sanctioned constitutions and charters."<sup>114</sup>

Stoker maintains that, "... governance is ultimately concerned with creating the conditions for ordered rule and collective action. The outputs of governance are not therefore different from those of government. It is rather a

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<sup>109</sup> Harrison and Huntington, *Culture Matters: How Values Shape Human Progress*, 99.

<sup>110</sup> Friedrich A. von Hayek and William Warren Bartley, *The Fatal Conceit: The Errors of Socialism*, (London: Routledge, 1988), 5.

<sup>111</sup> Mancur Olson, *The Logic of Collective Action; Public Goods and the Theory of Groups*, 176.

<sup>112</sup> Rosenau and Singh, *Information Technologies and Global Politics: The Changing Scope of Power and Governance*, 312.

<sup>113</sup> Ibid.

<sup>114</sup> Ibid.

matter of a difference in process.”<sup>115</sup> In the literature, ‘good’ governance features prominently as a determinant of many critical development factors, as key impetus behind levels of national saving, levels of (foreign/venture capital) investment, commitment to the adoption of technology, as well as overall effectiveness of per capita worker inputs relative to national output in countries across the board.

The process of governance, then, occurs where the ‘authorities’ congregate and centralize in the political system, while that which constitutes the ‘inputs’ into a political system can arguably be disseminated through a variety of media and channels. According to Leftwich, good governance includes some or all of the following features: efficient public service, independent judicial system and legal framework to enforce contracts, independent public auditor responsible to representative legislature, accountable administration or public funds, respect for law and human rights at all levels of government, pluralistic institutional structure, and free press.<sup>116</sup> In many ways, Leftwich appears to be more a proponent of having a developmental state – rather than a democratic state.

## **2.4 ICTs and Power in Political Systems**

In order to fully appreciate the dynamics and definitions of governance as they related to ICTs, it is important to try to understand how the emergence of

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<sup>115</sup> Gerry Stoker, “Governance as Theory: Five Propositions”, *International Social Science Journal*, (1998): 17-28.

<sup>116</sup> Leftwich also considers the range of necessary conditions for the presence of democratic politics, which include geographical, constitutional and political legitimacy; presupposition of secure and broadly-based consensus about rules of political game; governmental restraint on the extent of policy change undertaken by the winning party; a rich and pluralistic civil society; and diminished serious threat to authority and power of state. He states that these conditions are not easy to sustain in places divided by regional tensions or ethnic, cultural or religious pluralism. Adrian Leftwich, *Democracy and Development: Theory and Practice*, (Cambridge, England; Cambridge, MA: Polity Press in association with Blackwell Publishers, 1996), 301.



information technology can be cast as a tool of power in modern political systems. This is essential regardless of whether one accepts the conventional wisdom that a causal relationship exists between ICTs and transparent government. The old adage of Sir Francis Bacon that “information is power” is somewhat simplistic when it comes to analysis of government, though it is not untrue. As J.P. Singh asserts in *Information Technologies and Global Politics*, power is ultimately about capabilities, identities, and interests.<sup>117</sup> ICTs allow for diffused forms of authority to emerge, for concerted action to take place, and for institutional creation or reinforcement. IT is thus deemed, in popular opinion, to make political systems less hierarchical and more pluralistic. It is important to note however, that the application of ICTs should not be cast as having equalizing effects by default, neither broadly in the international system, nor more specifically in the context of national government. As Keohane and Nye point out, “... first-movers are often the creators of the standards and architecture of information systems. The path-dependent development of such systems reflects the advantage of the first mover. The use of the English language... and top level domain names on the Internet is a case in point.”<sup>118</sup> Therefore, it is critical to avoid making assumptions that allow for a deterministic ICT paradigm to supercede the reality of technology use in development work. Rosenau and Singh on the other hand study traditional, theoretical notions of instrumental, structural and meta power in political systems;

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<sup>117</sup> Rosenau and Singh, *Information Technologies and Global Politics: The Changing Scope of Power and Governance*, 312.

<sup>118</sup> Kamarck, Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, 170.

information technology for them is a key enabler for formerly disadvantaged groups to play a role in politics, and reconstitute their identities.<sup>119</sup>

#### 2.4.1 Instrumental Power

Instrumental power focuses on the capacity or capability of power holders to affect particular outcomes; hence ICTs are viewed as a force that enhances these capabilities. This was one of the first ways in which political scientists and policy makers examined the relationship between information technology and power in politics. ICTs augment the capabilities of traditional global actors like states and firms, while also empowering other actors (like transnational social movements or terrorist groups).<sup>120</sup> The way technologies empower less privileged groups is especially important in recognizing the promise of technology in instrumental contexts. The spread of democracy in Russia, as Rosenau points out, was in crucial ways tied to the proliferation of information networks and accessibility of information for individuals and groups.

#### 2.4.2 Structural Power

Structural power, on the other hand, deals with inherent and embedded capabilities in a political system - and on the ability of technology to affect the rules and institutions that govern outcomes. By definition, structural power is concerned with the constraints and limitations of particular activities with given institutions. Mark Alleyne approaches this conceptualization of power by addressing the ability of technology to exercise influence or control in a variety of environments, while

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<sup>119</sup> Rosenau and Singh, *Information Technologies and Global Politics: The Changing Scope of Power and Governance*, 312.

<sup>120</sup> Ibid., 7.

drawing a sharp distinction between the power of communication (in terms of the ability to use a variety of channels), and the power of information (the determination of content carried on those channels).<sup>121</sup> First, technology influences the structures of political or economic affairs; then, existing structures or institutions shape the technologies themselves.<sup>122</sup> Following closely in step, Winner believes that technologies are structures whose conditions demand the restructuring of their environments.<sup>123</sup> A slightly different notion of structural power comes from those who see existing structures as constraining the use of information technology. Thus, structure can determine what technology can or cannot do, instead of vice versa.

### 2.4.3 Meta-Power

The last concept of meta-power refers to how networks reconfigure, constitute, or re-constitute identities, interests and institutions. Keohane and Nye point out the ascendance of soft power - and thus come close to delineating a notion of meta power.<sup>124</sup> They see the power of persuasion (rather than force) as a new salient feature of politics when information networks proliferate. This area is particularly salient for those in the business of public diplomacy, which is essentially the realm of public relations in government. Thus, the emergence of

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<sup>121</sup> Mark D. Alleyne, *International Power and International Communication* (New York: St. Martin's Press, 1995), 1-38.

<sup>122</sup> The case of technology shaping structures is made foremost in radical scholarship; those of the Marxian strain posit that so-called 'forces of production' (including technology) are essential in the unfolding of history, shaping social relations (as between capitalists and workers). The dialectical relationship is held in place by the superstructure, including the state that 'exists to guarantee the production of these social (including economic) relations as a whole'.

<sup>123</sup> Langdon Winner, *Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought* (Cambridge, MA: MIT Press, 1977).

<sup>124</sup> Robert O. Keohane and Joseph S. Nye, *Power and Interdependence*, 2<sup>nd</sup> ed. (Harper Collins, 1989), 315.

government websites, for example, can serve to merely reinforce the relevance or legitimacy of institutions that are intent on conveying a particular image to a particular audience; the element of control implicit in the application of technology to the process of content development means that institutions can “be” what they say they are.

Moving from the theoretical realm to the practical, it is clear that communications revolutions have been instrumental to the exercise of the power of nation states. The use of ICT equivalents in the era of the Iranian revolution is very well known to have been a critical component in the victory of the theocracy. They have been important in the Philippines at the time of Marcos’ removal, in the Former Soviet Union, and in the notable challenge to the Chinese state during the Tianamen Square events in the early 1990s. It is not unreasonable to state that authoritarian governments by and large have been fearful of new technologies, and have strategized in order to find optimal ways to leverage them – most often through the creation of institutions and organizations. State-owned monopolies in telecommunications and media are a case in point. At the same time, it is also true that governments have been central to the development and growth of technologies of mass communications, in general providing environments conducive to the public-private partnerships that spur innovation. In some cases, the government role is more pronounced; after all, the internet itself is borne of US Cold War defense concerns and the inception of the ARPANet project by the U.S. Department of Defense. It is interesting to observe that the costs of controlling communications mediums, and in particular the messages that flow through them, must be extremely

high for governments whose legitimacy is founded on limited information and access.

## 2.5 ICTs and Political Development

The culmination of the relevance of communications theory, international relations theory, and the related concepts of governance and power can be woven together to form the base upon which a new approach to political development can be developed. Through the 1960s, a host of theorists began to approach and study the question of political development, including La Palombara, Marx, Eisenstadt, Riggs, Hoselitz, Spengler, Fainsod and Beck. Basic questions were explored at the time, such as ‘what is the meaning of political development?’, and ‘what characterizes ‘modernization’ in the realm of politics?’ Palombara seriously questions whether it makes sense to even think about development or change in terms of some conception of the politically ‘modern’, whatever may be the attributes one ascribes to modernity.<sup>125</sup> Little by way of conclusion resulted from this work, and a consistently applicable framework for the analysis of political systems was not derived. Pye states:

... if we are going to compare polities in order to understand better the dynamics of political development we must make our analyses in terms of the ways in which people develop, maintain, and change the fundamental basis of political behavior, and in terms of the collective stability and instability of different constellations of attitudes and sentiments.<sup>126</sup>

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<sup>125</sup> LaPalombara, Beck, Social Science Research Council, and Committee on Comparative Politics, *Bureaucracy and Political Development*, 35.

<sup>126</sup> Lucian W. Pye, Sidney Verba, Social Science Research Council, and Committee on Comparative Politics, *Political Culture and Political Development* (Princeton, NJ: Princeton University Press, 1965), 6.

This highlights the importance of culture as a universally sensitive measure by which to undertake comparative analysis, further explored in the Section 2.5.1 of this chapter. “The notion of political culture assumes that the attitudes, sentiments, and cognitions that inform and govern political behavior in any society are not just random congeries but represent coherent patterns which fit together and are mutually reinforcing.”<sup>127</sup>

According to Almond and Powell, the study of political systems necessitates an analysis of the capabilities and functions of institutions within.<sup>128</sup> In broad terms, political systems can be assessed in terms of the relationship between functions and structures, and in many ways it is technology that determines the interface between these. Certainly, the way ICTs are used in the political sphere affects the way government institutions convey information about their objectives and purpose, and how they make themselves accessible and interactive as part of a feedback loop with their constituents. Thus, the relationship between structure and function in government institutions is a critical one.

The term ‘political development’ is itself also endowed with a particularly deterministic undertone in the post-communist/development context. This is not uncommon to the majority of ICT projects undertaken in the developing world; the expectations of technology as positive transformer and de-centralizer of institutions are clear. To develop, particularly in conjunction with the deployment of ICTs, means to create and simulate the structures and appearance of neo-liberal

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<sup>127</sup> Ibid., 7.

<sup>128</sup> Gabriel Abraham Almond and G. Bingham Powell, *Comparative Politics* (Boston: Little, Brown, 1966), 348.

institutions as they exist in the developed world. Needless to say, this is a highly interactive, dynamic and complex process in which outcomes are not certain.

More traditional definitions are also important to consider. “A political system is said to be developing when there is an increase in its ability to sustain successfully and continuously new types of social goals and the creation of new types of organization.”<sup>129</sup> Montgomery and Siffin point out that political development is autonomous, proceeding along lines distinguishable from economic, social, or other forms of change.<sup>130</sup> Some have stated that political development as a concept is derived from the failure of economic development programs, while others have been tempted to define it as economic development is defined: equivalent to some ultimate stage of Rostow’s model – “age of high mass consumption”.<sup>131</sup> Organski developed this idea of stages more comprehensively; describing the movement of a polity as characterized by progression through the phases of political maturation. These include identity unification, the political of industrialization, the politics of the welfare state, and finally – the politics of abundance.<sup>132</sup>

Pye looks at political development as a function of national political unity and the broadening of the base of political participation. Wriggins and Spengler look at political development as the means by which the growth of institutions and practices allow a political system to deal with its own problems and to be more

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<sup>129</sup> John Dickey Montgomery, William J. Siffin, and American Society for Public Administration. Comparative Administration Group, *Approaches to Development: Politics, Administration, and Change* (New York: McGraw-Hill, 1966), 25.

<sup>130</sup> Ibid., 25.

<sup>131</sup> Ibid., 16.

<sup>132</sup> A. F. K. Organski, *The Stages of Political Development*, 1<sup>st</sup> ed. (New York: Knopf, 1965), 229.

responsive.<sup>133</sup> Pye, in fact, includes the concept of concurrent modern administrative developments as part and parcel of the political development process.<sup>134</sup> He states that "... it is not a process in which there is simply a decline of traditional modes of behavior and a rise of rationality and impersonal efficiency... [it] involves the expression of the collective values of a people... and above all else the tests of loyalty and commitment."<sup>135</sup> Eisenstadt puts political modernization concretely as a high degree of differentiation in political roles and institutions, and the development of a centralized and unified polity with specific goals and orientations. He highlights the extension of the activities of central administrative and political organizations into all spheres of society, and the weakening of traditional elites by an increase in ideological and institutional accountability of the rulers to the ruled.<sup>136</sup> In sum, there is little explicit agreement in the literature on exactly how to characterize political development, or what its ultimate stage might be, although certainly the idea of 'mass consumption' in politics is common, and can be likened to participatory politics and democracy.

While nonconsensual and non-democratic measures may often be essential in early stages of development to lay foundations (for example, for land reform), ultimately the goal of political development is comprised of the politics of accommodation and compromise. This is why democracy as a system may

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<sup>133</sup> Montgomery, Siffin, and American Society for Public Administration. *Comparative Administration Group, Approaches to Development: Politics, Administration, and Change*, 21.

<sup>134</sup> Lucian W. Pye, Social Science Research Council and Committee on Comparative Politics, *Communications and Political Development* (Princeton, NJ: Princeton University Press, 1963), 17.

<sup>135</sup> Pye, Verba, Social Science Research Council, and Committee on Comparative Politics, *Political Culture and Political Development*, 19.

<sup>136</sup> LaPalombara, Beck, Social Science Research Council, and Committee on Comparative Politics, *Bureaucracy and Political Development*, 99.



theoretically be an unlikely and improbable end in nations that are highly polarized – whether by income, class, ethnicity, religion or culture. According to Leftwich, seldom have liberal democratic institutions of the polity, declining social inequalities, a flourishing civil society, widening policy consensus and secular public/bureaucratic ideology (including the institutionalization of human rights) *preceded* development based on industrialization and urbanization. This may reinforce the aforementioned idea that the concept of political development has been borne of failures to achieve economic development; this also contradicts the notion that political development as a process is autonomous. This underlines the view that democracy, as a political system, is a *consequence* of development, not its precursor; this is congruent to my own assertion that the process of political development cannot be a blueprint unconditionally applicable to all places and people. To label institutions from the outside as ‘democratic’ before the necessary steps of organic, internal change have taken place is to undermine the very process of development in transition countries; using ICTs as a façade for this may unintentionally cause more harm than good. This idea will be explored in forthcoming chapters.

For the purposes of this dissertation, political development as a process is a function of the extent to which the international community permeates the institutions of a country, the way domestic society evolves alongside civil society, the way political elites pursue and fulfill their interests, and of course the extent to which governmental capacity allows for ‘mass consumption’. In its most practical form, it can be looked at as a process, characterized by effective governmental

infrastructure, transparency, and the capacity for service delivery. As a process, it has some critical catalysts, which have been extensively elaborated upon by David Easton: impulses for change in the magnitude (and content) of inputs (i.e., challenges, requests for information) into a political system.<sup>137</sup> Such impulses can emerge, theoretically speaking, as a result of a growing lack of capacity in a system to cope with confrontation to incumbent powers. Practically speaking, such impulses can take the form of donor-driven project objectives. It should also be pointed out that a decline in the magnitude or content of the flow of inputs into a political system may result in ‘development’ in a negative or regressive sense. Eisenstadt tells us that all political systems are subjected to a pattern of demands and that all of them have some capacity to deal with increases in demands and organization that may develop; how such demands are minimized, controlled, manipulated, or absorbed divulge the degree to which a political system approximates democracy or totalitarianism.<sup>138</sup>

Of the variety of definitions mentioned by Pye, two are also relevant here: one places emphasis upon governmental performance (and thus development involves an increase in administrative performance and a greater capacity for carrying out public policies); the other involves the test of system performance and capacity of both the administration of government and the policy to meet demands.<sup>139</sup> Alfred Diamant views political development in a way that reconciles

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<sup>137</sup> David Easton, *A Framework for Political Analysis* (Englewood Cliffs, NJ: Prentice-Hall, 1965), 143.

<sup>138</sup> LaPalombara, Beck, Social Science Research Council, and Committee on Comparative Politics, *Bureaucracy and Political Development*, 27-28.

<sup>139</sup> Pye, Verba, Social Science Research Council, and Committee on Comparative Politics, *Political Culture and Political Development*, 12.

itself well with the premises of this dissertation; as a process aimed not at achieving a specific political condition, but at creating an institutional framework for solving an ever-widening range of social problems.<sup>140</sup> Eisenstadt said that the central problem of modernization in any modern political system rests on the ability to deal with changing demands.<sup>141</sup> In other words, it becomes a matter of capacity.

### 2.5.1 The Concept of Capacity

Technology is arguably one part of an institution's total resource base. However, when it comes to the context of institutional transformation and political transition, I argue that it is a catalytic element dependent upon the capacity of an institution to absorb and apply it. The notion of capacity has been used prolifically in literature over the years coming from development and donor agencies like the UNDP. In the academic literature, McGuire asserts that "capacity has long been identified as an important correlate of effective governance"; concern in the public administration literature has typically focused on issues of management and administration.<sup>142</sup> John Gargan states that capacity as a concept has become part of the rhetoric of public officials and students of government, stressing however that it is important not to look at capacity as function of purely management factors, and warning against defining it in the abstract.<sup>143</sup>

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<sup>140</sup> Alfred Diamant, "Political Development: Approaches to Theory and Strategy" in Montgomery, Siffin, and American Society for Public Administration. Comparative Administration Group, *Approaches to Development: Politics, Administration, and Change*, 16.

<sup>141</sup> LaPalombara, Beck, Social Science Research Council, and Committee on Comparative Politics, *Bureaucracy and Political Development*, 103.

<sup>142</sup> Michael McGuire, Barry Rubin, Robert Agranoff and Craig Richards, "Building Development Capacity in Non-Metropolitan Communities," *Public Administration Review* 54, no. 5 (October 1994): 426-433.

<sup>143</sup> John J. Gargan of Kent State University, "Consideration of Local Government Capacity", *Public Administration Review* 41, no. 6 (Nov. 1981): 649-658.

Capacity can be considered a number of different ways; as potential vs. actual, as a function of ‘resources, performance and sustainability’,<sup>144</sup> and as an inherent part of structure as well as process. Gargan see it as a function of expectations, resources and existing problems, and says it can be a problem because of the growing gap between local practice and the magnitude of demands.<sup>145</sup> This, to a large extent, is exactly the problem in a country like Armenia. A large amount of anecdotal evidence gathered from the interview process yields the fact that there is little visible demand placed on the capacity of government institutions from the citizenry. The gap is thus not growing between citizenry and government; it is quite static and reinforced by a collective apathy: therefore absorptive capacity for ICTs remains stagnant *because it can*. Arguably, this thwarts what might otherwise yield the expected results of technology penetration in government; higher levels of transparency, interactivity, and more successful service delivery. The only real gap that is growing to heighten the tension around the concept of capacity in governmental institutions is one that seems to exist between recipients of donor aid, and international donor organizations. This is explained in further detail in Chapter 6.

Accordingly, it is important also to identify the vantage point from which levels of capacity are being addressed. The actual level of capacity in an institutional setting is determined by the context – social, economic, political – of a particular community since each community is indeed, unique.”<sup>146</sup> Likewise,

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<sup>144</sup> Jerry VanSant, *Center for International Development Working Paper* (Duke University: Research Triangle Institute), 1991.

<sup>145</sup> John J. Gargan, *Public Administration Review*, 652.

<sup>146</sup> *Ibid.*, 652.

definitions of public service adequacy (as with definitions of capacity) are based in citizen expectations, which are typically shaped by existing levels of service delivery; this is not to say, of course, that citizen expectations regarding adequacy of services and the capacity of government to deliver them are not immutable.<sup>147</sup> Cohen and Levinthal of Cornell University look at absorptive capacity in firms and posit that it is history-/path-dependent; they see it as part of what drives the allocation of an organization's resources to further innovative capacity.<sup>148</sup> This also makes sense in the context of institutions in the political sphere.

When it comes to usage of the term in the more practical literature of donor and international organizations, capacity is seen an ongoing process; it increases the ability of an organization to carry out its functions, to learn and solve problems, and to sustain its relevance to its environment.<sup>149</sup> The UNDP defines it as, "... the ability (of an individual, institution, or society as whole) to identify and solve a problem or problems. It is not the mere existence of potential."<sup>150</sup> Moreover, capacities develop within individuals and organizations, through learning processes and the acquisition of new knowledge, skills, and attitudes. For that reason, the results of capacity development efforts are best gauged through observing changes in the behavior and performance of people and organizations, as

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<sup>147</sup> Ibid., 655.

<sup>148</sup> Wesley Cohen and Daniel Levinthal, "Absorptive Capacity: A New Perspective on Learning and Innovation," *Administrative Science Quarterly*, (March 1990): 149.

<sup>149</sup> Douglas Horton, Anastasia Alexaki, et al, *Evaluating Capacity Development: Experiences from Research and Development Organizations around the World*, 1<sup>st</sup> ed. (The Netherlands: International Service for National Agricultural Research (ISNAR), 2003), 31.

<sup>150</sup> John Mugabe, *Capacity Development Initiative: Scientific and Technical Capacity Development Needs and Priorities*, 1<sup>st</sup> ed. (GEF-UNDP Strategic Partnership, October 2000).

opposed to a focus on studying the ‘impacts’ of external interventions.<sup>151</sup> There are a wide variety of tools in existence that measure institutional capacity<sup>152</sup>; likewise, I believe that the customization of such tools to a particular institutional environment may help to capture

So what – *ipso facto* – makes government institutions ‘capable’? I posit that the overall institutional capacity in Armenia is to a large extent a function of uniformity across several main capacity components; the greater the difference between one and the other forms of capacity, the less an institution is ready – as a whole – to make effective use of ICTs. This is elaborated upon in detail in Chapter 3.

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<sup>151</sup> Horton, Alexaki, et al, *Evaluating Capacity Development: Experiences from Research and Development Organizations around the World*, xiv.

<sup>152</sup> Jerry VanSant describes in his paper “A Composite Framework for Assessing the Capacity of Development Organizations” for USAID written in February 2000, a wide variety of existing institutional capacity measurement tools. These include the ‘ISR’ (based on “Institutional Self Reliance: A Framework for Assessment” by Jerry VanSant), ‘OCAT’ (based on “Organizational Assessment Capacity Tool: A Handbook on Participatory Monitoring and Evaluation” by PACT, 1996), ‘DOSA’ (based on “New Directions in Organizational Capacity Building” by PACT and EDC, 1998), ‘TTAP’ (based on “Training and Technical Assistance Plan” by Counterpart International in 1999), ‘ISA’ (the “Institutional Strength Assessment” methodology developed under the USAID/PVC-supported Child Survival Technical Support Project (CSTS), ‘OCI’ (the “Organizational Capacity Indicator” scale of the Christian Reformed World Relief Committee in 1997), ‘IDF’ (the Institutional Development Framework developed by Management Systems International), and ‘Fisher’ (based on “Non Governments: NGOs and the Political Development of the Third world by Julie Fisher in 1998). (accessed March 2005); available from [http://www.manageforresults.com/JV\\_framework.pdf](http://www.manageforresults.com/JV_framework.pdf).

*At times the spirit of a polity seems to produce a reality that is far more than just the sum of all the people and institutions of the moment; yet politics can only be the acts of specific individuals of whom the few can so readily overshadow the many.*<sup>153</sup>

## 2.5.2 Political Culture and Participation

In conjunction to clarifying the meaning and process of political development, it is important to also examine the subset concept of political culture. Pye states, "... in any particular community there is a limited and distinct political culture which gives meaning, predictability, and form to the political process."<sup>154</sup> According to Almond and Powell, it is the pattern of individual attitudes and orientations toward politics among the members of a political system; the subjective realm that underlies and gives meaning to political action.<sup>155</sup> Such orientations can be categorized into a few categories, including cognitive, affective and evaluative; each of these is based on varying levels of individuals' understanding, knowledge, feelings or judgment of political objects and events. Naturally, as a political system is made up of the sum of its parts, and as institutions are comprised of the individuals that work within them, these perceptions associated with political culture matter. Political culture is likely to support certain general political goals and procedures, and to reject others.<sup>156</sup> This can be manifested in a variety of ways.

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<sup>153</sup> Pye, Verba, Social Science Research Council, and Committee on Comparative Politics, *Political Culture and Political Development*, 3.

<sup>154</sup> Ibid., 7.

<sup>155</sup> Gabriel Abraham Almond and G. Bingham Powell, *Comparative Politics Today: A World View*, 6<sup>th</sup> ed. (New York: HarperCollins, 1996), 50.

<sup>156</sup> Ibid., 57.

For example, to a large extent the supply and demand of political trust in society is a determinant of its political culture: are political opponents viewed with suspicion? Pye states, "... many apparently non-political beliefs – such as feelings of basic trust in human relations, orientations toward time and the possibilities of progress, and the like – can be of overriding importance."<sup>157</sup> Political cultures are built either upon the fundamental faith that it is possible to trust and work with fellowmen or upon the expectation that most people are to be distrusted.<sup>158</sup> On a related note, Joseph Nye stated in 2002, "... public confidence in government has declined over the past few decades in a large number of democratic countries."<sup>159</sup> Does political interaction and discussion take place? What is the level of civility and institutionalization of political interaction? Pye states that rational considerations, ethical values, and political culture color peoples' expectations about the realities of politics and instills in them shared ideals as to the nature of their public life.<sup>160</sup>

This is where participation as a concept is important to explore. Political participation is a goal-oriented activity, the means by which the interests, desires and demands of the ordinary citizen are communicated and expected to be met.<sup>161</sup> Since transposing voting activities to the digital realm is challenging enough even in the most developed nations, it is important to look beyond this aspect of political

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<sup>157</sup> Pye, Verba, Social Science Research Council, and Committee on Comparative Politics, *Political Culture and Political Development*, 8.

<sup>158</sup> Ibid., 22.

<sup>159</sup> Kamarck, Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, 1.

<sup>160</sup> Pye, Verba, Social Science Research Council, and Committee on Comparative Politics, *Political Culture and Political Development*, 9.

<sup>161</sup> Sidney Verba, Norman H. Nie, and Jae-On Kim, *The Modes of Democratic Participation: A Cross-National Comparison* (Beverly Hills, CA.: Sage Publications, Inc., 1971).



participation into broader areas that are less event- and time-specific. Verba, Nie and Kim expand their view of participation beyond elections and voting processes, and into the ways in which citizens attempt to influence and interact with their government *between* elections periods. Their focus on citizen-initiated contacts and cooperative activity (working with or forming informal groups – or through formal organizations- to attempt to influence government officials) in addition to voting and campaign-related activities, “... probably encompass most citizen activities in ordinary times”.<sup>162</sup> “The fact that two cultures of the elite and the mass exist in all political systems means that ... [they] can be readily classified according to the character of the relationship between the two.”<sup>163</sup> This is related also to collective attitudes toward power; traditional societies tended to emphasize and to provide moral justifications for hierarchical relationships.<sup>164</sup>

Verba, Nie, and Kim also touch upon an extremely important factor that affects participation in a country, as they attempt to understand the variation in participation from society to society. They focus on the connection between standard socioeconomic mobilization, whereby rising levels of socioeconomic status – in particular increased education, and higher income and higher-status occupations – are accompanied by increased civic orientations (such as interest and involvement in politics), and norms of participation.<sup>165</sup> Nevertheless they also concede that, “... it may well be that the process that brings individuals to

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<sup>162</sup> Ibid.

<sup>163</sup> Pye, Verba, Social Science Research Council, and Committee on Comparative Politics, *Political Culture and Political Development*, 16.

<sup>164</sup> Ibid., 22.

<sup>165</sup> Verba, Nie, and Kim, *The Modes of Democratic Participation: A Cross-National Comparison*, 55.

participate differs somewhat from nation to nation or among groups within nations”; if this signals substantive differences in the ways in which citizens relate to government, this could “... require some reconsideration of our notions about the relationship of “modernization” to the development of a participant political system.”<sup>166</sup>

### 2.5.3 The Concepts of Digital Government & Bureaucracy

The effects on central governments of the third information revolution are still in their early stages. The dispersal of information means that power is more distributed and networks tend to undercut the monopoly of traditional bureaucracy. The speed or spontaneity of Internet time means that all governments, whether central or local, have less control of their agendas. This may make government more difficult, as there will be fewer degrees of freedom for political leaders to enjoy before they must respond to events.<sup>167</sup>

Approaches to the implementation of digital government work in developing countries generally tend to be broad and top-down. While a top-down approach in a transitioning country is very necessary in terms of guiding strategy and political will, it is not as useful when one gets to the nuts and bolts of looking at how digital government can actually be realized. Most of the work in this sphere in post-communist/transition countries is being undertaken by donor organizations, and little of it tends to be the product of any organic movement toward ICT/automation. This means that there tends to be little vision and strategy incorporated in this process, and therefore that website content developers are not working (as they should) with process engineers and Chiefs of Staff to determine, for example, how to limit the average citizens’ time spent on administrative merry-go-rounds. Yet,

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<sup>166</sup> Ibid.

<sup>167</sup> Kamarck, Nye, and Visions of Governance in the 21st Century, *Governance.com: Democracy in the Information Age*, 11.

simply put – digital or ‘e-government’ projects are still underway, and ICTs are still being expected to make a country more democratic. Is this justified? It is not, according to those who think that low internet penetration, low teledensity and a lacking general proclivity of the population to seek public information (as is evident in most post-communist societies, for example) invalidates the relevance of e-government initiatives.

As it is, the definition of digital government as evident through the interview process for this research yields absolutely no uniformity or clear understanding of the term by citizens. Digital government, for the purposes of this research, is defined as the use of information and communication technologies to provide access to government information and delivery of public services to constituents through the automation of bureaucracy.

According to Jane Fountain:

... [IT] and organizational/institutional arrangements are connected reciprocally. Both function in this framework as dependent and independent variables. Each one has causal effects on the other. Institutions and organizations shape the enactment of information technology. Technology, in turn, may reshape organizations and institutions to better conform to its logic. In contrast, institutions generate rules and requirements to which actors and organizations must conform if they are to receive support and be deemed legitimate in their authorizing environment.<sup>168</sup>

Fountain notes an important lag between advances in information technology and bureaucracy; she highlights perhaps one of the most relevant factors to this dissertation, which is that “institutionalized norms and values, bureaucratic

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<sup>168</sup> Jane E. Fountain, *Building the Virtual State: Information Technology and Institutional Change*, (Washington, DC: Brookings Institution Press, 2001), 251.

politics, and tightly coupled routines are highly resistant to change.”<sup>169</sup>

“Organizations often appear to change technology, rather than their own practices, by using or enacting technology in suboptimal ways that allow for the status quo to continue.”<sup>170</sup>

In order to better understand the workings of that status quo, it is necessary to explore the theoretical foundations of bureaucracy before delving into case study findings. According to Weber’s theory of bureaucracy, a new type of organization, leadership and bureaucracy was derived from a ‘rational’ framework in the second half of the 19<sup>th</sup> century. Leaders in these systems are recognized and obeyed for subscribing to values of logic, efficiency and reason; such organizations functioned on the basis of legitimately derived laws, rules and regulations.<sup>171</sup>

According to LaPalombara,

The role of bureaucracy in effecting socio economic political change is said to require, as central tendencies, such Weberian attributes in public administration as hierarchy, responsibility, rationality, achievement orientation, specialization and differentiation, discipline, professionalization. Insofar as public administrative systems fall short of hits Weberian legal-rational model, they are said not to be modern.<sup>172</sup>

Weber identified three key features of bureaucratic organizations: a formal and unambiguous hierarchical structure of power and authority, an elaborate, rationally derived and systematic division of labor, and a set of general, formal, explicit, exhaustive and largely stable rules that were impersonally applied in decision-

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<sup>169</sup> Ibid.

<sup>170</sup> Ibid., 127.

<sup>171</sup> Aby Jain, *Using the Lens of Max Weber's Theory of Bureaucracy to Examine E-Government Research*, Proceedings of the 37th Hawaii International Conference on System Sciences (Hawaii, 2004), 2.

<sup>172</sup> LaPalombara, Beck, Social Science Research Council, and Committee on Comparative Politics, *Bureaucracy and Political Development*, 12.

making.<sup>173</sup> All decisions and communications are recorded in permanent files, there is a clear separation of personal from official property, and a high level of meritocracy (as opposed to nepotism) applied to hiring personnel. Despite the clearly negative connotation of this terminology when used in present day, it is apparent that the characteristics attributed to it as a concept are desirable. That said, however, LaPalombara does not view classical bureaucracy as necessarily a precondition for development.<sup>174</sup> Marx believes that governmental machinery to carry out continuing public functions with at least minimal efficiency is a basic requirement of national advance, even of political survival; at the same time, he sees a bureaucracy as an aggregation of many factors rather than as a monolith.<sup>175</sup>

Fainsod concludes in fact that a bureaucracy can instill and implement economic modernity without itself absorbing any of the changes it seeks to disseminate.<sup>176</sup> This has interesting implications for the idea that ICTs in governing institutions might be a precondition and precursor of a well-governed and developed political system. In the same chapter, Fainsod cites examples of the US and Britain, who, when they “...experienced their most rapid economic change, [their] respective bureaucracies... were conforming much less to the Weberian model than they are today. A striking degree of particularism and corruption in public administration can be associated with economic development in both of these

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<sup>173</sup> Jain, *Using the Lens of Max Weber's Theory of Bureaucracy to Examine E-Government Research*, 2.

<sup>174</sup> LaPalombara, Beck, Social Science Research Council, and Committee on Comparative Politics, *Bureaucracy and Political Development*, 11.

<sup>175</sup> Fritz Morstein Marx, “The Higher Civil Service as an Action Group in Western Political Development” in *Ibid.*, 62-63.

<sup>176</sup> *Ibid.*, 11.

countries.”<sup>177</sup> LaPalombara observes however that the situation was different in developed Western systems in one important respect: the capacity of political systems for enforcement of decisions and the allocation of values increases along with the capacity of the society to generate demands.<sup>178</sup>

Carl Beck observed that “classic bureaucratic theory, concerned with isolating certain factors, is only a partial theory. If this partial character is not stressed sufficiently, [even] bureaucratic theory seems to be deterministic.”<sup>179</sup> Beck elaborates, “... it seems to state that under the impetus of a drive toward rationality, organizations and systems of administration will evolve into rational-legal structures in which decision making processes become bureaucratic. In constructing this model, bureaucratic theory underplays, if it does not ignore completely the relevance of politics.”<sup>180</sup>

For those familiar with Armenia’s political system, for example, it is clear that the ‘politics’ that Beck speaks of, dominate. The institutions and structures in place are pre-bureaucratic and functioning in the laden context of a traditional society. Almond rightly observes that it is difficult for a specialized bureaucracy to operate effectively in a traditional society.<sup>181</sup> In such societies, the conduct of politics is governed by custom, and more specifically by the patterns of behavior engrained in well-established social networks. Individuals are treated (and behave) according to ascribed status, not according to particular merits and needs relevant to

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<sup>177</sup> Ibid.

<sup>178</sup> Ibid., 29.

<sup>179</sup> Ibid., 298-299.

<sup>180</sup> Ibid., 298-299.

<sup>181</sup> Almond and Powell, *Comparative Politics Today: A World View*, 59.

a special political domain. If the rules of Weberian bureaucracy as we know them are imposed on such cultures, they are soon undermined by the persisting traditional norms. Hence the idea that even if ICTs were being used to enhance the functionality (and hence interactivity) of websites, the fact remains that citizens seeking information about how best to accomplish a public sector administrative task will not send email or check an internet site. They will call someone they know 'on the inside', if they can, to find the most effective and expeditious way to accomplish their goal. The demands of the citizenry take such a form that they outstrip any capacity of the system to meet them institutionally; hence we observe reinforcement of existing patterns of interaction.

## **2.6 Conclusion**

As cited by Aby Jain, two prevailing themes emerge through these types of enquiry: the first is that information technology emerges as a tool for reforming bureaucracy, and the second is that digital government failure may be explained as a consequence of bureaucracy.<sup>182</sup> The issue of how digital government and bureaucracy impact one another is undetermined and lacking in clarity in the literature. Various researchers like Schol, Bardach and Lazer have used various lenses to study digital government – stakeholder approaches, network theory and diffusion of innovations phenomena as a means of understanding under what conditions ICTs can improve the functioning of government.<sup>183</sup> The case of Armenia will serve as a means by which the validity of both of these emergent themes can be examined.

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<sup>182</sup> Jain, *Using the Lens of Max Weber's Theory of Bureaucracy to Examine E-Government Research*, 2.

<sup>183</sup> Ibid.

It is clear from this review of literature, that it is neither enough to examine simply the formal structures of political interaction nor just to observe their patterns of interaction. It is vital to look at a political system and its development in conjunction with the system of beliefs and values of which it is part, as well as to identify those aspects of the prevailing development paradigms that will be relevant to this study of ICT impact. This is a reflection of the importance of the constructivist approach mentioned earlier in this review; the way in which ICTs are adopted, absorbed, and employed to enhance institutional (and hence, governmental) capacity is dependent on a number of factors related to existing social capital and cultural considerations. Forthcoming chapters on methodology, comparative regional study, and detailed country case study will elucidate what aspects of the theories presented in this literature review will remain relevant, and what will be dismissed.



### 3 Methodology

It is evident in the literature review that ICTs can influence the dynamics of governance and processes of statehood in a country: on the development of institutions, the emergence of civil society, the functioning of the judicial system, the magnitude of public participation in governance, and on the process of state-building in general. These broad and general assertions are valid in most democratic states today. Yet, the ‘globalizing’ effects of ICTs as reflected in the conventional wisdoms espoused by global policymakers, particularly in settings like the World Summit on the Information Society (WSIS), may be misguided insofar as they foretell homogeneous outcomes. The general ‘default settings’ in arenas like WSIS point to the idea that the emergence of new technologies and communications networks are causally related, not merely correlated with the forces of ‘globalization’ that reflect the driving ideas of free-market capitalism. As Friedman says, “globalization has its own defining technologies: computerization, miniaturization, digitization, satellite communications, fiber optics, and the Internet, which reinforce its defining perspective of integration.”<sup>184</sup> While this may be true, it is important to scrutinize the nature of that integration and challenge its alleged uniform manifestation. “Simply increasing connectivity or distributing computers and software will not lead to development impacts unless the range of other

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<sup>184</sup> Thomas L. Friedman, *The Lexus and the Olive Tree*, 1<sup>st</sup> ed. (New York: Farrar, Straus, Giroux, 1999), 9.

factors—enterprise, applications, human capacity, policy—converge to make that possible.”<sup>185</sup> Indeed,

...many cultures do not treat information as an asset to be shared and disseminated. Rather than transparency and access, information is treated more like a precious commodity to be hoarded and protected. Such cultures are not in a position to realize the productivity gains promised by ICTs even when the technologies themselves are available.<sup>186</sup>

### 3.1 Research Question

This dissertation asks a fundamental question based on underlying assumptions about the role of technology in society and its concomitant impact on the institutions that govern that society. Do ICTs make government institutions more transparent? More specifically, does increased ICT penetration and its ensuing institutional transformation comprise the ‘necessary infrastructure’ for effective service delivery to the citizens in a post-communist state? Both transparency and service delivery are key components of the afore-mentioned concept of modern political development in Chapter 2. These questions began as a very broad inquiry into the broad effects of ICTs on the economies and politics of post-communist countries; it has since narrowed considerably to a very specific analysis across the governmental institutions and agencies of one post-communist country – Armenia.

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<sup>185</sup> Frederick S. Tipson and Claudia Frittelli, *Global Digital Opportunities: National Strategies of “ICT for Development”* (Washington DC: Markle Foundation, December 2003), 7-8.

<sup>186</sup> Ibid., 9.

### 3.2 Theory-Building Justification

According to Van Evera, a theory is a general statement describing and explaining the causes or effects of classes of phenomena; it is composed of causal laws or hypotheses, explanations, and antecedent conditions.<sup>187</sup> The methodology of this dissertation will thus be based on an inductive, theory-building approach, in an attempt to understand the impact of ICT utilization on the political institutions in a post-communist state. This approach can also be referred to as a ‘grounded theory’ approach, as popularized by theorists like Glaser and Strauss. The phrase “grounded theory” refers to theory that is developed inductively from a corpus of data, in contrast to theory derived deductively from grand theory without the help of data.<sup>188</sup> This approach rests on discovering or labeling variables and their linkages to each other in what Borgatti calls a ‘textual database’.<sup>189</sup>

In keeping with Van Evera’s typologies, as a theory-building paper, this dissertation is constructed upon a conceptual map that juxtaposes indicators of ICT capacity with an examination of perceptions of governance and service delivery; the theory elaborates upon the connection between the two in the absence of satisfying evidence as to the nature of their relation. A major premise of this analysis is that ICTs are the tools that modern institutions use to convey their message about who they are, what they do, and what services they provide. This dissertation is based on an in-depth case study, founded on an assessment of the experience of post-

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<sup>187</sup> Stephen Van Evera, *Guide to Methods for Students of Political Science* (Ithaca: Cornell University Press, 1997), 136.

<sup>188</sup> Barney G. Glaser and Anselm L. Strauss, *The Discovery of Grounded Theory: Strategies for Qualitative Research* (Chicago: Aldine Pub. Co., 1967), 271.

<sup>189</sup> “Introduction to Grounded Theory,” (accessed March 2005); available from <http://www.analytictech.com/mb870/introtoGT.htm>.

communist Armenian institutions. This is undertaken through an analysis of institutional capacity within the main branches of the Armenian government. As mentioned in Chapter 2, the notion of capacity is characterized by the fact that it is an ongoing process; it increases the ability of an organization to carry out its functions, to learn and solve problems, and to sustain its relevance to its environment.<sup>190</sup> The UNDP defines it as, "... the ability (of an individual, institution, or society as whole) to identify and solve a problem or problems. It is not the mere existence of potential."<sup>191</sup> The information gathered for this dissertation comprises an effective 'snapshot' of the state of ICT adoption, usage, and capacity in the country.

Qualitative research methods long employed by social scientists are often most effective when combined with quantitative methods. Indeed, theory-building researchers tend to use hybrid data collection methods, which will be the case in this dissertation. They are generally used in the process of developing a case study that focuses on understanding the dynamics present within a single setting, and employs multiple levels of analysis.<sup>192</sup> In qualitative research, a hypothesis is not necessarily needed to begin research; however, all quantitative research requires a hypothesis before research can begin. For the purposes of clarity and continuity, this chapter will outline a working hypothesis as a foundation for theoretical enquiry. Once a research question is defined, an investigator can decide which

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<sup>190</sup> Douglas Horton, Anastasia Alexaki, et al, *Evaluating Capacity Development: Experiences from Research and Development Organizations around the World*, 1<sup>st</sup> ed. (The Netherlands: International Service for National Agricultural Research (ISNAR), 2003), 31.

<sup>191</sup> John Mugabe, *Capacity Development Initiative: Scientific and Technical Capacity Development Needs and Priorities*, 1<sup>st</sup> ed. (GEF-UNDP Strategic Partnership, October 2000).

<sup>192</sup> Kathleen M. Eisenhardt, "Building Theories from Case Study Research," *The Academy of Management Review* 14, no. 4 (1989): 534.

organizations to approach, and what kind of constructs to use in shaping the initial design of the research. Such ‘constructs’ are often developed through familiarity with the literature, though this does not necessarily mean that they will continue to be relevant throughout the course of the field work or information-gathering phase.

A single case can often form the basis for research on typical, deviant or critical cases.<sup>193</sup> Case studies can be used to describe data and to generate or test theory. After a body of research has accumulated on a topic, a case study can focus on particular aspects of issues within the case to refine knowledge.<sup>194</sup> At the most rigorous level, case studies are designed to achieve experimental isolation of selected social factors or processes within a real-life context, so as to provide a test of prevailing explanations and ideas. Van Evera notes that countries can be chosen as substantively interesting in their own right: the society itself, or some aspect of it, such as the political system or policies, is the main object of study. Sometimes the research focus is a theory, and countries are selected to illustrate or test particular aspects of that theory. The aim is to test the generality of a thesis on how institutions operate, how societal change occurs, or how the social environment impacts on individuals, groups or social movements.<sup>195</sup> Moreover, Van Evera affirms that case studies of organizations and institutions are effective for studies of ‘best practice’, policy implementation and evaluation, organizational cultures and processes of change and adaptation, and for extending comparative studies of nations, governments, and multi-nationals. These objectives falls very much in line

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<sup>193</sup> Van Evera, *Guide to Methods for Students of Political Science*, 136.

<sup>194</sup> Ibid.

<sup>195</sup> Ibid.

with those of this dissertation, hence the suitability of case study methodology to this work.

In such research, cases may be chosen to replicate previous cases or to extend emergent theory. However, random selection is neither necessary nor even preferable in a theory-building exercise.<sup>196</sup> According to Pettigrew, “given the limited number of cases which can usually be studied, it makes sense to choose cases such as extreme situations and polar types in which the process of interest is ‘transparently observable’.”<sup>197</sup> This is in contrast to the statistically driven studies in hypothesis-testing work, which often require that a statistically significant population sample be selected randomly. Eisenhardt points out the utility of overlapping data analysis with data collection: building in an implicit flexibility into the process of information gathering, it allows researches to take “advantage of the uniqueness of a specific case and the emergence of new themes to improve resultant theory.”<sup>198</sup>

The three key units of analysis for any study are the principle social unit, space and time. In this dissertation, the principal unit is the government institution, in the context of the Armenian political system in the post-communist era. Indeed, “...most of the experts on this subject agree: institutions are not exogenous to the development process.”<sup>199</sup> In policy research, time and space are always of interest, whether they are held constant or treated as variables, and policy considerations may influence the choice of the social unit. A study like this one that takes

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<sup>196</sup> Eisenhardt, *Building Theories from Case Study Research*, 537.

<sup>197</sup> Ibid., 537.

<sup>198</sup> Ibid., 539.

<sup>199</sup> Johannes Jütting, *Institutions and Development: A Critical Review*, Working Paper No. 210 (Paris: OECD Development Centre, 2003), 21.

organizations or parts of them as the unit of analysis collects information through interviews with individuals; they are requested to provide information on the organization (as opposed to on themselves), on its characteristics and activities, and on processes and events taking place within it.

... While systematic data create the foundation for our theories, it is the anecdotal data that enable us to do the building. Theory building seems to require rich description, the kind that comes from anecdote.<sup>200</sup>

In the case of this dissertation, conventional wisdom as to the impact and effects of ICTs for development is being challenged, though the dissertation itself is designed to move beyond hypothesis-testing based on this wisdom. Evidence is gathered from interview and survey work to build a theory explaining the impact ICT projects have in a country from the perspective of those working in its government institutions, and from the perspective of its citizenry. Further nuance is added as the analysis encompasses which institutions are relatively more successful than others, what branch of government they fall under, and which donors they are working with. Just as it is impossible to separate oneself from the preordained theoretical perspectives or propositions abundant in the literature on ICTs and development, it is not totally possible to approach individual institutions with a totally clean slate insofar as expectations of ICTs are reflected in interview questions. There has to be some sense of a 'desired' or correct answer to some questions, in order for any subjective comparative assessment to be possible.

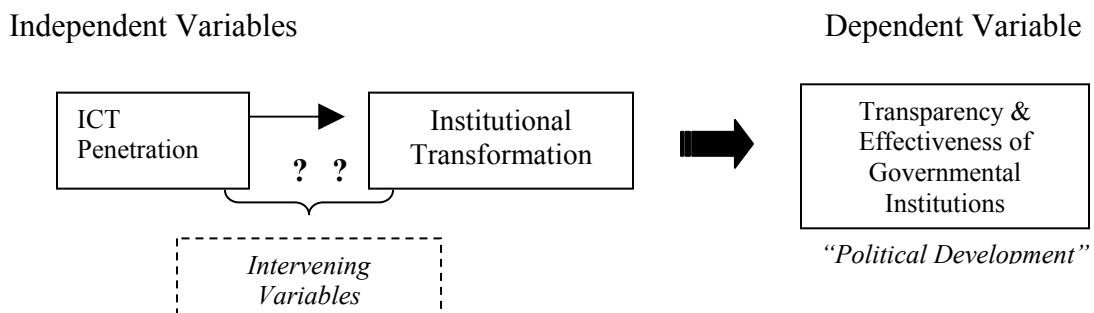
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<sup>200</sup> Eisenhardt, *Building Theories from Case Study Research*, 538.

### 3.3 Hypothesis

Prior to elaboration of the research framework for this dissertation, it is first helpful to state a working, ‘prime’ hypothesis. This overarching hypothesis frames the relationship between the independent and dependent variables of a theory<sup>201</sup>, which in turn helps to elucidate the idea that intervening and antecedent factors of a political environment are critical to the success of donor-driven ICT development projects. The paradoxical idea that, “... you must have capacity to create capacity”<sup>202</sup> is one that is highly relevant to the process of ICT deployments. The means by which ICTs are applied and the ends that are achieved by their application do not necessarily result in a re-configuration that confirms the expected set of ‘values’ or outcomes in a specific political system.

**Figure 3-1: Primary Hypothesis Structure**



The boxes in Figure 3-1 illustrate what is commonly accepted as the natural progression and output of ICT work in a developing country. The dependent variable of ‘political development’ is defined in this dissertation specifically as a product and function of transparency and the capacity of government to deliver service to ever-increasing segments of its population. This definition was elaborated

<sup>201</sup> Van Evera, *Guide to Methods for Students of Political Science*, 136.

<sup>202</sup> Mugabe, *Capacity Development Initiative: Scientific and Technical Capacity Development Needs and Priorities*.



upon in the Literature Review in Chapter 2. I posit ( $H_1$ ); however, that depending on the interaction of a series of critical intervening and antecedent variables, ICTs can actually reinforce the reverse: political stagnation due to non-transparent and non-service-oriented institutions in the post-communist setting. This is despite the fact that those agencies driving the majority of such projects are working in the country with the specific, stated aims of promoting democracy, transparency and liberal economic policies.

The critical ‘intervening variables’, as represented by the question marks (?) in the figure above are a vital part of this theory-building exercise; they reflect the changes that comprise what Van Evera calls the ‘explanatory hypothesis’. Their presence between the independent variables and the dependent variable indicates that intervening factors or forces are significant. This is a particularly relevant possibility in countries where the impact of ICTs is not undermined by an obvious lack of skills, education, and a legacy of existing critical infrastructure. A post-communist country of the Caucasus is thus a prime candidate for analysis.

The demise of the Soviet bloc released a large number of countries from the grip of a rigid ideology that represented some of the worst attributes of societies with cultures of ‘managed information’. Their transition to more open societies has been marked by widely different paces of change in adapting to the wider availability and application of ... [ICTs] for decision-making.<sup>203</sup>

Factoring out rare exceptions like Singapore where ICTs are leveraged in well-governed non-democratic states, I hypothesize that the case of transitioning countries is very special. This is true because of the nature of the antecedent

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<sup>203</sup> Tipson and Frittelli, *Global Digital Opportunities: National Strategies of “ICT for Development”*, 9.

conditions<sup>204</sup> associated with political life in a post-Soviet setting; these will be explored in depth in Chapter 5. My hypotheses are inspired in part by the following statement in a report by the Markle Foundation: "... it is all too easy to slip into the erroneous assumption that simply introducing these technologies – without addressing other major elements of the development equation – will produce development consequences."<sup>205</sup> My assertions are two-part. The first is that the conceptualization of the relationship between ICTs and institutional development must be altered to better incorporate notions of 'capacity'. The literature in this regard appears to be underdeveloped.

An organization's personnel, facilities, technology, and funding constitute its resource base. The organization's procedures and processes for managing its resources and programs as well as its external relationships make up its management capacity. Together, these resources and management capacities make up the overall capacity of the organization.<sup>206</sup>

That capacity, in many developing transition countries, has two determinants; exogenous and endogenous. Development work undertaken by the likes of the European Union's TACIS program, the United States Agency of International Development (USAID), the Canadian International Development Agency (CIDA), the Swiss Development Corporation (SDC), the World Bank and others in post-communist states is almost always delivered in the form of technical and financial support. These are infusions of 'hard' forms of capital that are often

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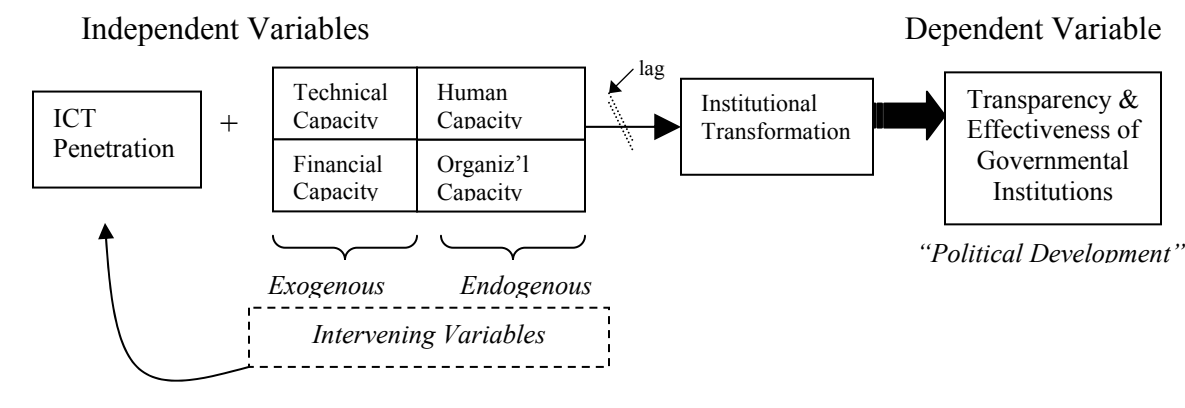
<sup>204</sup> Van Evera states that the presence of antecedent conditions precedes causal processes that they activate or magnify; they need not precede arrival of an independent variable onto the scene. They can appear after the appearance of high values on independent variable that they activate or magnify. Antecedent conditions can be restated as causal law or hypothesis, and are also called interaction terms, initial conditions, enabling conditions, catalytic conditions, preconditions, activating conditions, assumed conditions. From Van Evera, *Guide to Methods for Students of Political Science*, 136.

<sup>205</sup> Tipson and Frittelli, *Global Digital Opportunities: National Strategies of "ICT for Development"*, 8.

<sup>206</sup> Horton and Alexaki, Anastasia et al, *Evaluating Capacity Development: Experiences from Research and Development Organizations around the World*, 22.

exogenously injected into the political system with specific timelines and donor-determined objectives. The other main determinants are endogenous to a political system, and fall into the category of ‘soft’ forms of capital; human and organizational elements are determined largely as a function of the attitudes and perceptions that come from within a specific political culture. This is not a new dynamic. During the 1950s and 1960s, financial and physical resources were transferred to developing countries in ‘supply driven’ models of capacity development, where focus was chiefly on the supply of inputs and the transfer of technology to developing countries.<sup>207</sup> The assumption at the time was that these forms of capital and technologies would trigger sustained economic growth. Today, the focus on delivery of inputs and resources has necessarily shifted towards consideration of a more ‘demand-driven’ approach, taking into account issues of sustainability and local strategy provisioning. This theory-building exercise contributes to this shift, moving toward the evaluation of areas related to changing attitudes and the ability of individuals to work collectively in a modern ICT-enriched environment.

**Figure 3-2: Explanatory Hypothesis Structure**



<sup>207</sup> Ibid., 27.

As illustrated in Figure 3-2, both exogenous and endogenous elements have a feedback effect on ICT project work, and more specifically on its nature, duration and impact. This is an interesting notion that Fountain elaborates upon in writing that technology affects organizational structure, and that this structure in turn affects the technologies being introduced. Indeed, according to the OECD, "... development outcomes are not only influenced by the institutional set-up but also by other variables such as the local setting and the behavior of human actors. Reverse causalities might therefore operate."<sup>208</sup> Taking a necessary lag time into account, institutional transformation does ensue, although the nature of the outcome (of political development, for example) depends on the capacity components. The second part of my assertion is that when ICT capacity is measured to be at 'below' its potential, the threshold of which has yet to be determined in future research, in a country receiving continued donor funding, it can at the same time reinforce patterns of pre-existing 'institutional dynamics'<sup>209</sup>, and create the emergence of a 'cosmetic' democracy (H<sub>2</sub>), thereby heightening internal and possibly regional unrest. These hypotheses will be explored in Chapters 5 and 6.

For the purposes of this dissertation, a 'cosmetic democracy' is defined as a state in which the trappings of modern institutional transformation are intact, due mainly to the work of donor organizations, but in which the overarching political culture results in a lack of commitment to transparency and service delivery. This

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<sup>208</sup> Jütting, *Institutions and Development: A Critical Review*, 9. In order to operationalize this dynamic in statistical analysis, one would have to use some form of Two-Stage Least Squares regression analysis in order to deal with the simultaneity of effect on the part of the endogenous variables with the other independent variables.

<sup>209</sup> The pre-existing 'institutional dynamics' referred to above are characterized by rigid hierarchy, high degrees of centralization, and the pre-bureaucratic institutional conditions referred to in the Literature Review (Chapter 2). This will be elaborated upon in the Case Study (Chapter 6).

is elaborated upon further in the case study Chapter 6. This lack of transparency generally contradicts the very objectives of post-Soviet systemic transition. One excellent indication of this phenomenon is the input of large sums of donor money to public sector reform, with limited observable output as a result, in this case in the form of low ICT capacity in government.<sup>210</sup> One ultimate byproduct of a ‘cosmetic’ democracy may be a continued and sustained dependency on donor streams (H<sub>3</sub>), which I believe characterizes the case of Armenia. I posit that this occurs concurrently to a reduction of alternatives; exclusion or isolation from the ‘global networked economy’ becomes increasingly costly even as the likelihood and willingness to turn away donor-driven ICT projects diminishes. What emerges as a result is a form of path-dependency. Fountain mentions this phenomenon as an argument of North’s, that “... path dependence exerts a potent influence on behavior through culture. It is easy to make poor choices because of uncertainty about how to use new technologies, and further, it is unclear that government or any other institutions has corrective mechanisms in place that would illuminate them.”<sup>211</sup>

Within each institution, one must look at a series of variables elaborated upon in the research framework introduced in Section 3.4.1.2. On a collective level, these factors can be derived from an exploration of the characteristics of the political system, including the interests of key actors in the executive branch, the subservience of legislative and judicial bodies to the executive and a political

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<sup>210</sup> Data gathered from Armenia’s Information Technology Development Support Council (ITDSC) will help to track the scale of this input from donors, while the information in Appendix A provides ample evidence of output results.

<sup>211</sup> Jane E. Fountain, *Building the Virtual State: Information Technology and Institutional Change* (Washington, DC: Brookings Institution Press, 2001), 85.

culture characterized by ‘strongmen’ over ‘statesmen’. On an institutional level, these factors can be explored department by department in a given ministry, elucidating key drivers for ICT adoption, strategy and leadership. An ICT climate is also strongly influenced by the stance of regulatory and telecommunications authorities, the status of existing national ICT infrastructure, and the endemic problems of various forms of access as delineated by Babb.<sup>212</sup>

### **3.4 Quantitative Analysis for Initial Hypothesis Testing**

The qualitative work on the assessment of the independent variables is complemented by quantitative analysis based on a dataset compiled over the last year. This will provide an exploratory exercise featured in Chapter 4, upon which the aforementioned ‘conventional wisdoms’ are validated, and against which the micro-level qualitative analysis may prove the unique case of post-socialist institutions. This dataset is comprised of a large range of indicators that speak either to ICT penetration i.e., figures from the International Telecommunication Union, or to transparent governance and political development in more than 180 countries. World Bank data in particular, focusing on three aspects of work on ‘governance’ by Kraay and Kaufmann, includes the measures of ‘government effectiveness’, ‘voice and accountability’, and ‘rule of law’.<sup>213</sup> The objective of this

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<sup>212</sup> Annalee C. Babb, *Small States, the Internet and Development: Pathways to Power in a Global Information Society*, (Ph.D. diss., Fletcher School of Law and Diplomacy, 2003).

<sup>213</sup> “Government Effectiveness” combines into a single grouping responses on the quality of public service provision, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government’s commitment to policies. The main focus of this index is on “inputs” required for the government to be able to produce and implement good policies and deliver public goods. “Voice and Accountability” includes in it a number of indicators measuring various aspects of the political process, civil liberties and political rights. These indicators measure the extent to which citizens of a country are able to

analysis is to determine whether significant relationships exist between ICT presence and transparency and good governance, and whether such causality can be inferred. While the challenge of isolating independently causal variables remains, this analysis will attempt to control for factors such as population and GDP, when accounting for broad outcome variables like ‘rule of law’, ‘good governance’, or ‘transparency’.

In November 2003, the ITU created the first global index to rank ICT access called the Digital Access Index (DAI); this index distinguishes itself from other indices by including a number of new variables, such as education and affordability, in the redefinition of ICT access potential. This index will be regressed against the range of abovementioned governance indicators, and the results will be reported. According to the ITU, the DAI covers a total of 178 economies, making it the first truly global ICT ranking.<sup>214</sup> Countries are classified into one of four digital access categories: high, upper, medium and low. Those in the medium and upper categories include mainly nations from Central and Eastern

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participate in the selection of governments. The World Bank also includes in this category indicators measuring the independence of the media, which serves an important role in holding monitoring those in authority and holding them accountable for their actions. The “Rule of Law” includes several indicators which measure the extent to which agents have confidence in and abide by the rules of society. These include perceptions of the incidence of crime, the effectiveness and predictability of the judiciary, and the enforceability of contracts. This helps to measure the success of a society in developing an environment in which fair and predictable rules form the basis for economic and social interactions, and importantly, the extent to which property rights are protected. For the 2002 indicators the World Bank used 250 individual measures, taken from 25 different sources, produced by 18 different organizations. These organizations include international organizations, political and business risk-rating agencies, think-tanks, and non-governmental organizations. In Daniel Kaufmann, Aart Kraay, and Massimo Mastruzzi, *Governance Matters III: Governance Indicators for 1996-2002*, The World Bank, June 2003 (accessed January 2005); available from <http://info.worldbank.org/governance/kkz2002/q&a.html>

<sup>214</sup> Many have used ICTs as a development enabler and government policies have helped them reach an impressive level of ICT access. This includes major ICT projects such as the Dubai Internet City in the United Arab Emirates (the highest ranked Arab nation in the DAI), the Multimedia Super Corridor in Malaysia (the highest ranked developing Asian nation) and the Cyber City in Mauritius (along with Seychelles, the highest ranked African nation). International Telecommunication Union, *The Digital Access Index* (Geneva, Switzerland: Strategy and Policy Unit, 2003).

Europe, the Caribbean, Gulf States and emerging Latin American nations.<sup>215</sup> A very wide variety of indexes and correlations will be tested in this exercise, including World Bank governance indicators, Transparency International's index, the AT Kearney Globalization index<sup>216</sup>, the Vanhanen database<sup>217</sup>, Freedom House indicators, data from the Lex Mundi project<sup>218</sup>, as well as from the Polity IV database<sup>219</sup>. These will be narrowed down based on criteria such as country coverage, publication and refereed frequency, and overall specificity. This will supplement existing research already done in this area, this time using one of the newest ICT and most comprehensive indexes available.

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<sup>215</sup> The DAI combines eight variables, covering five areas, to provide an overall country score; the areas are availability of infrastructure, affordability of access, educational level, quality of ICT services, and Internet usage. Besides its global scope, its chosen variables guarantee transparency; the DAI concentrates on factors that have an immediate impact on determining an individual's potential to access ICTs. Ibid.

<sup>216</sup> The A.T. Kearney/Foreign Policy Magazine Globalization Index incorporates 13 key indicators of global integration. The index quantifies economic integration through various measures, charts personal contact via levels of international travel and tourism, international telephone traffic, and cross-border transfers, including remittances, and also gauges technological connections by counting the number of Internet users and the Internet hosts and secure servers through which they communicate. It also assesses political engagement by taking stock of the number of international organizations and U.N. Security Council missions in which each country participates, as well as the number of foreign embassies that each country hosts. (accessed October 2004); available from <http://www.atkearney.com/main.taf?p=5,4,1,64>.

<sup>217</sup> The Vanhanen democracy data contain information from 182 countries observed for the period 1810-1998. In the dataset, original electoral and other political data needed to calculate the values of Competition and Participation variables are given and documented separately for each country. The values of the three variables are calculated and given for each year over the period of comparison. (accessed October 2004); available from <http://www.democ.uci.edu/archive.htm>.

<sup>218</sup> Lex Mundi data is comprised of an index of procedural formalism of dispute resolution for 109 countries in the world. (accessed September 2004); available from <http://ideas.repec.org/p/cpr/ceprdp/3344.html>.

<sup>219</sup> Polity IV contains coded annual information on regime and authority characteristics for all independent states (with greater than 500,000 total population) in the global state system and covers the years 1800-2003. (accessed September 2004); available from <http://www.cidcm.umd.edu/inscr/polity/>.



### **3.5 Independent Variables**

#### **3.5.1. Qualitative Analysis**

In this dissertation, the bulk of the qualitative analysis used for the theory-building exercise comes from more than 70 interviews in twenty institutions of the Armenian government, albeit with heavy emphasis on the executive branch. These institutions include a full range of government ministries, as well as the Parliament, the Constitutional Court, the Central Bank, and two Commissions. Over a six month period spent in the heart of Yerevan, Armenia, information was gathered in a series of field notes, and what began as a series of informal discussions was merged into a more formal template for analyzing the ICT capacity of institutions. Each institution was explored individually, prior to the generalization of patterns across cases. The structure of the research framework (see Section 3.4.1.1) that informs the template for data gathering, distinguishes between four types of institutional capacity: financial, human, organizational, and technological.

The process of gathering qualitative information through interviewing can only be effectively leveraged if there is a strict framework of categories and definitions into which it can be organized. Very often, interviewing and surveying are the only means of gathering information of this kind as there is frequently a dearth of updated documentation in developing country governmental structures plagued by insufficient resources. Few governmental organizations in Armenia without explicit previous experience in ICT development appear to have strategic plans outlining their institutional objectives, particularly as they relate to improving the levels of transparency. The complex interplay of the components of

institutional ICT capacity requires that conclusions be drawn, often about the same issue, through a number of different questions and analytical perspectives.

Functional and operational objectives of each Ministry do not necessarily have to be the same. Moreover, the baseline standard of IT in each Ministry varies enough that a wide range of hybrid possibilities may be acceptable. Yet, to consider an institution's ICT capacity 'good', one needs a few commonly observable points. It is important to note that the assessment tool introduced in Section 3.4.1.1 is geared toward institutions that are *meant* to serve and interface with the public; the underlying perspective of the questions as well as the criteria for desired answers is intentionally critical of evidence of opaque decision-making processes. The following categories of questions are the rationale used for the design and content of the ICT Capacity Measurement tool, shown in Figure 3-4.

It is important to point out that the dependent variable of 'political development', defined as a function of transparency and the effectiveness of service delivery in the explanatory hypothesis of this dissertation, can be looked at on two levels; first at the individual institutional level, and second as part of the collective ICT capacity of the Armenian government as a whole. The departure from Weberian conceptions of bureaucracy is already evident in the methodology of this paper. Fountain observes, "One of the most important limitations of the Weberian framework is the absence of flesh and blood – that is, a view of government decision-makers and their activities even in highly bureaucratized organizations."<sup>220</sup> Accordingly, my independent variables considered catalytic to modern institutional

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<sup>220</sup> Ibid., 47.

transformation in this donor-dominated developing state take into account the vital human and organizational elements enshrined in the concept of political culture.

#### 3.5.1.1 A New ICT Capacity Assessment Tool

According to the 2001 ICT Master Strategy for Armenia, further elaborated upon in Chapter 6, “While lack of Internet access may limit widespread access to services by putting government online, there are significant benefits to be realized by automating the “back office” of government ministries. In fact, these back-office improvements frequently need to precede opening up public access.”<sup>221</sup> The tools used to manage information flow in a public sector institution, particularly related to the executive branch of government, has a material impact on the ability of that institution to articulate its objectives and to eventually meet them. Since the key role of public sector institutions can be seen as, at least theoretically, relegated to the sphere of public service, it is particularly critical to observe whether or not the utilization of technology is able to fulfill this goal.

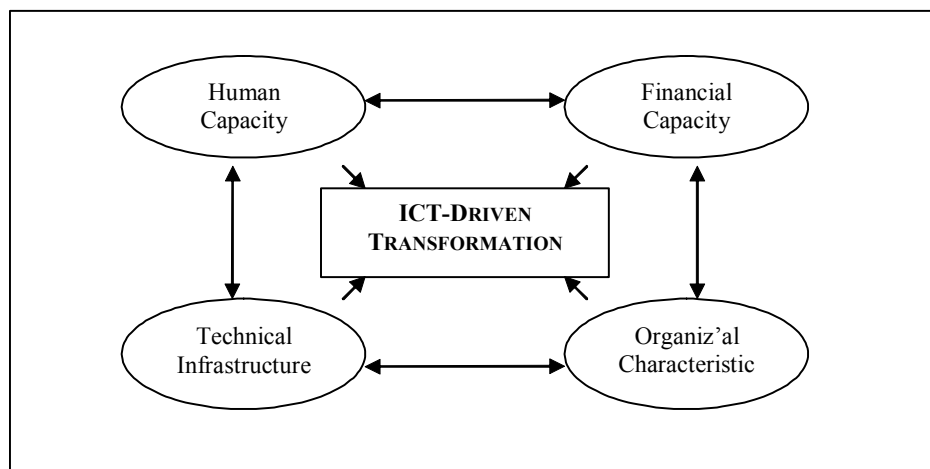
The likelihood and potential of an institution to absorb new information technologies such that they can be real enablers of change is contingent upon several interwoven key components related to organization, infrastructure, and leadership. Some are structural, while others are more dynamic and apt to be in flux, including budgetary and human resource issues. It is important, above all, to expand the assessment of ICT capacity beyond the realm of the technological; the drivers of its potential lie in the stock of financial, human and social capital (which

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<sup>221</sup>“ICT Master Strategy for Republic of Armenia,” (accessed December 2004); available from [http://www.ict.am/pr\\_images/MasterStrategy.pdf](http://www.ict.am/pr_images/MasterStrategy.pdf).

encompasses organizational and institutional characteristics) of an institution. (See Figure 3-3) The following section supports this assertion.

**Figure 3-3: Framework for ICT Capacity Analysis**



### 3.5.1.2 Key Lessons and Context for Assessment Tool

This section elaborates upon the existing work that has influenced or inspired the framework for qualitative analysis. A number of lessons learned from World Bank Information for Development (InfoDev) Case studies on ICT work are relevant to the rationale for this conceptual framework. One lesson comes from the fact that the involvement of target groups in project design and monitoring have enabled projects to better meet their objectives.<sup>222</sup> Therefore, gauging the organizational orientation of ICT work as well as the human component in an institution is important. Another lesson is that innovative technology solutions can be used to great advantage in development projects when they respond to user

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<sup>222</sup>“An Analysis of InfoDev Case Studies: Lessons Learned”, The Information for Development Program: Promoting ICT for Social and Economic Development, (accessed October 2004); available from <http://www.sustainableicts.org/infodev/infodevreport.pdf>.

requirements<sup>223</sup>; hence the importance of identifying whether innovators exist, whether there is feedback into the organization from their target audience, and whether that audience is the citizenry at all. Most of the UN *infoDev* case studies appear to have an identifiable “champion” - either a person or group who have vested interest in the success of the project. Required human capacity may not be there, but studies show three mechanisms for gaining capacity: it is possible to bring in expertise when necessary, to hire specialized staff or to train existing staff (or volunteers).<sup>224</sup>

Batchelor, Norrish, et al., further identify a variety of hypotheses that pertain to the sustainability of ICT development work; they look at sustainability as something beyond mere “ongoing financial cost recovery”.<sup>225</sup> They develop a research framework comprised of key sustainability factors and a corresponding set of questions to guide interview processes, including a number of hypotheses that help justify the framework for analysis shown in Figure 3-3. Institutional sustainability is said to be achieved when prevailing structures and processes have the capacity to continue to perform their functions over the long term. Sustainability will be affected by the human capital available; in other words, the capacity of staff, volunteers and users to adopt and use the available ICTs. This may be a matter of technical capacity, but is likely also to include factors of organizational and management capacity.<sup>226</sup>

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<sup>223</sup> Ibid.

<sup>224</sup> S. Batchelor et al., *Sustainable ICT Case Histories Final Technical Report*, ed. Department for International Development (DFID) (United Kingdom: Gamos Ltd., January 2003)

<sup>225</sup> Ibid.

<sup>226</sup> Ibid.

The infoDev experience has shown that the financial sustainability of most ICT case study projects in developing countries tended to be weak<sup>227</sup>; therefore, detailed questions about the financial components of ICT capacity assessment are imperative. Most infoDev case study projects apparently could not be replicated without significant external funding for initial community development work and startup costs<sup>228</sup>; for this reason, it is important to determine not only whether donors are involved, but to what extent and in what capacity. Since cost recovery in government ICT work is not necessarily feasible because of the inherent nature of public services provision, it appears from the infoDev experience that both technical and organizational capacity is important. It also appears that it was important in the InfoDev context for existing physical facilities to be leveraged where possible<sup>229</sup>; the questions for detailed information as part of the ‘technical’ component are preparation for the creation of exactly this type of synergy.

Sustainability of ICT activities is also likely to be strongly influenced by the technology used; for example, operation and repair factors may be critical to success. It has been found that some form of standardization of technologies across institutions is good, as it encourages a local market that can supply technology support<sup>230</sup>; hence the importance of exploring the physical infrastructure details as much as possible. According to the InfoDev experience, neither the comparative benefits of open source software (OSS), nor the costs of commercial software

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<sup>227</sup> Batchelor, S., Sugden S., *An Analysis of InfoDev Case Studies: Lessons Learned*.

<sup>228</sup> Ibid.

<sup>229</sup> Ibid.

<sup>230</sup> Batchelor et al., *Sustainable ICT Case Histories Final Technical Report*.

licenses, are well understood by implementers or end-users of ICT projects.<sup>231</sup> It is thus important to identify whether or not OSS work is underway, and what implications this may have on the technological capacity of the institution.

The main query areas of this assessment tool are designed to address each fundamental component in turn, related to a government organization's capacity to adopt and use ICTs. The theoretical context of this notion of capacity was explored in Chapter 2. These areas are based on a set of assumptions about what it means to use IT effectively in an institution, insofar as the characteristics of technology as an objective, positive transformer can be understood. Fountain identifies five processes that underpin and influence organizational capacity and control: production, coordination, control, direction, and integration; each of these is shaped by the application of ICTs to process.<sup>232</sup> In turn, each of these is considered in some form as part of my research process; for example, how intellectual production is affected by IT, how organizational memory is created and sustained, whether performance criteria and feedback are taken into account, whether high enough threshold levels exist in communication infrastructure to reduce coordination costs, and how to determine existing ICT capacities.<sup>233</sup> Since technical and financial capacity are most often driven exogenously by donors, it is the nature of the human and organizational capacity that I believe most closely reflects the abilities of institutions in post-communist states to evolve.

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<sup>231</sup> Batchelor, S., Sugden S., *An Analysis of InfoDev Case Studies: Lessons Learned*.

<sup>232</sup> Fountain, *Building the Virtual State: Information Technology and Institutional Change*, 129.

<sup>233</sup> Ibid., 128-135.

#### 3.5.1.2.1 *Examining Organizational Capacity*

One way of examining an institution relative to its peers from an organizational and strategic point of view is to attempt to identify its target (i.e., client) audience. This is a question directed at the strategic objectives of each ministry or government institution. Strategic leadership is the capacity to assess and interpret needs and opportunities outside the organization, to establish direction, to influence and align others towards a common aim, to motivate them and commit them to action, and to make them responsible for their performance.<sup>234</sup> The extent to which chiefs of staff and employees are transparent about the organizational structure of their ministry, who they target with the public information they make available, and whether or not there is evidence of collaboration between PR and IT departments are all part of what constitutes the transparency of each ministry. How the Chief of Staff works to facilitate the internal linkages that foster knowledge and information sharing within and across departments is vital. It is also important to determine whether the ministry in question is working on digitizing information and adopting technologies for the purpose of galvanizing the citizenry, thereby effectively exploiting the democratizing possibilities of ICTs. The key to understanding these motivations lies in finding out if donors are bringing in projects and funding, and whether the deployment of ICT projects is just another means by which donor funding is simply absorbed. After clarifying overarching strategic objectives, the identification of the

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<sup>234</sup> Horton, Alexaki, et al, *Evaluating Capacity Development: Experiences from Research and Development Organizations around the World*, 23-24.



kinds of external and internal ICT activities in which the organization is actively engaged and committed is a key element.

Whether or not an institution maintains its own website, and if it manages local networks and houses databases (i.e., for maintaining public records, internal payroll systems, or knowledge management systems) is a strong indication of the commitment of its leadership and government to service delivery. Those institutions engaged in activity of a more scientific nature (i.e. environmental protection, health, etc.) are more likely to have an IT infrastructure that allows for data mining and management; this signals existing technological capacity and a relatively higher degree of staff knowledge.

It is also important to break down the organizational structure of an institution so as to determine which departments are in need of what level of automation, and which serve most heavily as an interface with the citizenry (if at all). It is vital from a strategic point of view to determine whether the organization is structured optimally to deliver its service/product. Is IT in this institution the work of individuals or is it institutionalized in the form of a department? This question is an attempt to clarify whether the IT work in a given ministry is largely undertaken/driven by one person, or whether there appear to be strategic elements characteristic of more collective action. Is the management of IT centralized or decentralized? This question is related to the nature of the IT department in a given government body, and takes into account whether it (assuming it exists) functions in-house, or if it is the work of an entity independent of the Ministry. Examples of decentralized IT Management exist in a number of Ministries, in the form of what

are called “Information Analytical Centers” (i.e., Ministry of EP; Ministry of Labor). How and whether information is kept and the level of its accessibility is also an important aspect of organizational capacity. Indicators of inefficiency and lack of cooperation and due process are significant signs of low organizational capacity, and often – of corruption.

#### *3.5.1.2.2 Examining Financial Capacity*

Generally speaking, there are currently very few domestic investment capital organizations that support ICT work in Armenia. The only way to find serious investors is through Diasporan networking outside Armenia, or – more realistically – through interested donors organizations like USAID or TACIS. NGOs also take a lead role in some of this work, although the financial scale and scope of their projects tends to be much smaller and more limited to a specific project area. Whether an IT Budget is considered in aggregate or as a separate line on an institution’s accounting sheets is an indication not only of institutional commitment, but of top-level governmental (management) commitment to advancing the information infrastructure of its main branches. Does each ministry have an explicit IT budget? Although this is more difficult to discern, it is also interesting whether information is available as to the percentage of total budget dedicated to ICT work. In most cases, it will not be possible to identify this number in institutions that do not have a clearly articulated strategic ICT framework.

Ideally, the percentage allocation to IT-related development in institutions that “serve citizens” is somewhere between 10-15%.<sup>235</sup>

The extent and involvement of external support is a clear indicator of the potential of an institution to fulfill its ICT capacity. Questions on this subject gauge the involvement of significant donors in the development of IT infrastructure within the last 5 years; the ‘usual suspects’ in Armenia tend to include USAID, UNDP, TACIS, SDC, and CIDA. Are ICT projects proposed independently by donors or are they driven by needs identified from within the organization? Who owns the project, and what kind of external support, if any, is present? This item attempts to identify whether the institution has the capacity to manage relationships with donors, and to separate the various forms of aid (i.e., financial, design, technical, organizational/strategic) that comes from donors. It is also important to determine whether evidence exists of plans for sustainability and transfer of ‘ownership’. It is not unusual that there be no designated budget for information technology projects/operations in most governmental ministries; resources allocated to salaries/equipment either run through other organizational units or comes entirely from outside donors. ICT operations that are more institutionalized (in the form of a proper IT Department, for example) are at least theoretically more likely to be considered as a line item in the budget of an institution.

#### *3.5.1.2.3 Examining Technical Infrastructure Capacity*

Sustainability of an ICT activity is likely to be strongly influenced by the technology used e.g. operation and repair may be critical to the success of the

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<sup>235</sup> This estimate is based on the general approximation of a USAID IT development consultant working in the Armenian ICT arena.

activity.<sup>236</sup> The details of the technical, physical infrastructure underlying the ICT capacity of an institution are important, at least insofar as that capacity may be limited by a shortage of servers, network hubs, or computers. For those institutions that have no existing technical infrastructure, this “technical infrastructure capacity” variable becomes synonymous with technology penetration; in other words, if there is no technical capacity at all within an institution, the technical capacity variable in Figure 3-2 must take its place. The number of computers in each institution (relative to total staff), and the number of IT (technical support) staff relative to total employees help to initiate a cursory look at each ministry’s information technology status. Further important details include finding out about operating systems in use, platforms, the status of software licenses (per user), the nature of user interfaces (web-based, client-server, terminal, etc.), the number of servers servicing their network, the presence of local networks, and the status of internet connectivity in the ministry. While none of the studies undertaken by Batchelor and Norrish showed any indication that the standardization of technology is absolutely necessary, it has already been proven that the use of second hand technology tends to be a hindrance for many projects (due to increased need for maintenance and repair, etc.).<sup>237</sup> Furthermore, how much do employees need the internet to do their work? What are the key information sources used in the work of employees? Such questions attempt to capture whether any significant amount of the workload of Ministry staff/employees is comprised of internet usage; i.e., for research purposes. It is also useful to gather information about whether or not

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<sup>236</sup> S. Batchelor et al., *Analysis and Overview of Case Studies - Research Report*, Sustainable Initiatives, January 2003.

<sup>237</sup> Ibid.

equipment upgrades of any kind are necessary for this institution. As a note of interest, it appears quite rare in the case of Armenia that the lack of hardware is the most critical or chronic problem associated with institutional ICT capacity.

#### **3.5.1.2.4 Examining Human Capacity**

This element is foremost among those that constitute the potential for change that ICTs can bring to governmental institutions; it is tied strongly to the concept of social capital as mentioned in Chapter 2. Qualitative information drawn from case study research indicates repeated evidence that strong leadership and a conducive work environment are key determinants for ICT advancement. According to McGuire, the presence of... leadership and a shared vision for development are indicative of capacity.<sup>238</sup> How many people work in the IT department of this institution, and what is the ratio of IT employees relative to total employees in the firm? Whether or not this is in the context of an IT department external to the Ministry or in-house also has a considerable significance in terms of explaining the incentives people have to innovate. It is also interesting to note the caliber of the employees and their respective roles, their average salaries (if such information is divulged), the academic and professional backgrounds of employees, the existence of a career path (if any), and employee turnover rates. ICT work undertaken by individuals in this context is more likely to be sporadic, and implemented by part-time, underpaid personnel.

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<sup>238</sup> Michael McGuire, Barry Rubin, Robert Agranoff and Craig Richards, "Building Development Capacity in Non-Metropolitan Communities," *Public Administration Review* 54, no. 5 (October 1994): 428.

Are there any innovators working in the organization? This question refers to those individuals in government organizations that demonstrate the will, aptitude and wherewithal to gather together the necessary resources and create new mechanisms and means by which information can be managed. In some cases the innovation in question may not necessarily be comprised of a technical solution to information management per se; it can involve the use of rudimentary techniques whereby citizens' access to government officials and offices is generally facilitated.

### 3.5.1.3 The Analytical Tool

Figure 3-4 reflects the amalgamation of these various lines of examination. It is the template used in the interview process that lends structure to what consists mainly of qualitative and anecdotal information. The maximum score on this assessment tool is a '40' – this indicates optimal levels of information accessibility and structures conducive to effective absorption of ICTs. It also captures optimal organizational orientation (towards service delivery) and is designed specifically for institutions operating in the 'transition' context. Note that a perfect score of '40' on this template, though qualitatively close – is not equivalent to a perfect score on an institution in a developed country context. This is because some of the 'best practices' that are applicable to the Armenian context may be entirely unsuitable to the American or Western European bureaucratic or administrative experience.

**Figure 3-4: The Assessment Tool for an “ICT Capacity Metric”**

<b>Organizational Components</b>		
1	Transparency: If yes (1)	1
a	General propensity to divulge information	.25
b	Evidence of PR + IT depts. work together? If yes	.25
c	Does Chief of Staff facilitate ICT work? If yes	.25
d	Org chart available? If yes	.25
2	Target audience for ICT projects: who benefits? If citizenry (1)	1
3	Digitizing info for galvanizing citizenry: If yes (1)	1
4	Digitizing info for back office automation: If yes (1)	1
5	Efforts donor driven, simply for absorbing funding? If no (1)	1
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	1
10	Is IT mission critical for high %age of total functions? If yes (1)	1
<b>Total</b>		<b>10</b>
<b>Financial Components</b>		
1	Is there indication of institutional commitment? (1)	1
2	Is there an explicit IT budget? If yes (1)	1
3	Is there evidence of external support? (1)	1
4	Extent and involvement of external support (1)	1
4a	If financial? Yes	.25
4b	If design? Yes	.25
4c	If technical? Yes	.25
4d	If organizational, strategic? Yes	.25
5	Evidence for sustainability & transfer ownership? If yes (1)	1
6	Are upgrades of equipment planned? If yes (1)	1
7	Is there budget tracking? If yes (1)	1
8	Is the budget executed through the year? If yes (1)	1
9	If no budget, where does resource come from? If gov't (1)	1
10	How does IT interact with other factors of organization? If ubiquitous (1)	1
<b>Total</b>		<b>10</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80% (1)	1
2	Is security a priority? If yes (1)	1
3	If MS Windows (default) (0), If OS presence (1)	1
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes (1)	1
5	Web-based, client-server, terminal? If any (1)	1
6	Is there local network? If yes (1)	1
7	Status internet connectivity (low- 0, medium -.5, high- 1)	1

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is being given the benefit of the doubt.

8	How critical is internet to work? If M or H (1)	1
9	How many servers service network? If > 2, (1)	1
10	Level of upgrade necessary is low, If yes (1)	1
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>10</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3, (1)	1
2	Does human capacity management feed back into planning? If Yes (1)	1
3	Is there adequate ICT support? If yes (1)	1
4	If IT workers are: external (1), if internal (.5)	1
5	Salaries: If > average \$50 (1)	1
6	If background is technical, and regulated (1)	1
7	Career path? If yes (1)	1
8	Employee turnover: If low (1)	1
9	Presence of innovators: If yes (1)	1
10	Leadership: If subjective assessment is good (Yes =1)	1
	<b>Total</b>	<b>10</b>
<b>Grand Total (out of possible 40)</b>		<b>40</b>

### 3.6 Dependent Variables

In addition to interviewing IT employees and government workers on the inside of government bodies, it is apparent that a view from the ‘outside’ is a good way of examining whether and how much the government has ‘developed’ – and how transparent it is to its primary constituents. Thus, if indeed ICTs do not lead to a manifestation of liberal democratic value systems as reflected in government institutions, then the collective capacity of those institutions is perhaps best assessed by those they are meant to serve: the citizens. A survey instrument was designed to gauge the perceptions of the citizenry in Armenia, and was deployed with the help of the Armenian Sociological Association in Yerevan. The questions were presented to representatives of four hundred households in three different cities: Yerevan (the capital), Kapan (in the South), and Gyumri (towards the north). The questionnaire itself is available in both English and Armenian as shown in Appendix C; its results will be analyzed in Chapter 7. According to Van Evera, ad



hoc surveying can indeed be designed and carried out on ‘one-off’ bases, and they can be repeated at irregular intervals of time – often they reflect updated design and content each time, and these usually do not allow for precise comparisons. They can however indicate changing trends.

The questions in the survey cover a few main areas of enquiry: general technology access levels (and related demographic information), governmental ICT functionality, patterns of constituent interaction with government, and satisfaction and trust levels as a function of technology use. This provides the grounds upon which the effectiveness of ICT projects in Armenia’s public and administrative structures is gauged.

### **3.7 Conclusion**

A good theory has significant potential explanatory power and applicability in the real world; it will be parsimonious, clearly framed, falsifiable, explain important phenomena, and have prescriptive value (for possible policy recommendations, etc.). The extent to which this theory-building exercise will have fulfilled these qualifications will be explored in the concluding chapter of this dissertation. The process of theory-building itself is a highly iterative one, requiring many steps backward and forward between theory and literature, method, case study work and data analysis. The quantitative analysis undertaken in Chapter 4 will provide the foundation from which the hypotheses in this chapter will be explored. Chapter 5 will examine regional and comparative subjects, spanning the commonalities and exceptions of experience in the post-communist setting, while

Chapter 6 will hone in specifically on the findings of the Armenian case study. This exercise will hopefully thus illustrate that when one is freed of the biases inherent in aggregated (quantitative) data analysis, outcomes of ICT work can in some cases yield surprising results. The finer details of the comparative analysis of Armenian government institutions are presented in Appendix A.

As Eisenhardt states, “creative insight often arises from the juxtaposition of contradictory or paradoxical evidence.”<sup>239</sup> Should the study of individual Armenian institutions and their collective capacity in the post-communist context yield evidence that challenges the status quo of donor-driven ICT outcomes, significant implications could result for policymakers, both on the side of donors, and on the side of recipients. According to research methods theory, the extent of the tie between theory-building and direct evidence increases the likelihood that the emergent theory is testable and empirically valid, although the process of synthesizing and analyzing vast bodies of data makes it that much more difficult to adhere to the standard of parsimony. The dangers of encapsulating elements of idiosyncrasy are a real challenge to the generalizability of usable frameworks and tools, because they are theories about specific phenomena. There is also a danger to analyzing highly dynamic independent variables between which simultaneity is endemic; the lack of available and consistent data in the field prevents the possibility of looking at these institutions from a time-series perspective in which change can be measured. Nevertheless, Eisenhardt suggests that theory-building does not necessarily rely on prior empirical evidence (or even on previous

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<sup>239</sup> Eisenhardt, *Building Theories from Case Study Research*, 546.

literature). There is, therefore, an element of freedom in this exercise, alongside the opportunity to “provide freshness in perspective to an already researched topic”.<sup>240</sup>

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<sup>240</sup> Ibid., 548.

*“Embodying the link between communication and efficiency, IT promises to be a continuing force for moving the world toward the liberal model.”<sup>241</sup>*

## 4 Quantitative Analysis

Development, a conceptually ambiguous and operationally intractable notion, has typically been posited as either a cause for - by the likes of Comor<sup>242</sup> and Leftwich<sup>243</sup> - or as an effect of democracy (Olson<sup>244</sup>). Regardless of the direction of causality, a proper point of departure is that political systems, often democratic, and the development of communication infrastructure are linked. This idea is not new. For example, Kedzie has explored the connection, if any, between the spread of information technologies and that of democracy. Multivariate regression techniques have been used extensively to explore various forms of association between democracy, development, growth and information flows.<sup>245</sup> The resulting positive correlation between information technologies and democratic changes proves to be generally robust, as it does with economic growth. Relying on the idea of private enterprise, a liberal mass communication system, for instance,

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<sup>241</sup> Juliann Emmons Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age* (Albany, NY: State University of New York Press, 2002), 107.

<sup>242</sup> Edward A. Comor, *The Global Political Economy of Communication: Hegemony, Telecommunication, and the Information Economy* (New York: St. Martin's Press, 1994), 193.

<sup>243</sup> Adrian Leftwich, *Democracy and Development: Theory and Practice* (Cambridge, England; Cambridge, MA: Polity Press; in association with Blackwell Publishers, 1996), 301.

<sup>244</sup> Mancur Olson, *Power and Prosperity: Outgrowing Communist and Capitalist Dictatorships* (New York: Basic Books, 2000), 233.

<sup>245</sup> Christopher R. Kedzie, *Communication and Democracy: Coincident Revolutions and the Emergence of the Dictator's Dilemma*, 1<sup>st</sup> ed. (Santa Monica, California: Rand Corporation, 1997), 1. Heather Kavanaugh and Heather Mattson, *Democracy as a Determinant for Economic Growth*, ed. (De Pere, Wisconsin: St. Norbert College, 2000), 1. Robert J. Barro, *Determinants of Economic Growth: A Cross-Country Empirical Study* (Cambridge, MA: The MIT Press, 1997), 145. Rebecca Clark, *Female Literacy Rates, Information Technology and Democracy* (Ottawa, ON Canada: Canadian Political Science Association, 2003), 1. Seymour Martin Lipset, “Some Social Requisites of Democracy: Economic Development and Political Legitimacy,” *American Political Science Review* 53 (1959): 69-105. Kevin A. Hill and John E. Huges, “Is the Internet an Instrument of Global Democratization?” *Democratization* 6, no. 2 (1999): 99-127.

increases the proportion of public to private information, expands the domain for investments, and over time will tend to shift the production possibility frontiers to the right.

This idea of ‘conductive ICTs’ also in the context of constructivist theory underlies the liberal democratic peace theory that claims that no two democracies will go to war with one another. Democracies are averse to war not only because of a convergence of interests, but also because they tend to share a communication infrastructure that lends itself well to information exchange and flows among the citizenry and governments that are, in turn, connected with mutually reinforcing perceptions of liberal, democratic values. Concepts like equality are constructed and institutionally materialized through intra- and inter-state communication process among democracies.<sup>246</sup> This process is a vital element of the constructivist approach to international relations theory relevant to this dissertation. For example, Inglehart in *Culture Matters* delineates how certain levels of such concepts as political culture contribute to democracy. To the extent that the availability and use of communication infrastructure can be considered a proxy indicator for political culture, it is interesting to explore this idea. Based on World Values Survey (1995) data, Inglehart finds that “virtually all the societies that rank high on survival/self-expression values are stable democracies; virtually all societies that rank low have authoritarian governments.”<sup>247</sup>

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<sup>246</sup> Hannah Arendt, *The Human Condition* (Chicago: University of Chicago Press, 1958), 332.

<sup>247</sup> Lawrence E. Harrison and Samuel P. Huntington, *Culture Matters: How Values Shape Human Progress* 1<sup>st</sup> ed. (New York: Basic Books, 2000), 94.

Hofstede also presents evidence that the adoption of communication technologies is influenced by cultural characteristics.<sup>248</sup> This subject is treated at length in the section about ‘political culture’ in Chapter 2.

The principles of democracy as a system of government include citizens’ involvement in political decisions through representation, equality among and civil liberties for citizens and transparency in institutions. These principles are embodied in communicative practices and reflected in the sharing of knowledge and dissemination of information of all kinds in the private and public spheres. These practices are also critical to the maintenance and observance of the rule of law; “... absent communication between citizens on the issues, laws will lack social traditions, that is, legitimacy, and thus ultimately either fail or engender more coercion.”<sup>249</sup> Hedley Bull also alludes to the rule of law as a necessary norm based on communication in human societies; “... without communication there could be no international society, nor any international system at all.”<sup>250</sup> Pool in 1983 likewise indicates that communication mechanisms accessible to the wider population enhance freedom<sup>251</sup>, while other scholars such as Lasswell, Schramm and Lerner have all generally conceived of electronic media as forces of democratization. Again this brings us back to the techno-globalist camp.<sup>252</sup> In all cases, “the results indicate that electronic network connectivity is a significant

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<sup>248</sup> G. Hofstede, “Adoption of Communication Technologies and National Culture,” *Systèmes d’Information et Management* 6, no. 3 (January 2001): 55-74.

<sup>249</sup> Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*.

<sup>250</sup> Hedley Bull, *The Anarchical Society: A Study of Order in World Politics* (New York: Columbia University Press, 1977), 170.

<sup>251</sup> Ithiel de Sola Pool, *Technologies of Freedom* (Cambridge, MA: Belknap Press, 1983), 299.

<sup>252</sup> Lawrence K. Grossman, *The Electronic Republic: Reshaping Democracy in the Information Age* (New York, NY: Viking, 1995), 290.

predictor of democracy.”<sup>253</sup> Incorporating a more literal telecommunication component, an ITU paper entitled *ICTs in Support of Human Rights, Democracy and Good Governance* issued in 2002 claims that, “For every 100% growth in telephone Mainlines per 100 people, there is likely to be a beneficial corresponding change of -1.2 on the ‘freedom scale’ towards a “Free” ranking by Freedom House.” Therefore, the report concludes, “the more enhanced the basic communications infrastructure of a country, the more likely this will be conducive to the assertion and manifestation of liberties and rights for the citizenry.”<sup>254</sup>

Taking a more nuanced theoretical approach, Majid Tehranian, on the other hand, voices criticism over blanket assertions on the positive effects of information technology on the level of democracy. While outlining the conditions for and modes of ICT utilization that can help to free the democratic potentials of interactivity and communication networks, Tehranian simultaneously cautions that the prevalence of the ICT within nation-states generates “dual-effects”: one effect leading to a more democratic order, the other giving rise to de-democratization.<sup>255</sup> This is a reference to the fact that both new and old communication technologies can be used in communication processes like one-way communication, privileged access and closed communication circuits that damage democratization because they seek to perpetuate institutional and technological barriers to entry. Thus, each technology has democratic as well as authoritarian characteristics, and their

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<sup>253</sup> Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*, 110.

<sup>254</sup> Audrey Selian, *ICTs in Support of Human Rights, Democracy and Good Governance*, 1<sup>st</sup> ed. (Geneva, Switzerland: Strategy and Policy Unit, International Telecommunication Union, 2002), 22.

<sup>255</sup> Majid Tehranian, *Technologies of Power: Information Machines and Democratic Prospects* (Norwood, NJ: Ablex Publishers, 1990)

implementation and impact is mediated by the context in which they operate. Tehranian concludes that the realization of the democratic potential of technology involves an ongoing struggle and the adoption of strategies of empowerment. This is not very far from the assertion in Chapter 3 that very specific kinds of capacity must be in place for the penetration of ICTs to produce the desired democratic outcome.

Kedzie in 2002 confirmed a strong empirical link between the levels of network interconnectivity and those of democracy.<sup>256</sup> To approximate a natural progression of the advancement of interconnectivity, Kedzie defines the interconnectivity variable as an equally weighted index of information about the four globally dominant e-mail networks of Internet, BITNET, UUCP, and FIDONET<sup>257</sup>. “Despite the inherent limitations of statistical analyses, several analytical perspectives, every model, set of statistical tests, and functional form in this study is consistent with the hypothesis that interconnectivity is a powerful predictor of democracy, more than any of democracy’s traditional correlates.”<sup>258</sup> As a variable in an ordinary least squares regression, the technology component turns out to be the most powerful predictor. “Tests of alternative causal explanations invariably fail. As an endogenous variable in systems of simultaneous equations, interconnectivity always proves to be a significant predictor of democracy and economic development, but the reverse is never true.”<sup>259</sup>

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<sup>256</sup> Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*, 110-111.

<sup>257</sup> These data are compiled and tracked by the “Matrix Information Directory Service” (MIDS); the date of this compilation is 1993. In *Ibid.*, 112.

<sup>258</sup> *Ibid.*, 122.

<sup>259</sup> *Ibid.*



Nevertheless, while ICTs cannot be viewed as a panacea for the pains of growth and development, they can be regarded as one instrument of change among others—or as a variable in a multivariate regression with a strong, but perhaps not decisive, impact. In this chapter we explore the global data about the relationship between ICT and political systems, and the patterns that reside therein.

## **4.1 Introducing the Model**

### **4.1.1 Variables and Data**

This chapter will explore empirical support for the deterministic perspective on ICTs and political development. This will be undertaken through multivariate regression analysis, using recently issued data from the International Telecommunication Union (ITU), the United Nations Development Program (UNDP), the World Bank, and Transparency International (TI). This dataset is comprised of a large range of indicators that measure either ICT penetration and levels of effective/transparent governance in more than 170 countries. The objective of this analysis is to determine whether significant relationships in the macro realm exist between ICT presence and transparency/good governance, and whether any causality can be inferred. While isolating independently causal variables remains a challenge, this analysis attempts to control for factors such as national income in accounting for the broad outcome variables.

The 1990s witnessed a popular surge in collecting data and constructing variables that capture the effectiveness of institutions of governance; in other words, measures of government effectiveness, bureaucratic quality, transparency,

and corruption levels. Such indexes often fall into two broad categories: evaluative and descriptive. The former tends to be performance-oriented and related to quality of governance while the latter tends to be more process-oriented and looking at institutional “inputs” that produce particular governance outcomes.<sup>260</sup> The processes involved in the construction of a variable are significant, insofar as they reflect the transparency of the evaluation; the general rule of thumb appears to be that the smaller the number of experts consulted in preparing an index, the lower the level of data and variable reliability. Aggregating indicators is a double-edged sword: while it provides an amalgamation of more information (which is usually preferable to less), it is also a good way of diminishing specificity, and in turn, valuable idiosyncratic elements that could highlight interesting outliers. An aggregate governance index weakly correlated with component indicators is likely less accurate than an index with a strong correlation with individual components.

The governance variables in this study are chosen, first and foremost, based on the criteria of high levels of country coverage. For example, the Business Environmental Risk Intelligence (BERI) index is excluded from consideration because of its limited coverage, as is the Global Competitiveness Report (GCR) index issued by the World Economic Forum. Transparency International (TI) and Freedom House (FH) data are included because they enjoy relatively wide country coverage. Furthermore, as TI and FH reports are frequently used in published

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<sup>260</sup> The World Bank Group, “*Indicators of Governance and Institutional Quality*,” in Public Sector Governance, 2005 (accessed March 20, 2005); available from <http://www1.worldbank.org/publicsector/indicators.htm>.

refereed research, we can compare the results of this analysis with those of other studies more accurately. TI updates its 'Corruption Perceptions Index' (CPI) annually by aggregating corruption ratings produced by experts and from surveys. The CPI was first published in 1995 for 41 countries with data aggregated from seven surveys. Since then it has expanded to cover 146 countries in 2004.<sup>261</sup> Since 1972, FH has published an annual assessment of state freedom by assigning each country and territory the status of 'free', 'partly free', or 'not free' by averaging its political rights and civil liberties ratings. Despite their subjectivity, such indexes are valuable, particularly once the definitions of the basic elements of the index such as political rights, civil liberties, institutionalized checks and balances are clarified, because they shed light on multiple dimensions of the concept at hand. The FH rankings encompass the rights of people to participate freely in political processes through which the polity chooses authoritative policy makers and attempts to make binding decisions affecting national, regional, or local communities.

Although the Kaufmann, Kraay and Zoido-Lobaton (KKZ) governance indexes constructed for the World Bank are not used in published research as frequently as those of the TI and FH, they are very well-known as part of a series of work undertaken on the study of governance and its relationship with growth of various kinds.<sup>262</sup> These variables included six aggregate indexes from numerous indicators collected from 14 different sources, including ICRG, BERI and FH while

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<sup>261</sup> Transparency International Corruption Perceptions Index 2004 (accessed March 21, 2005); available from [http://www.transparency.org/pressreleases\\_archive/2004/2004.10.20.cpi.en.html](http://www.transparency.org/pressreleases_archive/2004/2004.10.20.cpi.en.html).

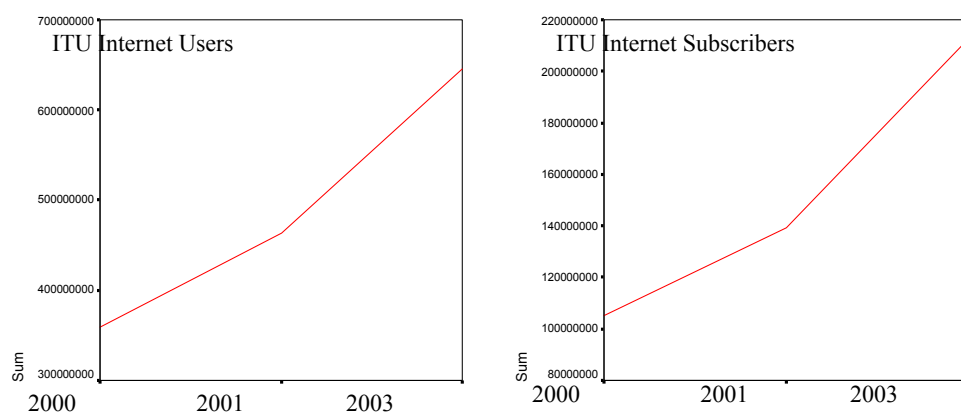
<sup>262</sup> Kaufmann et al show that countries scoring higher on these indexes of rule of law, voice and accountability tend to have lower infant mortality and higher literacy rates, as well as higher per capita incomes.

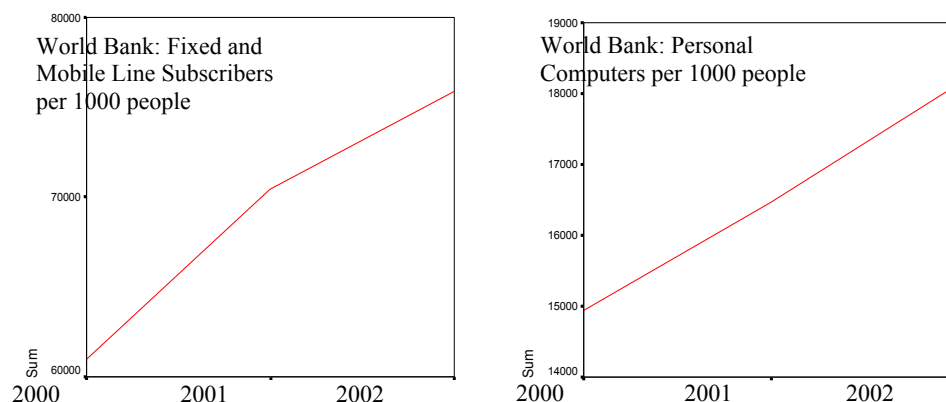
using exogenous instruments for their governance indexes to correct for possible reverse causality from income levels to governance. These indexes cover a large range of countries and present coverage of aspects of governance that fit well with the definition of political development in this thesis; the KKZ indexes include political stability, government effectiveness, voice and accountability, rule of law and regulatory framework.

#### 4.1.1.1 Examining the Independent Variables

The challenge of working on a subject as complex and interwoven as ICTs is that it is difficult to include all the necessary aspects that render technology penetration a coherent variable. For example, measures of wireless telephone users, main telephone lines and internet users are not sufficient in and of themselves to indicate societal ICT penetration *per se*; these are all highly correlated to one another (see Figure 4-1). It is necessary to consider that the concept of ICT should include some added element of context and access.

**Figure 4-1: Individual ICT/Technology Indicators**





Thus, moving away from simple interconnectivity and toward a more comprehensive index of ICT penetration, this chapter features an analysis using the new “Digital Access Index” issued by the International Telecommunication Union in Geneva in 2003. This index is an aggregated number, and measures the overall ability of individuals in a country to access and use ICT; it consists of eight variables organized into five categories. Each variable is converted to an indicator with a value between zero and one, by dividing it by the maximum value or ‘goalpost’, as depicted in Figure 4-2. Each indicator is then weighted within its category, and the resulting index values are averaged to obtain the overall DAI value. Figure 4-2 breaks out the index by major category.

**Figure 4-2: Composition of the ITU’s Digital Access Index<sup>263</sup>**

Category	Variable	Values for Hong Kong	Goal-post	Indicator	Weight	Category index	
Infrastructure	1. Fixed telephone subscribers per 100 inhabitants	56.6 /	60 =	.94*	(1/2) =	.47	.93
		91.6 /	100=	.92*	(1/2) =	.46	
	2. Mobile						

<sup>263</sup> *ITU Digital Access Index: World’s First Global ICT Ranking*, ITU Press Release, 2003 (accessed March 2005); available from [http://www.itu.int/newsarchive/press\\_releases/2003/30.html](http://www.itu.int/newsarchive/press_releases/2003/30.html).

	cellular subscribers per 100 inhabitants						
Affordability	3.1 - (Internet access price as percentage of Gross National Income per capita)	99.8 /	100	0.998*	1 =	0.998	
Knowledge	4. Adult Literacy 5. Combined primary, secondary and tertiary school enrolment level	93.5 / 63.05 /	100 100	0.94* 0.63*	(2/3) = (1/3) =	0.62 + 0.21	0.83
Quality	6. International Internet bandwidth (bits) per capita 7. Broadband subscribers per 100 inhabitants	1'867 / 14.6 /	10'000 30	0.88 <sup>a*</sup> 0.49*	(1/2) = (1/2) =	0.44 + 0.24	0.68
Usage	8. Internet users per 100 inhabitants	43.0 /	85	0.51*	1 =	0.51	
<b>Digital Access Index (Average of 5 categories above)</b>						<b>0.79</b>	
<b>Note:</b> a) Because of the large spread of values among economies in the area of bandwidth (bits) per capita, a logarithm is used to calculate this value: $(\log(1'867) - \log(0.01)) / (\log(10'000) - \log(0.01))$							

Source: International Telecommunication Union. Accessed February 2005. Available from [http://www.itu.int/newsarchive/press\\_releases/2003/30.html](http://www.itu.int/newsarchive/press_releases/2003/30.html)

A variety of categories – infrastructure, affordability, knowledge, quality and usage, are included in this index, all of which appear to be data gathered by the ITU through access and telecommunications-related research. Since the majority of the component variables are related to technology (with the exception of the education component), and these all tend to be highly correlated with one another, it is

unlikely that the process of aggregation here will result in a problematic bias or a loss of critical specificity.

The other independent variables in this analysis are those used primarily for control; in other words, it is necessary to pick a variable to accompany the ICT Digital Access Index that intuitively has a strong explanatory and causal impact on the various aspects of political development in the dependent variable. In this analysis, we test whether GDP per capita income growth rates from year to year have an effect on the dependent variable. An OECD dummy variable has also been created and included, in order to determine whether OECD membership status (and, in other words, the rank and privilege that accompanies it) affects the way the ICT Digital Access Index relates to the dependent variables.

#### *4.1.1.2 Examining the Dependent Variables*

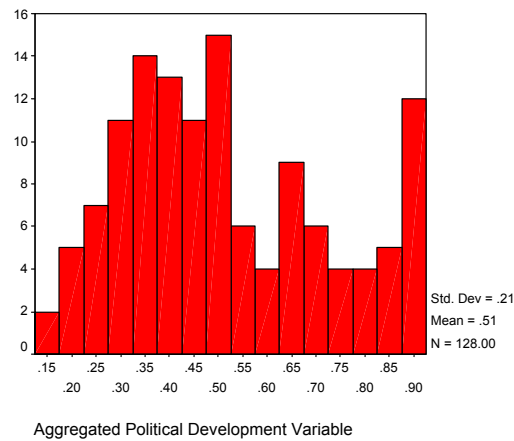
Although the dependent variable as identified in the qualitative analysis of this dissertation as a single, cohesive outcome capturing ‘transparency and service delivery in government’, a number of measures derived from World Bank data, Transparency International data, and Freedom House data serve as good proxy indicators for quantitative global data analysis. As a starting point, an aggregation of these indexes (after they are normalized<sup>264</sup> and weighted equally) is constructed and named “*polidev*”. An average across these dependent variable indexes allows for a reasonably accurate result capturing the relative differences of political

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<sup>264</sup> Normalization is a process in which any value  $a \leq x \leq b$  can be normalized to  $0 \leq \tilde{x} \leq 1$  such that:  $\tilde{x} = \frac{x-a}{b-a}$ .

maturity or development across nations as a function of each of the indexes included. This variable is disaggregated later on in the regression analysis for the sake of exactitude, but it provides a good initial context for analysis. The distribution of this aggregated variable is not normal; this does not however have an impact on its validity in regression analysis.

**Figure 4-3: Distribution of Aggregated Political Development “*polidev*” Variable**



The descriptive statistics for each of the five normalized dependent measures (as well as the aggregate) are shown in Figure 4-4; it is interesting to note that the means in OECD countries are remarkably consistent across the four indicators, with generally normalized high levels of transparency. The general mean ‘level’ of political development in non-OECD and OECD countries differs significantly from .4326 to .8060.



**Figure 4-4: Descriptive Statistics of Five Dependent Variables and Aggregated Political Development**

	Transpa rency	Governe nt Effectivene ss	Voice and Account- ability	Rule of Law	Freedo m House	AGGREGA TE Polit. Developmt
<b>NON-OECD</b>						
N	102	147	147	147	145	100
Mean	.3393	.4420	.4414	.4437	.5247	.4326
Median	.3000	.4200	.4400	.4100	.5000	.4193
S.E. of Mean	.01514	.01212	.01368	.01251	.02473	.01482
Minimum	.13	.18	.09	.14	.00	.13
Maximum	.94	.95	.78	.85	1.00	.78
Variance	.023	.022	.028	.023	.089	.022
<b>OECD</b>						
N	28	28	28	28	28	28
Mean	.7264	.7968	.7554	.7871	.9643	.8060
Median	.7650	.8550	.7800	.8450	1.0000	.8480
S.E. of Mean	.03929	.02503	.01723	.02395	.01628	.02318
Minimum	.31	.46	.41	.46	.58	.45
Maximum	.97	.95	.84	.91	1.00	.92
Variance	.043	.018	.008	.016	.007	.015
<b>TOTAL</b>						
N	130	175	175	175	173	128
Mean	.4227	.4988	.4916	.4987	.5959	.5143
Median	.3400	.4500	.4700	.4400	.6667	.4850
S.E. of Mean	.02017	.01471	.01468	.01469	.02425	.01861
Minimum	.13	.18	.09	.14	.00	.13
Maximum	.97	.95	.84	.91	1.00	.92
Variance	.053	.038	.038	.038	.102	.044

Note: OECD vs. non-OECD Samples

Moreover, Figure 4-5 shows that each of the dependent variables are significantly correlated with one another. This could potentially strengthen an argument for aggregation, although individual regressions are run in Section 4.4 of this chapter.

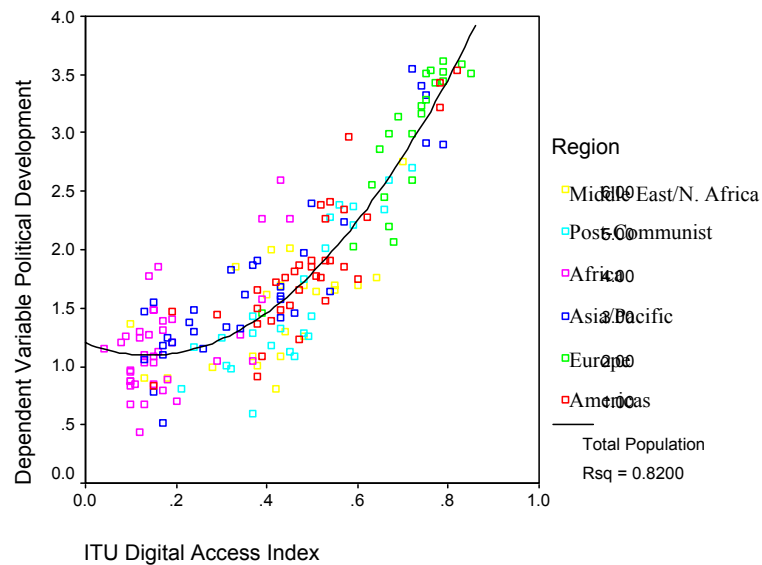
**Figure 4-5: Correlation Matrix of Five Dependent Variables**

	<i>ti</i>	<i>goveff</i>	<i>vacc</i>	<i>rol</i>	<i>free</i>
<b>Transparency (<i>ti</i>)</b>	1	.945(**)	.747(**)	.935(**)	.578(**)
<b>Government Effectiveness (<i>goveff</i>)</b>	.945(*)	1	.762(**)	.956(**)	.614(**)
<b>Voice and Accountability (<i>vacc</i>)</b>	.747(*)	.762(**)	1	.805(**)	.951(**)
<b>Rule of Law (<i>rol</i>)</b>	.935(*)	.956(**)	.805(**)	1	.668(**)
<b>Freedom House (<i>free</i>)</b>	.578(*)	.614(**)	.951(**)	.668(**)	1

\*\* Correlation is significant at the 0.01 level (2-tailed).

Figure 4-6 depicts the general relationship of the aggregated *polidev* variable with the ICT Digital Access Index with colors representing regions 1=Americas, 2=Europe, 3=Asia/Pacific, 4=Africa, 5=Post Communist, and 6=Middle East/North Africa. The quadratic fitted line in the scatter-plot depicts the points at which the fitted data will average at any given level of ICT penetration. This figure shows that approximately 60% of post-communist nations fall under the average expected global political development value for a given level of ICT Digital Access penetration. Of the states in the Middle East, nearly 64% also fall under this line. Of the African nations, about 44% fall below this line, as do 42% of nations in the Americas; only 31% of European nations have less political development than the fitted line, along with 24% of Asia/Pacific states.

**Figure 4-6: Relationship between ITU Digital Access and *polidev***



Of course, it is vital to point out that each region has its own mean “digital access index” value (see Figure 4-7), and that whether a point falls below or above

the fitted line must be looked at relative to its own expected average. The bar for Africa, for example, is much lower than the bar for the post-communist bloc.

**Figure 4-7: Mean Values of ITU Digital Access Index by Region**

	ITU Digital Access Index Mean
Africa	.1782
Asia Pacific	.3788
Mid. East/North Africa	.4209
Post-Communist	.4604
Americas	.4886
Europe	.7105

#### 4.1.2 Univariate Correlations

Typically, it tends to help if one examines significant correlations across a dataset before running regressions. It is important to make the distinction that correlation is not the same as causation. Based on correlation matrix in Figure 4-8, it is evident that the vast majority of ICT-related technology indicators have positive and significant correlations with political development indicators. The only sets of negative correlations that would appear are those for Freedom House numbers; this is because the lower the index number, the higher the level of perceived freedom. The Freedom House sample here, however, is corrected for this reversal of values in the correlation matrix. All of this corresponds to the general assertion of this chapter that global data in its aggregated form tends to reinforce conventional approaches to the question of ICT impact on development.

**Figure 4-8: Correlation Matrix of Dependent and Independent (ICT) Variables: 171 countries**

	Transparency International	Gov't Effectiveness	Rule of Law	Voice & Accountability	Freedom House Averages	Bureaucratic Quality Index	Trust: Infrastructure Quality (BERI)
EGov Rank	.601** (.000)	.560** (.000)	.526 ** (.000)	.377 (.000)	.267 (.000)	.477** (.000)	.543** (.000)
Digital Access Index	.846** (.000)	.845** (.000)	.835 ** (.000)	.734** (.000)	.62** (.000)	.731** (.000)	.819** (.000)
Internet Users	.232 (.009)	.270 (.000)	.253 (.001)	.183 (.000)	.153 (.047)	.311 (.001)	.337 (.010)
Personal Compute rs	.231 (.013)	.258 (.001)	.248 (.002)	.193 (.016)	.166 (.042)	.311 (.001)	.298 (.024)
Internet Hosts	.159 (.077)	.165 (.031)	.165 (.031)	.134 (.077)	.122 (.115)	.206 (.030)	.298 (.024)
Internet Subscrib ers	.223 (.014)	.271 (.000)	.248 (.001)	.143 (.068)	.095 (.228)	.279 (.003)	.268 (.050)
Total Telephon e Subscrib ers	.200 (.027)	.262 (.001)	.236 (.003)	.158 (.045)	.126 (.115)	.299 (.002)	.250 (.056)
Mobile Subscrib ers*	.838** (.000)	.83** (.000)	.824 ** (.000)	.702** (.000)	.593** (.000)	.738** (.000)	.778** (.000)

Sources: International Telecommunication Union (ITU), UNDP, World Bank and E-Government Research from Brown University. All measures from 2003, except E-Government Rank (2004), Total Telephone Subscribers (2001), and Mobile Subscribers (2002). \* per thousand people

Looking at a smaller sample set of twenty-five countries in the post-communist bloc in Figure 4-9, one finds that the strength of the significant positive correlations diminishes on most counts, although the ITU Digital Access remains important, as does the UNDP index on Mobile subscribers. Insufficient data exists for the analysis of correlations with the Bureaucratic Quality and Infrastructure Quality indexes as in Figure 4-8; they are therefore dropped from the matrix and from the analysis. While simple decreases in sample size tend to diminish the validity of such assessments, it is possible that the different results from this sample compared

to the global sample signal something important. Chapter 6 will further explore evidence based on in-depth country analysis as to why the presence of ICTs in government may in fact not have these high correlations.

**Figure 4-9: Correlation Matrix of Dependent and Independent (ICT) Variables: 25 Post-Communist countries**

<b>CORRELATION MATRIX</b>	<b>Transparency International</b>	<b>Government Effectiveness</b>	<b>Rule of Law</b>	<b>Voice &amp; Accountability</b>	<b>Freedom House Averages</b>
EGov Rank	.452* (.027)	.520** (.008)	.504* (.010)	.518** (.008)	-.579** (.002)
Digital Access Index	.851** (.000)	.869** (.000)	.854** (.000)	.810** (.000)	-.795** (.000)
Total Internet Users	.147 (.503)	.358 (.086)	.327 (.119)	.371 (.074)	-.298 (.157)
# of Personal Computers	-.126 (.629)	-.046 (.862)	-.138 (.599)	-.148 (.570)	.302 (.239)
# of Internet Hosts	.191 (.382)	.424* (.039)	.372 (.074)	.388 (.061)	-.274 (.195)
Internet Subscribers	.121 (.590)	.382 (.071)	.339 (.114)	.351 (.101)	-.278 (.199)
Total Telephone Subscribers	-.050 (.826)	.097 (.668)	.023 (.921)	.058 (.798)	.044 (.846)
Mobile Subscribers*	.820** (.000)	.910** (.000)	.865** (.000)	.926** (.000)	-.838** (.000)

Sources: International Telecommunication Union (ITU), UNDP, World Bank and E-Government Research from Brown University. All measures from 2003, except E-Government Rank (2004), Total Telephone Subscribers (2001), and Mobile Subscribers (2002). \* per thousand people

### 4.1.3 The Distribution of Transparency

Testing hypotheses about the means of the OECD and non-OECD transparency values (as a proxy for the other dependent variables) is also helpful, and the nonparametric Mann-Whitney test of means is applied. Since the Mann-Whitney test does not depend on an *a priori* probability density function (*pdf*) for the variable tested, it allows for different distributions of the transparency variable under different values of the OECD dummy variable. As shown in Figure 4-10, the difference in the means is significant at the .0000 level. To compare the medians of the transparency variable, we estimate the empirical distribution of transparency for

the sample, OECD countries, and non-OECD countries through kernel density estimation shown in Figure 4-11.

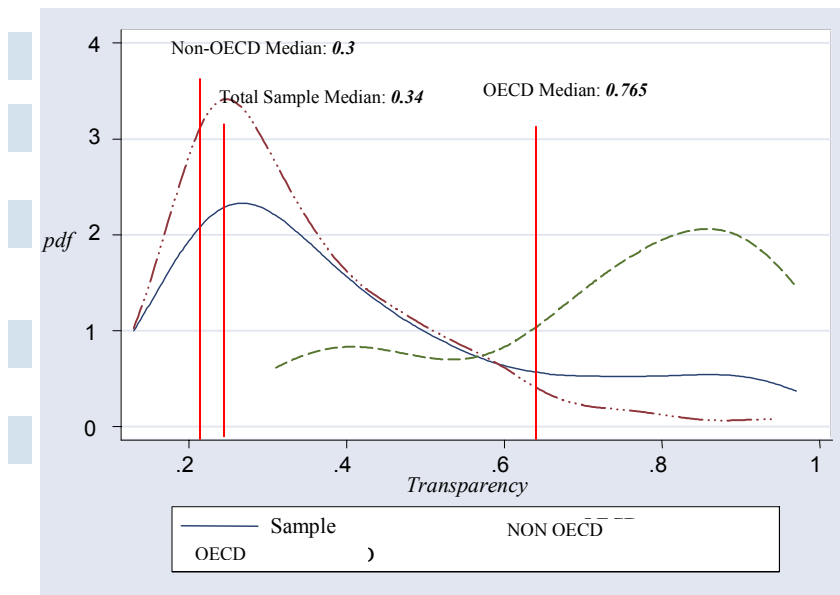
**Figure 4-10: Two Sample Wilcoxon Rank-Sum (Mann-Whitney) Test<sup>265</sup>**

	Difference between OECD and Non-OECD Samples
<i>ti</i>	$z = -7.477$
<i>goveff</i>	$z = -7.516$
<i>vacc</i>	$z = -7.644$
<i>rol</i>	$z = -7.477$
<i>free</i>	$z = -7.298$

Source: The difference between the means significant at .000 level

As shown in the estimated *pdf* of the transparency variable in Figure 4-11, the distribution of the transparency variable is skewed to the left for the non-OECD and the total sample while the OECD countries are skewed to the right. This is reflected in the median values for transparency where the difference in the medians for transparency between the total sample and the Non-OECD countries is statistically insignificant at .334.

**Figure 4-11: Probability Density Function of Transparency Variable**



## 4.2 Structuring the Analysis

A “testable null hypothesis” to the primary research question is formulated as a point of departure to the quantitative introduction and critique of the current literature on the *ceteris paribus* effect of the ICT on political development, where *ceteris paribus* presents the necessary condition for the testability of the null hypothesis.<sup>266</sup> Both normative and positive hypotheses satisfy the sufficient conditions for a testable null hypothesis to the conjecture that the change in ICT causes a change in the state of political development in various nation-states. A normative null hypothesis states that the increase in ICT will have no or a negative impact on the state of political development, since the prevalent normative presumption supports the positive causal relationship between the two.<sup>267</sup> The positive null hypothesis on the other hand, simply postulates that no causal relationship between the change in ICT and the change in political development can be determined. Assume

$$y \equiv y(x, \mathbf{Z}), \quad (\text{Eq.1})$$

where  $y$  measures political development,  $x$  represents ICT and  $\mathbf{Z}$  is a vector of possible control variables such as per capita income, we obtain the normative null hypothesis as

$$H_0 : \frac{\partial y}{\partial x} \leq 0, \quad (\text{Eq.2})$$

and the positive null hypothesis as

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<sup>266</sup> We will discuss the sufficient condition in the Estimated Model.

<sup>267</sup> Theoretically, one may propose another distinct null hypothesis: decrease in ICT will cause a non-increase, that is, decrease or constancy, in the state of political development. The two hypotheses are technically distinct because the statements  $p \rightarrow q$  and  $\neg q \rightarrow \neg p$  are not Boolean equivalent. We will treat this issue for the post-communist states data sample in more depth.

$$H_0 : \frac{\partial y}{\partial x} = 0 \vee \frac{\partial y}{\partial x} < 0 \vee \frac{\partial y}{\partial x} > 0. \quad (\text{Eq.3})$$

As the functional representation of the causal link between the ICT and political development, Eq.1 merits particular attention. Firstly, Eq.1 defines a contemporaneous link between the ICT and political development, thus, requiring a cross section, random sample of the data for estimation. In principle, the lagged values of ICT and the control variables may explain political development more efficiently than the contemporaneous values, since the limited instantaneous effect of the change in independent variables is a poor substitute for the effect of the lagged values that is realized after passing through the maze of national institutions and political culture over time. However, the rather arbitrary use of lagged intervals in the distributed lag model and lack of reliable data on the ICT measures covering a reasonable time span make the formulation and estimation of such a model impractical. Secondly, the flow of causality in Eq.1 is one way:  $y$  is determined by  $x$  and  $Z$ , but the feedback loop from  $y$  to either  $x$  or  $Z$  is not specified, that is  $x \equiv x(y, Z)$  and  $Z \equiv Z(x, y)$  are excluded from the model. While one can hardly fathom simultaneous causal feedback from measures of political development such as government efficiency on the level of per capita income (the control predictor) and the level of ICT penetration, other measures of political development such as rule of law can in theory affect per capita income. For example, increase in the rule of law indicator may be thought of as a precursor to lower foreign investment risk, higher net inflow of investment and consequently higher output.

Little empirical research has investigated the possible simultaneity bias in Eq.1. Among the notable few that do attempt to address the issue, Kedzie estimates



the model by two-stage least squares (2SLS) and rejects the endogeneity of political development and economic growth while essentially replicating the results of the majority of empirical research. Most of this research applies multiple regression techniques to verify a causal link between ITC and political development. Kedzie uses the level of network interconnectivity (defined as an equally weighted aggregate index of four globally dominant e-mail networks; Internet, BITNET, UUCP and FIDONET) and economic development as independent variables and the levels of democracy as the dependent variable to arrive at the conclusion that, “As an endogenous variable in systems of simultaneous equations, interconnectivity always proves to be a significant predictor of democracy and economic development, but the reverse is never true.”<sup>268</sup>

### **4.3 The Estimable Model**

In this section the econometrics model is introduced and used to estimate the general deterministic functional form in Eq.1. To that end, independent and dependent variables and their respective forms are introduced —level and logarithmic— and the most efficient functional form of the econometric model in terms of variables and parameters is specified. The ‘seemingly unrelated regressions’ (SUR) method of estimation is used, with particular emphasis on estimation problems such as correcting the heteroskedasticity of the error terms and deriving robust standard errors to test for the significance of regression coefficients. Finally an inferential procedure that weaves the results of the estimated model into further empirical results and theoretical insights will be outlined.

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<sup>268</sup> Ibid., 122.

#### 4.3.1 Linear Estimation

The most general form of the relationship between political development and the ICT can be formulated as in Eq.1. We define the equivalent general linear model for each dependent variable as:

$$\mathbf{Y}_i = \mathbf{X}\psi_i + \boldsymbol{\mu}_i ; i = 1, 2, \dots, 5, \quad (\text{Eq.4})$$

where each  $\mathbf{Y}_i$  is a logarithmic transformation of *eff, rol, voice, trans* and *free* introduced in 4.1.1 as dependent variables. The independent variables summarized in Figure 4-13 are functions of *ict, inc* and the dummy *OECD*. Eq.4 defines a system of five linear models, each with a different dependent variable  $\mathbf{Y}_i$ , matrix of parameters  $\psi_i$ , and a vector of error terms  $\boldsymbol{\mu}_i$ , but with a common set of independent variables  $\mathbf{X}$ . This general form neither imposes any restrictions on the form of  $\mathbf{X}$  or  $\psi_i$  nor does it require independent error terms across equations, that is, for  $i, j = 1, 2, \dots, 5; i \neq j$ ; it allows for  $E(\boldsymbol{\mu}_i \boldsymbol{\mu}_j | \mathbf{X}) \neq \mathbf{0}$ —or as it is more commonly stated—for  $\text{Cov}(\boldsymbol{\mu}_i, \boldsymbol{\mu}_j) \neq \mathbf{0}$ .

Before tackling the problems of estimation, it is necessary to elaborate on a few points: first and foremost, Eq.4 is linear in parameters. This implies that the matrix of parameters  $\psi_i$  is not only constant across all observations in each of the five equations, but it is also constant as the independent variables increase or decrease. As briefly mentioned in 4.2, the two hypotheses of increasing  $\mathbf{X}$  causes  $\mathbf{Y}_i$  to increase and decreasing  $\mathbf{X}$  causes  $\mathbf{Y}_i$  to decrease are not logically equivalent.

Yet, as  $\psi_i$  captures the average partial conditional effects of  $\mathbf{X}$  on  $\mathbf{Y}_i$ <sup>269</sup>, we are forced to consider the two hypotheses equal. One way to test for non-linearity in parameters is to create a dummy variable  $d$  for each of the independent variables where  $d_k = 1$  only if  $\partial x_k > 0$ . If we reject the hypothesis that the coefficient of regression on all  $d_k$  is jointly zero, we have reason to believe that the model is nonlinear in parameters—the parameters are different based on whether independent variables increase or decrease. This method requires at least two samples of the same units. As previous values for the independent variable *ict* are not available at the moment, we will assume that the model is linear in parameters. However, we will test parameter linearity when dealing with the post-communist bloc countries.

Secondly, the variables in Eq.4 can be transformed to reflect the underlying causal relationships more effectively. The choice between the level and logarithmic values of observations requires careful thought. We use the natural logs of the original values in our estimation, because the logs often smooth the fat tails of the original empirical distribution of the data resulting in more robust inference. As Figure 4-12 demonstrates, the sign and significance of the regression coefficients are the same in both logarithmic and level estimations while the coefficients of regression in the level estimation defy interpretation. Estimating Eq.4 requires regressing indexes on indexes whose average partial effects in unit changes have little or no empirical

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<sup>269</sup> The average partial effect  $\psi_i = \frac{\partial E(\mathbf{Y}_i|\mathbf{X})}{\partial \mathbf{X}}$  makes the direction of change in  $\partial \mathbf{X}$  irrelevant, because derivation requires that the left and the right limits at the vicinity of  $\mathbf{X}^0$  be the same.

meaning. Thus, we opt for logarithms where  $\psi_i$  delivers the average partial elasticities.

**Figure 4-12: Robust Regression Results for Level Variables**

	<i>eff</i>	<i>rol</i>	<i>voice</i>	<i>trans</i>	<i>free</i>	<i>polidev</i>
<i>ict</i>	.0884276 (.1745953)	.0884276 (.1745953)	.2756216 (.3070921)	-.4526178 (.2203878)	.4174317 (.5861501)	-.0293658 (.2178076)
<i>ict</i> <sup>2</sup>	.8232588 (.21447)	.8232588 (.21447)	.38858 (.3980182)	1.506453 (.270041)	.5277459 (.855346)	.9180796 (.240647)
<i>inc</i>	.0143435 (.0036365)	.0143435 (.0036365)	.0028189 (.0084676)	.0045286 (.00445)	-.0018203 (.0128276)	.0080109 (.004869)
<i>inc</i> <sup>2</sup>	-.0002758 (.0000501)	-.0002758 (.0000501)	-.0001228 (.0001329)	-.0000261 (.0001598)	-.0000732 (.0001861)	-.0001759 (.0001509)
<i>ict</i> · <i>inc</i>	-.0316838 (.0109232)	-.0316838 (.0109232)	-.0173035 (.0199156)	-.0116226 (.015679)	-.0277218 (.0322194)	-.0161258 (.0135833)
<i>OECD</i> · <i>ict</i>	.0543973 (.182224)	.0543973 (.182224)	-.0250898 (.2680867)	.4835417 (.2530154)	-.5298257 (.6219447)	.1254666 (.1684328)
<i>OECD</i> · <i>inc</i>	.0096366 (.0057369)	.0096366 (.0057369)	.0231462 (.0055412)	.0014641 (.0095256)	.0381516 (.0107615)	.0077222 (.0056769)
<i>OECD</i>	-.0083959 (.1099928)	-.0083959 (.1099928)	.0536064 (.1465236)	-.3301855 (.1590646)	.399009 (.3304032)	-.0526419 (.1025104)
<i>constant</i>	.2724253 (.0316726)	.2724253 (.0316726)	.2983804 (.0567852)	.2496519 (.0382757)	.3449418 (.0888658)	.2643395 (.0459701)

Note: Standard errors in parentheses.

Thirdly, Eq.4 does not necessarily require linearity in variables. In order to examine the sufficiency of linear variables, we run the Ramsey RESET with the square and cubic forms of predicted values of the linear regression in both level and logarithmic forms and reject the adequacy of the linear model at .0000 for both the

level and logarithmic transformations of the data.<sup>270</sup> Essentially, RESET determines the threshold for enduring significance.

**Figure 4-13: Dependent and Independent Variables in the Translog Specification**

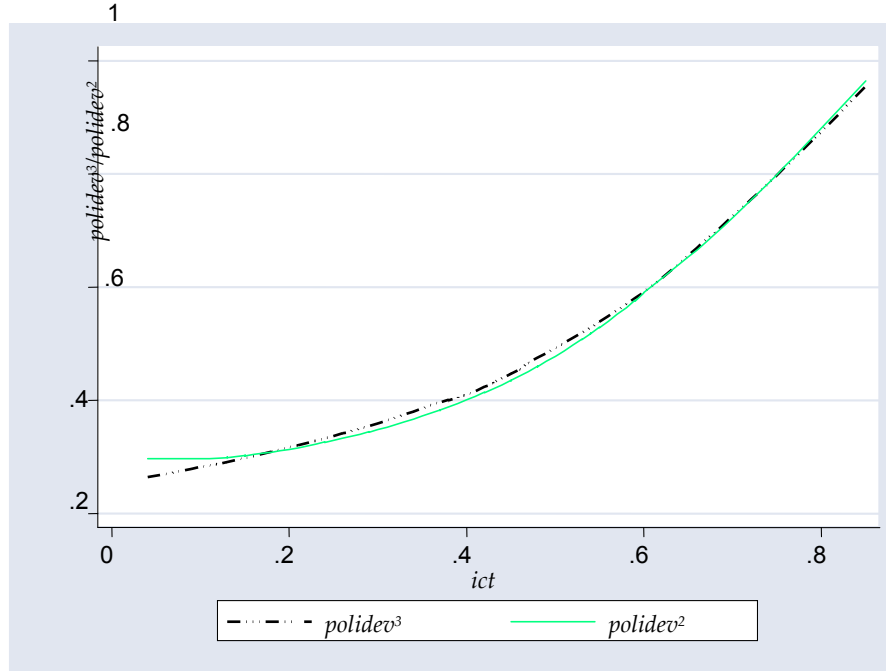
	Variable	Type	Description
$Y_1$	$\ln(eff)$	Dependent	Government Effectiveness Index
$Y_2$	$\ln(rol)$	Dependent	Rule of Law Index
$Y_3$	$\ln(voice)$	Dependent	Voice and Accountability Index
$Y_4$	$\ln(trans)$	Dependent	Transparency International Index
$Y_5$	$\ln(free)$	Dependent	Freedom House Index
$x_1$	$\ln(ict)$	Independent	ITU Digital Access Index
$x_1^2$	$(\ln(ict))^2$	Independent	ITU Digital Access Index squared
$x_2$	$\ln(inc)$	Independent	GDP Growth
$x_2^2$	$(\ln(inc))^2$	Independent	GDP Growth squared
$x_1x_2$	$\ln(ict)\ln(inc)$	Independent	Interaction between Digital Access Index and GDP Growth
$OECDx_1$	$OECD\ln(ict)$	Independent	Interaction between OECD and Digital Access Index
$OECDx_2$	$OECD\ln(inc)$	Independent	Interaction between OECD and GDP Growth
$OECD$	$OECD$	Independent	OECD membership

If the significance of independent variables diminishes when squared and cubed values (See Figure 4-13) of the independent variables are added to the regression, we reject the hypothesis that the existing linear function is a correct specification. The RESET results require that we incorporate the higher polynomials of the

<sup>270</sup> The mechanics of the RESET including the following: Consider the estimation of the presumably true model  $y = \beta_0 + \beta_1x + \varepsilon$  where  $\hat{y} = \hat{\beta}_0 + \hat{\beta}_1x$  are the fitted values. Regression  $y = \beta_0 + \beta_1x + \gamma_1\hat{y}^2 + \gamma_2\hat{y}^3 + \mu$  should simultaneously result in  $\gamma_1 = \gamma_2 = 0$  if the original model is correctly identified. Rejecting  $\gamma_1 = \gamma_2 = 0$  indicates the explanatory power of  $\hat{y}^2$  and  $\hat{y}^3$  which are in turn functions of  $x$ , since:  $\hat{y}^2 = (\hat{\beta}_0 + \hat{\beta}_1x)^2 = \hat{\beta}_0^2 + 2\hat{\beta}_0\hat{\beta}_1x + \hat{\beta}_1^2x^2$ .

independent variables into the estimation. We choose the quadratic over the cubic form because the graphic inspection of the data reveals that both functional forms result in concave up curves, that is, cubic estimation will not result in markedly different predicted values from the quadratic estimation in terms of the shape of the curve or slopes (see Figure 4-14).

Figure 4-14: Quadratic and Cubic Estimation of  $ict$



The combined necessity of using logarithms and higher polynomials of the independent variables leads us to choose the translog functional form whose advantages such as flexibility<sup>271</sup> are well known:

$$\begin{aligned} Y_i = & \alpha_{i0} + \alpha_{i1}x_{i1} + \alpha_{i2}x_{i2} + \alpha_{i3}OECDx_{i1} + \alpha_{i4}OECDx_{i2} + \\ & \alpha_{i5}OECD + \alpha_{i11}x_{i1}^2 + \alpha_{i12}x_{i1}x_{i2} + \alpha_{i22}x_{i2}^2 + \mu_i \end{aligned} \quad (\text{Eq.5})$$

Estimating the translog specification in Eq.5 and comparing it with the linear counterpart of:

$$\begin{aligned} Y_i = & \pi_{i0} + \pi_{i1}x_{i1} + \pi_{i2}x_{i2} + \pi_{i3}OECDx_{i1} + \pi_{i4}OECDx_{i2} + \\ & \pi_{i5}OECD + v_i \end{aligned} \quad (\text{Eq.6})$$

<sup>271</sup> Jeffrey M. Wooldridge, *Introductory Econometrics: A Modern Approach* (Cincinnati, OH: South-Western College, 2000), 824. Peter Kennedy, *A Guide to Econometrics*, 5th ed. (Cambridge, MA: MIT Press, 2003). Jeffrey Wooldridge, *Econometric Analysis of Cross Section and Panel Data* (Cambridge, MA: MIT Press, 2002). Christensen, L. R. and Greene, W. H. "Economies of Scale in U. S. Electric Power Generation", *Journal of Political Economy* 84, no. 4, (1976): 655-676.

reveals interesting possibilities for empirical investigation. In principle the average partial effects in each equation will be  $\frac{\partial EY_i}{\partial x_{ik}}$  where  $i$  indexes the dependent variable,  $k$  the independent variable, and conditioning on  $\mathbf{X}$  has been dropped for facility. For instance, setting the two slopes for  $x_1$  equal, we obtain:

$$\alpha_{i1} + \alpha_{i3}OECD + 2\alpha_{i11}x_{i1} + \alpha_{i12}x_{i2} = \pi_{i1} + \pi_{i3}OECD ,$$

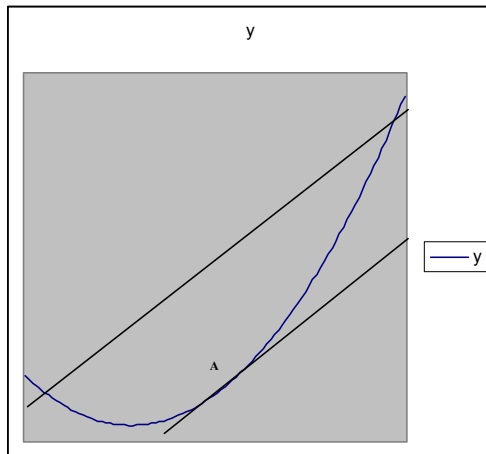
resulting in

$$x_{i1}^* = (\pi_{i1} - \alpha_{i1} - \alpha_{i12}x_{i2} + OECD(\pi_{i3} - \alpha_{i3}))/2\alpha_{i11}$$

as the point where the slopes meet. Note that  $OECD$  is a dummy here; therefore, whenever  $\pi_{i3} \neq \alpha_{i3}$ , the tangent points for OECD and non-OECD countries will be different. Assuming  $\pi_{i3}, \alpha_{i11} > 0$  whereby the slope of the line is positive and the quadratic has a minimum, for all  $x_{i1} > x_{i1}^*$  the slope of the quadratic is greater than that of the line. As will be shown in the results section, these assumptions are warranted. For all  $x_{i1} < x_{i1}^*$  the slope of the line is greater than that of the quadratic. If the quadratic is to be used according to the RESET, as is the case here, then the linear regression *overestimates* the average effect of the independent variable on the dependent variable for all countries whose  $x_{i1} < x_{i1}^*$ , and underestimates it for those whose  $x_{i1} > x_{i1}^*$ . As we will see in the results section the linear regression overestimates the impact of the ICT's on political development in the majority of cases. In Figure 4-15 below, the upper line is the result of linear regression. The lower line is tangent to the quadratic at point **A** where  $x_A = x^*$ . This means that for all the points on the right hand side of **A** the linear function underestimates the average effect. For the points on the left hand side, it overestimates the effect.



**Figure 4-15: Comparing Translog with Linear Estimation**



#### 4.3.2 Testing for Heteroskedasticity

As mentioned earlier, estimating Eq.5 as a system of linear equations, called seemingly unrelated regressions (SUR), does not demand uncorrelated errors terms across equations. Furthermore, as long as we do not impose cross-equation constraints on the value of parameters in each equation, estimating Eq.5 is tantamount to estimating each dependent variable by OLS separately.<sup>272</sup> This property facilitates the estimation, inference, and hypothesis testing on Eq.5 considerably as it makes post-estimation correction for the possible heteroskedasticity of the error term in each equation possible. In other words, we can compute heteroskedasticity-robust standard errors for regression coefficients after estimating each equation separately, instead of transforming the data for feasible general least squared estimation (FGLS). As shown in Figure 4-16 the Breusch and Pagan, and Szroeter tests for heteroskedasticity<sup>273</sup> fail to reject

<sup>272</sup> The rigorous proof of this property of SUR is rather lengthy, but straightforward. Wooldridge provides an intuitive account of the proof.

<sup>273</sup> Briefly, most tests for heteroskedasticity such as Breusch and Pagan, and Szroeter's use the fact that consistent estimation of Eq.5 by OLS requires  $E(\mu_i|\mathbf{X}) = \mathbf{0}$ , which makes  $Var(\mu_i|\mathbf{X}) = E(\mu_i^2|\mathbf{X})$

homoskedasticity. However, we robustify the standard errors as a cautionary measure as the size of the sample is large enough for the largesample equivalence of test statistics derived from standard errors.

**Figure 4-16: Testing for Heteroskedasticity**<sup>274</sup>

Error Variance	Breusch and Pagan	Szroeter
<i>eff</i>	0.4144	0.7945
<i>rol</i>	0.4938	0.2938
<i>voice</i>	0.9063	0.3363
<i>trans</i>	0.3227	0.4506
<i>free</i>	0.2604	1.0000
<i>polidev</i>	0.5451	0.8297

#### 4.4 Empirical Results and Conclusions

Five separate regressions were run using the logarithms of each of the dependent variables that separately and together reflect the phenomena of political development. Figure 4-17 displays a cross section of the linear results, and Figure 4-18 displays the Ramsey RESET results of regressions. For each instance that we note the statistical significance of a 'squared' (i.e.,  $x_{11}, x_{22}$ ) or 'interaction' (i.e.,  $x_{12}, OECDx1, OECDx2$ ) variable in this Figure, this proves that the explanatory power of the associated linear function rejecting the normative null hypothesis is not sufficient. Thus we find that across the board, the relationship between ICTs and political development is *not* best captured by a straight line, but

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since  $Var(\mu_i|\mathbf{X}) = E(\mu_i^2|\mathbf{X}) - (E(\mu_i|\mathbf{X}))^2$ . If  $Var(\mu_i|\mathbf{X})$  is constant across observations it should not be a function of the independent variables. Thus, the regression  $\hat{\mu}_i^2 = g(\mathbf{X})\Omega_i + \zeta_i$  where  $\zeta_i$  is assumed to satisfy OLS consistency assumptions and  $g$  is a transformation of  $\mathbf{X}$  should result in  $\Omega_i = 0$ .

<sup>274</sup> P-values reported

rather by a curve. All of the regressions in Figure 4-18, independently and together, demonstrate that the nature of the relationship between ICT and political development—while linear in parameters, is non-linear in variables (i.e.,  $y = \beta_0 + \beta_1 x + \varepsilon$ ).

**Figure 4-17: Comparative Linear Regressions with Robust Standard Errors**

	Government Effectiveness	Voice & Accountability	Rule of Law	Transparency	Civil Liberties & Political Rights	<i>AGGREG. VARIABLE polidev</i>
Constant	-.5025868 (.0565631)	-.4727279 (.0879465)	-.4992401 (.0600037)	-.6550896 (.0844612)	-.2434583 (.1433276)	-.4664768 (.0802469)
ICT Digital Access Index Ln (X1)	.2944797 (.0421865)	.2620832 (.0631821)	.2905149 (.0441093)	.4473032 (.0640822)	.2999034 (.0929802)	.3578552 (.0675105)
GDP Growth 2002 Ln (X2)	-.0138203 (.0312776)	-.0975328 (.0421438)	-.0281103 (.0266953)	-.0229283 (.0344651)	-.140225 (.0774583)	-.0232075 (.0326984)
OECD Variable Ln (OECD)	.6938949 (.0786174)	.4011082 (.0908883)	.657706 (.0748038)	1.202688 (.1295271)	.3058582 (.1443403)	.6227789 (.0892642)
OECD* ict Digital Access Index Ln (OECDx1)	1.017196 (.1874594)	.3565401 (.1088551)	.9338232 (.161401)	2.379084 (.3629685)	-.0387408 (.11613)	.7933482 (.1549001)
OECD* GDP Growth Ln (OECDx2)	.0301405 (.0379635)	.1160471 (.0442627)	.0370826 (.0316762)	.0553496 (.0495058)	.1442465 (.0780069)	.0396014 (.0365601)
<b>R-Squared</b>	0.6580	0.4452	0.6245	0.7212	0.3145	0.6604

Note: Standard errors in parentheses

**Figure 4-18: Ramsey RESET: Comparative Translog Regressions with Robust Standard Errors**

	Government Effectiveness	Voice & Accountability	Rule of Law	Transparency	Civil Liberties & Political Rights	AGGREGATE <i>polidev</i>
Constant (standard error)	-.1121399 (.0762035)	-.0016053 (.1302919)	-.0580317 (.0896844)	.163 (.1097644)	.4202353 (.2534451)	.2777013 (.130887)
ICT Digital Access Index Ln (X1)	.8819434 (.1194309)	1.120827 (.1915878)	1.003263 (.1544873)	1.973545 (.1980439)	1.372694 (.3504746)	1.652149 (.232931)
GDP Growth 2002 Ln (X2)	-.0504844 (.0461561)	.0203401 (.0826885)	-.053799 (.0421186)	-.0496498 (.0430692)	-.0562902 (.1640707)	-.0604433 (.062734)
ICT Digital Access Index <sup>2</sup> Ln(X11)	.1692286 (.0437244)	.3021992 (.0645761)	.2212843 (.0561306)	.5515184 (.0799715)	.3508229 (.1132776)	.4518219 (.095739)
GDP Growth 2002 <sup>2</sup> Ln(X22)	-.0326388 (.0170301)	-.055298 (.0231412)	-.0197858 (.0132582)	.0003001 (.0229198)	-.0933333 (.0375009)	-.0190204 (.021225)
ICT Digital Access Index * GDP Growth 2002 Ln(X12)	-.0815362 (.0311669)	.0026157 (.0537365)	-.0581522 (.0298719)	-.0449856 (.0339294)	-.0622769 (.099029)	-.0657567 (.049633)
OECD Variable Ln (OECD)	.3330026 (.0950801)	-.0508783 (.1257679)	.2486717 (.0988357)	.4519371 (.1491129)	-.3265448 (.2388907)	-.0635336 (.132067)
OECD* ict Digital Access Index Ln (OECDx1)	.5261652 (.2283192)	-.4523712 (.1862048)	.3660932 (.2130419)	1.259756 (.4184931)	-1.074573 (.3104284)	-.1939676 (.251607)
OECD* GDP Growth Ln (OECDx2)	.0556084 (.0441295)	.0202687 (.0691321)	.053212 (.0401372)	.0677734 (.0522105)	.0784354 (.1374001)	.0643175 (.051047)
<b>R-Squared</b>	0.7099	0.5134	0.6780	0.7928	0.3785	0.7272

Note: Standard errors in parentheses

Since the ICT Digital Access index is a significant explanatory variable across the board, and none of the coefficients for the ICT Digital Access index are negative, this means that both the normative and the positive null hypotheses are rejected. This is not surprising given the general slant of ICT literature that pertains to governance; nevertheless some interesting findings can be derived from Figure 4-

18. The GDP growth (control) variable loses relative significance through the course of this exercise. If we plot the quadratic function from the translog regressions relative to its linear function counterpart, we discover the areas in which there is chronic over- and under-estimation of the impact of ICT on political development (on each variable individually and in aggregate). Figure 4-18 shows the estimated minimums of the quadratic curves, which are derived from taking the derivative of the quadratic function and setting it equal to zero; these are juxtaposed with the point of contact (tangent) with the slope of the linear regression, which is calculated by setting the derivatives of quadratic and linear functions equal to one another.

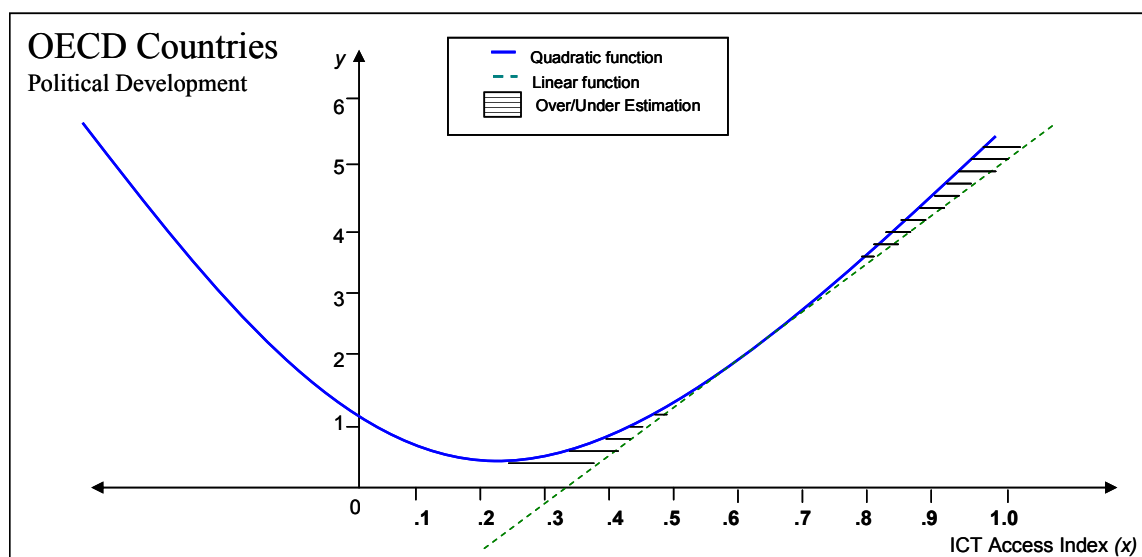
**Figure 4-19: Tangent Points of Estimated Translog and Linear Forms**

	Resulting Quadratic from Translog Estimation	
	Minimum	Tangent Point with Linear Regression
<b>OECD</b>		
<i>goveff</i>	0.082	0.991
<i>vacc</i>	0.330	0.992
<i>rol</i>	0.103	1.024
<i>ticpi</i>	0.053	0.893
<i>free</i>	0.653	1.000
<i>polidev</i>	0.160	0.893
<b>Non-OECD</b>		
<i>goveff</i>	0.100	0.951
<i>vacc</i>	0.156	0.878
<i>rol</i>	0.103	0.924
<i>ticpi</i>	0.167	0.656
<i>free</i>	0.141	0.828
<i>polidev</i>	0.160	0.746

Figure 4-20 below shows us an illustrative graph of a plotted quadratic function relative to its linear function; while both are derived from linear regressions, the quadratic better encompasses the complexity of causation between independent and dependent variables. Essentially, we can now determine at which point the linear function is estimating correctly when looking at a point of ICT Digital Access between 0 and 1. Looking closely in Figure 4-19 at the tangent point with the regression function, we can see immediately whether we are ‘out of sample’ or not; this is bearing in mind that all the dependent variables are normalized to 0 to 1. In Figure 4-20, which depicts an illustrative curve for aggregated political development for non-OECD countries, we see that any value of the *ict* index to the right of .746 based on the presumption of a linear relationship between ICT and political development will be *underestimating* the level of expected political development. This is because from that point forward, the slope of the quadratic function is higher (steeper) than the slope of the linear function.

This means that of the 170 countries included in this data, several are being underestimated on each dependent variable. For example, for the aggregated political development variable across the OECD sample, the United Kingdom, the United States, Sweden, Switzerland, Norway, Luxembourg, Netherlands, Canada, Austria, Iceland, Denmark, Japan and Finland fall into this under-estimated category; adding non-OECD, we find Singapore and Hong Kong also have *polidev* rankings above the estimation point. For the transparency function, which is among the few to exhibit underestimation, we find also that among the non-OECD countries - Slovenia, Cyprus, Estonia, Hong Kong, Israel, and Singapore (with scores higher than .656) are under-estimated. All the rest of the dependent variables appear to show chronic overestimation of the impact of ICT Access.

**Figure 4-20: Identifying Under and Over Estimation of Aggregate Political Development in OECD**



In order to calculate at which point a given non-OECD developing country (the dummy variable is constructed as: non-OECD=0, OECD=1) may fall relative to the estimated quadratic curve, the following equations for the logs of each dependent

variable (as well as the aggregated *polidev* variable) are useful (See Figure 4-13 for reference):

Government Effectiveness:

$$Y_1 = -.11 + .88x_1 - .05x_2 + .17x_1^2 - .08x_1x_2 - .03x_2^2$$

Rule of Law:

$$Y_2 = -.06 + 1.003x_1 - .05x_2 + .22x_1^2 - .06x_1x_2 - .02x_2^2$$

Voice and Accountability:

$$Y_3 = -.002 + 1.12x_1 - .02x_2 + .3x_1^2 + .002x_1x_2 - .06x_2^2$$

Transparency:

$$Y_4 = .163 + 1.97x_1 - .05x_2 + .55x_1^2 - .05x_1x_2 + .0003x_2^2$$

Civil Liberties:

$$Y_5 = .42 + 1.37x_1 - .06x_2 + .35x_1^2 - .06x_1x_2 + .09x_2^2$$

Aggregate (*polidev*):

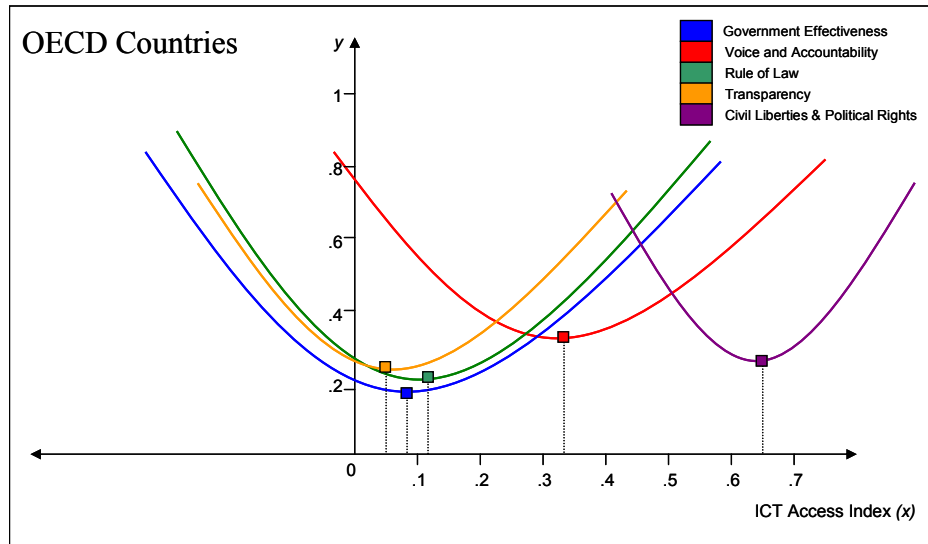
$$Y = .28 + 1.65x_1 - .06x_2 + .45x_1^2 - .06x_1x_2 - .02x_2^2$$

Furthermore, Figures 4-21 and 4-22 show that when ICT spending is increased, each dependent variable exhibits its own behavior, reaching its minimum impact at a different level of ICT penetration. We can thus identify which aspects of political development are affected in what order by increases in ICT Digital Access penetration. The order or progression in which this happens is starkly different between OECD and non-OECD countries, and indicative of the phenomena of path dependency. In the OECD region, a small level of ICT Digital Access brings with it nearly immediate high levels of transparency, followed quickly thereafter by government effectiveness and rule of law. Voice and accountability and levels of civil liberties and political rights follow later. This fits logically with the assumption that OECD countries are those in which democratic rule of law and institutional modernization have already been achieved; these countries by and large benefit from high levels of political maturity and the infrastructure of due process. Therefore, the impact of ICT is discernible more



quickly in the OECD because it is being deployed in countries that already have well-defined and functional bureaucracy and organizational forms. Little IT in a developed country can go a long way because institutions are in place to absorb it.

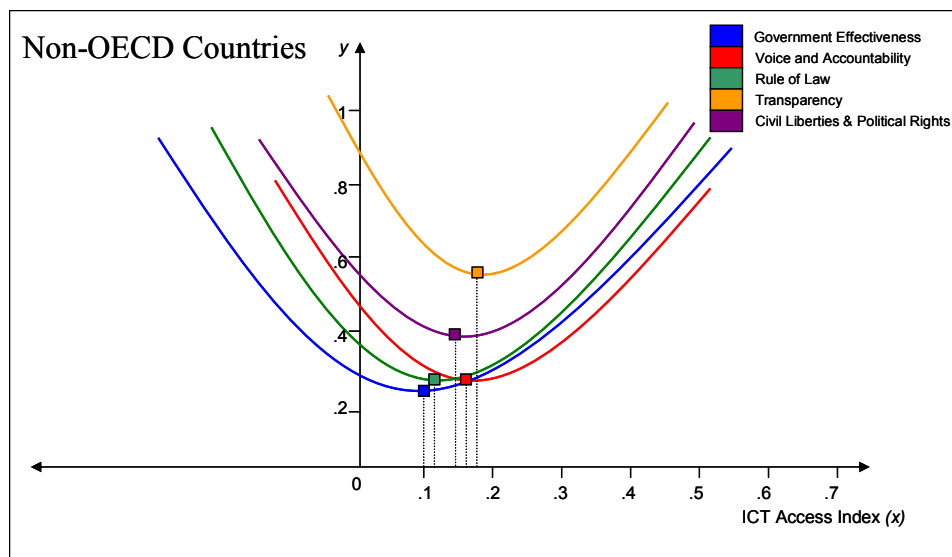
**Figure 4-21: Estimated Progression of Political Development in OECD**



In the non-OECD countries, this story differs markedly; government effectiveness results first, followed by rule of law, and then civil liberties and political rights. Voice and accountability and transparency come last. The necessary level of ICT to pass the minimums of all the dependent variables is higher, which means that the bureaucracy and political culture in these states is not as developed or modern. For OECD countries, for example, the impact of voice and accountability on transparency is positive, because as one reaches its minimum point, the transparency function is already steadily increasing. However, in the non-OECD context, the impact of the achieved minimum of voice and accountability on transparency is briefly negative; perhaps this is the case because governments will often demonstrate a backlash in response. It is also important to note that evaluations of all the dependent variables tend to be based on what is

codified *de jure*; this does not mean that what exists *de facto* on the ground is necessarily the same, although the chances of convergence between the two will be higher in OECD countries.

**Figure 4-22: Estimated Progression of Political Development in Non-OECD**



For example, in Armenia in 2002, a law was passed on the freedom of information; based on the experience of those who challenged its cogency and salience<sup>275</sup>, it is clear that the installment of a law has not yet altered the difficulties encountered by the citizenry in asserting their right to public information.

Similar regression analysis conducted on 25 post-communist countries in Europe, the Caucasus and Central Asia reveals further interesting dynamics of the relationship between information technology and political development. Since the size of the sample ( $n=25$ ) may not be sufficient for deriving valid test statistics, we bootstrap—generating equally probable random replications of the sample at

<sup>275</sup> “*Journalists Keep Fighting for Public Information*”, August 4, 2004, Investigative Journalists of Armenia (accessed March 10, 2005); available from <http://www.hetq.am/eng/court/0408-yerevan.html>.

hand—the coefficients of regression and their standard errors to obtain robust the results. While the results are robust at lower number of replications, we choose 200000 replications. Re-examining the same independent variables of the ICT Digital Access Index, GDP Growth, and OECD status, we find a causal linear—in variables and parameters<sup>276</sup>—relationship between ICTs and the measures of political development like *polidev*. As shown in Figure 4-23, the impact of ICT on political development tends to follow the same pattern as in global data. Here again, membership in OECD dampens the ICT effect on rate of political development. In this subsample, the effect of income growth on all measures of political development is uniformly negative, except for the OECD countries and civil liberties where an increase in ICT seems to increase civil liberties in the OECD countries of the post communist bloc. The results of the regression confirm anecdotal evidence to be presented in Chapter 5 that the Baltic and Central/Eastern European states are on a clearly different path of transition to democracy from the Central Asian and Caucasian countries. The estimated linear function in this sample as opposed to the translog estimation for the global data indicates that perhaps *ict* impacts political development where democratic institutions are still in infancy more acutely. The effect on political development in more mature institutional settings will be ‘flatter’. The linear estimates of the impact of the *ict* on political development affirm the findings in section 4.4 where we estimated the minimum for the quadratic function of *ict* and political development. Observe that the minimum value for the normalized *ict* among the post-communist countries is

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<sup>276</sup> Ramset RESET confirms the sufficiency of linearity in variables at .53.

above all the estimated minima in 4.4. Therefore, all post-communist countries are located on the right hand side of the curves in 4-21 and 4-22 where the slope is positive and the relationship between the independent and dependent variables can be estimated in linear form.

**Figure 4-23: Comparative Regressions with Robust Standard Errors for 25 Post-Communist Countries**

	Government Effectiveness	Voice & Accountability	Rule of Law	Transparency	Civil Liberties & Political Rights	AGGREGATE <i>polidev</i>
Constant	.3990591 (.2569506)	1.054308 (.4981954)	.7229955 (.358899)	-.075028 (.1304076)	2.206258 (1.055383)	.9339769 (.4922275)
ICT Digital Access Index	1.467238 (.6341156)	2.057472 (.8925907)	1.979079 (.861565)	2.096812 (.9063896)	4.046764 (1.747764)	2.396567 (1.038599)
GDP Growth	-.3816168 (.1861114)	-.709099 (.2043348)	-.5597808 (.254509)	-.3737913 (.1044187)	-.8978562 (.5643295)	-.5459971 (.2351095)
ICT Digital Access Index*GDP Growth	-.3835708 (.4049278)	-.6678263 (.2607499)	-.6417741 (.554335)	-.5747249 (.2985701)	-1.29008 (.8041015)	-.729076 (.4617726)
OECD	.0217922 (.010896)	-.7529915 (.3765052)	.0132133 (.006606)	.1526759 (.0763388)	-1.218893 (.60945)	-.4348832 (.217447)
OECD*ICT Digital Access Index	-.1420569 (.0710275)	-1.20737 (.6037)	-.1780814 (.089039)	-1.119898 (.5599552)	-1.413458 (.7067331)	-.8894898 (.4447559)
OECD*GDP Growth	-.006073 (.0030365)	.1908582 (.0954315)	-.0088781 (.004439)	-.5634937 (.2817501)	.4388586 (.2194306)	.0458691 (.0229351)

Note: Standard errors in parentheses.

Moreover, looking at the causal relationship between *ict* and *inc* yields a noteworthy finding: an increase in one unit of income growth in this smaller sample gives us a negative coefficient on *ict*. Looking at the log function of both these variables across the non-OECD and OECD samples, we find that the size of the negative coefficient for non-OECD countries is larger. This suggests that the rate of change induced by income growth on digital access (which is relatively flat for OECD countries) gets steeper and more negative in the non-OECD, signifying that

higher GDP growth does not lead to higher levels of ICT access in countries of this specific income bracket. This would signify a probable substitution effect of income; that is, an increase in income may not induce substitution out of expenditure on necessities and savings into spending on technology: the priorities of developing nations preclude immediate investment in ICT, and a marginal increase in income growth may actually decrease a state's level of digital access.

In conclusion, it is clear that there is a statistically significant relationship based on global data between ICT Digital Access levels and political development (across five popular indicators). The characterization of this relationship, particularly in the determinist context, has been that of linear and positive progression. However, statistical analysis tells us that there are conditions (in this case, based on OECD inclusion/exclusion) and ranges above and below which levels of ICT penetration will over- or under-estimate expected values of political development. Kedzie had parallel findings when he determined that the relationship between interconnectivity and democracy is different in mature democracies than in nascent democracies or those in the midst of political transformation.<sup>277</sup> This justifies the space in which a theory-building exercise can be undertaken.

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<sup>277</sup> Allison, *Technology, Development, and Democracy: International Conflict and Cooperation in the Information Age*, 117.

*“Just as a tall building will crack if it does not rest on a firm foundation, so a new democracy may not survive if it is not supported by the people in whose name it purports to govern.” (Easton, 1965)*

*“Men make their own history but they do not make it just as they please; they ... make it under circumstances directly encountered, given and transmitted from the past. The tradition of all the dead generations weighs like a nightmare on the brain of the living.” Marx, The Eighteenth Brumaire, as quoted by Jowitt 1992:266.<sup>278</sup>*

## 5 Regional Analysis and Post-Communist Context

The outcome of current power struggles and ‘transition’ on the Eurasian continent is crucial, and part of these struggles center around changing models of societal, national and regional communication. It is clear that in the post-Soviet countries of the Caucasus and Central/Eastern Europe, political, social and economic changes are imminent as consequences of the ‘information revolution’, which is often associated with globalization. A central supposition of this analysis is that technology plays a significant part in the process of development, even to the possible exclusion of intuitive variables like income growth, which World Bank analysts have surprisingly concluded does not necessarily lead to improvements of governance.<sup>279</sup> “It is... an indicator of ‘institutional readiness’ for countries to be

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<sup>278</sup> Richard Rose, William Mishler, and Christian W. Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies* (Baltimore, Md.: Johns Hopkins University Press, 1998), 144.

<sup>279</sup> Kaufmann, Daniel, Kraay, Art, Hellman, Joel, *Myths on Corruption and Economic Reforms* (Washington DC: World Bank Institute, May 27, 2003). Extensive statistical analysis in World Bank analysis indicates that the reasons why income growth does not necessarily have positive impact on governance are manifold. When the vested interests of the elite do not match the interests of national governance, and when ‘state capture’ exists (defined as the influence wielded by the influential firms that shape the formation of the rules of the game (laws, regulations, policies) to their advantage through illicit, non-transparent payments to officials/politicians) – the fruits of income growth are not appropriated correctly. This represents, therefore, a break in what would otherwise likely be a virtuous cycle between growth of incomes and improvement of governance structures.

able to adapt to technology-based industries rather than the heavy-industry ones prevalent in the region during socialist times.”<sup>280</sup>

Countries of the Caucasus, the Baltic region, Central/Eastern Europe and the Balkans cover an interesting area of analysis in part because these regions are characterized by similar transition from socialist legacies. All in their own way have been in the midst of important political and economic transitions during this past decade, just as the infrastructure for global communications networks (i.e., the internet) has become popularized and commercially accessible. Each in their way is facing the dilemmas that are associated with systemic transition, as ‘standard of living’ bears the brunt of the economic evolution towards the free market, and as the citizenry and the polity absorb the shock of institutional and legal implants. Moreover, problems of ‘collective memory’ that result from the accumulated life experience of several generations in one historical political system manifest themselves in the face of a shift to another, even as the instruments of technological change are adopted and diffused. A key resultant outcome of this process is a generational divide in Eastern Europe, for example, where the demographic distribution of eligible candidates in the labor pool is skewed heavily against the older generation. This is in part due to an inherited collective work ethic that is incompatible with the demands of the knowledge-based economy. The collapse of these regimes has created new divisions wherein some subsets of society are integrated within modern structures (based on Western models), and others remain

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<sup>280</sup> Christopher R. Tunnard, *The Role of Technology in the Development of a Modern Serbian State*, MALD (Medford, MA: The Fletcher School of Law & Diplomacy - Kokkalis Program, 2003), 6.

marginalized. Different social groups are galvanized by respective and contradictory sets of ‘values’ within a fragmented system.

To understand the region of the Caucasus and post-communist world in general, it is important to look at a few key concepts and areas that relate to political systems, issues of legacy, collective perceptions and civil society. This chapter will be comprised of an analysis of post-communist states, the challenges they have faced in transition, their path toward democratization, their approach to ICTs, and the donor development efforts in motion within them. It will provide the context against which the Case Study chapter, focusing exclusively across a range of government institutions in Armenia, will be examined. This chapter will also provide the background against which the dependent variable of transparency and political development (as well as the hypotheses of ‘cosmetic democracy’) can be studied, in light of the governance challenges, ICT access status, and related donor activities present in each post-communist state.

*Sometimes, it seems that the entire energy of the people of the USSR was devoted, not to building socialism, but to finding the way around the system, standing eternally in line, and circumventing every rule and regulation. As their saying goes, ‘every house has two doors, one in the front, and one in the back’.*<sup>281</sup>

## **5.1 The Challenges of Transition**

The post-Communist revolution was an abrupt process of regime change. Upon the fall of the Soviet Union nearly fifteen years ago, an opportunity was created for the materialization of regimes that fell somewhere between the cracks of

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<sup>281</sup> Randall Baker, *Transitions From Authoritarianism: The Role of the Bureaucracy* (Westport, Conn.: Praeger, 2002), 292.



capitalism and communism. The states that emerged from this era of systemic crisis faced a number of profound challenges that ranged from dealing with the issues of statecraft to the tensions between modern vs. traditional attitudes and generational divides. Unfortunately, the experience of these states confirms the idea that there is nothing teleological about development<sup>282</sup>, and that to assume so can compromise the accurate characterization of a nation's polity. In such cases as this, to call a system by anything other than its name is to potentially corrupt its future, and to reinforce ineffective development aid policies that exacerbate rather than alleviate problems. That said, however, it is vital to point out that once the taste of individual freedoms is achieved by the masses, there is an implicit momentum forward; this is synonymous with an implied understanding that 'going back is not an option'.

A fundamentally important aspect of transition is the idea of modernization, which – applied to the political sphere, is most often seen as synonymous with democratization. In the 17<sup>th</sup> and 18<sup>th</sup> centuries, the modern, bureaucratic state based on legal and rational principles began to emerge and become generally accepted as norm.<sup>283</sup> Although modernity also had a normative definition from the Marxist Leninist perspective, in Weber's sense modern society was knowledge-based and rich in information; a modern democratic government is a key institution in cybernetic systems with continued feedback between governors

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<sup>282</sup> Rose stated similarly that there is nothing teleological about changes between regimes. In Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*, 3.

<sup>283</sup> Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*, 122.

and governed.<sup>284</sup> It is a transparent thing, in which everyone can observe cause and effect relations. By contrast, the Communist system was fully opaque; rulers ignored or repressed feedback signals. In terms of Weberian social science, the Communist system was not merely ‘differentially’ modern, it was anti-modern.<sup>285</sup> The communist system was a perverse example of Weber’s dictum that ‘power is in the administration of everyday things.’<sup>286</sup>

The path of post-communist transition would indicate that the development process is not without its momentum in a very clear direction. This runs in parallel to the fact that the post-cold war international order creates powerful incentives for nation states to adhere to the homogeneity inherent to the ruling (i.e., capitalist) system. The catalysts for this momentum have come (and continue to derive) from a number of international organizations and non-governmental bodies that are American- or European- sponsored. This would underline the truth of Stark’s observation that a ‘myth of designer capitalism’ exists, which supports the idea that the ‘right’ institutions will produce the ‘right’ (i.e., predictable) response from citizens.<sup>287</sup> Survey and analysis work done by Inglehart on issues of self-expression and trust relative to geographical regions leads to an interpretation that:

... democratic institutions give rise to the self-expression of values that are so closely linked with them. In other words, democracy makes people healthy, happy, tolerant and trusting, and it instills post-materialist values... This interpretation is extremely appealing. It provides a powerful argument

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<sup>284</sup> Karl Wolfgang Deutsch, *The Nerves of Government; Models of Political Communication and Control* (New York: Free Press, 1963), 316.

<sup>285</sup> Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*, 124.

<sup>286</sup> Ibid., 126.

<sup>287</sup> David Stark’s 1995 article “Not by design: The Myth of Designer Capitalism in Eastern Europe” in Jerry Hausner, Bob Jessop, and Klaus Nielsen, *Strategic Choice and Path-Dependency in Post-Socialism: Institutional Dynamics in the Transformation Process* (Brookfield, VT: E. Elgar, 1995), 67.

for democracy and implies that we have a quick fix for most of the world's problems: Adopt democratic institutions and live happily ever after.<sup>288</sup>

And yet, as Harrison points out, unfortunately the experience of the people of the former Soviet Union does not support this interpretation. Since their collective shift toward democracy in between 1990-1, they have not become "... healthier, happier, more trusting, more tolerant, or more post-materialist. For the most part, they have gone in exactly the opposite direction."<sup>289</sup> Harrison further states that democracy is not attained simply by making institutional changes or through elite-level maneuvering; its survival is contingent on the values and beliefs of ordinary citizens.

#### 5.1.1 Dynamics of the Post-Communist Bloc

That said, of course, it is necessary to draw some distinctions as well. In this chapter, the countries of the post-communist bloc are separated into three categories; Eurasia (consisting of states of the Caucasus, Central Asia, Ukraine and Moldova), the Southern Eastern European bloc (including the Balkans and former Yugoslavia), and the Central/Eastern European bloc (including Poland, Hungary, Czech Republic, and the Baltics). Russia is kept aside as an island of its own. The region of the Caucasus (and Armenia, in particular) faces challenges ranging from an overall deficit of democracy and the predominance of 'strongmen over statesmen',<sup>290</sup> to the dysfunctions wrought by small clan-based ruling elites functioning in a dominant executive, a weak parliament, and a dependent judiciary.

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<sup>288</sup> Lawrence E. Harrison and Samuel P. Huntington, *Culture Matters: How Values Shape Human Progress*, 1<sup>st</sup> ed. (New York: Basic Books, 2000), 94.

<sup>289</sup> Ibid., 94.

<sup>290</sup> Richard Giragosian, "Problems of Governance: the Caucasus" in *Conference about Contemporary Security Challenges in Eurasia* (Chapel Hill, North Carolina: Center for Slavic, Eurasian and East European Studies, 2003).

However, this is more endemic to eastern countries of the post-communist world than to those located in the geographical bounds and periphery of the EU. With Azerbaijan as a model of dynastic succession and Georgia just recovering in the last year from ‘failed state syndrome’, the Caucasus region as a whole suffers from deeply embedded social discontent fueled by expanding networks of official/state/bureaucratic corruption. The lack of continuity and stability in the political realm perpetuates an ideal climate in which the informal networks of the ‘old guard’ transmute the reform process into a reconstituted creature embodying old practices.<sup>291</sup> Indeed, there appear to be three main factors to consider regarding the manner in which transitioning countries orient themselves – reflected in their ability and willingness to embrace Western capitalism, their capacity to attract the influx of foreign capital, and the emergence of a human capital base able to ‘improve’ structures of governance and promote change in supporting institutions.

The European Union creates a sort of ‘force-field’ for nations on its periphery; they gravitate toward it and therefore toward the standards, rights, and prosperity that it portends. Those outside this force-field are experiencing a different flavor of transition entirely. There are those, however, who have conducted research showing the limited achievements of the EU insofar as the reform of public administration is concerned in new ‘accession’ states. The importance of capacity to absorb functioning within a democratic system as well as the principles of the ‘*Acquis Communautaire*’ was not codified until the mid-1990s; the Madrid European Council, in December 1995, for the first time mentioned the

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<sup>291</sup> Baker, *Transitions from Authoritarianism: The Role of the Bureaucracy*, 293.

importance of administrative capacity as a criterion for EU membership. Tony Verheijen states,

... the relative failure, obviously with some exceptions, of projects to improve general administrative capacities has not lead to a reconsideration of the way this type of assistance is delivered.... All of this combined threatens to reduce the potential leverage of the EU... [by giving the impression] that the development of horizontal administrative capacities is not a priority among membership requirements.<sup>292</sup>

Nevertheless, McFaul states, “the closer a country is to Western Europe and the more integrated it is into the international economy, the greater the influence of these external forces on domestic democratic institutions.”<sup>293</sup> This is reflected in a number of comparative measures, not least of which include the civil liberties and political rights indexes published annually by Freedom House.

The Freedom House 2005 report observes that important advances have been made for freedom in the Ukraine and Georgia, although Russia, Belarus, Uzbekistan and Turkmenistan all have issues of repression, while Armenia suffers from ‘authoritarian consolidation’. The report is optimistic: “The post-Communist East-West divide (which formerly separated the countries of Central and Eastern Europe from those of the former Soviet Union) is gradually migrating eastward, as liberal values make gains in key post-Soviet states.”<sup>294</sup> However, noting that lower values (closer to one) reflect higher levels of civil liberties and political rights protection, and assuming that ‘success’ is indeed defined by these enhanced

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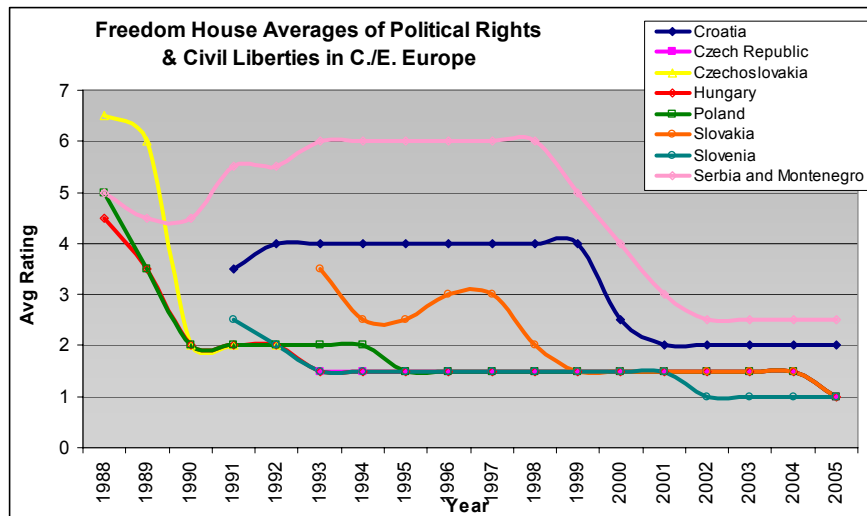
<sup>292</sup> Tony Verheijen in Baker, *Transitions from Authoritarianism: The Role of the Bureaucracy*, 258.

<sup>293</sup> Michael McFaul, *Post-Communist Politics: Democratic Prospects in Russia and Eastern Europe* (Washington, D.C.: Center for Strategic and International Studies, 1993), 93.

<sup>294</sup> Freedom House designates countries with an average score for civil liberties and political rights between 1 and 2.5 as free, those with a score between 3 and 5 as partly free and those with a score between 6 and 7 as not free. Countries with an average score of 5.5 could be classified as either partly free or not free, depending on the underlying data used to determine their civil liberties and political rights scores. Freedom House, 2005 report

freedoms, it is interesting to examine the regional and geographical differences as they are reflected in the Freedom House dataset over time.

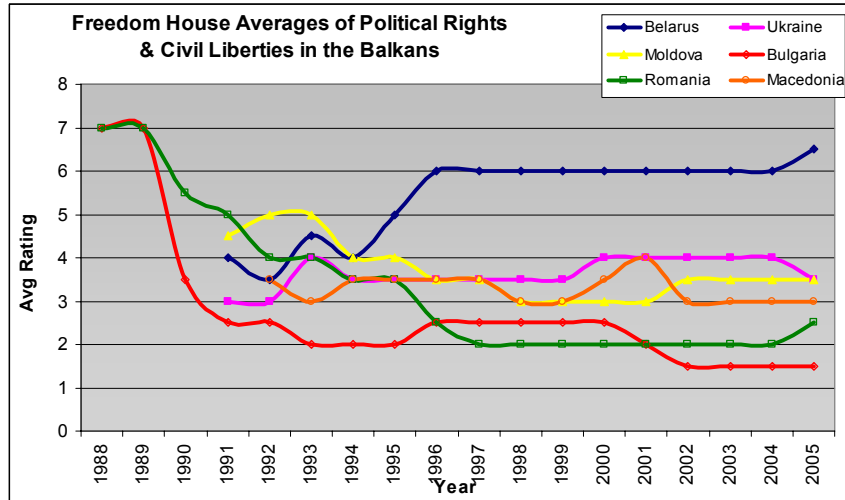
**Figure 5-1: FH Average of Civil Liberties and Political Rights in C./E. Europe**



Source: Adapted from Freedom House data accessed March 2005. Available from [www.freedomhouse.org](http://www.freedomhouse.org).

Over the last ten years or so, the countries of Central and Eastern Europe in Figure 5-1 are all without exception trending noticeably downward, indicating higher levels of freedom (here noted to be synonymous with democratization). Although they are not typically grouped together with the Balkans, Moldova and Ukraine appear to score relatively well (earning a Partially Free ranking from Freedom House), while Belarus looks to have considerably more difficult challenges to contend with. (See Figure 5-2)

**Figure 5-2: FH Average of Civil Liberties and Political Rights in the Balkans**

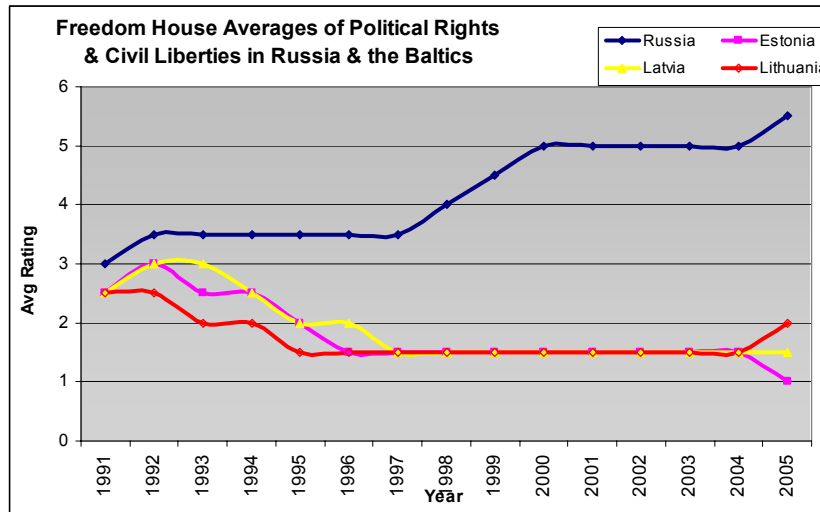


Source: Adapted from Freedom House data accessed March 2005. Available from [www.freedomhouse.org](http://www.freedomhouse.org).

Perhaps the least problematic of the post-Soviet states are those located near the Baltic Sea; it is no coincidence that Estonia is today widely regarded as the poster-child for successful ICT implementation and e-government work in the CIS. (See Figure 5-3) Insofar as their political culture is conducive to the protection of political rights and civil liberties, it can be said that their path toward democratization is considerably smoother than that of their counterparts. They are juxtaposed with Russia for effect, and it is obvious that the brand of ‘democracy’ that Putin wields is not defined the same way as it is in Europe or its periphery states. According to Freedom House’s Nations in Transit 2004 report, President Putin’s policies “have sought to centralize power, leaving little room for a vibrant civil society, independent media, or political opposition... While Russia has emphasized the importance it places on maintaining strong ties to the West, it is headed in an increasingly authoritarian direction.”<sup>295</sup>

<sup>295</sup> Freedom House Press Release, May 24 2004, (Washington DC: Freedom House) (accessed March 1, 2005); available from <http://www.freedomhouse.org/media/pressrel/052404b.htm>.

**Figure 5-3: FH Average of Civil Liberties and Political Rights in Russia and Baltics**



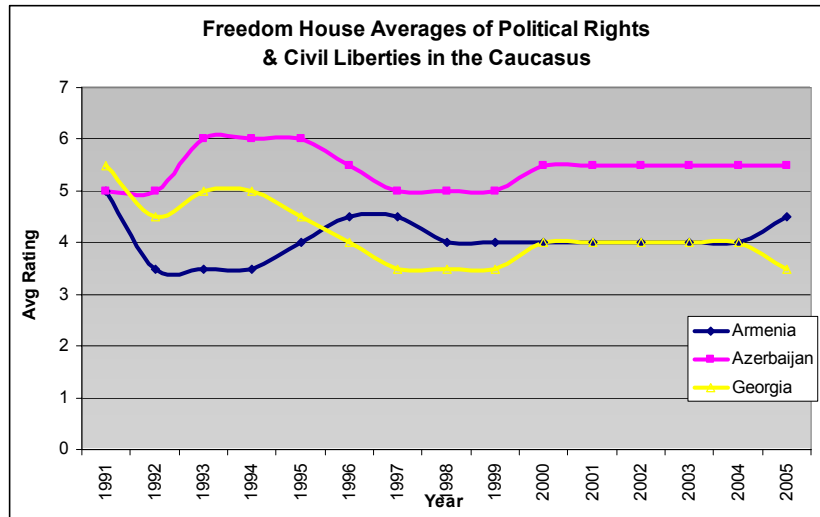
Source: Adapted from Freedom House data accessed March 2005. Available from [www.freedomhouse.org](http://www.freedomhouse.org).

Moving further east toward the Caucasus in Figure 5-4, one can observe an entirely different scenario altogether. The averages are up between four and six, with slight improvements noted in Georgia in the wake of the ‘Rose’ revolution, slight deterioration in Armenia in the wake of violently repressed media demonstration recently in the Spring of 2004, and consistently tight policies of control evident in Azerbaijan. If one could generalize, it would be to state that these nations – from baseline cultural and linguistic standpoints, are all considerably more within Russia’s ‘sphere of influence’ than they are oriented toward Europe.

The legacy of limited supply *and* demand for the political machinery of a democratic system is very much alive today. Hence the difficulties of a state like Armenia in successfully automating administrative and bureaucratic functions for public consumption, relative to the more successful endeavors of Estonia, for example.



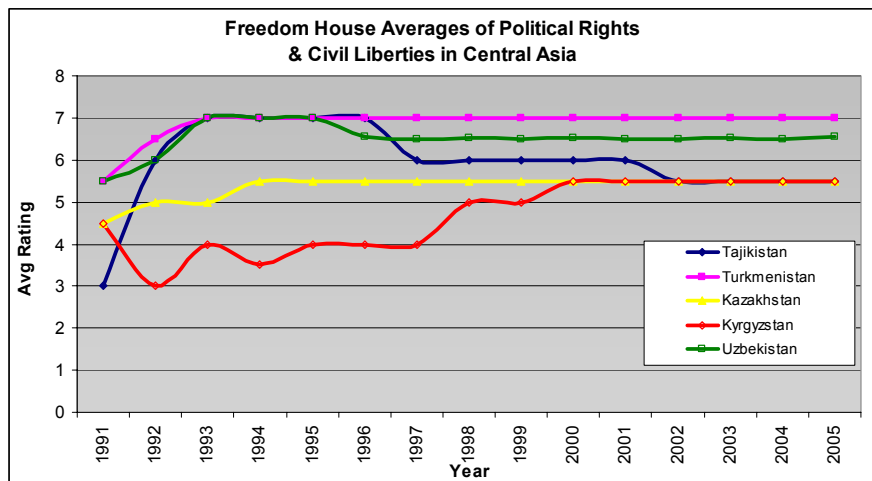
**Figure 5-4: FH Average of Civil Liberties and Political Rights in the Caucasus**



Source: Adapted from Freedom House data accessed March 2005. Available from [www.freedomhouse.org](http://www.freedomhouse.org).

Pushing finally to the last frontier of the post-communist world in Central Asia in Figure 5-5, one sees even more evidence that decreasing geographical proximity to Europe is related to lower levels of ‘freedom’. These are states that generally considered by Freedom House to be ‘Not Free’.

**Figure 5-5: FH Average of Civil Liberties and Political Rights in Central Asia**

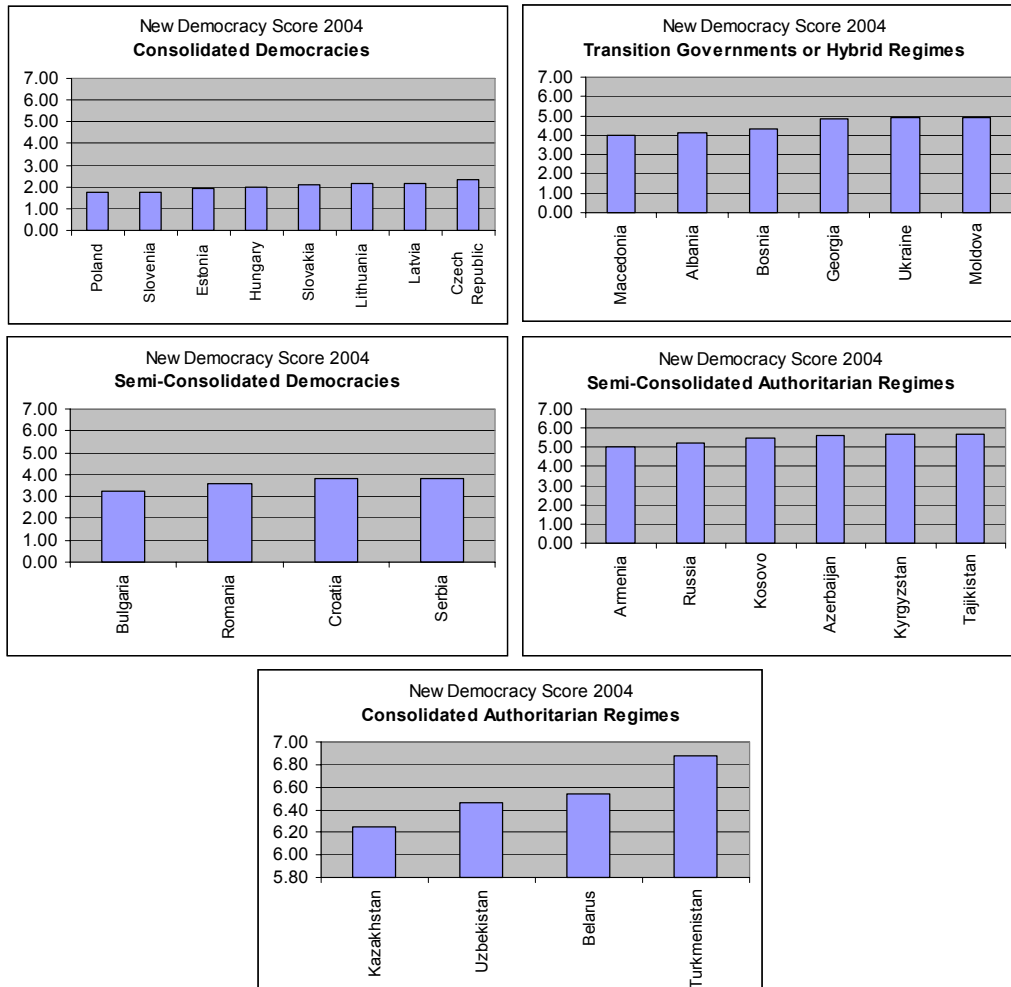


Source: Adapted from Freedom House data accessed March 2005. Available from [www.freedomhouse.org](http://www.freedomhouse.org).

The Freedom House “Nations in Transit” report of 2004 also provides a series of useful comparative measures when looked at an measures of ‘new democracy’ based on an average of aggregated data about electoral process,

independent media, civil society, governance, constitutional, legal and judicial frameworks, and corruption. Figure 5-6 presents a juxtaposition, by apparent system, of the New Democracy Scores for 2004. Nations in Transit ratings are based on a scale of 1 to 7, with 1 representing the highest level and 7 representing the lowest level of democratic development. The 2004 ratings reflect the period January 1 through December 31, 2003. Of course, such aggregated indexes – whether created by the World Bank, AT Kearney, UNDP or Freedom House, should not be taken as absolute indicators; they are illustrative rather of broad patterns and trends, and are actually more convincing and powerful when several of them together yield similar results.

**Figure 5-6: Freedom House “Nations in Transit” Assessments of New Democracy**



Source: Adapted from Freedom House data available from [www.freedomhouse.org](http://www.freedomhouse.org).

*“Many forms of government have been tried and will be tried in this world of sin and woe. No one pretends that democracy is perfect or all wise. Indeed it has been said that democracy is the worst form of government, except all those other forms that have been tried from time to time.”*  
(Churchill, 1947).

## 5.2 The Process of Democratization

“...The history of democratization is not a record of steady advance, but of advance and retreat, as waves crest and fall.”<sup>296</sup> The concept of democracy is best understood as a system of power under which no group can guarantee that its interests will automatically or always prevail. The common expression of democracy as ‘rule by the people’ should not be mistaken for its reality, which is based on a set of institutions.<sup>297</sup> These institutions are never in starker contrast with their predecessor totalitarian regime than when they ensure the rule of law and accommodate civil society institutions. However, often nonconsensual and non-democratic measures may be essential in the early stages of its development to lay foundations (for example, for land reform).<sup>298</sup> Democratic politics is the politics of accommodation, compromise and the center, which is why it is an unlikely and improbable end in places that are highly polarized – whether by income, class, ethnicity, religion or culture.

Democratization is seen by most theorists as a learning process, in part because it is taking place in countries which have little legacy experience to inform it. Indeed, the end of Communism was so abrupt that it did not allow time for new institutions to evolve gradually. In post-Communist countries, the paradigm country

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<sup>296</sup> Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*, 13.

<sup>297</sup> Ibid., 6.

<sup>298</sup> Adrian Leftwich, “Governance, Democracy and Development in 3rd World,” *Third World Quarterly* 14, no. 3 (1993): 605-625.

for modeling democratization has been Germany, which has in the last hundred years seen three different extremely undemocratic regimes (including the Weimar Republic and its fearsome ‘cult of personality’, prior to the arrival of the Federal Republic of Germany’s current status). The gradual (and relatively peaceful) experience characteristic of the Anglo-American world is atypical. Rose states, “post-communist societies started democratization backwards; the first step was to introduce free competition elections in 1990 with everyone eligible to vote. Free elections were needed to blow away the old regime.”<sup>299</sup>

### 5.2.1 The “Main Waves of Democratization”

The first wave of democratization was launched by the French and American revolutions in the eighteenth century. France gave the vote to all men in 1792 but went back and forth on it from regime to regime; meanwhile, the United States abolished slavery during the Civil War in 1863, but experienced an incredibly intense civil rights movement up through the 1960s. Prior to World War I, the main European powers were not democracies; they were apportioned pieces of the Austro-Hungarian, Ottoman, German and Russian empires. The second wave of democratization began after World War II; while some former colonies introduced free elections, others lapsed. The number of countries that were electoral democracies trebled to 36.<sup>300</sup> Aspirations to democracy in Central and Eastern Europe were crushed by Soviet troops, and by 1973, only one in four of the world’s

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<sup>299</sup> Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*, 66.

<sup>300</sup> Ibid., 16.

independent states had a claim to be an electoral democracy.<sup>301</sup> The third wave of democratization is often associated with the fall of the Berlin wall in 1989 and the breakup of the Soviet Union in 1990, creating nineteen new states in which the struggle was just beginning.

The resources – both in terms of human capital and strategic know-how – with which to construct an ideal democracy were not readily available in most of these states. In Ukraine, a gap of 55 months occurred between the election of a president in December 1991 and the adoption of a constitution.<sup>302</sup> The median lag between electing a new government and adopting a constitution was twenty months in Slovenia.<sup>303</sup> According to Rose, the Baltic states of Estonia and Latvia were exceptional: they simply invoked the constitutions that had governed the country in the previous period of independence between the two world wars. Poland also presented an interesting case; the victory of Solidarity in parliament in June 1989 was followed shortly thereafter with repeal of the commitment to communism in its constitution. In Bulgaria, 1989 hearkened the end of the Communist right to govern, and talks were initiated in 1990; the existing communist party re-cast itself as a socialist party with the misguided idea that they could win. Romania was somewhat different because of the despotic nature of Ceacescu's regime; violence erupted in 1989, and transition toward free elections came at the cost of many thousands of lives.

In the Soviet Union, meanwhile, republics were voting for the first time; in 1991 a referendum was called by Gorbachev asking whether they still approved

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<sup>301</sup> Ibid., 16.

<sup>302</sup> Ibid., 58.

<sup>303</sup> Ibid., 58.

preserving the USSR as a 'renewed federation' of equal sovereign republics. Ukraine, Kazakhstan, Kyrgyzstan, Uzbekistan and Azerbaijan held the referendum, albeit with re-wording of the ballot; Armenia, Georgia, Moldova and Lithuania, Latvia and Estonia flatly refused, opting to reinforce their own claims of independence. By Fall 1991, the USSR no longer existed. Of these countries, Belarus was unusual, in part because it has departed from its path toward democratization. All of the countries mentioned above have some form of elected Parliament, although they often differ on what kind of proportional representation they have adopted, and whether their President is popularly elected, or chosen by Parliament. Oftentimes the extent of economic liberalization undertaken in parallel to democratization has been a determinant for how much 'progress' each state has made relative its peers.

It is perhaps necessary to note, that from an individual perspective, the experience of having lived under a totalitarian regime tends to create a populace who is extremely appreciative of individual freedoms, no matter how small or limited they may be. The fact that despite the Soviet experience, each post-communist country today carries the remnants of a distinct cultural heritage begs the question of whether perhaps some of the differences in managing transition are not correlated to the pre-communist era. This question, while interesting, falls outside the scope of this dissertation.

### 5.2.2 The Foundations of Cosmetic Democracy

Randall Baker states in his chapter in *Transitions from Authoritarianism*, that there is frequently a divergence between what exists *de jure* and what goes on *de facto* in certain parts of the world.<sup>304</sup> This premise is critical to the value of in-depth case study work in a single country (See Chapter 6); what may be occurring *de facto* could have serious consequences for the integrity of democratic process in the long run. Richard Rose explains in great detail that which comprises a ‘complete democracy’ as opposed to one which remains unfulfilled. A ‘complete democracy’ is a system of government in which the rule of law invariably prevails and the institutions of civil society are able to impose constraints on government, holding it accountable between elections.<sup>305</sup> When popular demands lead elites and oligarchs to improve the supply of the essentials of democracy: the rule of law, accountability to the electorate and strong institutions of civil society, a democracy is completed. When a democracy is incapable of dealing with the burdens and responsibilities that it faces, or has only intermittent commitment to the rule of law, it is what Rose calls, ‘broken-backed’.<sup>306</sup> “To assume that holding elections make a new democracy ideal is as mistaken as to assume that communist regimes achieved equality simply because they abolished private property.”<sup>307</sup> In such instances, the problems are often manifold; among other things, parties may be under duress during elections, there may be inconsistency in their positions, and votes can be manipulated. There is by definition little stability in the process of transition.

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<sup>304</sup> Baker, *Transitions from Authoritarianism: the Role of the Bureaucracy*, 292.

<sup>305</sup> Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*.

<sup>306</sup> Ibid., 218.

<sup>307</sup> Ibid., 20.



By the end of 2000, four of the 26 post-communist states shifted between regime types: Belarus moved from a close oligarchy to sultanism, Azerbaijan shifted from a closed to open oligarchy and back to closed oligarchy, and Georgia moved from plebiscitary democracy to a closed oligarchy and back to plebiscitary democracy. These changes are all between subtypes of ‘façade democracy’. Gill breaks out his analysis of post-communist states on the basis of two criteria (procedural elements and observance of rights) into three broad categories: democracies, ‘façade democracies’, and non-democracies.<sup>308</sup>

... When democracy was created... [it was on the basis of] the political institutions and cultural patterns that were the legacy of the old regime. Furthermore, not all cases of regime change resulted in a democratic outcome. In some cases, the regimes emerging from this process of political change have not been democracies; despite in many cases the outward appearance of democratic forms.<sup>309</sup>

This definition of façade democracy is highly interesting and relevant to this dissertation; it basically refers to states that exhibit some of the procedural minima for democracy and some observance of political and civil rights – the latter of which is usually denied to a section of the population or sometimes generally for a brief period of time. Part of the terms upon which this is judged relate to whether or not irregularities and deficiencies exist in the protection of rights in elections.

Theories of political culture emphasize that the past does not disappear when one constitution supersedes another; it persists in the values and beliefs of politicians and citizens socialized to accept the cultural norms of the previous regime. In an established democracy, the persistence of cultural values is a source

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<sup>308</sup> Graeme J. Gill, *Democracy and Post-Communism: Political Change in the Post-Communist World* (London; New York: Routledge, 2002), 4.

<sup>309</sup> *Ibid.*, 2.

of stability<sup>310</sup>, while in transition or semi-consolidated democracies, it can be an insidious barrier to change. Gill explains that ‘north-west’ of the Communist world is the general home of democracies, the south-east of non-democracies, and the zone in the middle of the ‘façade democracies’. Due to related issues of culture and mentality, democracies appear much less likely within the former Soviet Union than in Eastern Europe.<sup>311</sup> This coincides closely to my own definition and hypothesis about the relationship of new technologies with ‘cosmetic democracies’; these are states in which the appearance of modern institutional transformation is discernible, but the actuality leaves something to be desired. I argue that the presence of ICTs exacerbates an already existing tension, between that which the outside world sees, and that which is experienced by citizens. Meanwhile, the problems associated with commitment to transparency and service delivery still comprise an intrinsic aspect of their political culture.

### **5.3 Challenges to New Democracies**

What happens in a new democracy is the outcome of a continuing process of interaction between what elites supply, and what the populace demands.<sup>312</sup> Countries that are new democracies are by definition several steps short of institutionalizing or even introducing the features of an established democracy. Certainly, it is logical that the institutions that took generations to evolve in Western Europe cannot be produced overnight in the wreckage of a Communist

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<sup>310</sup> Gabriel Abraham Almond and Sidney Verba, *The Civic Culture; Political Attitudes and Democracy in Five Nations* (Princeton, NJ: Princeton University Press, 1963), 562.

<sup>311</sup> Ibid., 11.

<sup>312</sup> Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*, 12.

state; and thus the design of post-Communist democracy cannot be demand driven, it must be a function of supply – of experienced democratic politicians and leaders.<sup>313</sup> Rose aptly observes, “... there is a shortage of public officials accustomed to administering the rule of law and delivering public services fairly and efficiently.”<sup>314</sup> And therefore what has been discernible is a process of elite bargaining, which begins as soon as the leaders of the *ancien* regime realize that they cannot wield control as before.

To survive in competition with other regimes, a new democracy requires the support of the mass of the population<sup>315</sup>; this in turn requires that some form or mechanism of demand input or participation be in place. A significant number of people (70% in Czech Republic, 85% in Slovakia, 73% in Hungary, 70% in Poland, and 63% in Romania in 1994) believed the post-communist system was no better than its predecessor in enabling ordinary people to influence what the government did.<sup>316</sup>

### 5.3.1 Democracy as Evolution vs. Revolution

Whether democracy is a product of evolution or revolution is an important factor to consider, not only because of the nature of the process, but because of the degree of importance that must be ascribed to the influence of external actors (i.e., donors like USAID). Dahl named these two possibilities in 1971, as the means by which democratization is brought about. In the latter, change is more likely going

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<sup>313</sup> Ibid., 6.

<sup>314</sup> Ibid., 6.

<sup>315</sup> Ibid., 6.

<sup>316</sup> Gill, *Democracy and Post-Communism: Political Change in the Post-Communist World*, 120.

to be the result of trial and error, whereas evolution allows time for the rule of law and institutions of civil society to develop.<sup>317</sup> A new regime can receive a ‘soft’ or ‘hard’ legacy from its predecessor, depending on the extent to which the predecessor respected the rule of law, tolerated institutions of civil society, and had institutionalized electoral competition and accountability.<sup>318</sup> The legacy of Western European regimes tended to be soft, because their starting point was normally an oligarchic regime with existing institutions of civil society. In Poland, for example, the transition began based on a long and developed history of opposition to communism; social movements, worker protests, and student revolts all came out in direct confrontation with the state, and movements were clear in carving out space for civil society.<sup>319</sup>

That said, however, McFaul clearly states that the transitions in Eastern Europe and the former Soviet Union are ‘true revolutions’, involving a “... sweeping, fundamental change in political organization, social structure, economic property control and the predominant myth of social order...”.<sup>320</sup> The fact that through the course of the process, the property rights of the old rulers were not protected and that civil society (in most cases) had to be built up from scratch indicates the significance of the leap from system to system. This is not to say that some states did not have a smoother experience than others; in Hungary, for example, Kadar’s relatively liberal regime created space for parallel planes of activity in the economy and polity. This created a ‘second society’ that eased the

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<sup>317</sup> Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*, 46.

<sup>318</sup> Ibid., 64.

<sup>319</sup> McFaul, *Post-Communist Politics: Democratic Prospects in Russia and Eastern Europe*, 1.

<sup>320</sup> Ibid., xiii.

pains of polarization<sup>321</sup> through an evolutionary transition, as compared to the events that emerged in Poland and Czechoslovakia around the same time. Poland had a negotiated but polarized experience, while the Czechs transition was very sudden and driven by ethnically based anti-Communist groups. Russia, as is often the case, falls in a separate category; "... the scale of revolutionary transformation required to create a capitalist democracy in Russia dwarfs all others".<sup>322</sup> The conclusions drawn by McFaul, though derived from the Central and Eastern European experience, are useful. They incorporate the idea that the more liberal the ancient regime, the more continuity between old and new; the more revolutionary a transition, the greater the challenge of consolidating a democratic polity; part of which is driven by the timing and sequence of elections.<sup>323</sup> Given the forces of war, separatism, and chaos that took over in successor states like Tajikistan, Armenia, Georgia and Azerbaijan, political leadership has already floundered considerably and hopes for a stable future remain rather bleak.<sup>324</sup>

It is also important to note that there is an element of opportunism that applies to the way that democracy takes hold in a given state; in order for it to be established, people must believe in it. This element was critical particularly within those states who lived in the shadow of the three great powers prior to the world wars; such border/buffer states were characterized by a distinctly more flexible conceptions of regime. This explains, for example, the 'goulash' capitalism in evidence in Hungary behind the cloak of 'lip service' to the communism system.

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<sup>321</sup> Ibid., xiv.

<sup>322</sup> Ibid., xviii-xix.

<sup>323</sup> Ibid., 85-90.

<sup>324</sup> Timothy J. Colton and Robert C. Tucker, *Patterns in Post-Soviet Leadership* (Boulder, CO: Westview Press, 1995), 235.

### 5.3.2 Corruption and Lack of Trust

Repressive institutions, distrust and corruption (as an offshoot of the command economy) featured prominently as characteristics of the regimes that emerged in the post-communist world. Those in the communist party's nomenklatura reinforced irrationality at all levels of public bureaucracy, and

... individuals could not rely on bureaucrats to deliver services to which they are entitled by law; who you know was often more important than what the law said. People who wanted things from the state had three alternatives: to accept passively what was done by officials, to sue personal appeals or influence to get what they wanted, or to use bribes or other illegal means.<sup>325</sup>

“When individuals deal with government about their personal concerns, they often find that the ‘front-line’ face of government, namely the people delivering services locally, remains the same, and this can also be true of leaders of representative institutions, such as political parties and trade union.”<sup>326</sup> “A study of the use of connections at the start of the transformation found 2/3 of Czechs and Slovaks and one-third of Bulgarians used bribes.”<sup>327</sup> The Lex Mundi Project<sup>328</sup> compiled a database of relative perceptions (of law firms) of legal systems in 109 countries around the world, ranking countries on scale ranges from 1 to 6, where a higher score signals a more honest and uncorrupt system. Data is used to construct an index of procedural formalism for dispute resolution in each country; such formalism is systematically greater in civil than in common law countries. Across the civil law systems, those countries deriving their systems from the French civil

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<sup>325</sup> Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*.

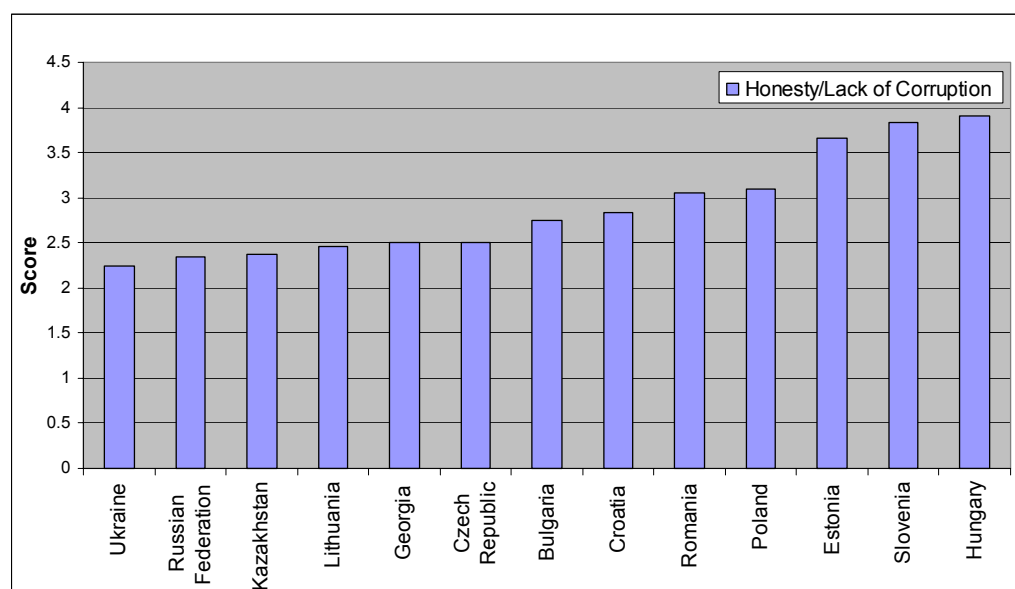
<sup>326</sup> Ibid., 153.

<sup>327</sup> Ibid.

<sup>328</sup> Simeon Djankov et al., *Courts: The Lex Mundi Project* (Massachusetts: National Bureau of Economic Research, 2002).

law tradition appear to have more engrained and rigid formalism.<sup>329</sup> Procedural formalism is associated with higher expected duration of judicial proceedings, more corruption, less consistency, less honesty, less fairness in judicial decisions, and inferior access to justice.<sup>330</sup> While about half of the post-communist countries in the world were not given scores, and while some of the results appear slightly exaggerated (particularly as concerns Romania), there is still a general discernible pattern to the data. Figure 5-7 shows that those in the Baltic and Balkan areas within the sphere of influence of the EU are more likely to exhibit higher standards of honesty with regard to the legal system than their Russian-oriented Central Asian or Caucasian counterparts. While such an index is unlikely to serve as a reliable meaning of exactitude, it can be considered a useful illustrative that speaks to a general trend.

**Figure 5-7: Lex Mundi Project: Measures of Honesty & Lack of Corruption in Legal System (2002)**



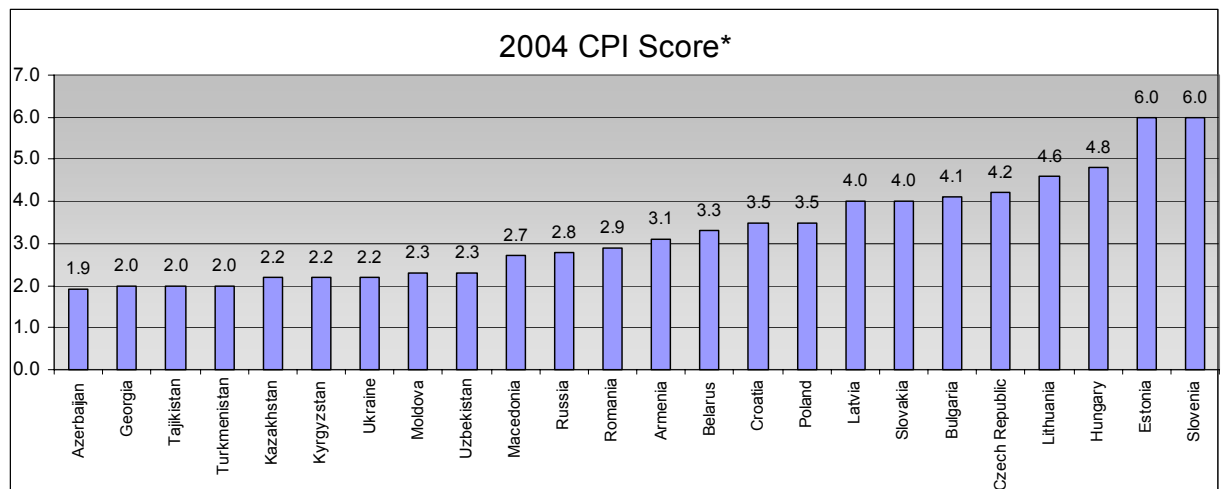
Source: Lex Mundi data accessed March 2005. Available from <http://ideas.repec.org/p/nbr/nberwo/8890.html>.

<sup>329</sup> Ibid.

<sup>330</sup> Ibid.

Another very commonly cited dataset which speaks to levels of corruption is that issued by Transparency International, which issues a CPI Score related to perceptions of the degree of corruption as seen by business people and country analysts; it ranges between 10 (highly clean) and 0 (highly corrupt). It is a composite index, drawing on corruption-related data in expert surveys carried out by a variety of reputable institutions. It reflects the views of businesspeople and analysts from around the world, including experts who are locals in the countries evaluated. Figure 5-8 shows Azerbaijan as the least ‘clean’ of its post-communist counterparts, followed closely by Georgia and a host of Central Asian counterparts. Surprisingly, Armenia finds itself situated in 2004 closer to its Balkan and Eastern Europe equivalents, while the Baltics find themselves predictably at the optimal end of the scale.

**Figure 5-8: Transparency International Corruption Perceptions Index (2004)**



Source: Transparency International data accessed March 2005. Available from [www.transparency.org](http://www.transparency.org).

## 5.4 ICTs and the Post-Communist World

The dissolution of the Soviet bloc released a large number of countries bearing a legacy of ‘managed information’; this was a byproduct of the command



economy and a rigid ideology. The process of transition has been marked by widely different paces of change; this is particularly true in the context of applying ICT infrastructure to decision-making. This is because the role of ICT is one that transcends philosophical realms occupied by questions about political systems and social engineering, and gets straight to the heart of how democracy is to be delivered to a populace. The example of China is relevant to this observation; its economic success appears in part to be the result of the government's ability to compartmentalize information – increasingly promoting access to economic information while keeping tight control on what is deemed “political”.<sup>331</sup> Kamarck observes that “... governments such as the Republic of China can control the access of their citizens to the Internet by controlling Internet service providers and by monitoring the relatively small number of users. It is possible, but costly, to route around such restrictions, and control does not have to be complete to be effective for political purposes. Closed systems are more costly.”<sup>332</sup> While there is no single accepted formula for successful information management today, it is certain that the use of ICTs and the internet is a necessary part of modernizing any administrative or bureaucratic institution.

#### 5.4.1 The Soviet Legacy

From a more historical perspective, post-communist countries from the Caucasus to the Balkans have a tradition (or system) of technological national

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<sup>331</sup> Frederick S. Tipson and Claudia Frittelli, *Global Digital Opportunities: National Strategies of “ICT for Development”* (Washington DC: Markle Foundation, December 2003), 9.

<sup>332</sup> Elaine Ciulla Kamarck, Joseph S. Nye, and *Visions of Governance in the 21st Century, Governance.com: Democracy in the Information Age*, (Washington, DC: Brookings Institution Press, 2002), 175-6.

innovation that runs from a relatively coherent source for the last fifty years – the USSR prior to 1990. The common factors that make this analysis interesting lie in the Soviet legacy that is borne to this day in the form of national physical infrastructures (transportation, energy, and telecommunications), the remnants of inherited innovation systems, mentalities of ‘evolved’ nomenklatura, and strong bases of education/high literacy levels. As a result, these countries tend not to fall squarely on either end of the famed ‘digital divide’, and accordingly the effects of new technologies within them may be in the form of conclusions that may be less than obvious.

The technological legacy inherited by many transition economies from the communist period is a peculiarly insidious one insofar as the spirit of innovation was concerned. “The old system was always very bad at innovation, but actually managed to get worse in its final decades.”<sup>333</sup> Manuel Castells in fact sees the collapse of communism as related to difficulties of the statist mode of production in making the transition to the informational mode of development. While the history of the last two hundred years is full of the exploits of brilliant, individual innovators, innovation is a fundamentally integrative activity – by contrast with science – which progresses on the basis of ever higher degrees of specialization. One of the reasons why innovation has to be integrative is that it is by definition goal-oriented; there is no such thing as technology for its own sake. The fact that this is true, and that it affects the overall supply and demand capacity of nations to adopt technology in government, is confirmed by phenomena of ‘brain drain’ in

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<sup>333</sup> David A. Dyker, *The Technology of Transition: Science and Technology Policies for Transition Countries* (Budapest: Central European University Press, 1997), 6.

many of the newly independent republics. People leave when they see no opportunity to achieve their goals; such changes “...reflect an incomplete and often distorted process of institutional transition, against which exists a background of a highly unfavorable macroeconomic framework (deflation and high interest rates).”<sup>334</sup>

#### 5.4.2 Lack of a Unified Theory

Harkening back to the review of literature in Chapter 2, the following observation by Castells puts ICTs in a definitive light: “By relatively leveling the ground of symbolic manipulation, and by broadening the sources of communication, the Internet does contribute to democratization.”<sup>335</sup> Across the post-Soviet world, however, no single blueprint has emerged to explain a direct, consistent relationship between ICT penetration and democratic governance, and the conventional wisdoms of the World Summit on the Information Society (WSIS) fall flat. The main exceptions to the rule are cited frequently, Singapore being the most popular, having embraced technological modernization as a development tool while at the same time maintaining a very sophisticated authoritarian system.<sup>336</sup> China, too, is a unique case; it actually employs a force of internet police, thought to number about 40,000, who operate filters that block access to sensitive sites dealing with issues like Taiwan, human rights, Tibet, and the banned Falun Gong

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<sup>334</sup> Ibid., p. 51.

<sup>335</sup> Manuel Castells, *The Internet Galaxy: Reflections on the Internet, Business, and Society* (Oxford, New York: Oxford University Press, 2001), 292.

<sup>336</sup> Ibid.

meditation group.<sup>337</sup> Software filters crawl through the emails of China's estimated 70-80 million internet users, picking up suspicious keywords, and at least 60 laws have been passed aimed at controlling content online.<sup>338</sup> Thus, the variety of 'exceptions to the rule' in this regard ensures that the path of deterministic theory is not an uncomplicated one. This connects well back to the techno-nationalist literature in which theorists view technologies as tools through which power can be wielded.

#### 5.4.3 ICTs and Effectiveness of Government

By looking at the sheer number of new endeavors in the area of ICTs, and particularly at digital government work in various post-communist countries, it seems that ICTs are playing a significant role in the transformation of the face of government. But how this translates to deeper issues related to political development, bureaucratic transformation, transparency and service delivery is still a question. My hypothesis that the impact of ICT on institutions is affected by poor capacity is generally supported by the fact that many notoriously capacity-poor post-Communist states continues to score rather badly on governance indexes and ratings like the World Bank 'government effectiveness' measure created by Kaufmann and Kraay. This measure, while admittedly prone to certain problems by virtue of the data aggregation methods that underlie it, is still an important assessment of the capacity of government to formulate and implement policies; its

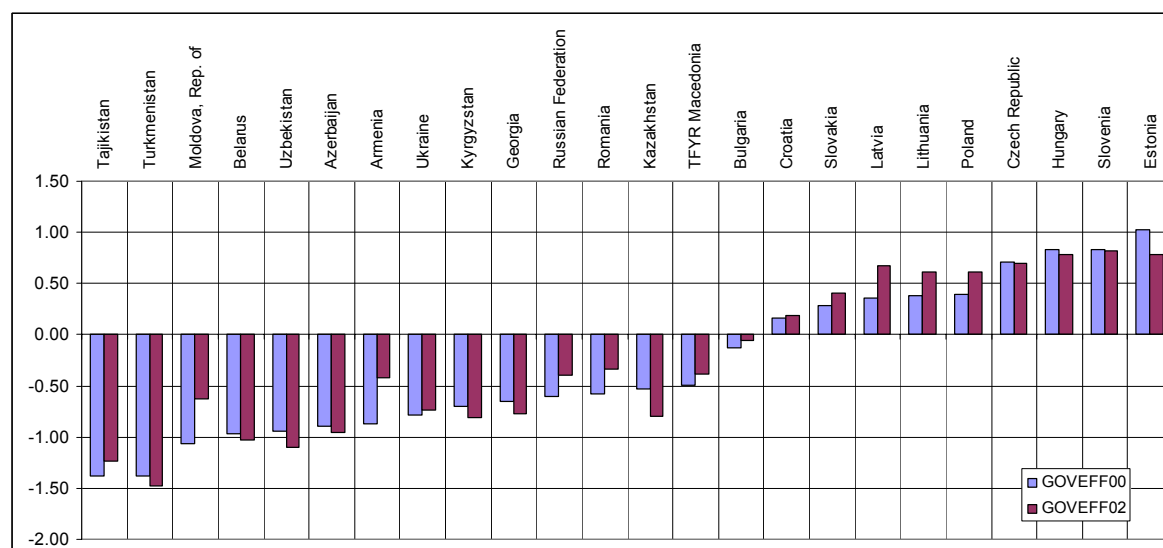
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<sup>337</sup> Hamish McDonald, "China Shut Down 8600 Internet Cafes in Three Months", *The Age*, May 7, 2004. (accessed March 10, 2005); available from <http://theage.com.au/articles/2004/05/07/1083881475636.html?oneclick=true>.

<sup>338</sup> Alfred Hermida, "Behind China's Internet Red Firewall", *BBC*, September 3, 2002 (accessed March 11, 2005); available from <http://news.bbc.co.uk/1/hi/technology/2234154.stm>.

scale runs from -2.5 to +2.5, with the positive end of the scale reflecting higher government effectiveness. From 2000 to 2002, a time frame during which the number of surveys underlying the methodology of the index was the most stable since its beginnings in 1996, it is interesting to note what happens in most countries. Of the nearly 46% that got worse in terms of government effectiveness, 64% of those are countries in the Caucasus and Central Asia. Of those in which government effectiveness shows a better score (including Armenia, in fact), 54% of those countries are located in the Balkans/Baltic or European region. (See Figure 5-9)

**Figure 5-9: WB Government Effectiveness Measure in Post-Communist bloc**

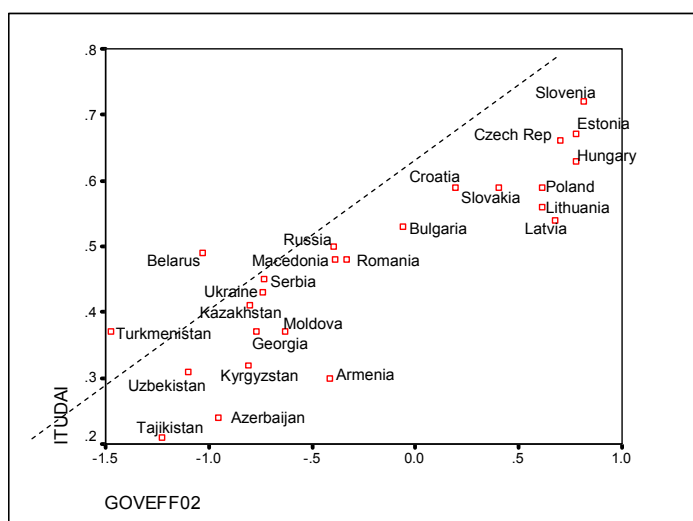


Source: World Bank data accessed March 2005. Available from <http://www.worldbank.org/wbi/governance/govdata2002/index.html>.

That said however, there is also evidence that supports the simplistic and deterministic assertion that higher levels of ICT access in a country bring higher levels of government effectiveness. The ITU Digital Access Index introduced in Chapter 4 (for quantitative analysis) is comprised of eight variables (covering five areas) to provide an overall country score, based on availability of infrastructure,

affordability of access, educational level, quality of ICT services, and Internet usage. The statistical correlation between this DAI index and the abovementioned World Bank government effectiveness measure is .869, at a 99% confidence interval.<sup>339</sup> However, we know from the detailed quantitative analysis in Chapter 4 that high correlations and high  $R^2$  values do not necessarily signal model sufficiency and robustness. Looking at Figure 5-10 below, an important relationship emerges despite the small sample size: a clustering of data points illustrates the upward trend between higher levels of ICT access, and more effective governance.

**Figure 5-10: Scatter-plot of ITU Digital Access Index and Government Effectiveness**



Source: Author's analysis.

This would signal that a relationship exists therein. Nevertheless, this does not bypass the importance of capacity; it is quite clear even for the untrained eye that those states at the lower end of both scales have serious problems of governance.

<sup>339</sup> The DAI has a relatively normal distribution, while the World Bank government effectiveness indicator does not.

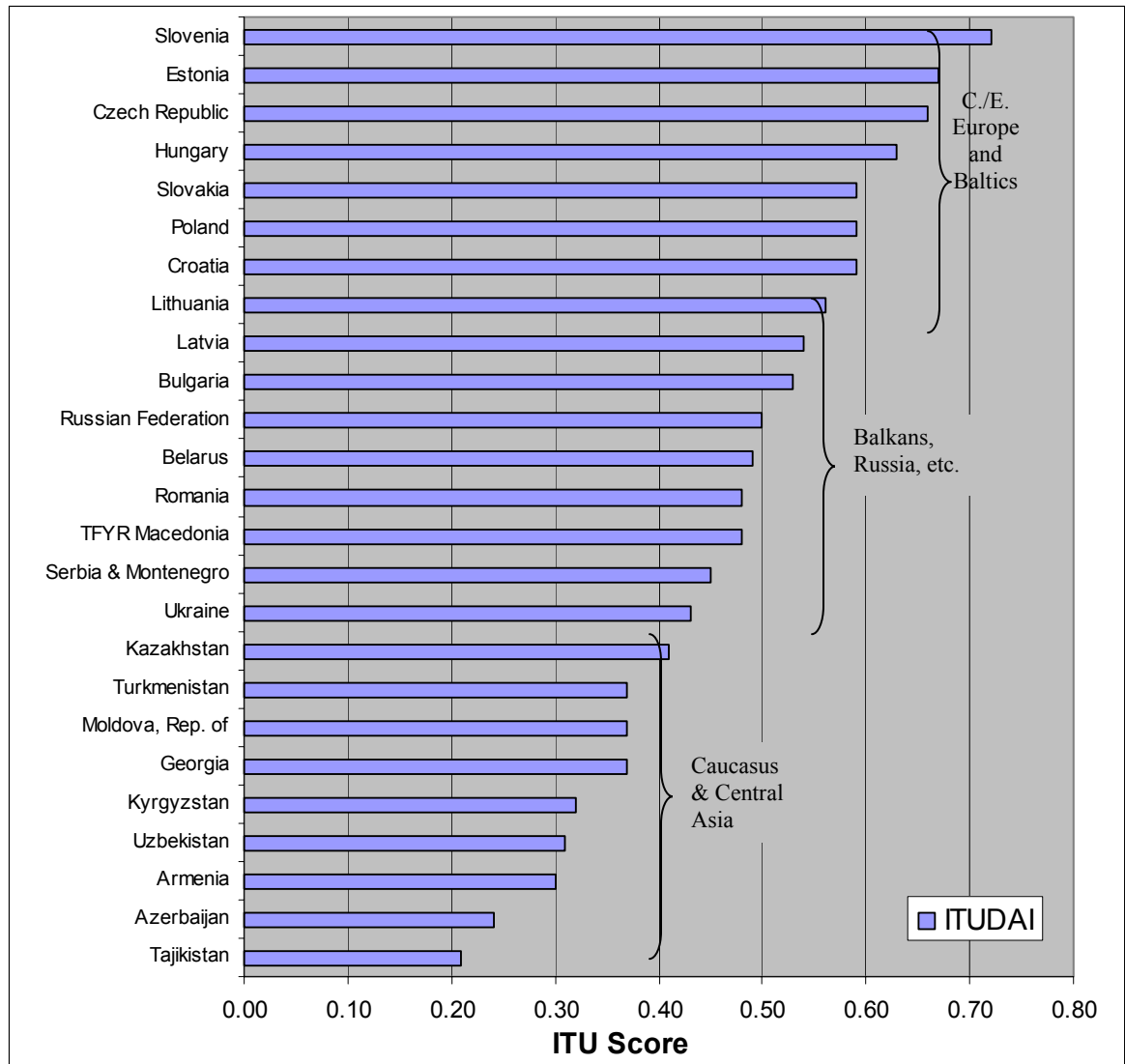
Chapter 6 will provide contrast to the generalizations that aggregated data tends to support.

According to Castells, an ICT like the Internet has inspired networked social movements, alternative media hubs, online activism, community access networks and e-government initiatives; these are all important consequences for politics. The DAI ranking is thus a good proxy measure for the prevalence (and perhaps success) of such various Internet-inspired phenomena in these countries. Maintaining the same eastward movement from Europe toward the Caucasus/Central Asia as shown above in the Freedom House figures, there is a clear deterioration in Figure 5-11 of levels of digital access; this runs in parallel to the same movement of deteriorating freedoms (associated with political rights, etc.).

Yet another way of looking at ICTs from a regional comparative perspective is to take an approach that aggregates a number of variables like the World Bank's Knowledge Index. This is the simple average of the performance of a region or country in three main pillars: education, innovation and ICTs. Like the ITU DAI, it implicitly incorporates elements of societal capacity that reside in the areas of education and innovation. Each pillar score is derived by averaging the normalized scores of each defining variables for which data is available. The ICT variable is comprised of three measures, including telephones per 1,000 people, computers per 1,000, and Internet users per 10,000 (defined by the number of computers with active Internet Protocol (IP) addresses connected to the Internet). The innovation variable is constructed on three measures, including researchers in R&D, patent applications granted by the US Patent and Trademark Office, and

scientific and technical journal articles. Finally, the education variable is based on measures of adult literacy, and secondary and tertiary enrollment rates.

**Figure 5-11: ITU Digital Access Ranking (2003)**



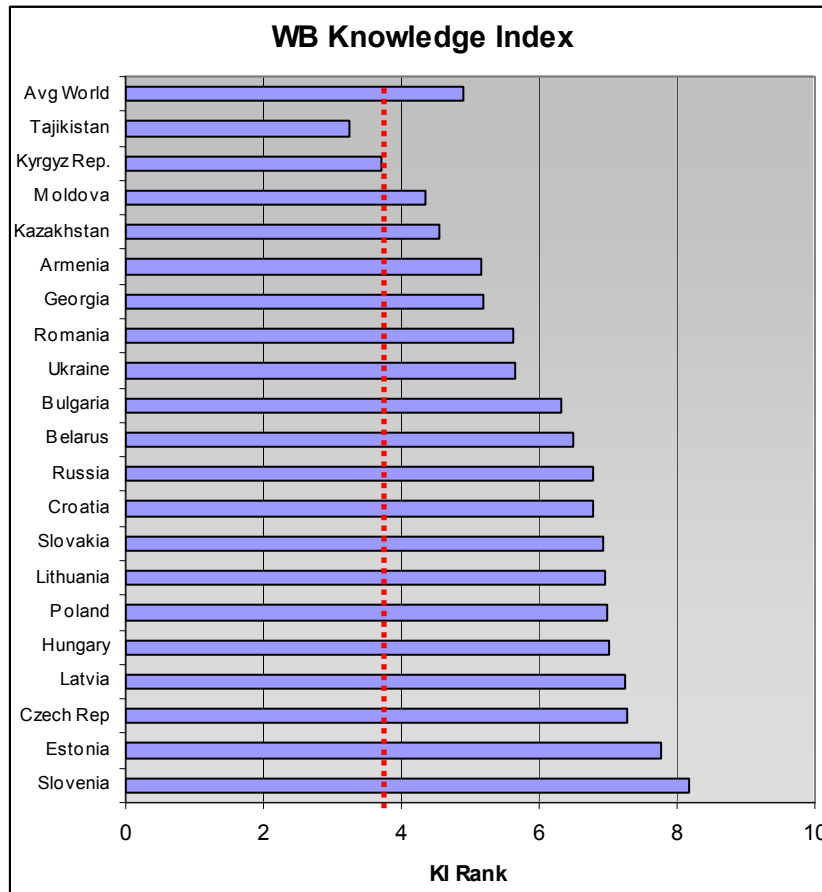
Source: ITU Press Release accessed March 2005. Available from [http://www.itu.int/newsarchive/press\\_releases/2003/30.html](http://www.itu.int/newsarchive/press_releases/2003/30.html).

Like the earlier figures, Figure 5-12 shows again the Baltic and European states to be leaders, followed by the Balkans, the Caucasus and Central Asia. Although there was no data gathered on Azerbaijan, it is interesting to note that both Armenia



and Georgia are just above the world average (which includes all of these countries).

**Figure 5-12: World Bank Knowledge Index**



Source: World Bank data accessed March 2005.

Available from <http://info.worldbank.org/etools/kam2005/index.htm>.

#### 5.4.4 Posturing at The World Summit on the Information Society (WSIS)

The transition experience is one that has been underlined by particular patterns of technological activity, and a combination of science-push and central planning. Dyker puts it well when he states that technology activity and “... the way it responds... [is] constrained by the attitudes, the ‘mind-set’ of the individuals

and groups involved.”<sup>340</sup> This was true through the Soviet period, and remains relevant through present-day. However, what we find today in abundance – is a certain level of posturing, albeit unintentional, with regard to the way technology ought to be used and absorbed. As it is a hard task to measure how ICTs are making a positive contribution to the ‘demos’, a battle is currently being fought in the marketplace of ideas and perceptions. Absorptive capacity and a state of political ‘readiness’ or maturity in a given country is being conveyed in many international fora, perhaps in hopes of issuing self-fulfilling prophecies. The UNDP over the years has in fact elaborated on the meaning of this capacity by stating that it exists on three levels: individual, institutional and societal.<sup>341</sup>

The best example of this was evident at the first phase of the UN World Summit on the Information Society (WSIS) in December 2003 in Geneva; world leaders had a showcase opportunity to present their positions on partaking in the famed ‘information revolution’. Leaders of post-communist countries like Armenia, Azerbaijan, and Georgia each took their turn at the podium, and iterated their respective commitments in jargon-laden oratory to the principles and values championed by WSIS. As part of the Summit’s design, strong emphasis was placed on its explicitly trip-partite nature; this was an opportunity for governments, the private sector, and civil society to discuss common concerns about information society objectives, and their shared commitment to the use of technology for development. And yet, unsurprisingly, the true depth and complexity of the problems that lie beneath the surfaces of these nation states was not even scratched.

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<sup>340</sup> Dyker, *The Technology of Transition: Science and Technology Policies for Transition Countries*, 7.

<sup>341</sup> Stephen Browne, *Rethinking Capacity Development* (New York: UNDP, 2002), 2.

Quotes like the following, coming from a leader like Robert Kocharyan (President of the Republic of Armenia) who emerged victorious from one of the most corrupt elections of 2003, are a case in point:

In our part of world, soviet thinking continues to hamper smooth transition to an engaged society. Technologies help us change old assumptions. We are here as leaders who wish to use the potential to strengthen democratic societies, transparent and accountable government... Rapid development often leaves behind parts of society. IT revolution has not been an exception. We are here to jointly ensure connectivity and computerization for all. That responsibility is not government's alone. NGOs, academia, media, and donor organizations shall employ applications based on new technologies as a tool for development.

Even as the struggles of effective participation plagued the civil society sector, government leaders from all over - like Kocharyan - paid lip service to 'technology for development' and the importance of non-state actors in the international system. The result of these countless, repetitive speeches was a familiar, inscrutable sense of ineffectuality, which resonates well beyond just the context of the developing world. In some ways, the challenges of broad-based participation by civil society in intergovernmental fora mirror some of the hardest challenges of the experience of post-communist societies; dis-intermediating well-established power hierarchies and finding ways to provide systemically induced incentives for the legitimization of bottom-up movements.

Juxtaposing the public diplomacy aspect of a state's development with 'its-on-the-ground reality' is a good way of setting the stage for case study analysis; the survey results discussed in Chapter 7 will further clarify this distinction. It identifies the gap between what is and what should be, as well as the specific nature of the challenges that emerge when processes like 'democratization' are in question. The process of systemic transition and the changing scope of governance

discernible in the post-communist world provide an excellent opportunity for the student of international relations and technology policy to examine key independent variables affecting the process of democratization.

*“Over the past two centuries, the formal institutions of the nation-state have been transplanted throughout the world, among peoples having quite different pre-existing systems of political organization and conceptions concerning the sources and functions of authority, or in some cases no power structure or tradition of allegiance wider than the tribe, local community or family.”<sup>342</sup>*

## 5.5 Donor Activities

The design of a new post-Communist democracy is unlikely to be demand-driven, since institutions that took generations to evolve in Western Europe cannot be produced overnight in the wreckage of a Communist state. The challenges are immediately visible on the supply side of politics.<sup>343</sup> Over the years, many institutions have played a significant role in aiding post-communist states toward fulfilling their commitments to democracy. An analysis of this region would be incomplete if the activities of such donors were not included, given their catalytic influences. A survey undertaken by the OECD Development Assistance Committee in December 2003 found that the vast majority of donors recognize the potential of ICT as a catalyst for socio-economic development, but not all of them have reached the same stage in using ICT to help meet development objectives.<sup>344</sup> Often ICT work becomes a component of broader ‘governance’ or ‘public

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<sup>342</sup> Marshall Wolfe, *Elusive Development* (Geneva, Switzerland: UNRISD, 1996), 63.

<sup>343</sup> Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*, 6.

<sup>344</sup> “Donor ICT Strategies Matrix”, OECD, December 2003 (accessed February 20, 2005); available from <http://www1.oecd.org/dac/ictcd/docs/matrixdocs/FullMatrix.pdf>.

administration reform' projects; unfortunately, as a result of this subsidiary status, donor work tends to fragment rather than unify the communication infrastructure of institutions 'on the ground'. The sustainability of projects from an ICT standpoint is heavily problematic for most recipient countries; one example of this is the fact that the licenses for operating systems and software that are given along with other donor project components tend to remain un-renewed, particularly if the project has a lifespan of less than one year. This reinforces dependency on pirated software as well as maintains the status quo in terms of violations of international intellectual property rights.

The larger donors, including the International Monetary Fund (IMF) and the World Bank, tend to focus on economic assistance; the European Bank for Reconstruction and Development (EBRD) has been a pseudo-'Marshall Plan' to help post-Communist countries and works in nearly all the post-communist bloc, and the Organization for Security and Cooperation in Europe (OSCE) works to repair conflict between former Cold War adversaries. USAID plays a major role, while the Canadian International Development Agency (CIDA), the Swiss Development Corporation (SDC)<sup>345</sup>, the Department for International Development in the UK (DFID)<sup>346</sup>, and others national development agencies are also very active (particularly in Armenia).

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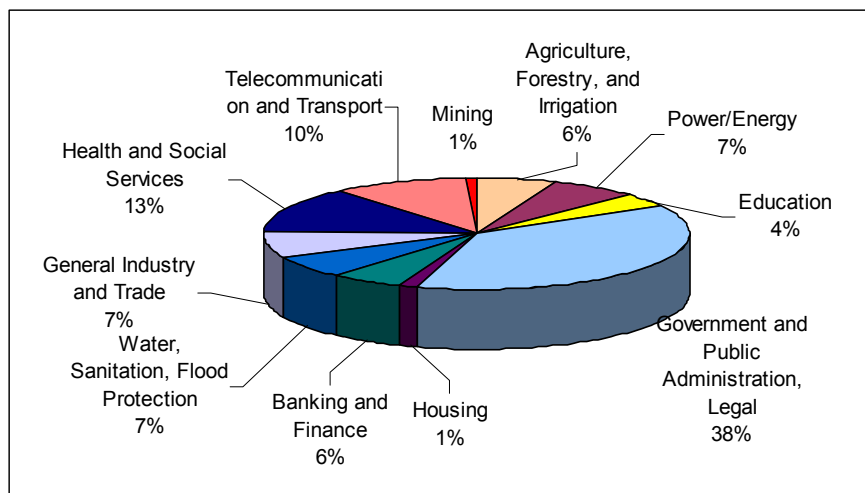
<sup>345</sup> The SDC had \$130.8 million francs and \$167.3 million francs allocated for aid in 2002 and 2003 respectively, according to their website.

<sup>346</sup> DFID's actual resources for reducing poverty were £2,829 million (2002-03 £2,754 million). Resources used for conflict reduction were £45 million (2002-03 £35 million). DFID is spending approximately £18 million on procurement projects in post-communist countries along, according to their website. (accessed February 2005); available from <http://www.dfid.gov.uk/>.

### 5.5.1 The World Bank (WB)

A tracking of World Bank activities in particular is very interesting – mainly because of the trends in funding that are discernible within (See Figure 5-13). In areas related to the sectors of information and communication and law, and justice and public administration (with major themes of public sector governance and rule of law) in the post-communist world, the World Bank has spent \$21.8 billion dollars in project money. Fifteen billion dollars of this was spent before 2000, \$5.4 billion (or 25%) of this was spent since January 2000, and about 6% of those projects do not have official approval dates.

**Figure 5-13: World Bank Project Allocations to Post-Communist Countries (post 1990)**

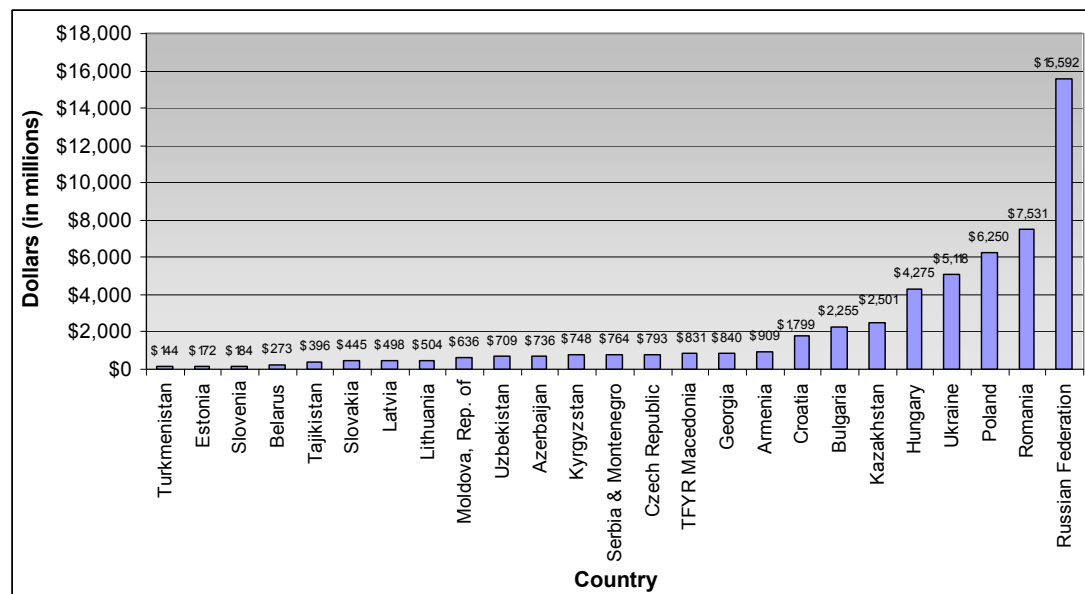


Source: World Bank Website accessed March 2005. Available from [www.worldbank.org](http://www.worldbank.org).

Nearly 40% of these projects are still active, while the remaining 60% are either closed (52%), dropped (2%), or still in proposal phase (6%). A significant number of them appear to be in the area of governmental and public administration reform, followed by health and social services and telecommunications/transport.

If one looks at *all* sectors and themes of World Bank involvement on a country by country basis, the breakout of funding runs as follows in Figures 5-14 and 5-15. These include both investments and adjustments. On a relative scale, far less has gone from the World Bank into the states of the Caucasus or Central Asia (with the exception of Kazakhstan), as compared to the chief Central/Eastern European and Balkan powers like Poland, Hungary, Romania, Bulgaria, Ukraine and – of course – Russia. Of course, it is logical that such divergence would occur given the tremendously large range of territories and population sizes across the post-Communist world.

**Figure 5-14: Total World Bank Spending Per Country Since 1990**



Source: World Bank Website accessed March 2005. Available from [www.worldbank.org](http://www.worldbank.org).

It is important to bear in mind that the World Bank, like any other, is going to look to place its investments in areas in which the returns will justify them.

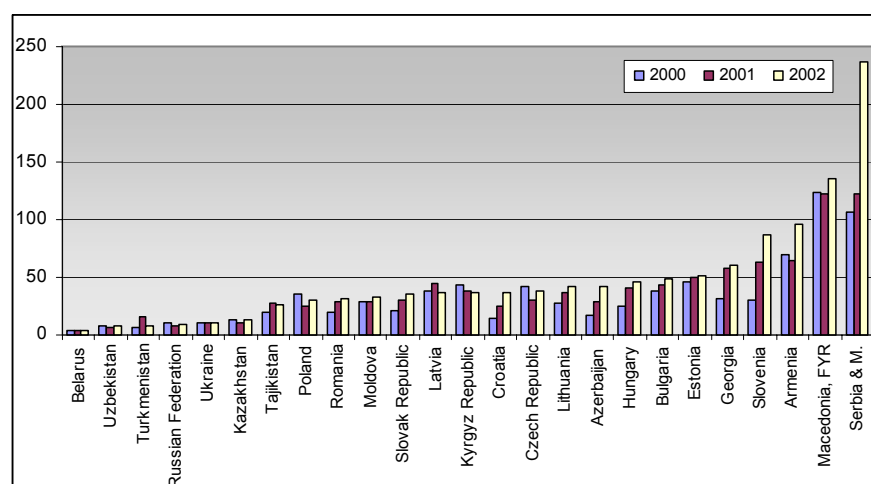
**Figure 5-15: World Bank Spending Breakdown per Post-Communist Country**

World Bank Spending (in Millions)						
Countries	Prior to 2000	After 2000	No Date Available	Total	Plus Grants	TOTAL
Armenia	\$535.35	\$325.36	\$40.00	\$900.71	\$8.12	\$908.83
Azerbaijan	\$369.20	\$276.52	\$74.96	\$720.68	\$15.00	\$735.68
Belarus	\$170.20	\$22.60	\$71.84	\$264.64	\$7.90	\$272.54
Bulgaria	\$1,269.06	\$641.44	\$311.76	\$2,222.26	\$33.20	\$2,255.46
Croatia	\$762.70	\$482.97	\$534.98	\$1,780.65	\$18.37	\$1,799.02
Czech Republic	\$776.00	\$0.00	\$0.00	\$776.00	\$17.10	\$793.10
Estonia	\$125.70	\$25.00	\$21.00	\$171.70	\$0.00	\$171.70
Georgia	\$509.59	\$263.21	\$55.00	\$827.80	\$12.48	\$840.28
Hungary	\$4,247.60	\$0.00	\$9.00	\$4,256.60	\$18.51	\$4,275.11
Kazakhstan	\$1,819.10	\$139.89	\$481.00	\$2,439.99	\$61.47	\$2,501.46
Kyrgyzstan	\$499.98	\$218.30	\$30.00	\$748.28	\$0.00	\$748.28
Latvia	\$314.95	\$101.03	\$77.00	\$492.98	\$5.10	\$498.08
Lithuania	\$314.54	\$176.35	\$0.00	\$490.89	\$13.40	\$504.29
TFYR Macedonia	\$523.30	\$186.18	\$115.53	\$825.01	\$5.75	\$830.76
Moldova, Rep. of	\$448.80	\$143.21	\$20.00	\$612.01	\$24.29	\$636.30
Poland	\$4,972.00	\$838.74	\$375.00	\$6,185.74	\$63.78	\$6,249.52
Romania	\$5,240.30	\$1,683.23	\$497.00	\$7,420.53	\$110.72	\$7,531.25
Russian Federation	\$11,751.50	\$1,614.60	\$1,725.00	\$15,091.10	\$501.21	\$15,592.31
Serbia & Montenegro	\$0.00	\$585.01	\$140.00	\$725.01	\$39.02	\$764.03
Slovakia	\$135.00	\$288.06	\$17.00	\$440.06	\$5.05	\$445.11
Slovenia	\$168.20	\$9.50	\$0.00	\$177.70	\$6.20	\$183.90
Tajikistan	\$182.36	\$150.57	\$58.00	\$390.93	\$5.50	\$396.43
Turkmenistan	\$89.50	\$0.00	\$54.07	\$143.57	\$0.00	\$143.57
Ukraine	\$2,821.80	\$983.08	\$1,151.00	\$4,955.88	\$162.10	\$5,117.98
Uzbekistan	\$434.00	\$205.14	\$70.00	\$709.14	\$0.00	\$709.14
<b>TOTALS</b>	<b>\$38,480.73</b>	<b>\$9,359.99</b>	<b>\$5,929.14</b>	<b>\$53,769.86</b>	<b>\$1,134.27</b>	<b>\$54,904.13</b>

Source: World Bank Website accessed March 2005. Available from [www.worldbank.org](http://www.worldbank.org).

On the other hand, World Bank aid per capita as depicted in Figure 5-16 shows some different patterns; the Caucasus makes out relatively well, outspent significantly only by the former conflict areas of Serbia and Macedonia.

**Figure 5-16: World Bank Aid Per Capita Spending (2002)**

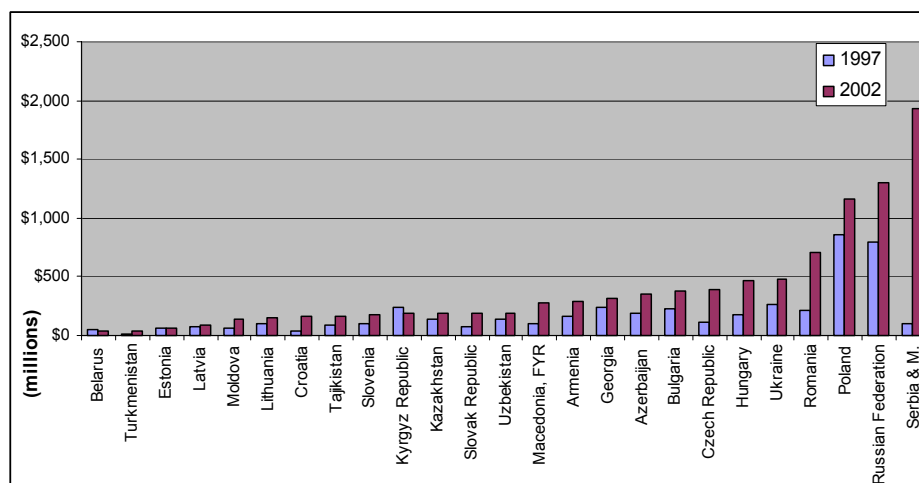


Source: World Bank Website accessed March 2005. Available from [www.worldbank.org](http://www.worldbank.org).



The Central Asian states receive far less aid per capita than some of their Eastern European and Baltic counterparts, and increases are not in evidence. Figure 5-17 puts the picture in broader focus, looking at net aid flows to this region by country. Total World Bank aid spending moved from \$4.6 billion in 1997 to \$9.8 billion in 2002.

**Figure 5-17: World Bank Net Aid Spending**



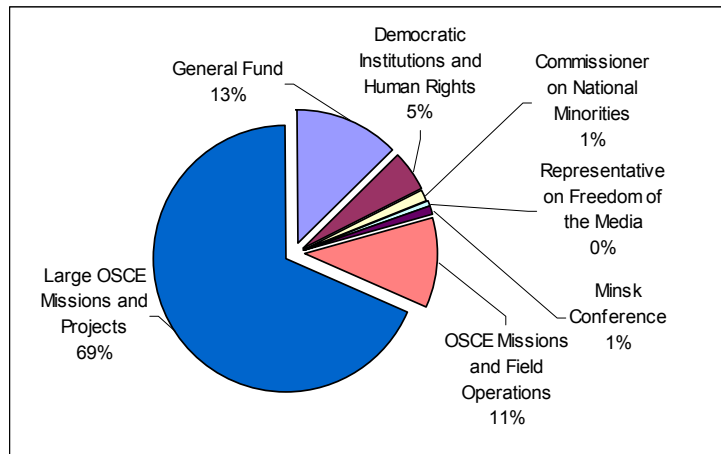
Source: World Bank Website accessed March 2005. Available from [www.worldbank.org](http://www.worldbank.org).

### 5.5.2 The Organization for Security and Cooperation in Europe (OSCE)

The OSCE has allocated nearly \$168 million dollars (126.8 million euros) to ‘large OSCE missions and projects’ in 2003, with another \$26.7 million dollar (20 million euros) going to ‘missions and field operations’, as well as \$32 million dollars (24 million euros) to a ‘general fund’. (See Figure 5-18) Since OSCE’s major mission activities are focused in Bosnia, Croatia, Georgia, Kosovo, Moldova and Serbia & Montenegro, and it has offices in Armenia, Azerbaijan, and the Ukraine, it can be assumed that a great deal of the money mentioned above is going to these states specifically. The OSCE also has a number of centers throughout

Central Asia and Albania, Macedonia, and Ukraine. OSCE member states contribute to the organization's budget, and accordingly \$4.9 million of this portion of money comes from the 25 countries included in this analysis of the post-communist world.

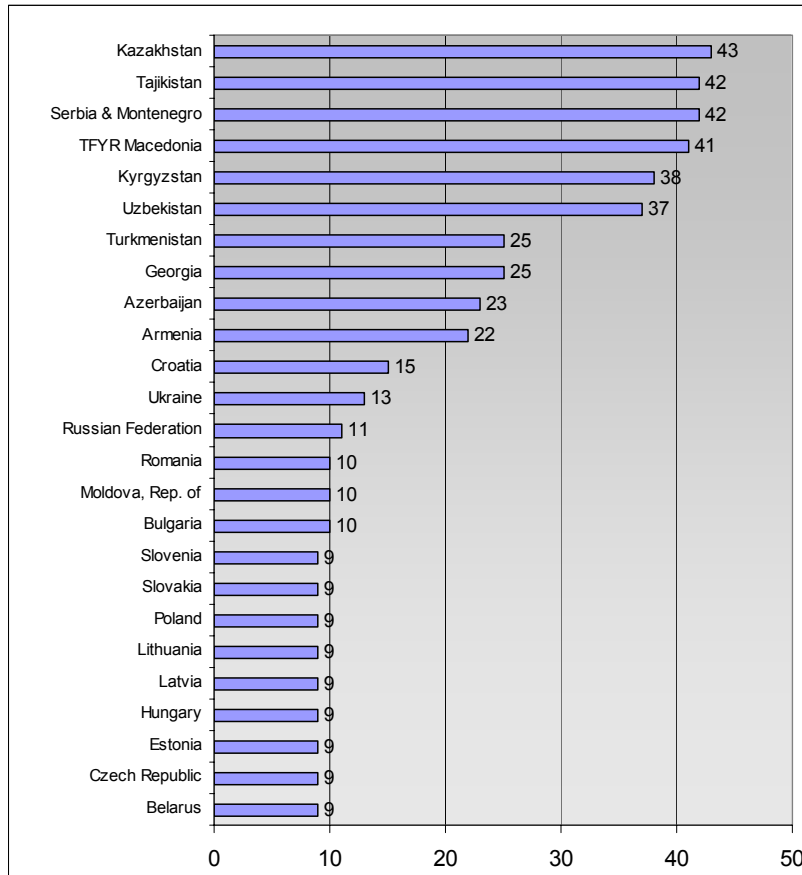
**Figure 5-18: OSCE Funding Distribution**



Source: OSCE website accessed March 2005. Available from [www.osce.org](http://www.osce.org).

The number of OSCE projects by country can be seen in Figure 5-19; in contrast to the World Bank, their focus is more on the problematic states of Central Asia and the Caucasus than on Eastern Europe, Balkan or Baltic counterparts.

**Figure 5-19: Number of OSCE Funded Projects by Country**

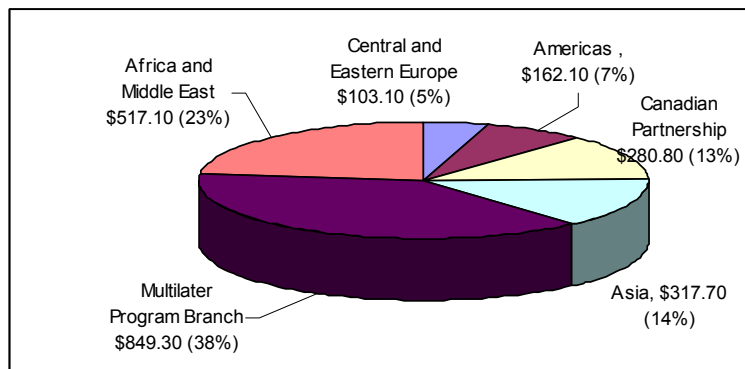


Source: OSCE website accessed March 2005. Available from [www.osce.org](http://www.osce.org).

### 5.5.3 The Canadian International Development Agency (CIDA)

Canada works with a wide variety of partners to meet its objective of helping people in developing countries to achieve self-sustainable economic and social development in accordance with their needs and environment, through its \$2.87-billion aid program, which is managed by the Canadian International Development Agency, or CIDA. \$103 million of this goes to the post-Communist bloc in Central and Eastern Europe. (See Figure 5-20)

**Figure 5-20: CIDA Regional Breakdown for Fund Allocation**



Source: Canadian International Development Agency website accessed March 2005. Available from [www.acdi-cida.gc.ca/index-e.htm](http://www.acdi-cida.gc.ca/index-e.htm).

#### 5.5.4 The United States Agency for International Development (USAID)

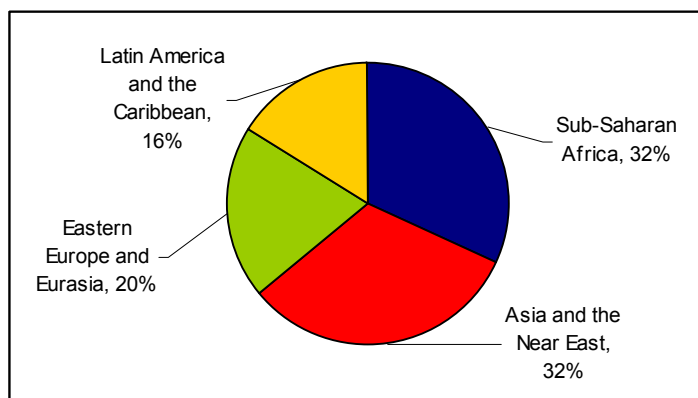
The United States in particular has extended considerable resources since 1990, including more than \$2 billion for Central and Eastern Europe and close to \$10 billion for the former Soviet Union.<sup>347</sup> USAID appears to have significant amounts of explicitly ICT-oriented work; 95% of all USAID Missions reported one or more ICT activities.<sup>348</sup> Of the 351 ICT activities reported by Missions, 68 (20%) of them were undertaken in Eastern Europe and Eurasia. (See USAID Budget Allocations by Region, Figure 5-21) USAID's primary investments in ICT are made directly through its worldwide network of field missions. These investments are typically part and parcel of broader programmatic investments in such areas as health, democracy, agriculture, economic growth, and the environment. USAID in Washington plays a supporting role, offering technical advice and promoting ICT

<sup>347</sup> US Government Assistance to and Cooperative Activities with the New Independent States of the Former Soviet Union: FY 1995 Annual Report, (Washington, DC: US Department of State, April 1996) and SEED Act Implementation Report: Fiscal Year 1995 (Washington, DC: US Department of State, February 1996).

<sup>348</sup> *USAID Mission Activities in Information and Communication Technology (ICT): 2003 ICT Inventory Results*, USAID (accessed March 1, 2005); available from [http://www.usaid.gov/our\\_work/economic\\_and\\_trade/info\\_technology/2003ictinventoryresults.pdf](http://www.usaid.gov/our_work/economic_and_trade/info_technology/2003ictinventoryresults.pdf).

implementations in field programs. In Eastern Europe, USAID has been known to support public access tele-centers combined with specialized services to support growth of small and medium-sized enterprises; in Armenia, they were instrumental in the introduction of smart cards issued by the Central Bank.<sup>349</sup>

**Figure 5-21: USAID Budget Allocations by Region**



Source: USAID Budget Statements accessed March 2005. Available from [www.usaid.org](http://www.usaid.org).

The USAID approach to “ICT for Development” includes the creation of collaboration with partners, the promotion of pro-competitive ICT policy, legal, and regulatory reforms, the expansion of ICT access (particularly for under-served populations), the development of individual and institutional ICT capacity, and inspiration for innovative ICT applications. Total funding in this area was in the range of \$200 million in 2003-4, about 40% of which was used for ICT sector work, and 60% for using ICT as a tool. (See Figure 5-22) Given the percentage breakdowns, Eastern Europe and Eurasia are receiving approximately \$40 million.

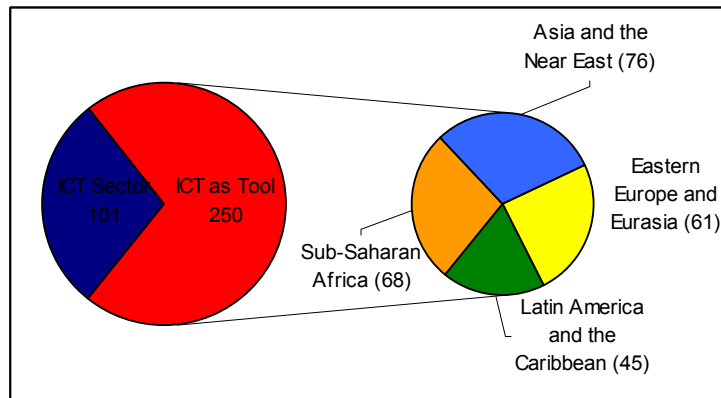
Measuring the impact of these activities is difficult, particularly on a per country basis:

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<sup>349</sup> *Information and Communication Technology for Development: USAID's Worldwide Program*, USAID Bureau for Economic Growth, Agriculture and Trade (Washington DC: USAID, 2004), 24.

USAID is an organization of limited transparency. Its annual reports to the US Congress on assistance to Eastern Europe and to the former Soviet Union contain some information about categories of assistance and descriptions of programs. They do not, however, include complete lists of grantees and of the dollar amounts of specific grants and contracts.<sup>350</sup>

**Figure 5-22: Breakdown of USAID Activities using “ICT as a Tool”**



Source: USAID Budget Statements accessed March 2005. Available from [www.usaid.org](http://www.usaid.org); Note: (in number of projects).

According to Carothers, both foreign external analysts and local participants report a fairly consistent litany of operational problems with US donor work: too much of the aid goes to American organizations rather than to people in the target countries; the aid is often too concentrated in large, top-down projects rather than smaller, grassroots efforts; and it is too often based on predetermined US-oriented models rather than on local realities.<sup>351</sup>

As stated on the USAID website, “The U.S. Government has always assumed that assistance to the 27 country E&E region would be temporary, lasting only long enough to ensure a sustainable transition to market-oriented democracies.”<sup>352</sup> While this goal has been met in selected countries, most countries

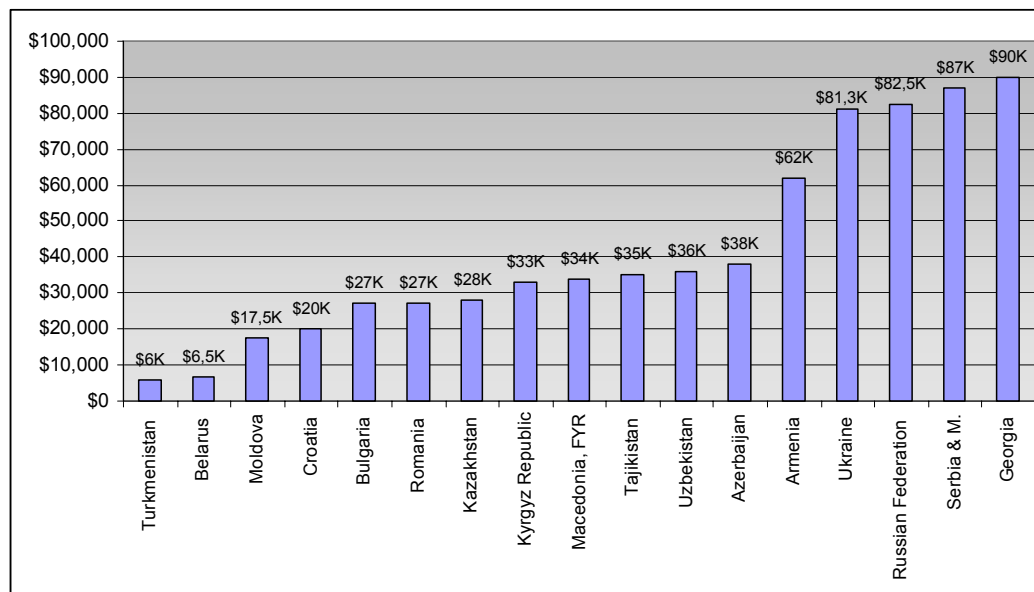
<sup>350</sup> Thomas Carothers, *Aiding Post Communist Societies: A Better Way?* 2<sup>nd</sup> ed. (Washington DC: Carnegie Endowment for International Peace, September-October 1996).

<sup>351</sup> Ibid.

<sup>352</sup> “USAID Budget: “Europe and Eurasia: The Development Challenge” (accessed March 22, 2005); available from [http://www.usaid.gov/policy/budget/cbj2004/europe\\_eurasia/](http://www.usaid.gov/policy/budget/cbj2004/europe_eurasia/).

in the region have not fully achieved it, neither in democratic nor in socio-economic terms. The stream of donor money continues, however; and Figure 5-23 below shows the requested funds per country for 2005 for countries in which USAID has a presence.

**Figure 5-23: USAID Requested Funds per Country for 2005**



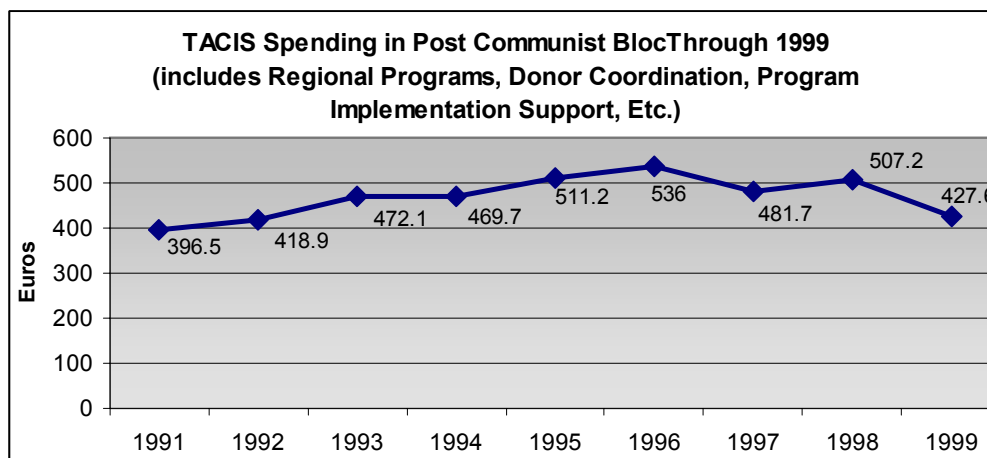
Source: USAID 2005 Annual Report accessed March 2005. Available from <http://www.usaid.gov/policy/budget/>.

### 5.5.5 The European Union and TACIS

The Council of Europe also plays a part in promoting democracy, refusing acceptance to non-democratic regimes from the old Communist bloc – while the European Union (EU) is an open membership organization that is a beacon of sorts to post-communist world. The EU offers hard currency markets for exports and financial aid to poorer members, as membership strengthens commitment to democracy. Created in 1991, the TACIS Program is the European Community's main instrument for cooperation with the countries of Eastern Europe, the Caucasus and Central Asia, i.e. Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz

Republic, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan. The program, consisting mainly of technical assistance, is currently based on Council regulation (EC, Euroatom) No. 99/2000 which sets out the objectives of promoting the transition to a market economy and reinforcing democracy and the rule of law in the partner countries.<sup>353</sup>

**Figure 5-24: TACIS Spending on Post-Communist Bloc Through 1999**



Source: EU TACIS program website accessed February 2005. Available from [http://europa.eu.int/comm/external\\_relations/ceeca/tacis/](http://europa.eu.int/comm/external_relations/ceeca/tacis/).

A total of \$5,674 million (4,226 million euros) was committed through the TACIS Program between 1991 and 1999 to these countries, and an additional \$4,213 million (3.138 million euros) in TACIS budget will be committed for the period 2000-2006.<sup>354</sup> (See Figure 5-24 for spending through 1999) Based on the average year to year growth rate of the TACIS aid numbers through 1999 of 1.4%, one can apply this growth rate each year from 2000 and estimate that approximately \$600 million is being spent by TACIS this year and next. On a country by country

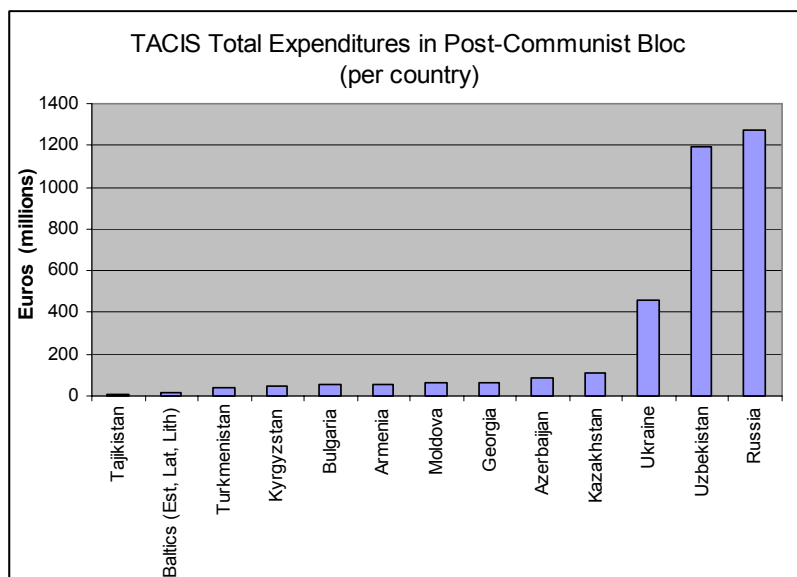
<sup>353</sup> "External Relations: Towards a New Concept and Regulation for the TACIS Programme," European Commission (Brussels) (accessed 2005); available from [http://europa.eu.int/comm/external\\_relations/consultations/webcov\\_tacis.htm](http://europa.eu.int/comm/external_relations/consultations/webcov_tacis.htm).

<sup>354</sup> "The EU's Relations with Eastern Europe & Central Asia," European Union (Brussels) (accessed 2005); available from [http://europa.eu.int/comm/external\\_relations/ceeca/](http://europa.eu.int/comm/external_relations/ceeca/).



basis, Figure 5-25 depicts these total expenditures over a six-year period through 2006.

**Figure 5-25: TACIS Total Expenditures in Post-Communist Bloc (as of 2000)**



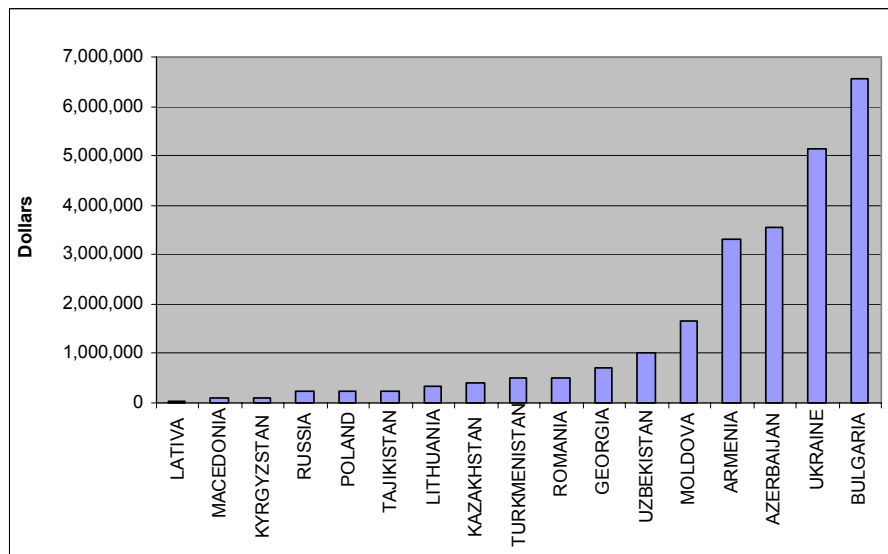
Source: EU TACIS program accessed February 2005. Available from [http://europa.eu.int/comm/external\\_relations/ceeca/tacis/](http://europa.eu.int/comm/external_relations/ceeca/tacis/).

### 5.5.6 The United Nations Development Program (UNDP)

UNDP does not have a particular regional or country focus, and operates in over 160 developing or transition states, with 135 country offices and other liaison offices. Data from the UNDP ICT for Development Yellow Pages indicates that since 2000, at least \$24.5 million dollars have been spent on the post-communist bloc, including figures that have been both allocated as well as those in the ‘pipeline’. (See Figure 5-25 for country by country breakout) According to the same OECD “Donor ICT Strategies” paper mentioned earlier, donors put ICT to the service of the achievement of their broader strategic objectives in a number of development sectors (health, education, e-Commerce, e-Government, etc.). The focus usually tends not to be on the technology *per se*, put rather on other objectives

such as achieving Millennium Development Goals (MDGs). Often they will partner with other agencies and organizations, as well as with ministries, civil society, the private sector, universities and research institutions in both developed and developing countries.<sup>355</sup>

**Figure 5-26: UNDP Budget Allocations (Planned and Tentative) 2000-present**



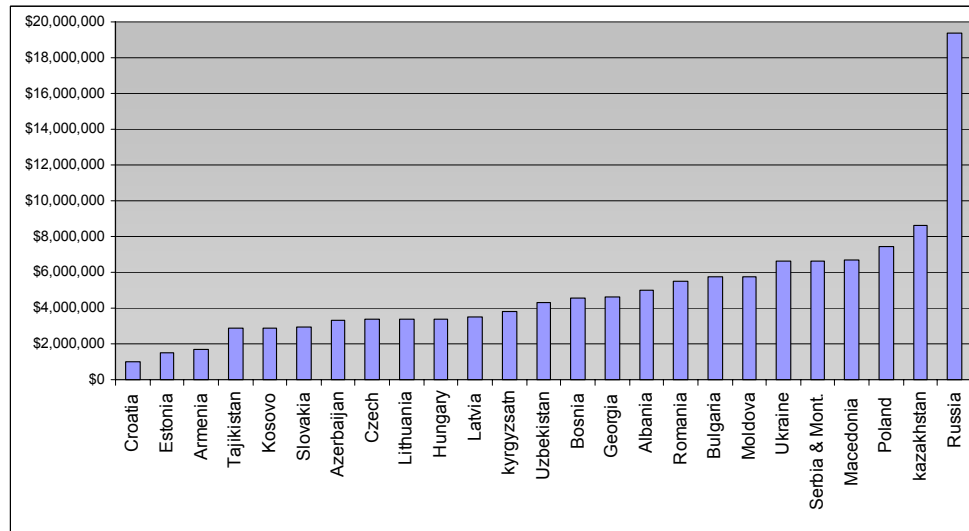
Source: UNDP accessed February 2005. Available from <http://www.sdn.undp.org/it4dev/yp/>.

### 5.5.7 Open Society Institute (OSI)

The Open Society Institute is actively involved in work related to the region; this occurs largely in the form of the ‘Central Eurasia Project’ (CEP), which is aimed at disseminating information about human rights and the social and economic health of the South Caucasus and Central Asia both within the region and internationally. Figure 5-27 shows the extent of funding allocation per country in 2003; it is obvious that Russia is largest recipient, followed by Kazakhstan, Poland, Macedonia, Serbia, and Balkan countries. Armenia is the third smallest recipient of aid from OSI.

<sup>355</sup> OECD Development Assistance Committee, *Donor ICT Strategies Matrix*.

**Figure 5-27: Open Society Funding Allocations by Country (Dollars)**

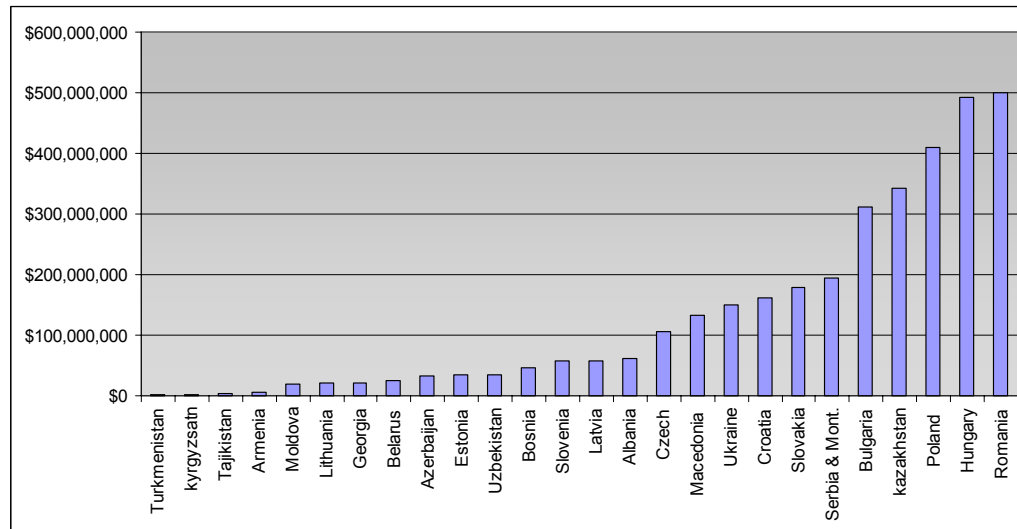


Source: Open Society 2003 Annual Report.

### 5.5.8 European Bank for Reconstruction and Development (EBRD)

The EBRD is owned by 60 countries and two intergovernmental institutions, and aims to foster the transition from centrally planned economies to market economies through the Commonwealth of Independent States.

**Figure 5-28: EBRD Funding Allocations by Country (Dollars)**



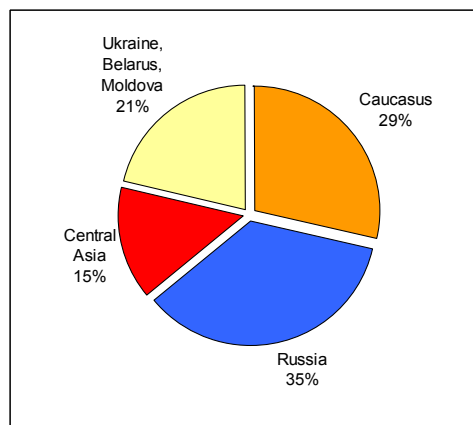
Source: EBRD 2004 Annual Report.

EBRD is basically one of the largest single investors in the region, with presence through a network of over 30 local offices. Figure 5-28 shows the breakout of investments by country in 2003.

#### 5.5.9 Eurasia Foundation (EF)

In its first decade of work, EF received nearly \$252 million in support of civil society, public administration and enterprise development programs in 12 Eurasian countries. Most of this support has come from the US government through USAID grants. For 2003, of the total \$28 million spent by EF in the post-communist region, 77% came from the US government.

**Figure 5-29: Eurasia Foundation Regional Funding Allocations**



Source: Eurasia Foundation 2004 Annual Report.

## 5.6 Conclusions

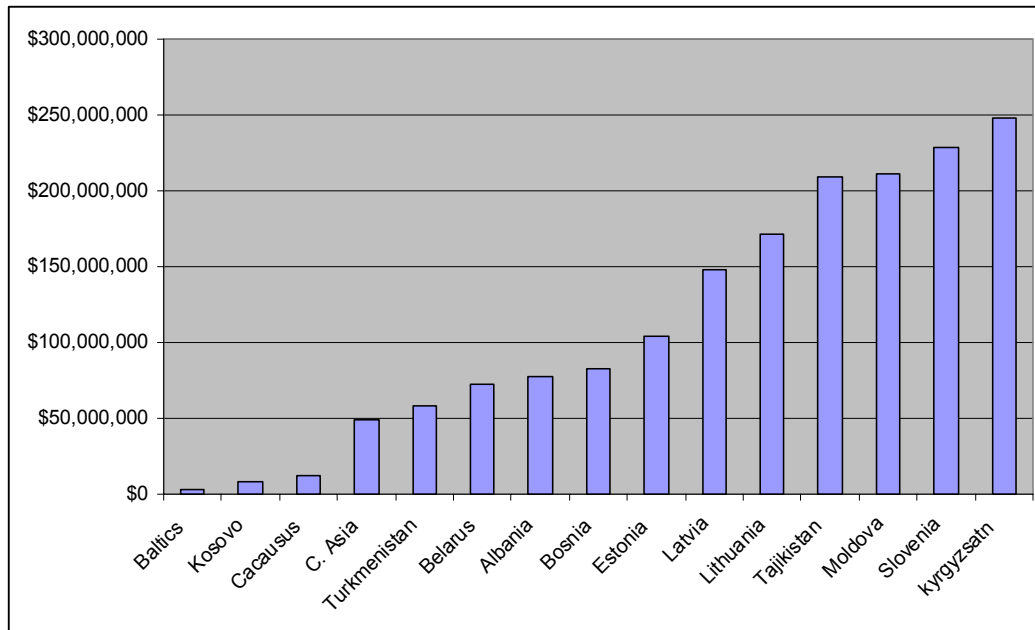
Countries of the Balkans have been making real progress on their road to democratization; Bulgaria and Croatia, for example, are coming to the point of graduating from USAID assistance. Others, like those areas of the former Socialist Federal Republic of Yugoslavia, are also making headway and recovering from the

ethnic conflicts that plagued them in the early 1990s. Countries of Eurasia, however, including those in the Caucasus and Central Asia, have a great deal of change to contend with before their economies and politics can transcend their current stagnation. Although they have shown some interesting economic growth since 2000, much of it has been driven by high prices for commodity exports (energy, etc.) and devaluation in the aftermath of 1998 Russian financial crisis. Integration and exposure to international organizations and regimes in general has been a positive influence; currently, seventeen countries have gained membership in the World Trade Organization (WTO); they include Albania, Armenia, Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kyrgyzstan, Latvia, Lithuania, Macedonia, Moldova, Poland, Romania, Slovakia, and Slovenia. Eight of them are now in the European (EU), and four more are either candidates or pending applications. Ten of them are currently members of NATO.

Based on the information presented in the last few pages about donor activities in the post-Communist bloc, it is possible to approximate that – taking into account the most recent available information (and allowing for some slight overlap where specific yearly spending is not broken out) – at *least* \$19 billion has been spent in the last two to three years in this region. It is also safe to say that at least half of this is being allocated to various forms of governance reform, which is generally designated for the improvement of government institutions. At the very minimum, \$40 million from USAID is going just for ICT work in the Caucasus; this does not take into account the rest of the technical components of public sector reform/governance projects currently underway. Figures 5-30 and 5-31 break out

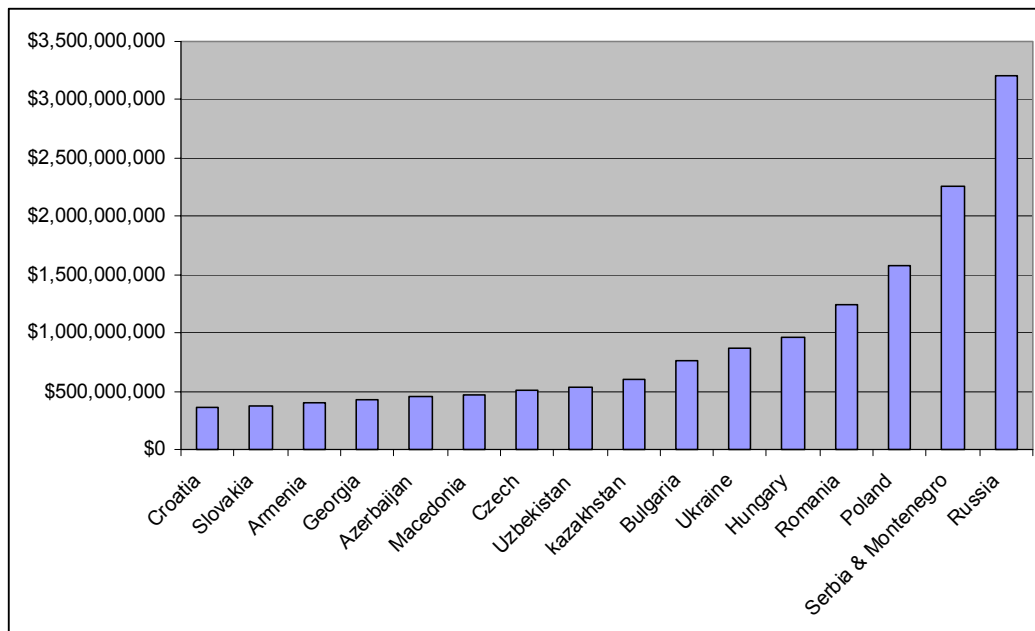
the lower and upper tiers of aid recipients in 2003 by country; this data reflects the aid flows from the world's largest donors outlined in Section 5.5.

**Figure 5-30: Lower Tier (<\$300,000,000) of Global Aid Recipients By Country**



Source: Author's analysis.

**Figure 5-31: Upper Tier (>\$300,000,000) of Global Aid Recipients by Country**



Source: Author's analysis.

The big questions surrounding the issue of whether or not this expenditure is achieving its desired effects are scrutinized a number of different ways by the donor agencies themselves. Considerable effort goes into impact assessment work and surveys, although in such cases there is often the risk of ‘self-fulfilling prophecy’; the tools and instruments of measurement are designed by the same organization that implements a project, which often yields the phenomena of ‘finding what one is looking for’. Civil society plays an important and useful role in keeping watch of major trends and issues, and disseminating information; however, it is not necessarily a powerful instrument when it comes to influencing the momentum or direction of donor activity in a country that is still dominated by neo-nomenklatura. Neither is civil society frequently granted the access to government that allows for assessment of the status of critical communication infrastructure. Civil society, albeit a critical component of post-communist development, tends to report on the consequences of a problem, not its causes.

Very often, therefore, one must resort to an analytical lens that is influenced by the literature in a field in combination with available aggregated data. For example, if one juxtaposes the ‘Global E-Government’ ranking created by Darrell West of Brown University with the World Bank ‘Government Effectiveness’ index<sup>356</sup>, it becomes possible to start surmising which countries are

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<sup>356</sup>The data for the E-Government analysis consists of an assessment of 1,935 national government websites for the 198 nations around the world. Each country is assessed through a number of its prominent sites, including those of executive offices (such as a president, prime minister, ruler, party leader, or royalty), legislative offices (such as Congress, Parliament, or People's Assemblies), judicial offices (such as major national courts), Cabinet offices, and major agencies serving crucial functions of government, such as health, human services, taxation, education, interior, economic development, administration, natural resources, foreign affairs, foreign investment, transportation, military, tourism, and business regulation. Darrell M. West, *Global E-Government 2004*, Center for Public Policy at Brown University (Providence, Rhode Island: [www.InsidePolitics.org](http://www.InsidePolitics.org), 2004), 3.

currently pushing forth with their ICT development, but not improving their underlying bureaucratic and administrative institutions. This is possible because West's index appears to focus just on the superficial functionality of the websites themselves; not on any element of underlying institutional capacity.<sup>357</sup> Of the websites examined around the world, however, 21% offer services that are fully executable online, which is up from 16% in 2003 and 12% in 2002. Of this group, 11% offer one service, four percent have two services, and 6% have three or more services; seventy-nine percent have no online services.<sup>358</sup> Unsurprisingly, North America (including the United States, Canada, and Mexico) is the area offering the highest percentage of online services. 53% (up from 45% in 2003) had fully executable, online services; only 2% in Russia/Central Asia, 8% in Africa, and 8% of sites in Eastern Europe offer online government services.<sup>359</sup> In Figure 5-32, it is apparent that nearly all the states of the Caucasus and Central Asia cluster in one particular area, along with a greater number of their developing counterparts. They tend to show less-than-average levels of 'government effectiveness' (the average being -0.23) than the rest of the world (the difference being in the order of more than 3500% worse), but higher-than-average ranks in E-Government. The global average E-Government ranking in 2003 and 2004 were 29.6 and 25.3 respectively; both years, the total average E-Government ranks of the post-communist bloc (comprised in this analysis of 25 countries) were higher by several percent. Similar

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<sup>357</sup> Similar assessments of the functionality of Armenian Government websites were conducted in 2001 by the e-Armenia Foundation. Results of this are available in Appendix F.

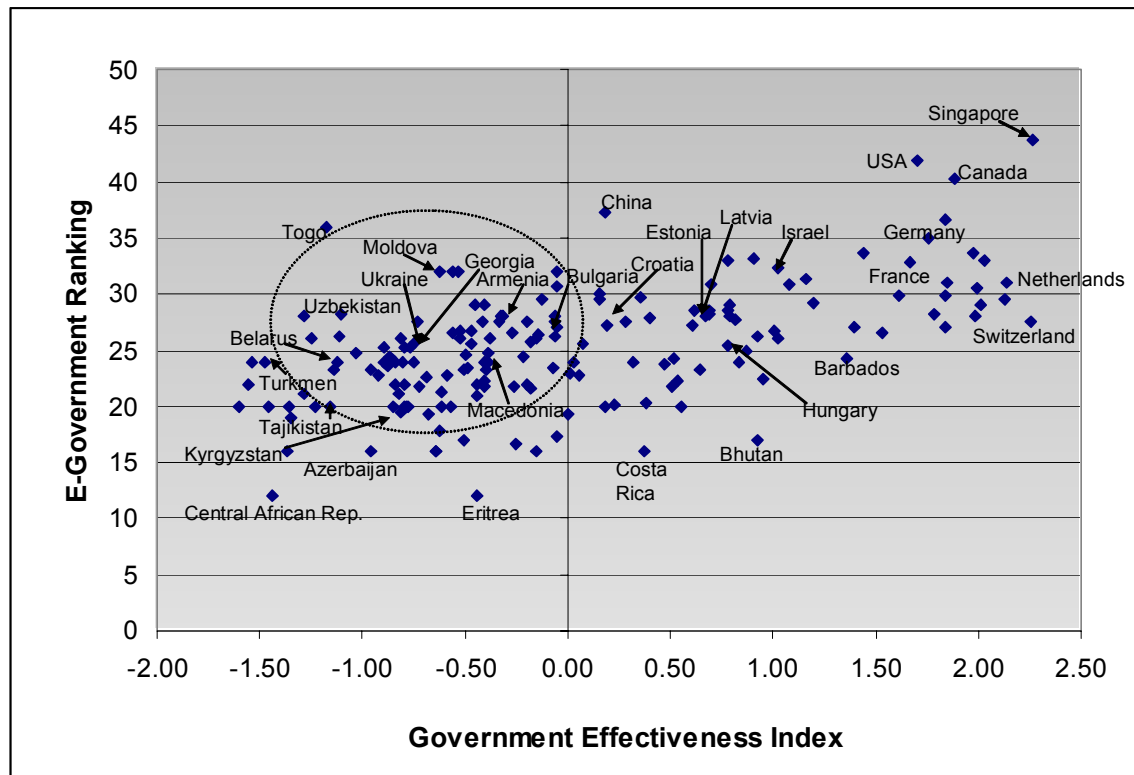
<sup>358</sup> Ibid., 5.

<sup>359</sup> Ibid., 5.



correlation exercises between the E-Government rank and Transparency International's data set yield very similar outcomes.

**Figure 5-32: Cosmetic Democracies?: E-Government Rank (2004) & Government Effectiveness (2002)**

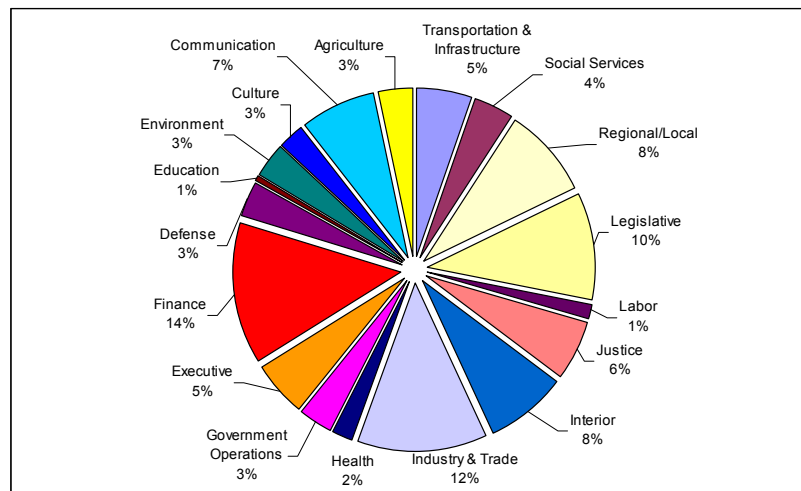


Source: Author's analysis.

Although the sample size of the post-communist bloc may be too small to assert levels of statistical significance, the tendency in evidence can serve to support the idea that the divergence between what websites convey and what actually exists is real. That the countries of Central and Eastern Europe, the Baltic region and the Balkans fall outside of the circle in Figure 5-32 should come as no surprise upon the conclusion of this chapter; their path has diverged notably from that of their Eurasian cousins over the past decade. As a case in point, the advancement of Estonia's governmental infrastructure in conjunction with ICT development is

notable. The case of Estonia is widely cited as the most successful of the transition ‘experiments’ due to high levels of industrialization, its highly educated/skilled workforce, its close proximity to Scandinavian countries, and the head start it had on institutional reform already in the Soviet era. It thus has been among the only post-communist states to attain relative ease of integration with Western economic and political structures. Figure 5-33 is based on Cyberspace Policy Research Group (CYPRG) data on Estonia through 2000, displaying the extensive breakout of government websites for dominant governmental ministries. Estonia was the only post-Communist country in the CYPRG dataset to have as extensive an ICT infrastructure already in 2000.

**Figure 5-33: CYPRG Data on Estonia’s Government Websites**



Source: Author’s analysis from data available from <http://www.cyprg.arizona.edu/>. Accessed February 2005.

On the other hand, the problems inherent to the states of the Caucasus and Central Asia, including the turmoil of their legacies, the prevalence of corruption, the lack of transparency and rule of law, and an overall lack of capacity in building infrastructure for the *delivery* of democracy (in both provision of supply and growth of demand) help to explain the status quo. Chapter 6 will build on the context

provided here, and use a magnifying lens to examine the micro-level issues of capacity as they relate to institutional transformation and the relevance of ICTs to service delivery and transparency. The case study in Chapter 6 will focus exclusively on government institutions in Armenia, and the results of a survey of Armenian citizenry will follow in Chapter 7.

## 6 Case Study: Armenia

This chapter includes the results of in-depth case study work based on six months of interview work in the main government ministries of the Armenian Government. Fourteen ministries, two State Commissions, the Constitutional Court, the National Assembly, the Central Bank, and the Prime Minister's Office were included in this analysis. (See Figure 6-1) These interviews were conducted largely with department heads of IT divisions, or in some cases the representatives of Public Relations departments (where an IT division was not institutionalized or existent). Considerable interaction with technology policy specialists and donor organization employees also provided deeper nuance to this research project. The majority of interviews were carried out in Armenian, and the information gathering process was tailored around the parameters set by the ICT Assessment Tool introduced in the Methodology Chapter 3. This Assessment Tool provides the structure for the aggregation of information in the four key areas of this case study: human capacity, organizational capacity, technical capacity and financial capacity.<sup>360</sup> The aim of this information gathering process was to gather as much data as possible with regard to the status of ICT implementation in the Armenian government. The 'status of ICT' thus becomes a compartmentalized measure, based on subjective assessment of those elements designated as most critical to successful ICT adoption and usage.

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<sup>360</sup> Detailed information plus organizational charts and other data for each Ministry/Organization is available in full in Appendix A.

**Figure 6-1: List of Case Study Institutions**

Ministry of Foreign Affairs
Ministry of Healthcare
Ministry of Education and Science
Ministry of Environmental Protection
Ministry of Energy
Ministry of Agriculture
Ministry of Culture and Youth Affairs
Ministry of Labor and Social Affairs
Ministry of Transport and Communication
Ministry of Urban Development
Ministry of Trade and Economic Development
Ministry of Finance and Economy
Ministry of Justice
Ministry for Regional Administration and Infrastructure Coordination
Securities Commission
State Commission on the Protection of Economic Competition Commission
The Constitutional Court of the Republic of Armenia
Central Bank of Republic of Armenia
The National Assembly of Armenia / Parliament
Government/The Prime Minister's Office

Having established in Chapter 4 that a statistically significant (albeit nuanced) relationship exists between ICTs and political development, this case analysis explores the ways in which ICT absorption can be measured, and how its effects can be accounted for. Knowing that the relationship between the presence of ICT and institutional development is not always a linear one, this case is designed with an eye toward identifying and capturing meaningful idiosyncrasy. The value of hybrid quantitative/qualitative analyses, after all, is to transcend the generalities drawn from aggregated data, and to create ways of drawing knowledge from anecdotal and unstructured information. To this end, this chapter focuses on two general facets of technology utilization within government institutions, and then on their perceived impact. One is based on the organic growth and usage of technology internally (i.e., technology as endoskeleton), including the existence of information systems, servers and networks – as well as databases and applications. The other refers to the external usage of technology (i.e., technology as

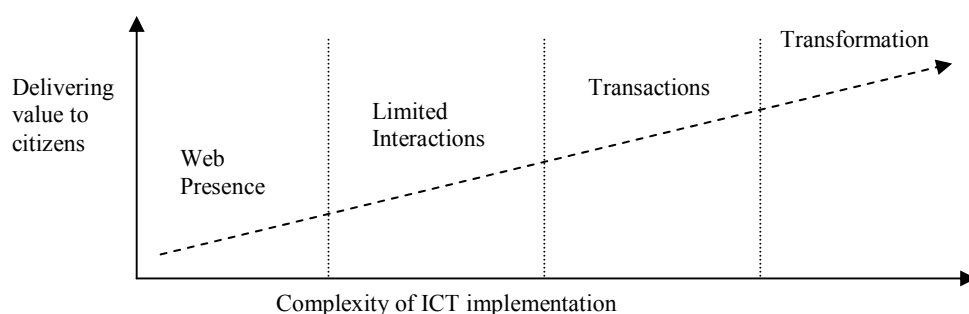
exoskeleton), as public diplomacy and public relations tool – as the primary means by which a given institution projects information about itself to its citizenry and peers in government. The most superficial manifestation of this type of ICT is the internet site, while the deepest measure of technology commitment in such organization is the existence of an explicitly designated IT budget, staff, and developed institutional capacity. This comprises the theory-building exercise of this dissertation

The challenges I encountered in the process of acquiring access to these institutions I believe in some ways reflect the problems inherent to Armenia's political structure. The lack of transparency in political organizations and the discernible entrenchment of private interests in the Armenian public sector create great difficulties for those tasked with acquiring access to government-related information. My experience with attempting to establish direct contact through formal channels of telephone or email with government institutions was fruitless; the informal connections through social networking became quickly the only effective means of accomplishing any task. Generally speaking, it was also quickly evident that the ICT projects (i.e. websites, portals) implemented on top of the existing institutional 'status quo' create a less than optimal environment for research.

Generally, the evolutionary process of the informational mode of development (or e-development) identified by Castells follows three distinct stages that are evident in such case study work: the automation of tasks (i.e., rationalization of existing processes), the experimentation of uses (i.e., innovation

of new processes), and the reconfiguration of applications (i.e., implementation of new processes, thus creating new tasks).<sup>361</sup> This is validated by the adapted conceptualization of the ICT implementation process (See Figure 6-2) as a function of the value delivered to citizens. A version of this figure was presented at a World Bank conference in Armenia on ICT development in November 2005, and helps to clarify the points of departure of institutions relative to end-goals. As ICT implementation progresses, the utility of the technology to the citizenry is gauged as a function of the complexity of the types of transactions it facilitates. This framework attempts to clarify the features that render the deployment of a technology program either a success or failure in these terms.<sup>362</sup>

**Figure 6-2: The Complexity of ICT Implementation**



Source: Author's adaptation of graph presented at World Bank Conference in Yerevan, Armenia in 11/2005.

<sup>361</sup> Manuel Castells, *The Rise of the Network Society*, 2<sup>nd</sup> ed. (Oxford; Malden, MA: Blackwell Publishers, 2000), 60-65.

<sup>362</sup> Generally speaking, government-to-constituent transactions can be categorized into three groups: government-to-government (G2G), government-to-business (G2B), and government-to-citizen (G2C). The processing complexity of a transaction is a function of the information available as to how to execute that task. The success of digital governance work tends to be dependent upon the motivation of users (perceived value), ease of use (processing complexity) and the nature of the users themselves (entity type). The degree of resistance to change due to organizational, structural, and social factors varies depending upon differences in each of these three dimensions. These are factors that are heavily interlinked with broader aspects of a country's political culture and context. Correctness, completeness, clarity and ease of accessibility each speak to very specifically identifiable local challenges in terms of IT infrastructure, and human and organizational capacity (to generate, for example, reliable content development mechanisms). From a presentation by Audrey Selian and Mysore Ramaswamy, "On the Concept of an E-Governance Cube", Caucasus Resource and Research Center (CRRC) at Yerevan State University, November 2004.

Its underlying axiom is that as government adopts new rules in governance and management, it will be transformed into a more viable, flexible, effective and transparent institution. This implies the successful introduction of electronic mediation between and within different government structures and citizens, manifested as shown in Figure 6-2: web posting of government information and citizen's letters, simple interactions (e-mail exchange, press conferences etc), and transactions (e -procurement, registration, etc).<sup>363</sup>

Due to the fundamentally qualitative and subjective nature of this analysis, it is important to articulate a basic understanding of the interplay of decisive factors in this conceptual framework, as well as to clarify what optimal and sub-optimal outcomes may result. Figure 6-3 lays out cursory descriptions of what sub-optimal vs. optimal mean within the framework of this case analysis. This chapter will describe where Armenia falls on this conceptual map.

**Figure 6-3: Characteristics of ICT Scenarios**

	<b>Sub-optimal</b>	<b>Optimal</b>
<b>Human Capacity</b>	Late Adopter Culture	Innovator Culture
<b>Technical Infrastructure</b>	Donor Driven & Marginal	Organic Growth & Mission Critical
<b>Financial Capacity</b>	Deference to External "Push" factors/ Aid	Commitment/ Active Resource Allocation
<b>Organizational Characteristics</b>	Opaque, No Feedback Mechanism	Commitment/ Transparent & Accountable

Source: Author's analysis.

## 6.1 The Armenian Political Climate

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<sup>363</sup> Garegin Chookaszian, *E-Development and Armenia: An Overview* (Yerevan: Information Technologies Foundation, 2001), 33.



A common theme in the democratizing ‘transition’ states of the former Soviet Union (with the exception of Georgia, in which there has been significant U.S. involvement) is that outright challenges to government are relatively latent although unrest is high and general standards of living are low. This typifies the experience of Armenia. According to a Freedom House report, “Armenians cannot change their government democratically”<sup>364</sup>; the 1995 and 1999 parliamentary elections, as well as the 1996 presidential elections were all criticized for serious irregularities in process. In 2003, the February-March presidential election and the May parliamentary vote were both condemned for failing to achieve proper international elections standards. President Robert Kocharian’s reelection occurred in a controversial second-round runoff, in the midst of massive demonstrations against the election results and the detention of hundreds of opposition supporters. More recently, political turmoil surfaced again for a time in the spring of 2004 before being brutally repressed, without allowing time enough for there to be ripple effects in the fabric of governmental institutions.

The constitution, last approved in 1995, reinforces the position of a weak legislature and a strong, directly elected president who appoints the prime minister; the judiciary, which is subject to political pressure from the executive branch, is characterized by widespread violations of due process.<sup>365</sup> Formal opposition to government still exists in a highly controlled environment, but the more dangerous informal opposition forces characterized by demonstrations in the streets is gone – replaced now with general apathy of the citizenry, mingled with high levels of

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<sup>364</sup> Freedom House Country Report: Armenia, 2004 (accessed March 18, 2005); available from <http://www.freedomhouse.org/research/freeworld/2003/countryratings/armenia.htm>.

<sup>365</sup> Ibid.

mistrust and fear.<sup>366</sup> Most political parties in Armenia, even if they manage to be effective, tend to be dominated by specific government or public figures and suffer from significant internal discord. President Robert Kocharian himself does not formally belong to any party, allying himself instead with a selection of large and small political groups. Those who dare to criticize the incumbents in the press appear to be few in number; limitations on press freedom<sup>367</sup> and controversial media laws have been a cause for concern for resident watchdog organizations, although slight improvements in this area have been discernible through 2004. In general, the government does not restrict academic freedom, and respects freedom of assembly and association.

The neo-nomenklatura working in government institutions are very concerned about conveying a particular image about the state of affairs in Armenia, and there appears to be a concerted, collective effort to portray a cosmetically (and technologically) enhanced image of government and state. In most cases, this appears merely to ensure that donor funding streams continue to flow – in what is without question a donor-driven economy. Accordingly, these funding streams have not ebbed, and rampant levels of bribery and nepotism common in the government bureaucracy continue. This is not to say, however, that all programs undertaken by donors are ineffective. This would be both simplistic and unfair; the World Bank has undertaken important anticorruption work, the UNDP has provided

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<sup>366</sup> A poll conducted in the summer of 2002 revealed that less than 15% of the population read (government-controlled) newspapers on a daily basis and reported that 48% did not read newspapers at all. A September 2002 survey that found a mere 1.5% of the Armenian population trust the country's print media, compared with 80% five-six years ago. Richard Giragosian and Tania M. Balci, *Report on the Status of Economic and Political Transformation: The Republic of Armenia (1998–2002)* (Germany: The Bertelsmann Foundation, 2003), 9.

<sup>367</sup> The selective closure of television station A1+ in the Spring of 2002 is a good example.

connectivity in all of Armenia's marzes (regions), the work of USAID with the Central Bank has been a resounding and notable success, and EU TACIS has launched an extremely ambitious and effective project to make the Ministry of Foreign Affairs a "paperless ministry". As with all such transformational initiatives, a lag period must be allowed for prior to measurement and assessment.

Armenia's formal political culture is characterized by a President that holds enormous power (despite lack of specific reference thereof in the Constitution), a Prime Minister that has no specific mechanism of recourse upon presidential decisions, a redundancy of responsibilities, as well as a lack of accountability and 'checks' between branches.<sup>368</sup> Its informal political culture, exemplified by its nepotistic tendencies, its non-standardized work habits, its general disregard for transparency and the free flow of public information, as well as a paradoxical conduciveness to the emergence of individual innovators within its structures, is something more difficult to gauge without the experience of immersion.

The nature of the elite-dominated political scene in Armenia is indicative of a phenomenon that is not unique relative to neighbors and peers in the post-communist international community; it is a function of the workings of a dense and impermeable social network, built on bonds of trust that are not governed by the principles of a social contract. It is common knowledge (as well as a cornerstone of a corrupt system) that people do not resort to 'due process' to get things done; they

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<sup>368</sup>Mkrtchian, Nerses. 2001. "The Governance System in Armenia". United Nations Development Program. (accessed December 16, 2004); available from <http://www.forum.am/groups/pol/mat/29.doc>, 2.

call on favors and personal relations from their private spheres in order to accomplish their objectives in the public sphere. In a sense, Fukuyama touches upon the implications of this idea in his chapter about social capital in *Culture Matters*, stating that social capital may not always be beneficial to a country. Some bonds of social reciprocity can become obstacles to efficiency and modernization, and thus the value of a social network can begin to depreciate as its stock becomes obsolete.<sup>369</sup> It is also interesting to look at social capital from a distribution standpoint; the more obviously it is disparate and limited to “strata of highly socialized, self-organizing people ... [coexisting] with pockets of extreme atomization and social pathology”<sup>370</sup>, the more likely it is to be a source of dysfunction in a country transitioning toward rationally governed institutions.

Almond and Powell identify several types of challenges or problems to a political system; one of these is the problem of penetration and integration associated with state-building, the second is that of loyalty and commitment (possibly manifested by the extent of general trust in government), the third is that of participation in government decision-making.<sup>371</sup> All of these problems feature prominently in Armenia’s political system, and in some ways ICTs appear to be used as a superficial balm to soothe these problematic areas. The proliferation of internet sites, online communities, and the objectives of portal creation are in large part aimed at addressing issues of political participation and political trust. However, it is interesting to consider that what appears to the Western eye as

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<sup>369</sup> Lawrence E. Harrison and Samuel P. Huntington, *Culture Matters: How Values Shape Human Progress*, 1<sup>st</sup> ed. (New York: Basic Books, 2000), 100.

<sup>370</sup> Ibid., 102.

<sup>371</sup> Gabriel Abraham Almond and G. Bingham Powell, *Comparative Politics* (Boston: Little, Brown, 1966), 35.

irrationality does not necessarily imply that the tasks of governance are inhibited or unaccomplished. La Palombara observes that the Soviet situation illustrated that public administration could be managed through the omnipresent domination of a political party formally outside the governmental system.<sup>372</sup>

## 6.2 The Armenian ICT Climate

As many reports and analysts are apt to mention, Armenia was once considered “the Silicon Valley” of USSR, one of the most technologically developed republics with regard to the development of the IT industry. Before 1991, Armenia was a key developer, producer and supplier of almost 30 percent of high-tech computers and electronic equipment for the Soviet defense and space systems; about 40 R&D centers were acting in this field and working on defense projects.<sup>373</sup> Indeed, about 100,000 (about 10% of labor force) people working in the field of electronics in Soviet Armenia.<sup>374</sup> Armenia’s competitive strengths in the software and IT services sector include a unique 50 year-old tradition of multi-generational IT skills, a cost effective and highly skilled workforce, linkages with key markets, and an ambitious national vision.<sup>375</sup> However, this has unfortunately not translated to an inherent institutional or collective aptitude to leverage ICTs in any way related to the public sector.

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<sup>372</sup> Joseph LaPalombara, Carl Beck, and Social Science Research Council, Committee on Comparative Politics, *Bureaucracy and Political Development* (Princeton, NJ: Princeton University Press, 1963), 50.

<sup>373</sup> Center for International Development (CID), Information Technologies Group, *Readiness for the Networked World Assessment: Armenia* (Cambridge, MA: Harvard University, 2000).

<sup>374</sup> Ibid.

<sup>375</sup> Padraic Murray, *Armenia: IT Sector Needs Assessment Study*, Software and IT services, Armenian Development Agency (2004), 7.

As stated in Armenia's ICT Master Strategy of 2001, currently it is the established strengths of engineers and software designers developed during the Soviet period that are sustaining the dynamism of the ICT sector. As Garegin Chookaszian of the Information Technologies Foundation (ITF) observed in his 2001 e-development paper on Armenia,

...The creation of the means of exchanging information and making it available has not prompted a boom in the creation of quality information resources (sites). This may be to a degree be attributable to the fact that in the absence of any meaningful, strategic, comprehensive and targeted national policy for e-Development, information and communication technologies, though declared a national development priority and recognized among the most powerful engines of the country's economic recovery, are still paradoxically viewed as a luxury "gadget"... by definition accessible to only a select few.<sup>376</sup>

Based on a review of the 'ICT for development' projects recently or presently underway in Armenia, one can see the extent to which the invisible threads of determinism are wrapped around the various technology-related aid programs organized by donor agencies. There is an obvious degree of expectation in the terminology and stated missions of those involved in gifting computers, networks and servers to the developing world. This normative component that derives from academic literature characterizing ICTs as inherently positive social transformers has been comprehensively reviewed in Chapter 2.

A number of related and promising initiatives have emerged over the last five years in Armenia, including the implementation of the "Armenia Development Gateway (ADG)" ([www.gateway.am](http://www.gateway.am)) Project in 2000 as part of a collaborative effort between the Armenian Government, the World Bank Group, the UNDP Armenia Office, and the Armenian Development Agency (as responsible for

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<sup>376</sup> Chookaszian, *E-Development and Armenia: An Overview*, 33.

implementation). In 2001, the Information Technology Foundation (ITF) received an InfoDev Planning Grant for the establishment of an Armenia Country Gateway Organization and further strategy development; digital readiness and e-needs assessments were conducted, and an “e-Armenia” Foundation was created to support the activities aimed at bridging the digital divide and providing new tools for development.

The Armenian government, in close collaboration with the World Bank and USAID, developed an ICT Master Strategy in 2001, a vision and plan to make the country a regional ICT hub and create an industry that promotes wide use of technology by citizens to improve their quality of life. Its idea was the creation of an industry that promotes the widespread use and application of ICTs by Armenian citizens, businesses, and the government to improve the quality of life and advance every facet of Armenian society including home life, businesses, schools, and the community. Its objective is to foster an environment that nurtures entrepreneurs and creates the networks of support, both domestically and internationally, capable of attracting investment and capital necessary to sustain a positive development environment. The following year, the Enterprise Incubator Foundation (EIF) was born, an IT development program aimed to stimulate economic growth by providing services to and assisting local IT and High Tech companies in business development. Shortly thereafter in 2003, ‘Open Source Armenia’ (OSA) was born, a project initiated to promote open source software development in Armenia by building a community of individuals and organizations interested in software development. Several associated programs began at the American University of

Armenia (AUA) under the management of the Union of IT Enterprises (which unites Armenian software, hardware, IT training, and Internet service provider companies); soon after that, the Eurasia Foundation agreed to continue financing the program. Lycos/Armenia, the Enterprise Incubator Foundation, the Armenian High-Tech Council of America, the International Executive Service Corps and the American University of Armenia have also contributed to the project's implementation.

Projects were also underway through 2004 in the customs and tax areas by Barents Group of BearingPoint (formerly KPMG Consulting), implementing a USAID funded project, aimed at creating consolidated, robust and transparent nationwide computer systems for improved customs and tax administration. BearingPoint also assisted both State Tax Service and State Customs Committee with website development ([www.taxservice.am](http://www.taxservice.am) and [www.customs.am](http://www.customs.am), respectively) to increase the transparency of these agencies and provide information directly to importers and taxpayers. BearingPoint, under the same USAID project, has also been in the process of developing the first major Government-to-Government (G2G) application in Armenia, to help electronically process ministry funding requests during the annual budget preparation process. Still, however, there has been no real in-depth exploration of the status quo of information and communication technology adoption.

It is particularly interesting to note a study undertaken on the Armenian Development Gateway on the status of website functionality of Armenian Government in 2003. The nature of this analysis is not unlike that undertaken by

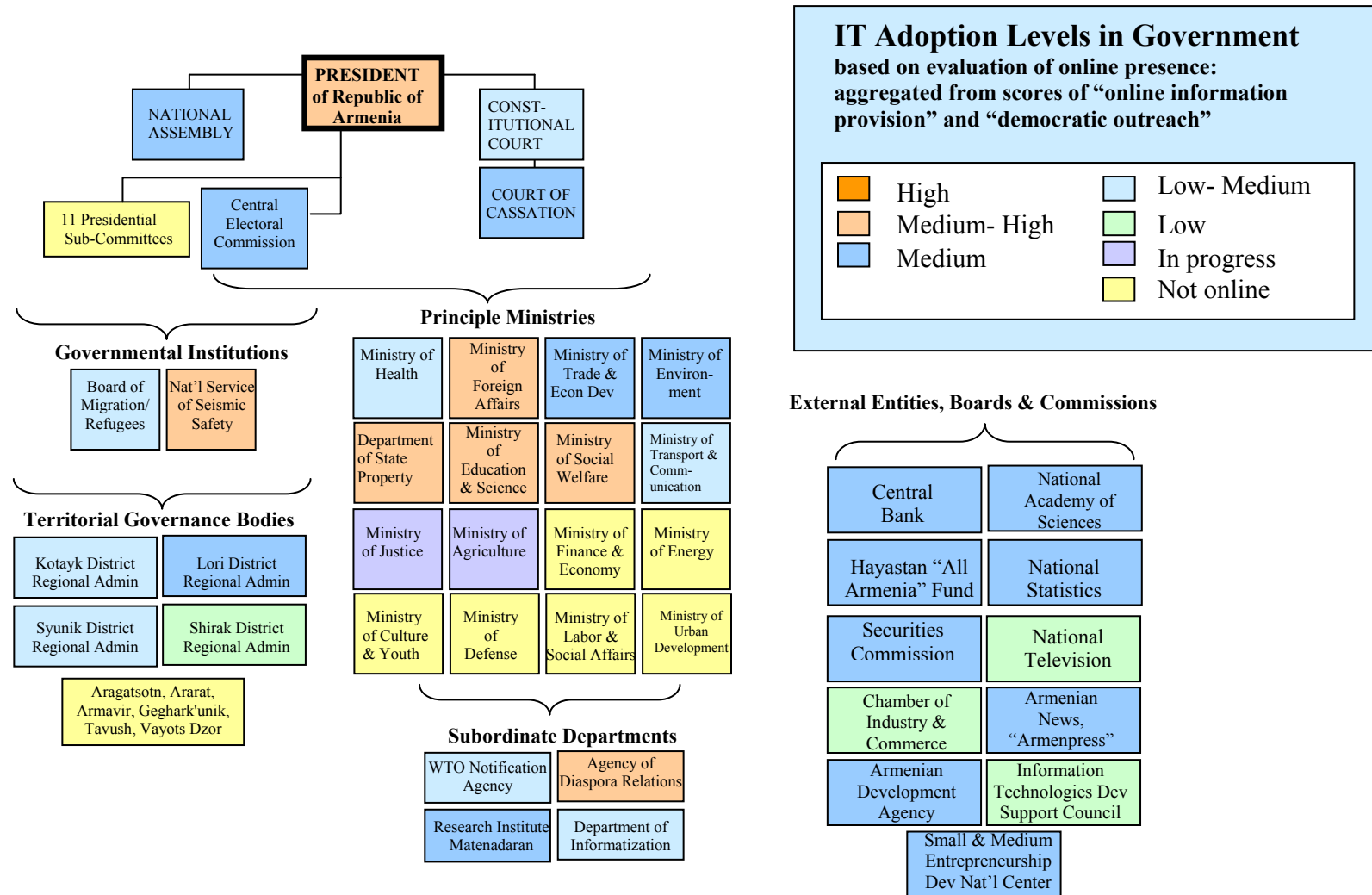


Darrell West (mentioned in Chapter 5); it consists of a superficial assessment of interactivity potential of ministry/office websites. Figure 6-4 is adapted from a paper written by the E-Armenia Foundation<sup>377</sup> and conveys the relative ‘web capability’ of government institutions. If nothing else, it shows us the danger of assessing ICT capacity based purely on front-end technology in the form of web interfaces. This information mischaracterizes the capacity of the most advanced government institutions simply by virtue of their website status, missing key aspects of capacity that can determine the real success of digital government initiatives. When compared to the full case study work available in Appendix A, it is neither an accurate proxy for the status of political development of government institutions in this country, nor does it account for the extent to which ICT advancement is the product of donor initiatives.

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<sup>377</sup> Suren Vardumyan, *E-Government Study: Official Government Websites*, Yerevan, Armenia: E-Armenia Foundation, April 2003.

**Figure 6-4: The Organizational Structure and Website Functionality of Armenian Government**



Source: Adapted from data from Armenian Development Gateway, [www.gateway.am](http://www.gateway.am)

### 6.2.1 Taking Inventory

The purpose of comparative ‘capacity inventory’ analysis is to lay a foundation upon which the future of political development in the government of Armenia can be assessed, and to determine whether ICTs can contribute to veritable change. The issues of sustainability and ownership in this country are critical. If digital governance is to emerge as a tool relevant to Armenia’s reality, and to make its government more transparent, effective and efficient, several vital things must be considered: strategic vision and political will for organizational change, public awareness of both civil servants and the citizenry, the extent of capacities and capabilities, and legal innovation.<sup>378</sup> Armenia has the remnants of a functioning national system of innovation (referred to in Chapter 2), but it has been significantly bolstered since independence by external Diaspora and World-Bank-led initiatives intent on leveraging the country’s existing human/social capital base.

There is a strong tendency in Armenia for projects to dissolve or disappear completely after funding runs out, in part because ownership and commitment by Armenian figureheads and organizations is not always successfully assumed. This appears to be a theme that is not uncommon to many of the developing states of the post-communist bloc. In the words of one interviewee, however, it appears that this is often not unintentional or beyond the capacity of Armenian civil servants or politicians; after all, ‘... the lack of information is also power’. Moving toward institutional transparency does not necessarily serve the purpose of those who are not suffering from the workings of the status quo. Moreover, there often appears to

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<sup>378</sup> Ibid., 33.

be perceived ‘buy-in’ on the part of various departments or organizations for the purpose of securing grant money and acquiring the new hardware/equipment.

The extent of political participation that digital government projects are created to provide is a social phenomenon that must be possible to manifest in the physical realm before it can work in the virtual realm. In other words, the social reality of a political culture characterized by ‘unpleasant’ interactions with all levels of public administration, as is the case in Armenia, can easily transcend the objectives of any ICT efforts to provide the opposite. As stated in a 2001 e-development report on Armenia, “... IT culture is almost non-existent among the authorities or civil service.”<sup>379</sup> To provide online functionality that typifies an advanced polity is thus to present a solution thirty steps ahead of society. The technology itself can ‘leapfrog’ various technical steps and standards, but it should not be geared toward leaping over public perceptions of ‘what could work here’, and ‘what could never work here’. Every society has its own answer to the question of effective ICT adoption, and in the case of transitioning countries, workable solutions are often hybrids; in other words, they are combinations of automation and social networking.

### 6.2.2 Culture Matters

Without doubt, the climate for the use of ICTs in Armenia is still generally sub-optimal. While there is little existing ICT infrastructure that can raise serious problems of interoperability and the organizational arena is ripe for change in terms of process/strategy innovation, there is still very little foundation laid for creating a

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<sup>379</sup> Ibid., 33.

culture of IT-savvy government workers. Neither have the ICT projects that *have* been implemented on the federal and municipal levels helped to galvanize the citizenry to boost demand for services and the assertion of rights. This comes from a work ethic heavily influenced by the communist experience, and the work patterns of a generation of workers and civil servants who are generally resistant to organizational change, particularly in government. One government advisor made the following statement regarding his interpretation of the common terminology: “When the citizen here is not a direct beneficiary of his/her ruling administration, the term ‘government’ signifies the nature of the unidirectional top-down dynamic. When the citizen *does* enjoy the benefits of living under his/her particular administration, the two-way, interactive nature of that political dynamic is better captured by the term ‘governance’.” Digital governance, however it should be defined to be relevant to this context, is thus still a long way off, because citizens in Armenia in general are not capable of seeing themselves as the beneficiaries of public information provision. There is therefore no obvious sense of understanding as to where the main impact of ICTs will be. This is further manifested through a very obvious collective misunderstanding as to what ICTs in government are supposed to accomplish.

In a country the size of Armenia where the use of ICT is generally not institutionalized or standardized, the work of one or two innovative people can make a significant material impact on the population of 3 million. The example of the e-visa deployment is a case in point. Individual leadership and innovation in an environment that is not inherently conducive to it can actually stand out more

starkly that it otherwise might, particularly in contrast to the stultified status quo of post-soviet bureaucracy. The 2001 ICT Master Strategy was vocal in identifying the need for a more coherent innovation system in Armenia; one that is supported and coordinated, and provides incentives and visibility for innovative approaches and new ideas from the laboratories through education, management, and commercialization of technology to government operations. This kind of coordination and communication among the entities that create this system is critical, and should be in place at top levels before empowerment at the grass roots will be discernible.

The extent of individual creativity and innovation necessary to materially affect a society, however, is balanced to a certain degree on an important threshold; too little of it will miss the mark in terms of achieving critical mass and seeing the light of day, while too much may result in an inefficient allocation of scarce human capital resources. The work of open source software (OSS) programmers in Armenia provides an excellent example of this, for example. While some see the emergence of OSS as a vital life sign of organic, sustainable development and domestically driven productivity, others see it as a luxury that can not be afforded in Armenia. One interviewee mentioned, in fact, that “...there should not be one calorie of energy allocated to OSS development, preferring instead to ‘beg Bill Gates for a discount’ as opposed to foster potential political turbulence”. On the other hand, just because Windows XP has Armenian font does not mean that Armenia should necessarily formalize their buy-in to Microsoft products (that they

most certainly can not afford).<sup>380</sup> The communities of learning that are the byproduct of open source software development, and particularly the skills that they can help to encourage and foster in young programmers and engineers, not only broadens the collective capabilities of the labor force, but enriches the social capital of the country. In the meantime, the status quo of nearly 100% pirated software usage without consequence certainly suits all concerned players well; until intellectual property rights (IPRs) emerge as a priority in the whole of the former Soviet bloc, this is unlikely to change.

Another key point to consider when examining the ICT climate in a post-Soviet setting is the tendency for workers, and particularly civil servants and government employees, to be Russophile, and to hearken back to the ‘old system’ with a sort of inadvertent and subconscious nostalgia. This was evident in some form in nearly every interview (with the exception of a few Diasporans working in government). Generally speaking, many of those working in government ministries in Armenia are looking for inherent compatibilities with the Russian system; thus, there are issues of alphabet usage, and a general resistance to more challenging work that involves English proficiency. The issues of language and tendency for people to revert to Russian would not be so problematic if there was not pressure from the donor world to implement and carry through their work in English; after all, it is to a large extent the language of ‘development’. In any case, the

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<sup>380</sup> Software giant Microsoft announced a partnership with the United Nations Development Program on Friday to back information technology and communications improvement projects in disadvantaged countries. Under the agreement, the Redmond, Wash.-based company will work alongside the UNDP to build IT-training facilities in developing nations, with a focus on establishing community education centers.

Matt Hines, “Microsoft-U.N. deal aims to wire poor nations,” News.com (2004).

transaction costs of reforming administrative processes and modernizing bureaucracy are heightened by several orders of magnitude as a result of this tendency.

On a related note, it is useful to look at levels of government employees' interest and participation in ICT work relative to age brackets /generation. In the case of Armenia, at least, it is something of a fallacy to assume that it is only the older generations in the labor force (50-60-somethings) that are closed off to ideas of change, particularly insofar as they relate to reform in their workplace. There is also a fair segment of the population in their 30s and 40s who are equally resistant, and equally indoctrinated in the Soviet *modus operandi*, to which they might have been exposed (as working professionals) only briefly until 1990. Although the communist system was dismantled fifteen years ago, this does not mean that the way institutions functioned in its aftermath (and its periphery) was changed accordingly. The residual effects of systemic change are still very much alive and well, embodied in the mentality, work ethic, and culture of the current work force.

It is helpful to also briefly mention the policy environment, despite the fact that a significant disconnect exists between regulations that have 'passed' and those that are actually 'implemented'. The "Gark Act" of 2001, for example, is an interesting iteration of formalized information policy on the part of the Ministry of Environmental Protection. It is an attempt at constituting the rules to regulate the presentation and dissemination of information and reports to an "information analytical center". This document is essentially an attempt to delineate how, when, and in what form information must be received; a local computer network (LCN) is



formed, and subdivisions both part of and external to the LCN network are to follow specific instructions of data management. This helps to clarify the responsibilities of heads of division, and stresses the importance of accuracy, security and integrity of information, exact time frames for actionable materials, and the criticality of cooperation between press secretaries/public relations and ministry leadership. As very few homegrown ‘information policy’ or ‘strategy’ documents exist, this is significant insofar as it takes the flow of information and the mode through which it is disseminated seriously. Unfortunately, there do not appear to be any enforcement mechanisms built into this Act. Again, this is likely to be tied to latent cultural tendencies as they apply to bureaucratic and administrative spheres.

### 6.2.3 Failed Projects

It is clear, of course, that one must look to the past in order to understand the current context in which technology can (or cannot) affect development challenges. One particularly interesting case example of a failed technology initiative exemplifies the challenges that exist in Armenia vis-à-vis the objectives of developing e-government capacity. In 2003, EU TACIS initiated a project in the range of 1.5 million euros, allocating this vast sum to the digitization of information pertaining to laws of the Republic of Armenia.

According to several sources active in the “IT” realm of Armenia, this project was undermined by the Deputy Minister of Justice, who chose to protect his own agenda in the production of CD-ROMs with that same legal information, and

upon which was created a private company that purportedly possesses unique ‘rights’. The name of the private company servicing the vast majority clients for this public information is IRTEK ([www.irtek.am](http://www.irtek.am)), and the many users of their system have described it as primitive and unsophisticated; up until just a few months ago, the system was run on DOS, and has only just now begun to improve its outward appearance. Updates to the ‘system’ are not centralized on a server, but executed manually machine by machine through the insertion of CD-ROMs into subscribers’ workstations. Subscription is apparently known to be in the range of \$50 for a one time fee (although reports of the scale of this fee vary widely, up to \$500 in one case), with smaller fees (\$5-30) incurred on a regular basis in monthly, quarterly or semiannual ‘update’ charges.

Although such a company should have the right to protect and defend its position in a marketplace, it is quite another thing to go to court (as it did, and won) to ensure its monopoly on public information in digitized format. The strength of the service offering of IRTEK should be on the design and functionality (including, perhaps, searchability) of the system interface it provides to users, *not* on the simple provision of legal and regulatory information on a computer screen. This is indicative of a major strategic weakness in identifying the company’s core competency. Part of the process of a “law becoming law” in Armenia entails its articulation (printing/publishing) in something called the ‘bashtonagan deghegagir’ – the ‘official registry/records’, which is printed monthly in thin booklets, and subsequently added to its previous volumes. It is possible for any interested party to go and pick up one of these booklets, though they are available only in hard

copy, only in Armenian, and do not lend well to comparative analysis or research of any kind. To continue to block the work of willing donors who are interested in making the laws, regulations and recent activities of the National Assembly transparent and available to the public on websites is to willfully obstruct the emergence of an information society in the interest of private gain.

Another good example of a technology-related work that did not achieve fruition between 1999 and 2000 was the EDAR project, an initiative whose objective was to bring 12 state universities on to one functioning network via radio-connection. The objective was to tie the Ministry of Education and science with its various ‘constituents’, for the purpose of facilitating the transfer of information, and the management of knowledge. It appears that upon the change of a Deputy Minister (under endorsement of the Minister of Education), the project was allowed to stagnate and eventually fold. There have been, however, other projects in this area that – while challenged with capacity and funding problems – are still alive. One example is the Academic Scientific Research Computer Network (ASNET-AM) started in 1994, which brings together academic, research, educational and other organizations engaged in scientific and educational activity via radio links. Thanks to a NATO Networking Infrastructure Grant in 1999, the satellite connectivity and capacity of the satellite connection (which was previously limited to 64 Kbps) were improved, though still limited.<sup>381</sup>

#### 6.2.4 Successful Projects

One of the more important ICT-related undertakings in Armenia over the past few years has to do with the implementation of a ‘personal number’ (PN) system for Armenia, whereby the administrative capacity of the government to administer social assistance programs can be strengthened. The background of collaboration between entities that has made this possible is further described in the forthcoming section under the “Ministry of Labor and Social Affairs”. Both USAID/PADCO have been active in implementing this PN system, along with the work of two centers, one called the “Nemrut” Center and the other, the Armenia Social Transition Program (ASTP). The ASTP has provided its support in various ways, by conducting seminars - and from an IT standpoint, contributing a computer, printer, email access and a legal database for the use of the project. A strategic plan and report was put together between 2001 and 2002, and the system is still currently under development. This ultimately makes it easier for government agencies, local actors, and ministries to work together and deliver services to the Armenian citizenry.

##### *The E-Visa and Virtual Consulate Services*

Perhaps one of the most well-known and innovative ICT-related projects that has been able to put Armenia on the ‘ICT development map’ is the work related to its e-Visa and virtual consulate project, which has been initiated by a local consultant working closely in conjunction with the Ministry of Foreign Affairs. The e-visa is a first phase in a broader virtual consulate program, and is a system that interfaces and compares data with other government systems. The capability

now exists to identify incorrect or inaccurate information from system to system, thereby providing the grounds for potential rejection/cancellation of a visa, should an important inconsistency or issue be discovered.

An e-visa requires no paper insertion into a passport, and no visit to a diplomatic mission to submit information. All applications and information (including credit card information) can be submitted and verified online, and visas are approved and issued online within two working days, with applicants and border control agents informed simultaneously. To a significant extent, this e-visa work in Armenia is regarded by many as a pilot project paving the way for the emergence of further digital government related work, particularly as it has become a recent priority for the Ministry of Foreign Affairs thanks to the support of TACIS through 2004-5. The general public benefits because they can now find out which services are available online, what information is necessary to receive these services, submit applications, review status and receive confirmation without having to interact with a single human being.

The work entailed in this project includes the development of a website to serve as the foundation of e-consular services, including digitized public information of rules and regulations, agenda information, and online forms for download. For a virtual consulate to be a successful initiative, of course, it would be necessary to evaluate service provision, and to acknowledge that better communication with the public should also be considered a valuable indicator of 'return on investment'. The MFA has the e-visa system fully online and functioning, and an incremental approach is currently being applied to the further

roll out of available services. The only thing that does not work in the favor of the MFA is the fee structure surrounding the issuance of these online visas; a foreigner to Armenia will invariably discover that upon arrival at Zvartnots airport in Yerevan, they have the option available to them to apply for a visa immediately on the spot. In the instance where one does this, they discover quickly that the e-visa that which costs \$60 and a trip to the MFA website, is actually even more painless if one shows up without a visa at all. The cost for immediate issuance of a visa upon arrival is \$30. One of the suggested actions in the 2001 ICT Master Strategy includes engaging the Armenian Government's Consular network in a positive marketing campaign, linking their office to the incubator networks for follow up and customer contact.

#### 6.2.5 Donor Coordination

Across the spectrum of Armenia's numerous ICT-related projects, one can observe a problematic and overarching rigidity to the work undertaken by donors. For example, while the idea of connecting schools in the regions of Armenia might be made more effective by allowing them to serve a dual-purpose as community centers, oftentimes it happens that the most logical and sustainable solution is sacrificed in the name of an individual donor's mission. Those initiating projects in the ICT sector do not appear to be thinking about the range of other activities that may render their work redundant, or contribute to the further fragmentation of an already incoherent ICT arena. Among six surveyed organizations in a report by the ADA in 2004, USAID and Eurasia Foundation have been found to have the

strongest ties with software and information technology development projects.<sup>382</sup>

Figure 6-5 provides a quick snapshot of recent and current donor projects.

**Figure 6-4: Snapshot of Donor Programs**

<b>World Bank</b>	<ul style="list-style-type: none"> <li>• Enterprise Incubator Foundation;</li> <li>• Educational technologies (ICT) in schools component in Education Quality and Relevance Project;</li> <li>• The ICT infrastructure and skills development component of the Foreign Investment and Export Facilitation (FIEF) Project (at Armenian Development Agency);</li> <li>• e-Armenia Foundation;</li> <li>• e-Government component in public sector reform assistance activities.</li> </ul>
<b>USAID</b>	<ul style="list-style-type: none"> <li>• Support for implementation of IT master strategy (ITDS Council and ADA);</li> <li>• The Armenian University Consortium MSIS Program;</li> <li>• Support to the development of electronic payment systems (ARCA) - Firm level/technical assistance;</li> <li>• Management information system for Tax Administration – State Registry System for registration of legal entities at the Ministry of Justice;</li> <li>• Technical assistance to the Ministry of Justice on resolving telecommunications issues; and</li> <li>• Citizen Information Centers in two cities. Provision of hardware and software to nine cities for budgeting.</li> </ul>
<b>Eurasia Foundation</b>	<ul style="list-style-type: none"> <li>• Authorized Training Centers for organization of authorized certification training courses</li> <li>• Information Systems Development and Training Center for ten municipalities</li> </ul>
<b>EU TACIS</b>	<ul style="list-style-type: none"> <li>• Support to the Creation of the European Regional ICT Academy (ERICCTA)</li> <li>• Information Technologies development project</li> <li>• e-Caucasus project</li> </ul>
<b>UNDP</b>	<ul style="list-style-type: none"> <li>• Support to Information Society &amp; Democratic Governance</li> <li>• Support to the development of regulatory framework related to e-governance</li> <li>• Expansion capacities of the Armenian Freenet - Online communities</li> <li>• Development of an Armenian search engine</li> <li>• Support to the initial phase of the Universal Networking Language</li> <li>• National e-governance system for territorial administration</li> <li>• E-visa system, E-consulate system, E-treaties</li> <li>• External Assistance Database (IADA)</li> <li>• Online Guide for Armenian export products</li> </ul>
<b>IREX</b>	<ul style="list-style-type: none"> <li>• Internet public access sites – Small Grants Program for creating web resources</li> <li>• Internet Access and Training Program (IATP)</li> </ul>
<b>OSI - AF</b>	<ul style="list-style-type: none"> <li>• Support to GIPI</li> <li>• Creation of community tele-centres at schools &amp; libraries.</li> <li>• Armenian OCR, <i>Armenian search engine</i>, <i>Online translator Eng-Arm- Eng</i></li> <li>• Web city education modules in Biology and Chemistry</li> </ul>
<b>DFID</b>	<ul style="list-style-type: none"> <li>• IT needs assessment (Presidency &amp; PM's Office)</li> </ul>

<sup>382</sup> Padraic Murray, *Armenia: IT Sector Needs Assessment Study*, Software and IT services, Armenian Development Agency (2004), 51-52.

	<ul style="list-style-type: none"> <li>• WAN for the Region of Tavush – Network between Min. of Territorial Administration and two Regional Administrations</li> </ul>
<b>NATO</b>	<ul style="list-style-type: none"> <li>• Virtual Silk Highway-ARENA</li> </ul>
<b>PROJECT HARMONY</b>	<ul style="list-style-type: none"> <li>• Armenia School Connectivity Program</li> </ul>

Source: Padraic Murray, Armenia: IT Sector Needs Assessment Study, Software and IT services, Armenian Development Agency (2004).

The full extent of donor activity is difficult to capture and even more challenging to quantify. Overall, however, there is a very clear lack of strategic direction from the Armenian side; this is characterized by an overarching ‘take what they can get’ attitude.

For example, projects in the Ministry of Environmental Protection such as the World Bank work through the Water Management Agency, or EU TACIS work on the Clean Development Mechanism (i.e., in providing computers, web consultancy, etc.) create interesting side-effects. Each such agency associated with the Ministry tends to have its own technical component; this lends to a considerably fragmented ICT infrastructure. Another example is the Akhtala Center created by the Eurasia Foundation for the dissemination of public environmental information. According to an interviewee, once the funding ends, the center will close, leaving one more loose end with half-consolidated institutional knowledge.

In December 2002, the Ministry of Environmental Protection asked UNDP Armenia, the World Bank, EU TACIS, and USAID to sit on a unified advisory board to address the issues of redundancy and overlapping in donor work. Others have said that this was actually initiated by the UNDP – and was a first step in the right direction towards coordination of activities and effective needs assessment in



the country. This fell apart over one year ago in 2003 when a formal alternative was suggested – the ITDSC (Information Technology Development Support Council) was created as a support and coordination body for the Prime Minister’s offices.

The ITDSC works out of the Armenian Development Agency (ADA), and serves as an IT arm to the Prime Minister’s office (further information available on Appendix A). It is in fact a sub-committee, and known to be a clearinghouse of financial aid coming to Armenia. Its role was to intended to institutionalize the task of donor coordination work in the IT area, although since its inception this objective remains unfulfilled. According to interviews, more than \$80 million has been invested into this organization, and several years later its true role and extent of its impact is still unclear. Some have pointed to the World Bank, and question why it did not audit the ITDSC, although no evidence is currently available to indicate evidence to the contrary. The ITDSC has not been actively involved in addressing the grave problems of donor coordination, but it has however, created a useful documentation of country-wide ICT related activities.

### **6.3 Review of Armenia’s Institutional ICT Capacity**

The assessment tool developed in this dissertation, while somewhat rough insofar as it weights intra-component characteristics equally, includes a wide variety of questions in each of four main capacity areas: organizational, financial,

technical and human.<sup>383</sup> An area for further research may include the development of more sophisticated assessment tools tied to regression analysis. If one looks at the comparative inventory analysis results, interesting patterns emerge; the topmost legislative (or related) and judicial branch institutions (here represented by the Parliament, the Ministry of Justice, and the Constitutional Court) are all generally more ICT-capable than most of their executive branch counterparts. Those institutions that have important roles in the determination of fiscal, monetary, trade or labor policies are considerably better supported in terms of ICT capacity than those institutions in the executive branch with a role in the broader social sphere (including health, education, environment, culture, etc.), including the prime minister's office and those ministries associated with areas of critical infrastructure (i.e., transport, energy). Levels of public information provision are highly inconsistent, reflected by a lack of uniformity not only in the fonts used on government websites, but in the core organizational structures of these institutions.

There is neither a standard applied, nor a measure to assess the work that a Ministry is doing vis-à-vis its constituents. Among the most notable strides taken in the past year has been the creation of a simple information center (as part of a public sector reform project) by PricewaterhouseCoopers. Several ministries are now making use of the Public Information Center that is located in the reception area of the Government Building #3 in Yerevan, which is home to about half of the

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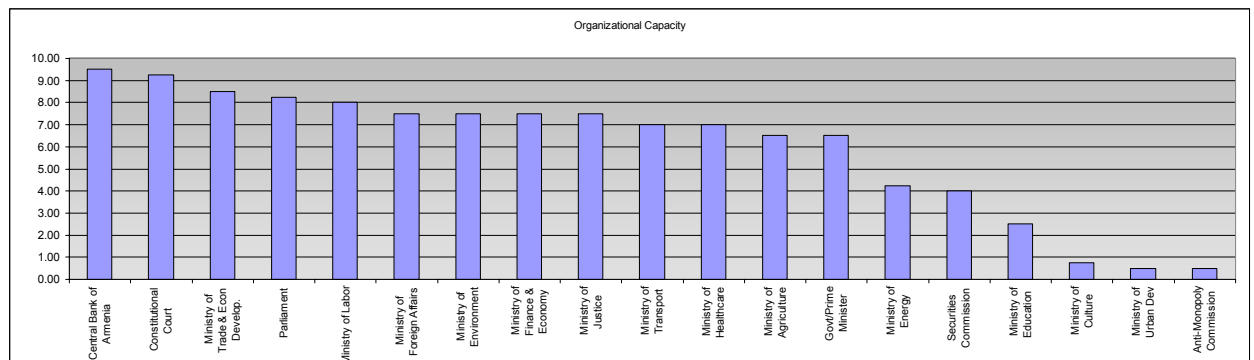
<sup>383</sup> The refinement of this tool, which will necessitate the determination of weights within each component as well as the configuration of less binary measurements of component areas is a clear task for future research. My work toward this goal is already underway within the framework of a study for USAID.

Ministries in Armenia. For the first time, they are offering informational brochures for citizens coming with queries and requests.

### 6.3.1 Organizational Capacity Component

In Chapter 3, the components of what an ICT-related organizational analysis should include were reviewed. This began with a look at who is the target audience of each Ministry, and whether each Ministry appears to be guided by any visible sign of a strategic plan. This was reviewed in conjunction with the accessibility of Chiefs of Staff, the extent of transparency of staff, and whether easily attainable information like ‘number of PCs’ and organizational structure was available. While it is not a foolproof indicator, it does appear as a general rule of thumb that the attitude of the Ministry interviewee to questioning was positively related to the extent to which his/her organization is concerned with service delivery. This varied significantly through the course of the interview process, and generally – the extent to which we see organizational capacity in Figure 6-6 is a good reflection of how comfortable and open various government employees felt with discussing ICTs.

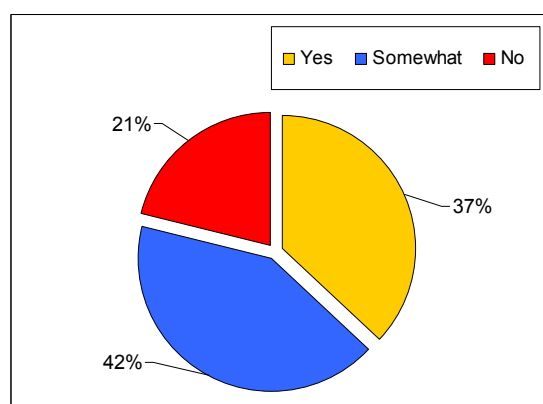
**Figure 6-5: Breakout of Organizational Capacity Component**



Note: The Ministry of Regional Administration has been excluded from this study due to its highly decentralized structure. Source: Author's analysis.

Based on interview discussions, a cursory analysis of the objectives of ICT work in Ministries is possible; to what extent are these ministries using ICT aiming to serve or benefit the citizenry (as opposed to the donor organizations and external constituents)? Figure 6-7 is meant only to illustrate the general ratio of those organizations whose job and role it is to serve citizens, relative to organizations whose work resides in the high level spheres of international finance, for example, and who do not have a direct interface with the local population. Those organizations who fall into the categories of ‘somewhat’ and ‘no’ often stated that the primary target audience for ICT work is international donor organizations and researchers.

**Figure 6-6: ICT work in Ministries: Does it Serve/Benefit Citizens?**



Source: Author's analysis.

Looking specifically at a measure of transparency in these institutions based on the general propensity to divulge information, evidence of inter-departmental collaboration, leadership of Chiefs of Staff in the facilitation of ICT work, and the availability of organizational charts, these institutions fall out equally. My primary research indicates shows that exactly half of them score low on providing confirmation of the above qualifications, and the other half score high.

We can thus conclude that what we see in the realm of organizational attitudes to ICT is not orchestrated or intentionally shaped; such outcomes point rather to the likelihood of the absence of coherent and collective strategy in government. The Ministry of Energy, for example, exemplifies this phenomena; there is little strategic direction or information regarding the utilization of ICTs in the Ministry; the transparency of the institution as advertised on its website is not substantiated by receptiveness of its upper level personnel to public information queries.

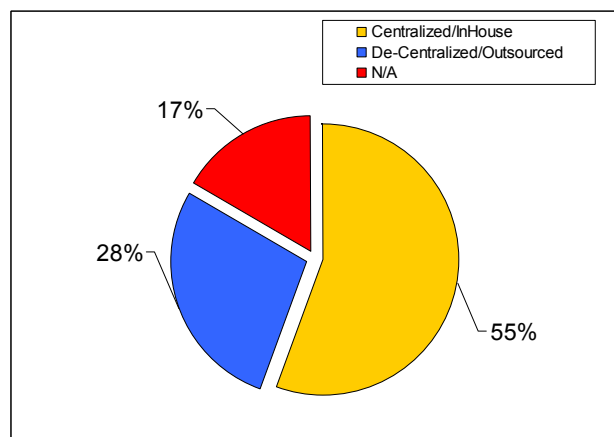
It is interesting to note that the organizational challenges related to connectivity and communication infrastructure, are strongly affected by basic environmental factors (i.e., facilities). For example, the challenges faced by the Ministry of Education appear to be a result of the fact that the Ministry moved buildings approximately one year ago (into the popular Government Building #3 where six other Ministries are currently housed). Since that move, many logistical issues have remained unaddressed, including those of basic connectivity. This is a rather strong indicator of the fact that technology is not a mission-critical component to the work of this institution; at the same time, what was previously an open access building to the public is now heavily securitized (after a security policy revamp in November 2004). The lack of ICT infrastructure precludes that ministry employees be accessible via email or Internet; the impenetrable filters that govern whose telephone call reaches what office are even more of a challenge. This ensures that citizens with formal queries to the Ministry will either have a very hard time getting their queries addressed, or will have to wait a very long time for hard-copy responses through the mail. Unless they know the right person, that is.

The Ministry of Foreign Affairs appears to be one of the few government institutions in Armenia that has managed to capture an element of innovation within the confines of its organizational structure. There are two separate and well-outfitted departments working on Communications and Web-related issues. A good example of the kind of innovation that has emerged from this Ministry is the E-Visa project mentioned earlier, which allows for visiting parties to Armenia to apply and receive their visas online through the MFA website. The significance of this project lies in its accomplishment of closing off two more points of interaction with public authorities that would otherwise be prone to corruption. This has been possible because this institution is comprised of individuals who have had educational and professional exposure abroad, and who have been able to import and manifest some of the entrepreneurial values that appear not to be indigenous to the Armenian political landscape. However, as the work of the Ministry of Foreign Affairs is 90% directed to a non-Armenian audience outside the country, this institution may not best exemplify the success of technology application in government relative to its peer institutions. It has, nonetheless, been making strides toward providing public access points, in a project funded by UNDP – to deploy computer ‘stands’ in various parts of the capital – that offer Internet access and public information to the citizenry.

Several Ministries have opted for decentralized ICT Management, at times in the form of what are called “Information Analytical Centers”, otherwise known as external IT departments (i.e., Ministry of Environmental Protection; Ministry of Labor; Ministry of Health). Across the board, this structure of ‘semi-outsourcing’

of the ICT component appears to work better than attempts at maintaining technology activity ‘in-house’. Levels of accountability and oversight are heightened, reporting structure appears to be more official and direct to Deputy Ministers, and the transaction costs of managing relationships outside the formal structure of the Ministry do not appear to exceed the costs of the poor/sub-optimal service provided by underpaid and overworked employees in ‘in-house’ IT divisions. While this may not be a finding that can be transposed well to other national contexts, in Armenia it appears certainly to be the case, with the important exception of the Central Bank, whose level of operations and organization is incomparable to the Ministries of the Executive Branch. Figure 6-8 lays out the aggregated status of IT departments across the range of institutions examined.

**Figure 6-7: Status of IT Departments in Armenian Government Institutions**



Note: The IT departments of the Central Bank are excluded from this figure, as their performance does not conform to the ‘best practice’ of outsourcing derived from interview work. The Ministry of Regional Administration is also excluded from the above figure, as its organizational structure is highly fragmented and de-centralized, and does not compare well to its ministry counterparts.

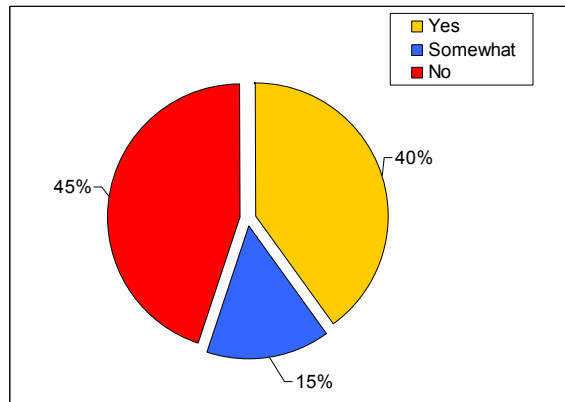
For example, the Ministry of Health’s association with its outsourced counterpart ‘MedInfo’ appears to be a good working model; it supports the Ministry’s technical needs (from the standpoint of equipment maintenance, upgrades, accessories, etc.). ‘MedInfo’ employs twelve people, including engineers, programmers and network

administrators, and typically has low turnover and a consistent, high level of training for the employees. The Ministry of Environmental Protection also employs an external center, which was formed three years ago, and is comprised of an independent servicing group responsible for developing databases, a website, and secure networks. It employs 12 people, most of who are obliged to do other work by contract to keep afloat; salaries here tend to be poor and below the average of other external centers. Perhaps the most successful example of de-centralized and outsourced IT work is that of NORK, a center that provides technical service and support to the Ministry of Labor and Social Welfare. It was established in 2000 by Government Decree, as part of a technical assistance plan from USAID/PADCO and the World Bank, and has grown to employ 165 people. It is essentially the critical lever that has enhanced the capacity of the Ministry of Labor, enabling it to surpass its peer ministries and rise to the standards of the Ministries of Finance and Trade and Economic Development.

Finally, the extent to which ICTs are a mission-critical component of the organizations in question is also a good indicator of whether technology can be used as an instrument of galvanization and ultimately, of institutional transformation. Figure 6-9 indicates that only slightly over half of the ministries and institutions of government (including the Constitutional Court, the Central Bank, and Parliament) consider ICT to be an integral part of their ability to fulfill their objectives as an organization.



**Figure 6-8: Is Information Technology a Mission Critical Component of the Organization?**

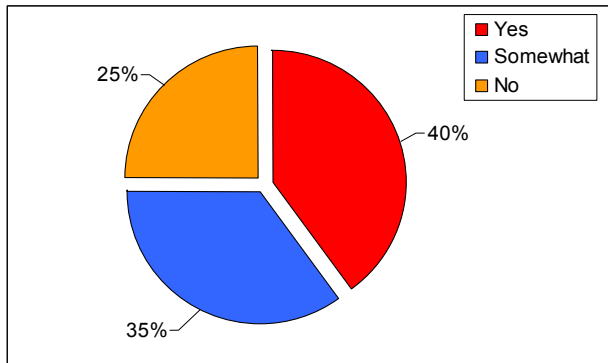


Source: Author's analysis.

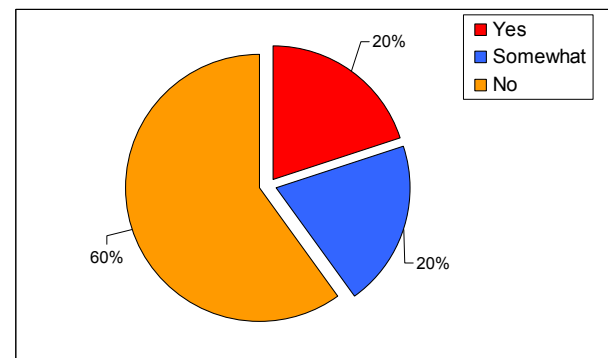
### 6.3.2 Financial Capacity Component

Understanding the financial component of ICT development in government is a tricky thing, particularly in a state whose government appears to have made no formal priority budget allocations to the technological capacity of its institutions (despite declarative statements to the contrary). In each case (with the exception of the Central Bank), identifying a line item entitled "IT budget" in the financial plans of Ministries was impossible. While verbal commitment to the idea of ICT development was evident in three quarters of the institutions analyzed (See Figure 6-10), 80% had little if no budget for ICT projects in the past or for the forthcoming year (See Figure 6-11).

**Figure 6-9: Commitment to Finance ICTs in Future?**



**Figure 6-10: Real Evidence of IT Budgets**



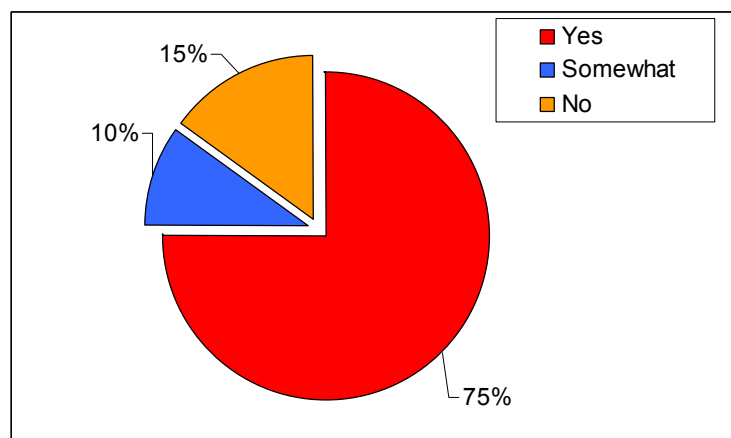
Source: Author's analysis.

Figure 6-10 confirms the fact that the clear majority of these government institutions are dependent on external donor support for the realization of ICT objectives of back-office automation, information management, and front-end web site development. Therefore, one can conclude that the extent to which government institutions are able to control their public relations – or public diplomacy – is contingent on exogenous factors. Of the tiny percentage reflected in Figure 6-12 that do not exhibit evidence of dependence on donors (i.e., the Ministry of Culture, the Ministry of Urban Development, and the Anti-Monopoly/Competition Commission), all of these organizations have little/no ICT infrastructure and would welcome the support were it extended. As a point of comparison, local governments responding to a 2001 survey in the United States on digital government highlighted that, regardless of population, the top two barriers to using ICTs in government are the lack of technology/Web staff to develop and maintain a web presence (66.6%) and the lack of adequate financial resources (54.3%).<sup>384</sup>

<sup>384</sup> Patricia Diamond Fletcher et al., *E-Government: Planning, Funding, and Outsourcing* (Washington, DC: International City/County Management Association, 2001), 3.

Many local governments reported that demands on the staff increased 44% versus decreased 17% as the result of digital government.<sup>385</sup>

**Figure 6-11: Is There Evidence of External Support?**



Source: Author's analysis.

Donor support is the most critical catalytic element to the emergence of digital government capability. For example, with the help of EU TACIS, the MFA is now aiming to make their ministry paperless by January, working through the process of mimicking current workflows, which include the processing of incoming information, information filtering (i.e., based on sensitivity of information contained), necessity of response and associated time frame, and the identification of those whose responsibility it is to follow up. One of the more amusing anecdotes from this experience comes from this particular line of questioning at one of institutions interviewed; in response to questions about the existence of a budget, one IT specialist smilingly replied, “We don’t need a budget. We have USAID.”

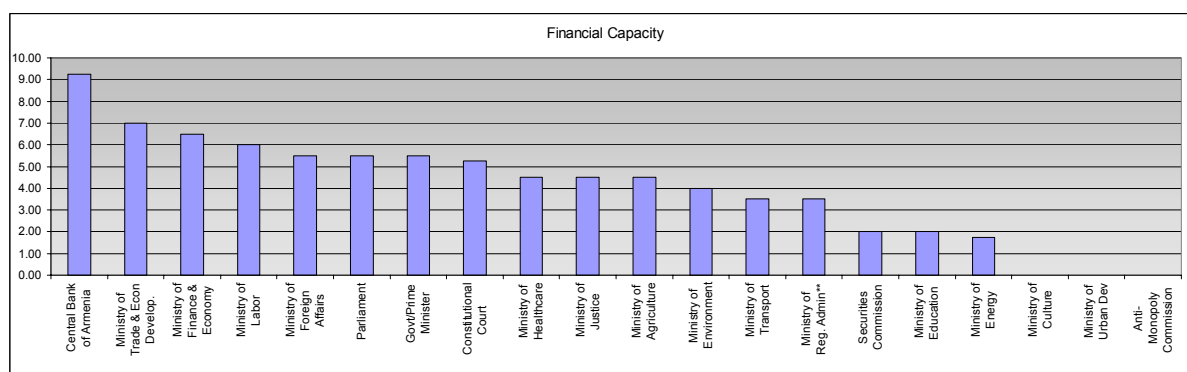
Figure 6-13 conveys a comparative view on the financial capacity component of each of the ministry and governmental organizations; again it is clear

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<sup>385</sup> Ibid., 3.

that those who give financial priority to ICT development tend not to be institutions concerned with frequent interactions with citizens. Although some are certainly better supported than others, financial limitations are the main problem associated with maintaining consistent ICT progress; the costs of connectivity<sup>386</sup> are a constant challenge. The Ministries of Culture, Education, Regional Administration, Agriculture and Environment all fall lower on the scale than Central Bank, the Ministries of Finance and Economy, Trade and Development and Foreign Affairs.

**Figure 6-12: Breakout of Financial Capacity Component**



Note: Despite the fact that it is decentralized, the Ministry of Regional Administration is included in this breakout because it has to benefit from some form of financial support to justify its work and existence. Source: Author's analysis.

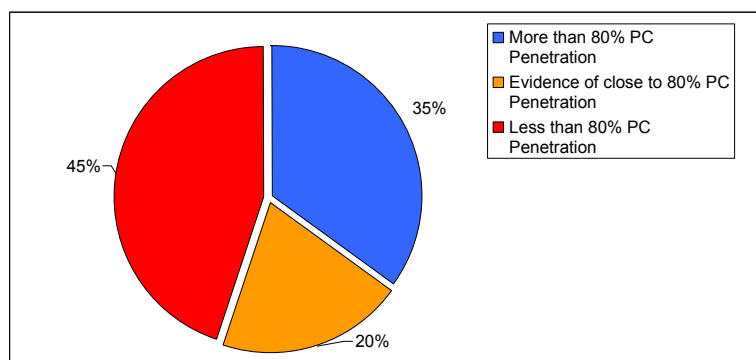
The only possible exception to this “high-politics” category is the Ministry of Labor; they exhibit high levels of attentiveness to the need for leveraging ICTs, and are tasked with the highly dynamic and interaction-intensive work of managing the state’s social welfare programs. Leaving aside their effectiveness in this role, this Ministry appears to come closer than its counterparts to the articulation of ICT-related strategy, in part because of its successful PADCO-supported outsourcing work with NORK, its large IT counterpart. (See Appendix A for more information)

<sup>386</sup> The issue of Armentel’s telecommunication monopoly features prominently here as everywhere else; ministries tend to have downlinks of 1 Mb, and radio modem uplinks of 128 Kbps.

### 6.3.3 Technical Capacity Component

This particular area of capacity is what comprises the endoskeleton of most government institutions – the machinery that makes for the smooth functioning of the organization in terms of human resources management, payroll systems, document processing and delivery, and knowledge management (in its most rudimentary form). Most of the ministries have a reasonable ratio of personal computers (PCS) to staff; the average ranges from 72-76% PC penetration, although it is certain that those Ministries working in more scientific and data-gathering areas (i.e., Health, Environmental Protection) are better equipped. (See Figure 6-14) Most of the computers in Ministry offices are gifts from donors.

**Figure 6-13: Extent of PC Penetration Levels**

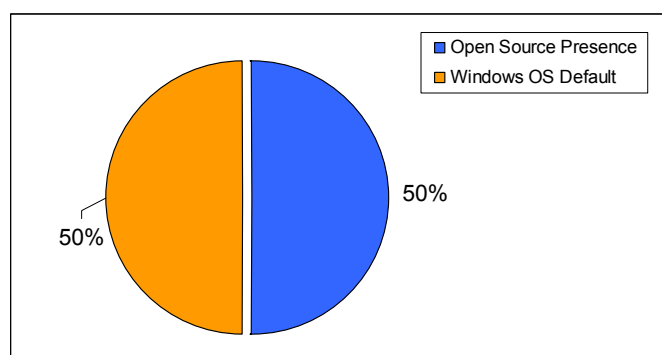


Source: Author's analysis.

The extent of networking capability in most of these institutions seems to stop at the level of local network file servers; Intranet/portal capabilities are rare, and often those using the local file servers are a small subset of the total ministry employee base. 75% of ministries are using some kind of local file server, while 25% are devoid of any such network/sharing infrastructure.

The issue of software licensing is of fundamental importance in such developing contexts, though it is often overlooked as a priority in government, given the overwhelming culture of software pirating in Armenia (as in most peer former Soviet republics). Trying to acquire information regarding the status of operating system and desktop application licenses was not possible; it appears that the number of updated licenses is miniscule, with even less information available about whether existing licenses cover total numbers of users. 100% of software being used - even in the advanced Ministry of Foreign Affairs - is pirated, with the rare exception of machines/servers that have been granted by donors that come with their own licenses already cleared; the Central Bank is the only real exception as an institution. Insofar as open source software development activity can help to mitigate the problems of unabashed software piracy, the growing prevalence of open source work in Armenia is a hopeful sign.

**Figure 6-14: Open Source Software Development Activity vs. Windows**



Source: Author's analysis.

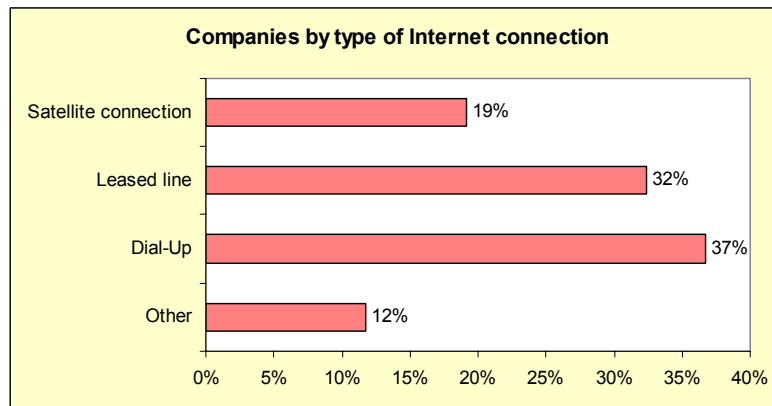
For the moment, although it is not part of a concerted strategic effort on the part of government, a full 50% of government ministries and organizations is employing some element of open source development. (See Figure 6-15)

Over time and across projects, these institutions tend to accumulate significant numbers of machines of varying quality and capability; the result is a mosaic of computing capacity, ranging from the newest Pentium IVs to the oldest Celeron processors. The need for equipment upgrades is vast, and remains often unfulfilled; the challenges of interoperability are often left unaddressed. Connectivity as a technical challenge is certainly tied to financial constraints, although even when there is fiber optic cable already laid between government buildings and ministries, it seems that people have not yet determined what to do with it. What sporadic Internet access exists in support of basic information retrieval needs and email comes in some cases from employees who are using personal dial-up accounts at work (i.e., Ministry of Education, Ministry of Urban Development). These are sometimes partially subsidized by the ministry, although exact figures were not possible to obtain. Based on an IT Sector Needs Assessment Survey conducted by the Armenian Development Agency in 2004, Armenia's communications infrastructure is currently being updated with digital lines. Figure 6-16 displays that 37% of IT companies in Armenia access the Internet through Dial-Up connection, with 32% doing the same through leased line. Notably, almost all of the surveyed participants complained of the reliability and speed of the telephone and Internet connection.<sup>387</sup>

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<sup>387</sup> Padraic Murray, *Armenia: IT Sector Needs Assessment Study*, Software and IT services, Armenian Development Agency (2004), 26.

**Figure 6-15: IT Sector Survey – Armenian Companies by Type of Internet Connection**

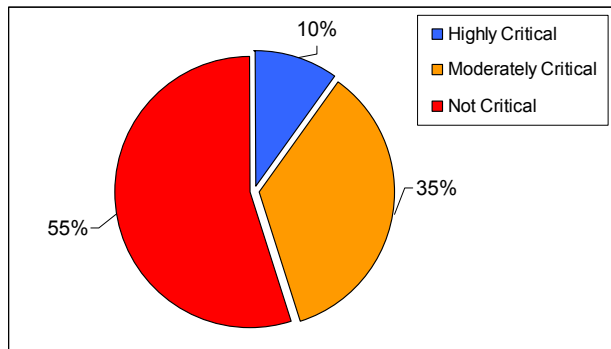


Source: Author's analysis.

In any case, it is common to find several employees at a time sharing one computer to check their email. Moreover, many ministry staff (for example, at the Ministry of Foreign Affairs) apparently continue to use their private yahoo/hotmail addresses rather than their workplace (i.e., mfa.am) domain email. This is indicative of a blurred line in collective conceptions of private vs. public work. That said, however, often the functionality of local (.am) web servers are not sufficient to support frequent access to webmail. Figure 6-17 displays the extent of criticality of internet access across the organizations in this study. Only 10% are actively dependent on Internet access for the operations and work of their employees.



**Figure 6-16: How Critical is Internet Connectivity to the Work of the Organization?**

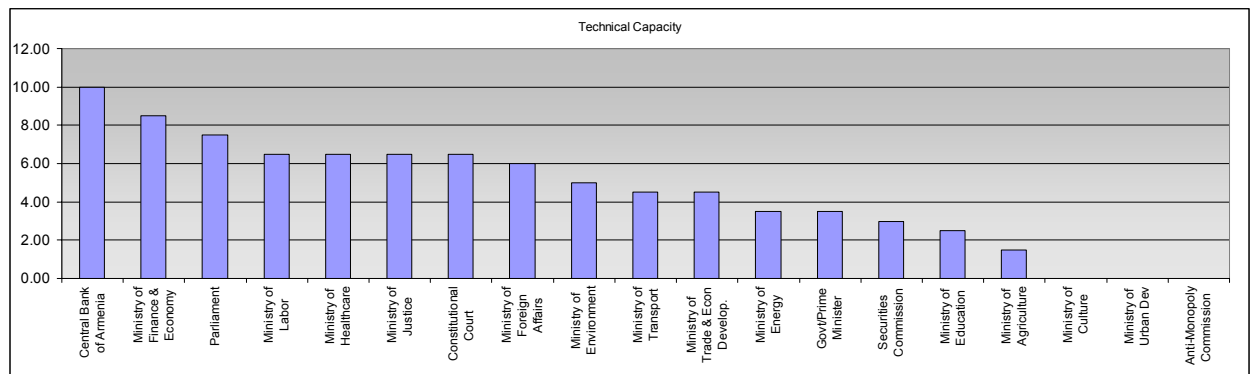


Source: Author's analysis.

Needless to say, it is important to point out that Internet connectivity in an institution is not in and of itself sufficient indication of successful ICT implementation. Likewise, the relevance of the following quote by an interviewee: “... we don’t have to have CPUs to have IT in an organization”. For example, three times a week, the Ministry of Foreign Affairs opens its doors at the back of its building, allowing citizens to come forth, stand in queue, take numbers, wait to be called, and address their personal queries in matters related to the Ministry.

Looking at Figure 6-18, it is easy to surmise that those organizations with the highest and moderate levels of technical capacity (i.e., hardware and equipment like servers for networks, PCs, etc.) are also those who are most likely to have had concerted exposure to donor organizations over the last several years. Once again, the organizations associated with international finance and monetary flows are well-supported; Parliament has benefited from substantial donor collaboration, and the Ministries of Labor, Healthcare and Justice all have a significant component of their ICT infrastructure work outsourced.

**Figure 6-17: Breakout of Technical Capacity Component**



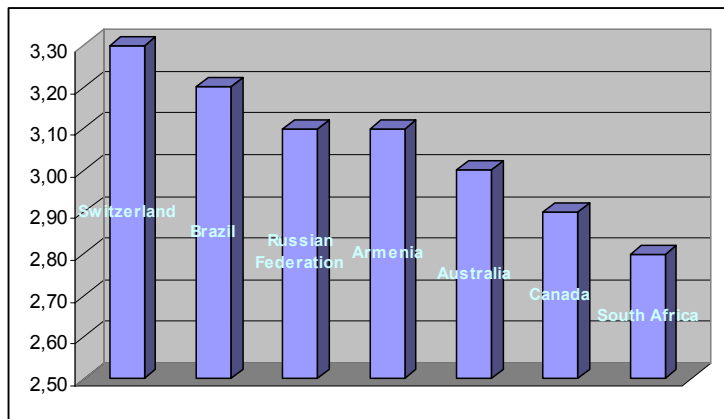
Note: The Ministry of Regional Administration has been excluded from this figure due to its highly decentralized organizational structure; the bulk of its work and capacity lies in the various field offices that have been active in providing connectivity to regions. The main donor working with this Ministry is UNDP. Source: Author's analysis.

### 6.3.4 Human Capacity Component

The human capacity component in this case analysis is probably the most interesting element to consider, in large part because great potential exists in Armenia for the development of an IT-savvy employee base in government. According to the IT Sector Survey conducted by the Armenian Development Agency in 2004, Armenia's legacy as leading center of computing technologies during the Soviet era (regarded to be the Silicon Valley of the former Soviet Union) has translated well to its solid standing in the realm of human capital. A 2002-2003 report by Brainbench<sup>388</sup> lists Armenia and Russia as sharing first place in the CIS, and the third worldwide, in the category of geographical areas with the highest average Information Technology test scores. The report revealed Armenia as having one of the highest concentrations of certified IT specialists in the world.

<sup>388</sup> Brainbench Inc. is an online testing service which enables testing from operating systems to computer languages to packages. In total, more than 400 skills can be tested. A study from Brainbench has mapped out the global distribution of skilled knowledge workers. Called the Global Skills IQ 2003 Report, the research provides a country-by-country ranking in nine key categories, including Finance, Health Care, and Information Technology. Global Skills IQ Report, Brainbench, July 2003 (accessed March 25, 2005); available from July 2003, <http://www.brainbench.com/pdf/globalskillsiq2003.pdf>.

**Figure 6-18: Top Countries by Average Score on IT Testing**



Source: Brainbench, Inc. Accessed March 2005. Available from <http://www.brainbench.com/pdf/globalskillsiq2003.pdf>.

In relative terms (per 1,000 inhabitants) Armenia scored among the top ten countries in the world (see Figure 6-19), whereas in absolute terms it is comparable with countries such as Turkey (which has a population 20 times that of Armenia) and ranks 41<sup>st</sup> in the world.<sup>389</sup> How such a finding translates to the reality of Armenia can be assessed by looking first at the capacity of end users in various ministries and how ICTs apply to their work, and next at the capacity of the IT staff – if any exists.

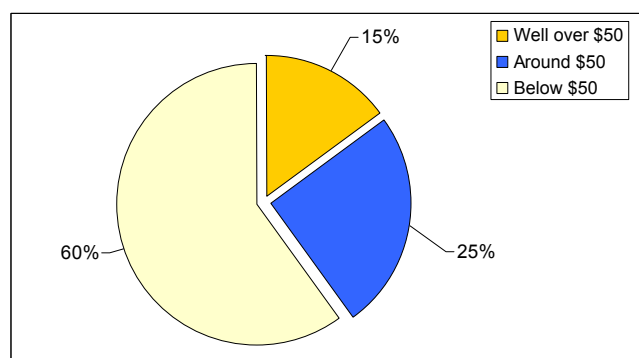
Employee salaries are very constrained, and are a main reason for the prevailing apathy that one sees in the IT departments of the average government ministry in Armenia today. The sheer inability of Ministers to officially integrate the existence of IT departments within their organizational structure, much less allocate appropriate levels of funding to staff is a grave impediment to the emergence of modern mechanisms of public diplomacy in Armenia. While ministries should be paying their employees somewhere in the realm of \$250-\$300/month (to compete with the vast amount of private sector technology work

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<sup>389</sup> Padraic Murray, *Armenia: IT Sector Needs Assessment Study*.

that pays in this range), oftentimes they are not able to give their employees more than \$50/month.<sup>390</sup> This is because they have neither allocated budgets for this work, nor top-level support from government to plan for it. Figure 6-20 conveys the essence of the problem when it comes to remuneration; more than 80% of employees are earning around \$50 a month or less. This sharply limits the number of young people helping to develop ICT usage in government, as well as marginalizes those who could really make a difference, but who are simply obliged to base their decision-making on the highest bidder.

**Figure 6-19: Salary Range for Ministry Employees in IT Divisions**



Source: Author's analysis.

Salary levels at the Ministry of Agriculture, for example, are at an average of \$50/month. The emergence of the Ministry's main ICT work on a portal is the result of UNDP funding; this of course, is temporary, and questions of incentives and sustainability featured prominently in the interview.

There are exceptions to the rule, of course. The employees at the helm of IT development at the Central Bank are well trained, well-paid and have an average turnover of about 25% per annum. One problem appears to be that young people

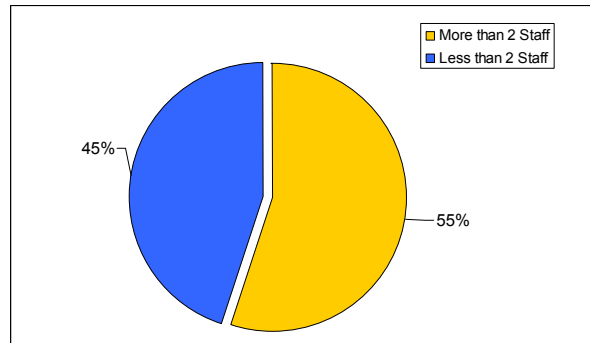
<sup>390</sup> As a point of reference, average starting salaries among all reporting governments ranged from approximately \$35,000 to \$55,000 in the United States. Donald F. Norris et al., *E-government: Web Sites and Web Access* (Washington, DC: International City/County Management Association, 2001), 4.

come in, receive excellent training, and then move toward private sector work. In terms of the background of those entering the Bank, there have been no direct requirements, although entrants have largely had polytechnic backgrounds or training in economics. Of the approximately 450 people who work at the Bank (including 80 administrative staff), 100% of them have PCs; there are currently 300 users of the interbank CBANet. The caliber and advanced status of IT work at the Central Bank appears to be unparalleled in Armenia in other government branches.

The more advanced organizations appear to have a team of people working together in a single division, comprised of database managers, network maintenance specialists, and web application developers. For example, a total of 6 people aside from the advisor to the Minister work in two units that are related to web and communication work of the Ministry of Foreign Affairs. These include a Web Division comprised of 4 people and a Communication Department, comprised of 2 people. Over the last five years in this organization, there have been between fifteen and twenty individuals who have worked on ICT-related projects; there tend to be on average three people working at any given time. Two tend to be full employees, one works on an on-call basis (i.e. part-time), and one with basic manual support tasks. Looking at the range of institutions, however, it is clear that most do not have the resources to support more than one or two full-time persons. In Figure 6-21, we see that 45% of these organizations have less than 2 people supporting the technology needs of the entire ministry; this is often indication that there is no in-house content development or web management underway. This is often possible because donor organizations tend to undertake website creation

projects with limited time horizons; few such projects are initiated with an eye toward sustainability and transfer of ownership.

**Figure 6-20: Size of IT Department Staff**

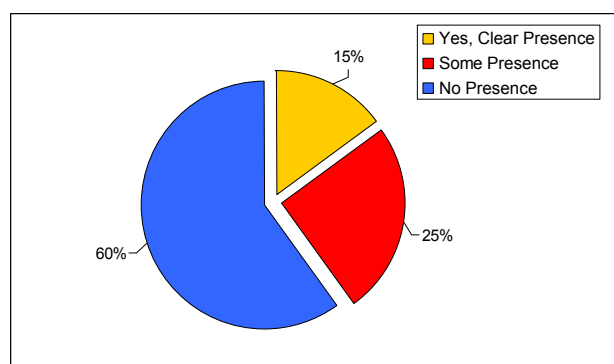


Source: Author's analysis.

While some of these employees have certified technical backgrounds, there appear to be few unified standards that apply to employees in this area. In terms of the management of human resources, there is little independent decision-making that can be made at the department level in most Ministries; the process of hiring/firing is not at the personal discretion of department managers. The culture of nepotism is one that is pervasive in this country; few people are brought into jobs by others to whom they have no personal connection. Decisions regarding the appropriation of work are taken from higher up, and there is no strategically derived plan from which training and investment in staff is funded. At the Ministry of Transport and Communication, for example, appointment of new positions, as in many others, is subject to oversight in government; thus, in the same way that organic growth is somewhat impinged upon by the work of donors, it is also suppressed from within. Decisions regarding the strategic addition or deletion of staff are guided from above.

The essence of effectively leveraged human capacity comes down to the existence of innovative leadership and vision. Based on information gathering related to past highlights/successes and future project work, it became possible to gauge whether or not each ministry or organization benefited from the vision of a ‘champion’ or leader, guiding the process. Figure 6-22 captures the general status quo across Armenian government institutions; only 15% are benefiting from a clearly acknowledged visionary or ‘champion’, which really means that the task of ICT innovation is left to a small handful of individuals with the drive and fortitude to make battle in what is otherwise a stultified operational environment.

**Figure 6-21: The Presence of Innovator or ‘Champion’ in Organization**



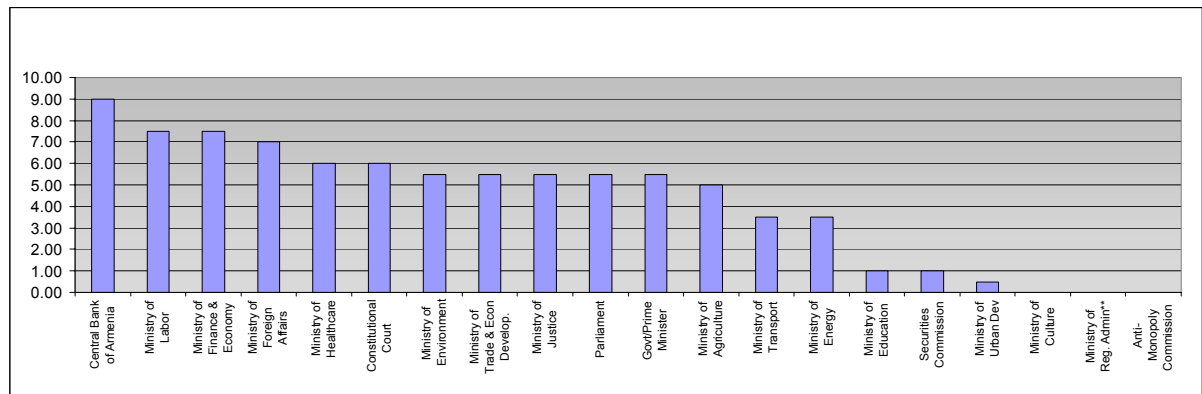
Source: Author's analysis.

Not unlike the other capacity components in this research, the ‘human factor’ and its critical role in creating a conducive environment for ICTs appears to be tied to the range of factors that define an organizational and political culture. Those organizations that are under the highest pressure to adhere to international standards and protocols (which unsurprisingly are those dealing with bank transfers, credit extensions and all other forms of capital flows) are those who have their ‘act together’, so to speak. The more a ministry or organization can benefit from being

a ‘closed system’ or ‘black box’, the less it has the capacity to use and absorb ICTs.

(See Figure 6-23)

**Figure 6-22: Breakout of Human Capacity Component**



Source: Author's analysis.

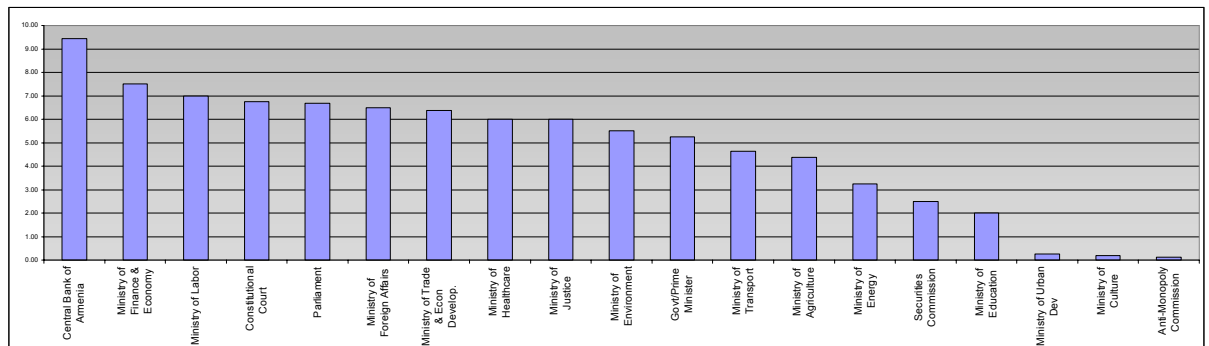
## 6.4 Conclusion

While capacity for ICT usage in all four critical areas is not entirely lacking across the board, the lack of consistency from institution to institution is damaging to the collective; those organizations that do demonstrate excellent levels of organizational, technical, human and financial capacity also happen to be those that have the least amount of contact with the average citizen. (See Figure 6-24)

The Central Bank and the Legislative and Judicial branches (as represented by the Constitutional Court and Parliament) appear to have much higher levels of capacity than ministries belonging to the Executive branch of government.



**Figure 6-23: Average Total ICT Institutional Capacity Rankings Across Government**



Source: Author's analysis.

Therefore, what effective ICT development exists is strengthening a layer of interactivity that, while valuable in and of itself, is really beyond the pale of the real constituents of the Armenian government. This creates thus an illusion from the outside that Armenia has the necessary institutional capacity infrastructure to be considered a viable and democratic state. For example, the annual Index of Economic Freedom, jointly prepared by the Heritage Foundation and the Wall Street Journal placed Armenia 44<sup>th</sup> (along with France and ahead of Poland) well ahead of its neighbors in terms of development of its business climate. Armenia is considered the only “mostly free” economy in the Commonwealth of Independent States (CIS), compared to Georgia (ranked 91<sup>st</sup>), Azerbaijan and Turkey (ranked 106<sup>th</sup>) and Iran (ranked 148<sup>th</sup>). At the same time, most of the indexes measuring Armenia’s status of political development indicate that there are serious problems beneath the surface of ‘government portals’ like [www.gov.am](http://www.gov.am).

One of the conclusions to be drawn from this is that by and large, there is either little understanding of the necessity of unified and coherent strategy when it comes to the use of ICTs in Armenia, or – there is an intentional lack of ICT-induced transparency due to perceived costs of interactivity. Such costs may not

necessarily be derived in monetary terms. On a comparative note, a survey conducted in 2000 of 3,749 local governments in the United States found that only 8.8% of those responding – regardless of form or type of government – had an overall strategy or master plan to guide their development of digital government government.<sup>391</sup> More than half (53.3%) of those governments with populations greater than one million had strategies or master plans for e-government; but only 7.9% did in the 25,000 to 49,999 population range, and none in populations less than 10,000.<sup>392</sup> Governments that serve large populations have traditionally been quicker to adopt new IT, more likely to have an extensive IT infrastructure and staff, and more likely to plan for new IT developments.<sup>393</sup> While this may not necessarily be a good comparative for Armenia, it does convey an interesting point about the relationship between critical mass in a population, and the related incentives to innovate in government service delivery.

Each successful agency must have a strategy and stated objectives, and the main ingredients for good results (rare as they may be) are predicated on having a single vision, solid financial backing, and a strong local leader who is able to drive the project. For the time being, the advancement of ICTs in the various key government institutions of Armenia is tied to the whim of donor organizations, and the corresponding skill and ability of ministry ‘rainmakers’ to attract them. The computerization of various national governance bodies’ functions assumes that ICTs will be used to make the execution of general functions easier (i.e., planning, decision-making, supervision, access to information, service delivery) and less

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<sup>391</sup> Fletcher et al., *E-Government :Planning, Funding, and Outsourcing*, 2.

<sup>392</sup> Ibid., 2.

<sup>393</sup> Ibid., 2.

taxing of a limited resource base. That said, however, this has not been achievable because of a lack of coordination and analysis on the one hand, and a lack of political will from the offices of the President. A presidential statement that “IT is a priority sector for Armenia” has not been enough to galvanize even those who work in Government, much less those whom it serves.

Open access to information and pervasive automation in all the ministries, commissions, deputies and employees will not be valuable unless there is a means or mechanism by which feedback can be integrated, and empowerment can take the form of an offering: of real, online, functional tools for citizens. These could include, among other things, searchable electronic databases (i.e., court decisions), consistent access to open session schedules, hearings, and meetings, and guidelines on legal proceedings. What appears lacking today is a coherent and updated ICT strategy that does more than generate actionable points and recommend the creation of a “Chief Information/Technology Officer”. Although the Master Strategy document recommended the need for a High-Speed Government of Armenia Network (GOANet), it has not been realized and is insufficient; the digitization of government institutions cannot achieve its stated aims if the utility of ICTs is not indoctrinated into the work ethic of those it is meant to serve.

The executive, legislative and judicial branches must be brought together as part of a unified movement toward tackling the challenges of digitization and automation, and an active body must undertake the task of educating and training at every level of public sector administration. The ICT 2001 Master Strategy observed that while active government initiatives in Armenia are necessary in the

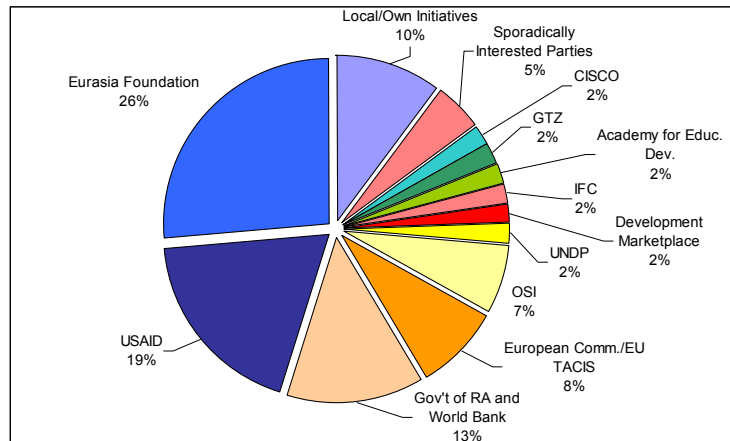
short-term, what is needed is a long term view that embraces the goal of reducing government involvement and increasing profit orientation. This approach has apparently been adopted successfully in many locations now recognized as global ICT centers. That said, however, Armenia is far from emulating the successes of Ireland, Israel or India, even if one applies a relative lens. Change through the utilization and application of ICTs is a unique thing, because technology is not only the instrument of those in power; it is an instrument for those who seek to challenge it. For the time being, government leadership is the only means by which the institutions in question will start to achieve their service delivery potential.

Based on information gathered by the Information Technology Development Support Council (ITDSC) to the Prime Minister's Office, from 2004-present we know that there have been approximately 106 ICT related projects underway in the country. A report written in June 2002 highlights the progress of these projects within the scope of Armenia's existing ICT Master Strategy in fulfilling strategic directions across 18 major topic areas<sup>394</sup>; but field research in this dissertation yields evidence that many of these are in fact still in embryonic stages and not yet functional.

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<sup>394</sup> Development Network, NGO, "Status Assessment of Projects Implemented within the Scope of Armenia ICT Master Strategy", Final Report, Yerevan, Armenia, 2002.

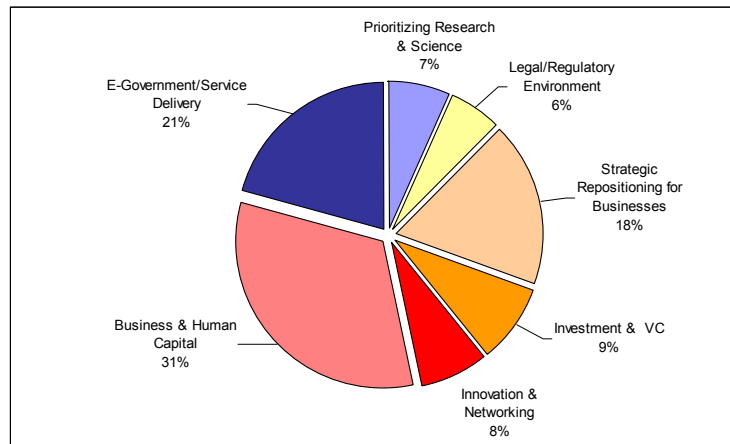
**Figure 6-24: Cross-Section of ICT Project Work by Financier 2004-Present**



Note: Those classified as “sporadically interested” financiers include the International Scientific Center, DFID, Barents Group, the Urban Institute, and various random Diaspora-led projects. Source: ITDSC

While Figure 6-25 in no way approximates the amount of money spent on ICT work per financier in Armenia, earlier reports on donor activities in Chapter 5 give us an idea as to the scale of funding being appropriated per country. This information guides us toward understanding which organizations are most frequently active across the range of ITC-related project areas. The most prominent areas of ICT-related activity fall into categories (adapted upon categorizations by the ITDSC) of e-government/service delivery, human/business capital generation, and strategic repositioning for private sector entities, investment and venture capital generation, innovation and networking, etc. as shown in Figure 6-26.

**Figure 6-25: Major Areas of ICT Work in Armenia**



Source: ITDSC

Ownership of projects that are intended to enhance functionality and service delivery is vital. Each branch of government has its unique challenges in developing its potential in terms of human, organizational, technical and financial capacity; using the ICT Capacity Measure template presented in this paper is a first step toward identifying and resolving problem areas in each institution. The local market is unfortunately not well utilized or leveraged when it comes to identifying and developing ICT-related solutions for government. In many cases, they are excluded completely; concurrently, many knowledgeable, innovative individuals are cut out of the process of developing viable and comprehensive e-government solutions, simply because of the politics of the donor world (and their institutional counterparts) in Armenia. This is a problem that spans beyond a few unintentional exclusions; this is indicative of a condition that undermines the value, relevance and legitimacy of Armenia's organic social capital. Favoritism on the part of donors reinforces this problem.

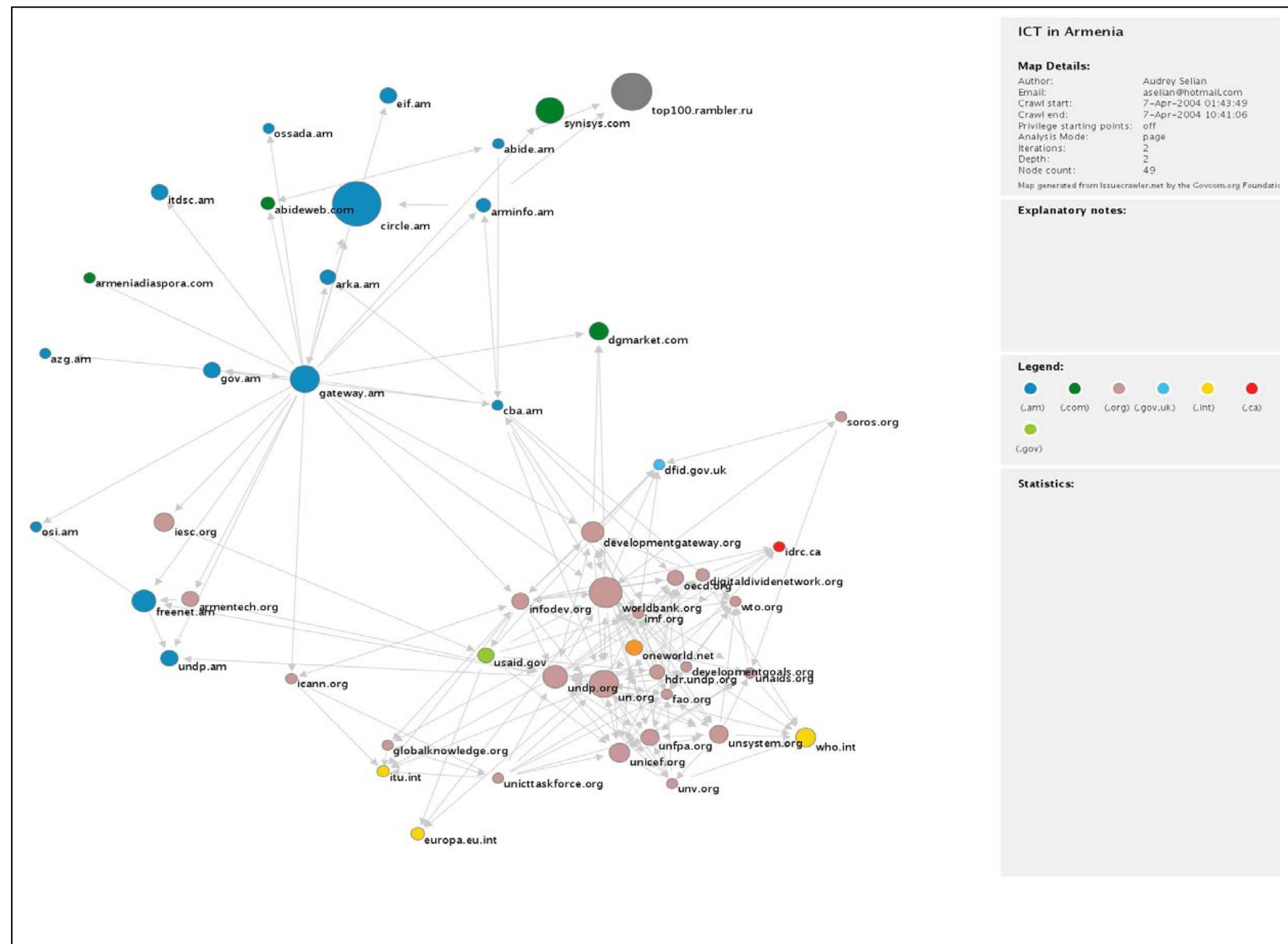
Use of the innovative mapping tool created by Richard Rogers at the University of Amsterdam yields an interesting angle on the dynamic of ICT

development in Armenia; the ‘issuecrawler’ conducts hyperlink analysis based on harvested url’s from a common search on any internet search engine.<sup>395</sup> Figure 6-27 shows us the sharp distinction between the connections of .org organizations (i.e., usually major international donors and NGOs), and .am (i.e., local Armenian government domain entities) in cyberspace. The density of the network between the donor organizations around the issue of ICTs relative to the sparse connections on the local side, signal evidence that much of the work being undertaken is not organic and indigenous, but transplanted. This figure not only distinguishes between major related entities, but gives us a sense of the donor-driven nature of ICT development work in this country. It is quite evident that the important players on the donor side include the World Bank, UNDP, USAID and various UN organizations. On the Armenian side, we see some of the major portals like gateway.am, gov.am, and circle.am (which is a ratings site tracking statistics for Armenian web resources). A mapping of the search “E-Government and Armenia” in July 2004 yields almost exactly a similar divide between regional and international organizations, which supports the idea that the issues of digital/e-government work and ICT tend to be convergent.

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<sup>395</sup> Richard Rogers, Govcom.org, Issue Crawler Software (accessed August 2004); available from [http://www.govcom.org/Issuecrawler\\_instructions.htm#2](http://www.govcom.org/Issuecrawler_instructions.htm#2).

**Figure 6-27: Issue Crawler Mapping Results based on “ICT in Armenia” (April 2004)**





In order for government institutions of Armenia to achieve their potential when it comes to ICTs, institutions themselves must begin an evolution; the end goal of such an evolution is actually the starting point that many analysts take for granted when working in public sector reform: bureaucracy. Weber identified the features of what institutions must achieve as bureaucratic organizations, and it is clear that despite the negative connotations of the terminology of ‘bureaucracy’ in present day, the characteristics attributed to it as a concept are desirable for post-soviet transitioning ‘democracies’. For those familiar with Armenia’s political system, it is obvious that the structures in place are pre-bureaucratic and thus in need of rationalization prior to digitization. In a country where the conduct of politics is governed by custom and by patterns of behavior engrained in established social networks<sup>396</sup>, it is very important to apply a holistic framework that pinpoints shortages in capacity to absorb solutions like ICTs before spending donor money needlessly. The following chapter provides a unique view upon the perceptions of individuals in their households in Armenia; more specifically, we look to the insights to be gained from those whose stake in the effectiveness and transparency of the public sector is highest and most personal.

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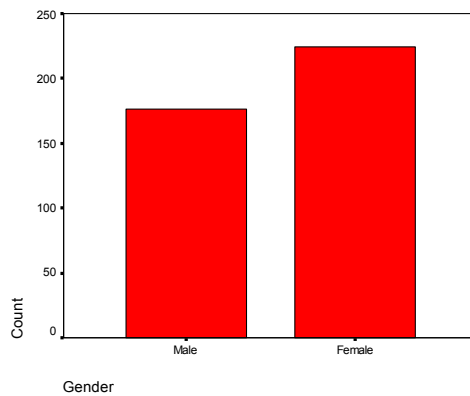
<sup>396</sup> Hence the idea that even if ICTs were being used to enhance the functionality (and hence interactivity) of websites, the fact remains that citizens seeking information about how best to accomplish a public sector administrative task will not send email or check an internet site. They will call someone they know ‘on the inside’, if they can, to find the most effective and expeditious way to accomplish their goal.

## 7 Survey Results

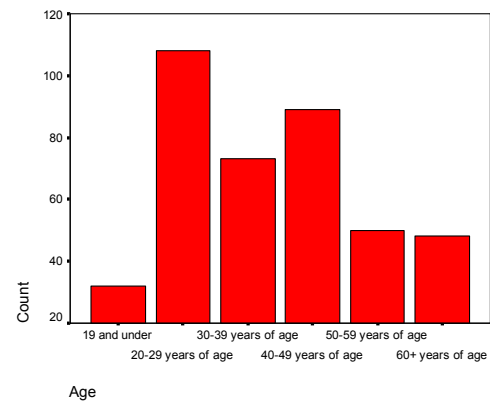
If the potential of ICTs to lead to manifestations of liberal democratic value systems in government institutions is largely overestimated (as proven in Chapter 4) by deterministic models, then the real output of these institutions is perhaps best assessed by those they are meant to serve: the citizens. A survey instrument was designed to gauge the perceptions of the citizenry in Armenia, and was deployed with the help of the Armenian Sociological Association in Yerevan from September through December, 2004. Questions were presented to four hundred households in three different cities: Yerevan (the capital), Kapan (in the South), and Gyumri (towards the north). The questionnaire itself is available in both English and Armenian as shown in Appendix C. The questions in the survey cover a few main areas of enquiry: general technology access levels (and related demographic information), governmental ICT functionality, patterns of constituent interaction with government, and satisfaction and trust levels as a function of technology use. This provides the grounds upon which the impact (if any) of ICT projects in Armenia's public and administrative structures is gauged.

The distribution of the survey with regard to gender and age brackets is as follows in Figures 7-1 and 7-2; the distribution of education levels of respondents is shown in Figure 7-3, and the distribution (by percentage) of respondents across the three main cities is show in Figure 7-4.

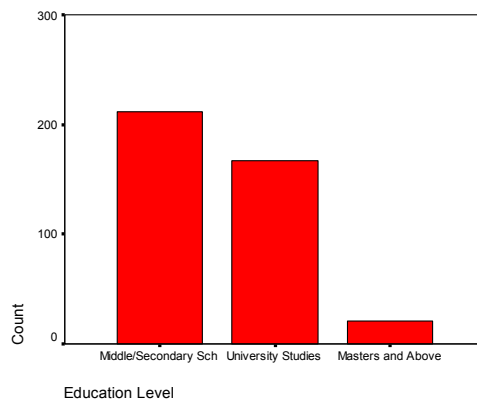
**Figure 7-1: Gender Distribution**



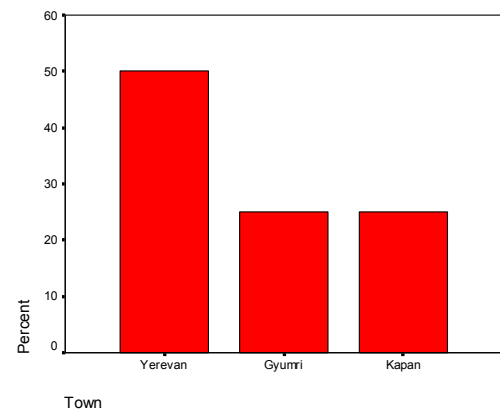
**Figure 7-2: Age Bracket Distribution**



**Figure 7-3: Education Level Distribution**



**Figure 7-4: City Location Distribution**



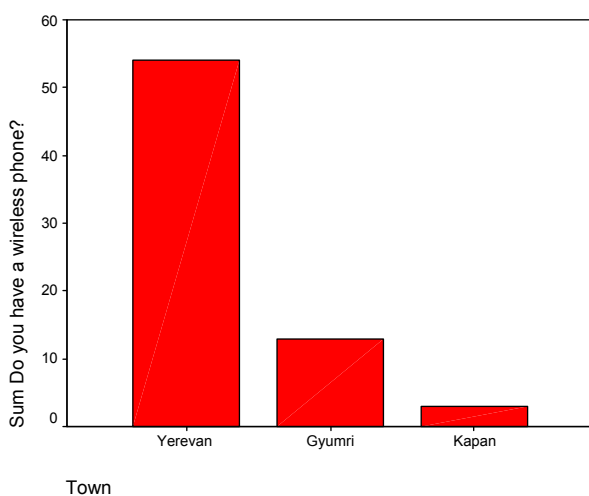
Source: Author's analysis.

## 7.1 Connectivity Status

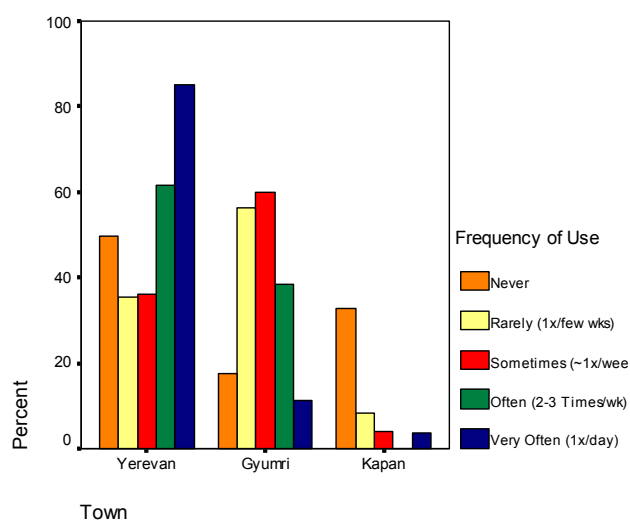
The questionnaire begins with the issue of connectivity, and the extent to which a household uses fixed line telephones, mobile phones, and the internet. According to this survey 79% of those questioned have a fixed line telephone at home, though only 17% have mobile phones. Of the total who uses mobile phones, 66% are males; indeed, 25% of all the men surveyed use mobile phones, as compared to only 10% of all the women. This difference between the genders is a

statistically significant one. Unsurprisingly, nearly 64% of those who use mobile phones fall within the age brackets of 20-39 years of age (in other words, 44% in the 20-29 age bracket; 19% in the 30-39 age bracket). The correlation between having a telephone at home and having a wireless phone is statistically significant (.204, with 99% confidence interval), although not as strong as the correlation between owning a wireless phone and the frequency of using the internet (.436, with 99% confidence interval). Also unsurprisingly, the distribution of wireless phone ownership is heavily skewed toward the capital, Yerevan, as is the frequency of Internet use (See Figures 7-5 and 7-6).

**Figure 7-5: Wireless Phone Ownership by City**



**Figure 7-6: Frequency of Internet Use By City**

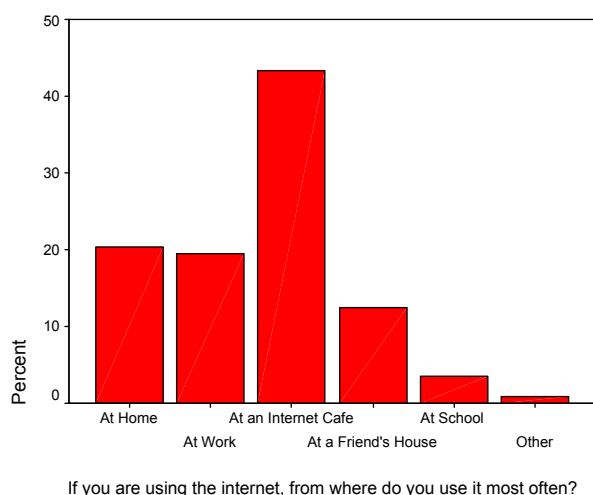


Source: Author's analysis.

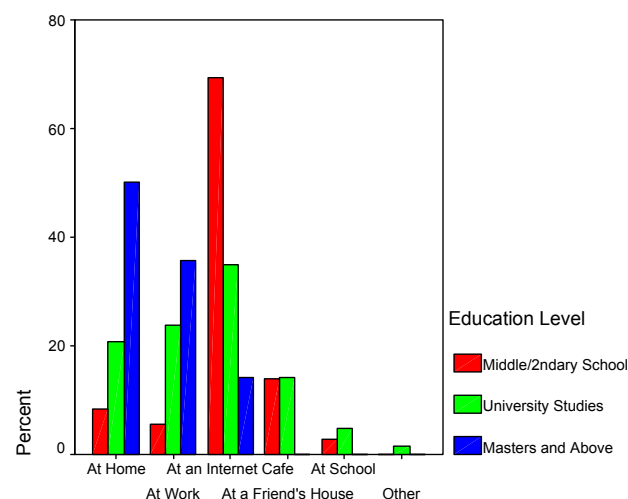
Of those 28.3% of the sample population who are using the Internet in Armenia, nearly half (46%) of them fall in the 20-29 age bracket. 52% of the total Internet users are getting online to check their email, 20% are using the Internet for learning, and 12% are online for getting access to news; the remainder are largely chatting, downloading music or playing games. The difference in the way the

Internet is being used between genders, age groups, and education levels is insignificant, contrary to the differences between the cities. This must be predicated in large part on the introduction of access and likelihood of familiarization of the population with email, etc. If one compares this to the official aggregated data by the ITU that Armenia had about 200,000 Internet users in 2003, based on average estimates of the population at 3,000,000 – one could calculate that an approximate 7% of the total population uses the Internet. The decisive differentiating factor between that percentage and what is found in this study, however, is likely due to the fact that 50% of the sample respondents are located in Yerevan.

**Figure 7-7: Preferred Locale of Internet Use**



**Figure 7-8: Internet Use by Locale by Education Level**



Source: Author's analysis.

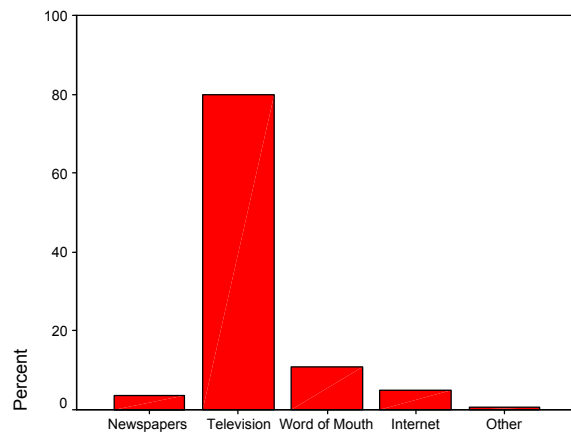
Of the 28.3% of Internet users in this sample, nearly 62% of those who use the Internet 'sometimes' or more frequently are located in Yerevan. (See Figure 7-7) This group of users largely (43%) accesses the Internet from an Internet café; the capital is littered with such cafés on every street corner. Home use is followed

closely by use at work, and the difference between genders and age groups on this question is insignificant. However, difference between people's educational levels (comparing those with high school degrees to those with University-level or Masters degrees) and the place from which they get online *is* significant. (See Figure 7-8)

## **7.2 Attitudes and Approaches to ICTs and Information**

As compared to some of the grim statistics surrounding access levels in Armenia today, one very hopeful number stands out: 87% of the sample respondents indicated that they felt pressure and necessity to learn how to use new technologies like the Internet, presumably because they are aware of how potentially useful they can be. There is no statistically significant difference between genders, age groups or education levels relative to the way people responded to this question. That said, however, people do not seem to be stretching their limits when it comes to finding alternative sources for acquiring public information. An astounding 80% of the sample reported that they derive most of their information from public television, as shown in Figure 7-9. The difference between the responses by gender, age group and education level are all significantly and statistically different.

**Figure 7-9: Sources of Public Information**

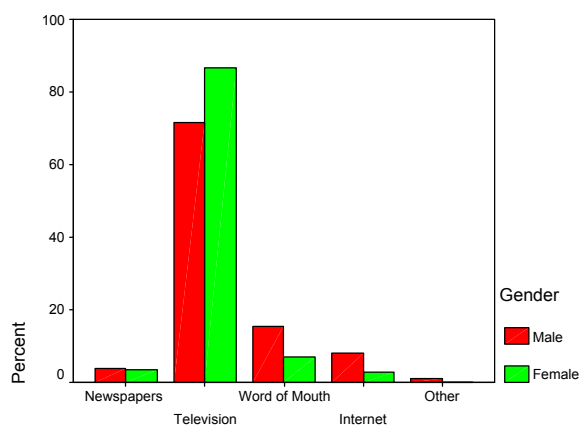


Where do you most often get public information that applies to you?

Source: Author's analysis.

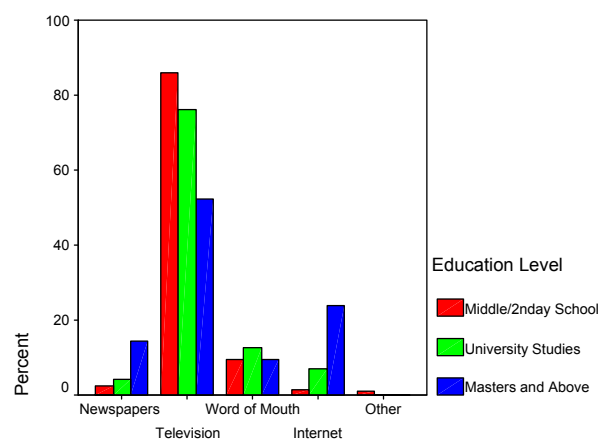
Women rely significantly more on television and less on alternative sources as compared to men (See Figure 7-10), and those with Master's degrees and higher rely significantly more on the Internet; the highest percentage of television watchers is comprised of those who did not go beyond middle/secondary schooling (Figure 7-11). The frequency of internet usage is correlative positively (.347) with the sources from which public information is most often acquired.

**Figure 7-10: Sources of Public Information by Gender**



Where do you most often get public information that applies to you?

**Figure 7-11: Sources of Public Information by Education**



Where do you most often get public information that applies to you?

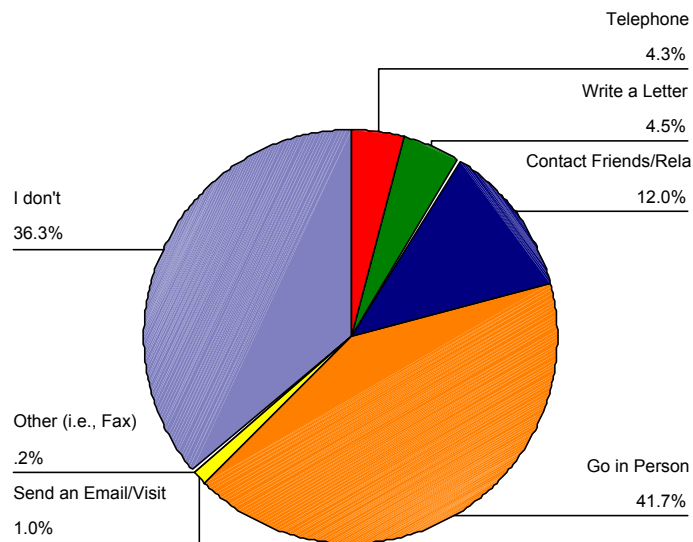
Source: Author's analysis.

### **7.3 Contacting Government**

For those who at any point may have an issue that must be resolved with the involvement of public sector administration or its officials, it is interesting to note how survey respondents say they would contact their government. The difference in responses between the age groups is barely significant, and the differences by gender or education level are insignificant; this signals, to a certain extent that the system is impervious to the pressures wrought by those who would want to change ‘how things are done’; students returning from abroad are a good example of such a category of people. The fact that less than 10% of people combined would opt for a strategy of emailing, calling or writing a letter to a governmental ministry or authority signals a grave problem with the nature of the bureaucracy. 36% of sample respondents avoid contact government at all costs, while the remainder go in person or contact a friend/relative on the inside for help. (See Figure 7-12)



**Figure 7-12: Common Ways of Contacting Government**

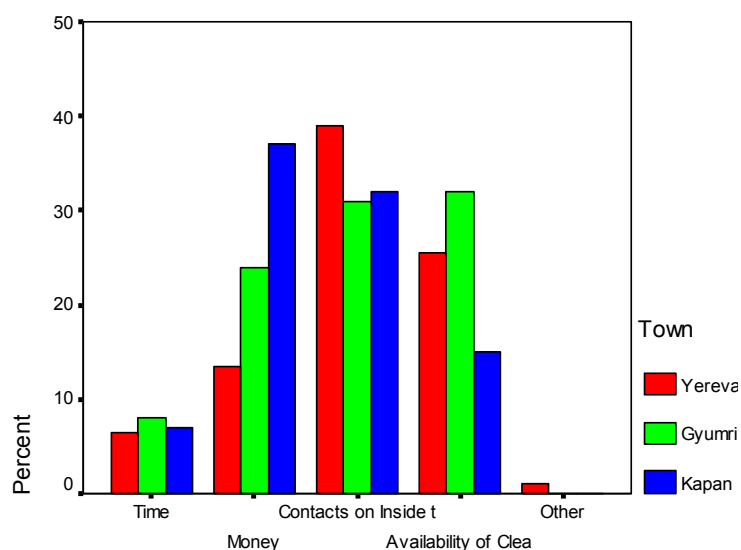


Source: Author's analysis.

When asked to identify the biggest problem entailed in contacting government institutions, 35% of respondents replied that it was an issue related to having 'contacts on the inside'. A further 25% elected the 'availability of clear instructions' as a main problem, while another 22% stated outright that their hesitation was related to money. The difference in response between gender groups and education levels was insignificant; difference between age brackets as well was barely significant. However, between cities, the divide between cosmopolitan/urban experience of Yerevan and the developing/rural experience of Kapan is stark – and statistically significant. (See Figure 7-13) Whereas the biggest perceived problem with contacting government for any purpose in Yerevan is related to having 'contacts on the inside' to help, the most worrisome aspect for those in Kapan is definitely tied to 'money'. In Gyumri, the problem of having contacts as well as of finding clear instructions feature approximately equally

prominently. This is likely the case because the institutions in Yerevan proper are under considerably higher levels of scrutiny when it comes to the provision of basic information and directions. Those respondents who selected ‘Other’, had telling reasons to support their perceptions: six people mentioned ‘having no trust’, while others cited reasons like ‘inequality’, ‘lack of political maturity and standards’, ‘lack of necessity’, knowing that ‘they won’t get an answer’, and unnecessary ‘struggle’ involved with dealing with government. Perhaps the bleakest shared response was given by a university-educated man in Yerevan (50-59 years of age) and a high-school educated woman in Kapan (60+ years of age), who stated: ‘They are insensitive to our suffering, it is useless’.

**Figure 7-13: Perceived Problems with Contacting Government**



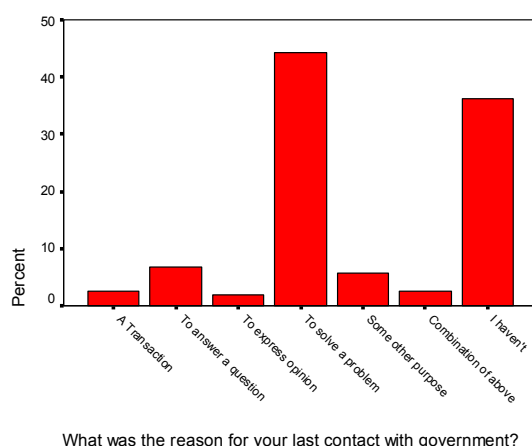
What is the problem with contacting public/government institutions?

Source: Author’s analysis.

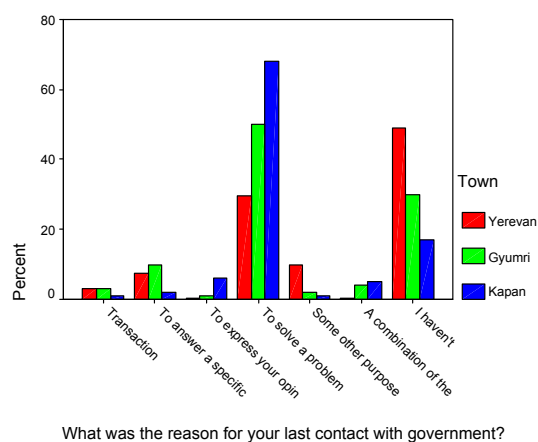
In an attempt to examine the inevitability of contact with government, a question was asked regarding the nature of the reason for respondents’ last contact with government; 44% stated that it was to solve a problem (Figure 7-14). There is

no difference between genders, age groups and education levels in determining their answer to this question, although statistical difference between responses in the three cities is deemed significant (Figure 7-15). The responses to this question are strongly correlated with responses to the previous question about ways of contacting government; in other words, there is a significant relationship between the numbers of people who contact government to solve a problem, and those who go in person to deal with it. Moreover, unsurprisingly there is a significantly negative correlation between those who go to government to solve a problem, and whether they have ever sent email to a government ministry or institution.

**Figure 7-14: Reasons for Last Contact with Government**



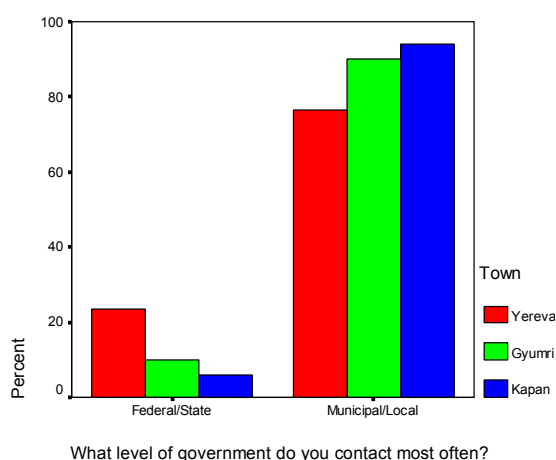
**Figure 7-15: Reason for Last Contact with Government by City**



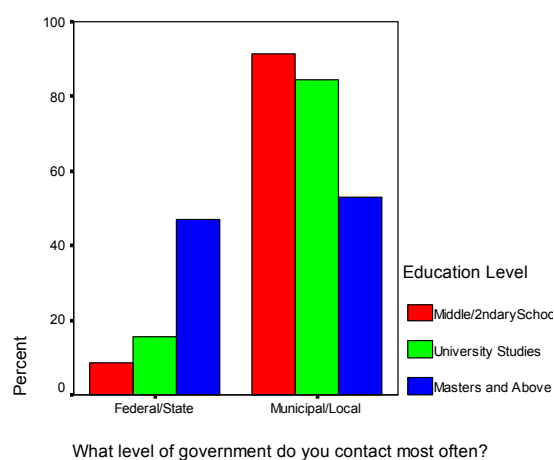
Source: Author's analysis.

It is important to note that when asked which level of government they contact more often (federal/state or municipal/local), 86% of respondents said that they deal with local authorities (known as ‘marzbedarans’, ‘taghabedarans’ or ‘kaghakabedarans’). Differences between age and gender are not significant, although different educational backgrounds do appear to have an impact on how respondents answer this question. Respondents living in Yerevan are significantly more inclined to contact federal/state level institutions, as are those with Master’s Degrees (or higher). (See Figures 7-16,7-17)

**Figure 7-16: Contact with Level of Government by City**



**Figure 7-17: Contact with Level of Government by Educational Background**

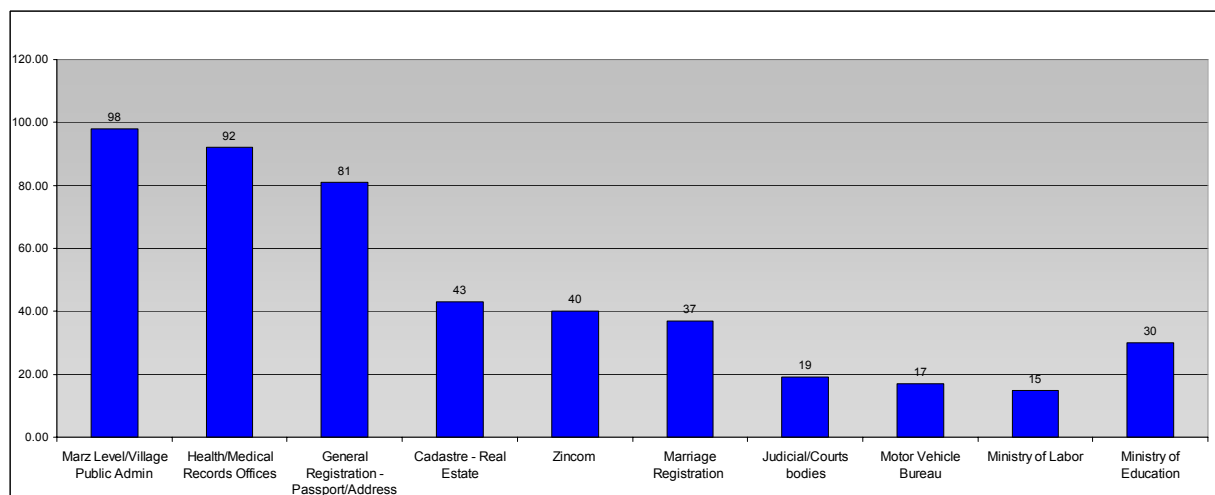


Source: Author’s analysis.

When asked to specify which institutions and ministries most frequently interacted with, respondents confirmed the earlier finding that their local/municipal governmental bodies receive the majority of their attention. (See Figure 7-18) That said, however, the top ten governmental organizations consist of an mix of records/registration offices (for medical records, address registration (a fallback to the old Soviet system which required citizens to always be registered to a particular city), real estate, marriage, motor vehicle bureau, etc.), courts, the Ministry of Labor

(responsible for social welfare programs in Armenia), and the Ministry of Education (to which countless parents must pay a visit when their children are in the process of passing state exams for highly competitive entrance to the public universities).

**Figure 7-18: Frequency of Interaction with Governmental Bodies – Top 10**



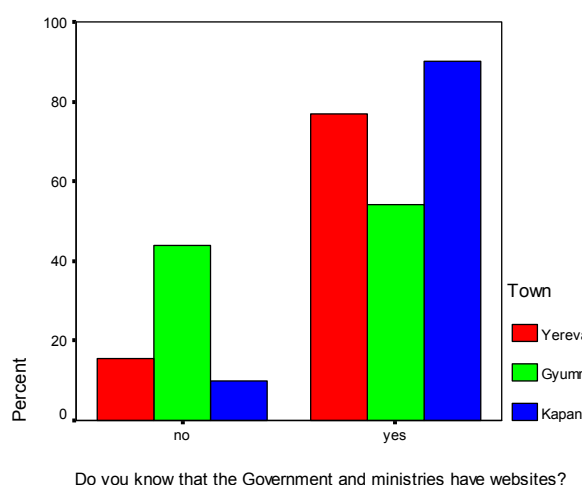
Source: Author's analysis.

## 7.4 Knowledge About ICTs

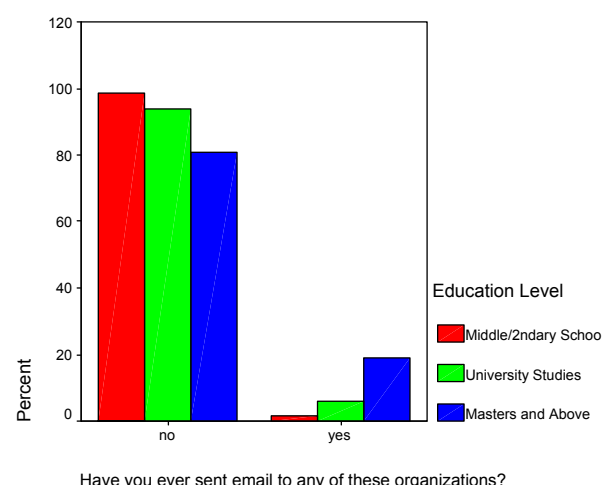
When asked whether they had knowledge that the government had websites online, 74% of respondents indicated that they did, although 93% reported never having used the Internet to access those sites. Difference in age bracket, gender and educational background were not significant in the responses to this question, although once again city appears to play a role. (See Figure 7-19) Surprisingly, awareness levels in Kapan appear to rival those of Yerevan; Gyumri appears to have benefited less from any ICT awareness campaigns that may have been underway over the last year. When asked why they have never accessed/used these websites, 63% responded that 'they did not need to', while a further 20.5%

stated that they ‘did not know how’. Nearly 10% cited ‘no internet access’ as a reason for not looking at the government websites. Neither differences in age, gender, education or geographical location were significant in response to this question.

**Figure 7-19: Knowledge of Government Websites by City**



**Figure 7-20: Email Interaction with Government by Education Level**



Source: Author’s analysis.

Similarly, when asked whether they had ever sent email to a government organization, 96% of respondents said ‘no’; of the 4% who had, 71% received a response to their query. Different responses by age bracket, gender and location were not significant, although the likelihood of sending email does appear to be significantly tied to difference in education level. As shown above in Figure 7-20, those with advanced degrees are more apt to contact email using these modern methods.

Surprisingly, 70% of respondents indicated that they thought such website are ‘useful’ in Armenia. This was consistent across the board, irrespective of differences in gender, age, education and location. This variable is positively

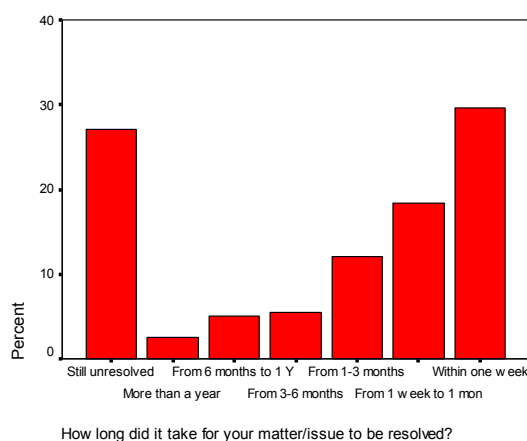
correlated with the responses to the question of whether the use of internet and websites help to changes levels of trust in government, as well as with whether respondents thought that the experience of the average citizen's interaction with the government/public sector has changed over the last year.

## **7.5 The Experience of Transaction with Government**

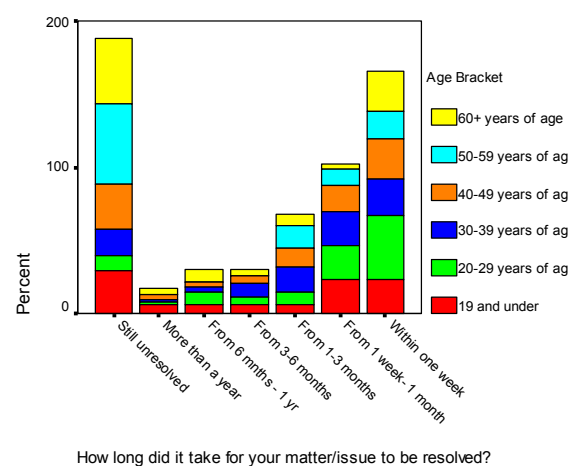
Of the 400 respondents to this survey, 64% reported having had some kind of interaction with a governmental entity; of those, nearly 70% had some kind of experience in the past one year. Of the roughly same number of respondents from the total sample, 97% reported the successful resolution of their problem, issue or question. None of the factors related to differences in gender, age, education or location were significant to the resolution of issues; this indicates that there does not appear to be preferential treatment one way or another. Roughly 30% of those involved in some interaction with government stated that their issue was resolved within one week; a nearly equal percent claimed that they still had some outstanding/unresolved matter at hand. (See Figure 7-21) Given that information was not gathered as to the starting date of each respondent's transaction in question, this issue of unresolved transaction is not very useful. Differences in response by age bracket appears to be statistically significant, and a breakout in Figure 7-22 indicates that those respondents older than 50 years of age appear to have a disproportionately larger number of unresolved transactions with government. While this in itself may not be a meaningful finding, it is interesting to note that the largest segment of those respondents able to resolve a transaction within one week

are those which fall into the younger 20-29 age bracket. This may be indication of the fact that younger people are not any less indoctrinated in ‘the way things work’ in Armenia than their older counterparts.

**Figure 7-21: Time Taken for Problem Resolution**



**Figure 7-22: Time Taken for Problem Resolution by Age Bracket**

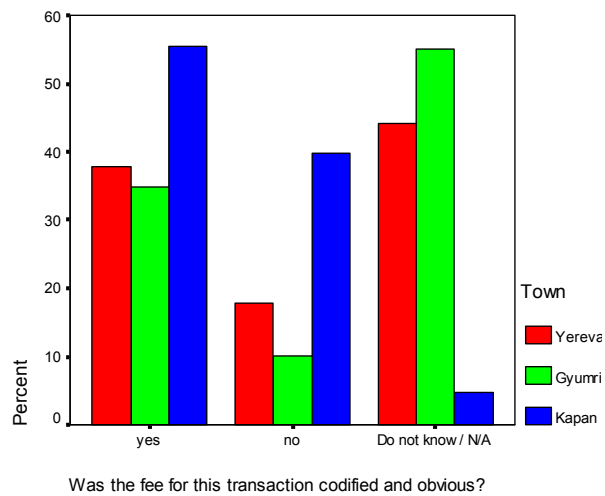


Source: Author's analysis.

It is interesting to note that 71% of respondents noticed that the governmental employee who was helping them was using a computer; nearly 30% said ‘no’, or ‘did not know’ whether a computer was being used to process their transaction. Of the same pool of respondents, 43% stated that a fee for the transaction was codified and obvious, while 23% said one was not, and the remainder did not know or found this point ‘not applicable’ to their particular situation. Figure 7-23 shows that from city to city, it appears that there is a significant difference in perceptions of codification, with higher levels of apparent clarity in transaction fee structures in Kapan than in Yerevan and Gyumri.



**Figure 7-23: Codification of Transaction Fees**

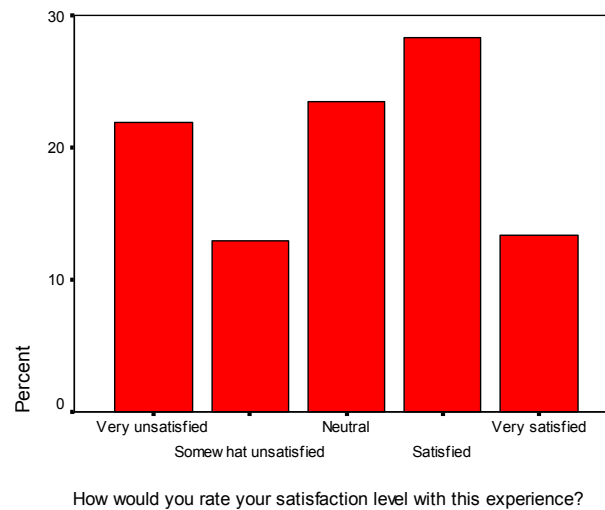


Source: Author's analysis.

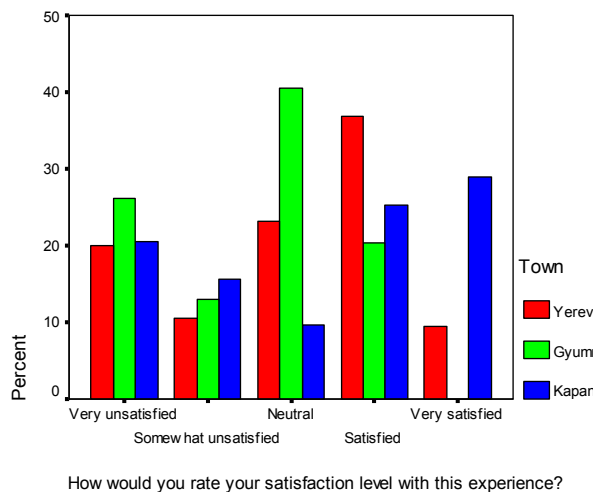
## 7.6 General Satisfaction Levels

Overall, when asked to rate their level of satisfaction with their transaction experience, nearly 42% of respondents said that they were 'satisfied' or 'very satisfied', about 35% were unsatisfied, and the remaining 23% were 'neutral'. (See Figure 7-24) The differences in response between both city/location and age bracket were statistically significant; they are broken out in Figures 7-25 and 7-26. It is evident that older age brackets tend to have more negative perceptions of their interactions, and younger age brackets appear to dominate the 'neutral' category. This is not surprising, considering the fact that the older generation has memory of the Soviet system, as well as experience interacting with the 'old' bureaucracy. Informally speaking, it is noticeable the extent to which people convey their mingled feelings of nostalgia while at the same time denouncing that the current bearers of power have not changed since 1990.

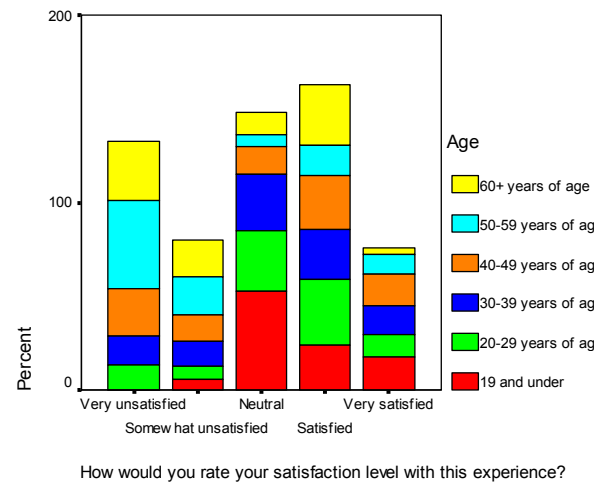
**Figure 7-24: Overall Satisfaction Levels**



**Figure 7-25: Satisfaction Levels by City**



**Figure 7-26: Satisfaction Levels by Age Bracket**



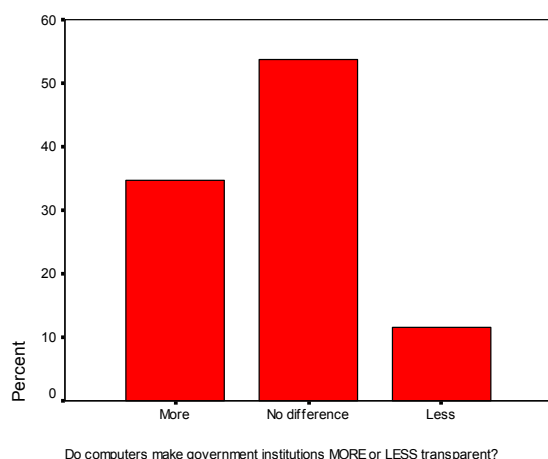
Source: Author's analysis.

## 7.7 Perceptions of Transparency and Trust

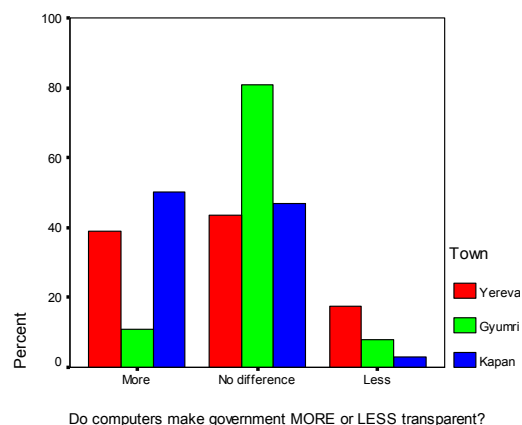
When asked whether the use of computers makes government more or less transparent to citizens, 54% of respondents felt that they made 'no difference', 35% felt that 'yes' they made it more transparent, and the remainder 12% said they felt computers made government less transparent. (See Figure 7-27) This was

consistent across the board, and differences in age, gender and education level had no impact on the way people responded to this question. City location once again, however, seems to matter a great deal. We see in Figure 7-28 that the degree to which citizens in Gyumri perceive the impact of PCs as positive is far less than in Yerevan or Kapan; that is to say, that they appear to have significantly less faith in the technology and tools of government effectiveness.

**Figure 7-27: Overall Perceived Impact of PCs on Government**



**Figure 7-28: Perceived Impact of PCs on Government by City**

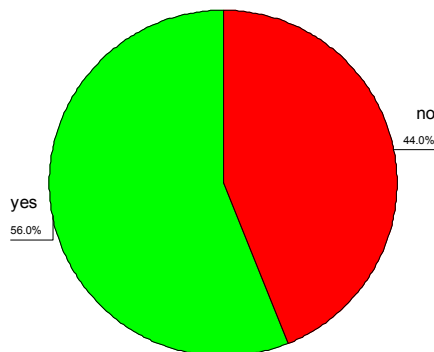


Source: Author's analysis.

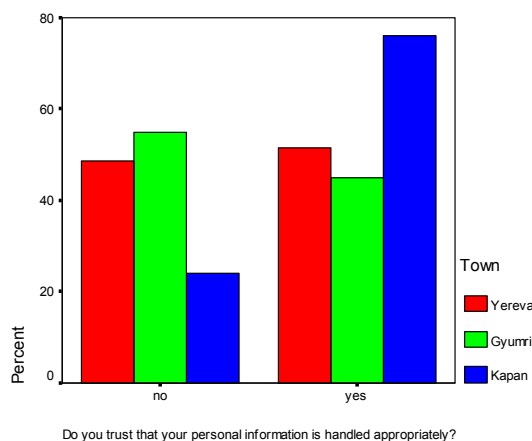
When it comes to the matter of trust in Armenia, it is unlikely that there be clear majorities with demonstrable faith in the system. Survey respondents were asked whether they had trust that their personal information is handled appropriately when they interact with government agencies or institutions. 56% said 'yes', and 44% said 'no' - as exhibited in Figure 7-29; the difference between responses to this question is significant. While differences of gender and education do not yield significantly dissimilar responses, age bracket and city location do; levels of trust in Kapan (See Figure 7-30) are much higher than in the other two

cities. Unsurprisingly, this question of trust correlates positively with geographical location. Moreover, Figure 7-31 shows preliminary evidence that those in younger age brackets (up to 40-49) tend to be more trusting than those older than 50 years of age.

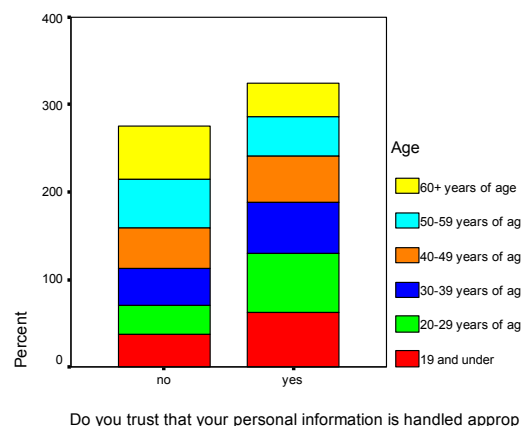
**Figure 7-29: Trust in Management of Personal Information**



**Figure 7-30: Trust in Management of Personal Info by City**



**Figure 7-31: Trust in Management of Information by Age Bracket**

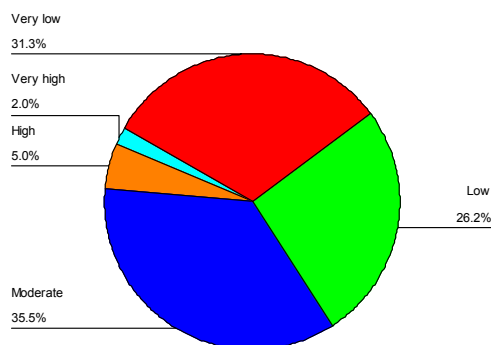


Source: Author's analysis.

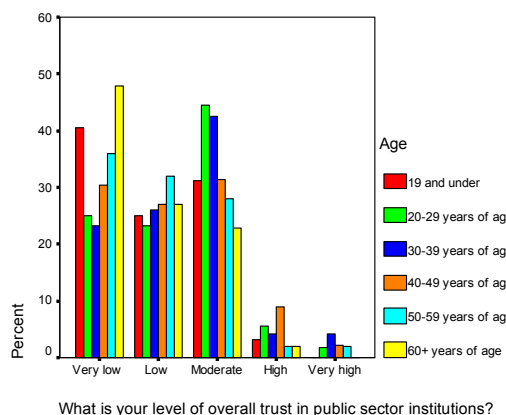
More generally, levels of overall trust in government vary significantly. Figure 7-32 shows that nearly 60% of respondents have 'low' or 'very low' levels of trust in public institutions. This measure of overall trust is highly correlated (.495, with 99% confidence) with the level of satisfaction of respondents with whatever was their most recent interaction with government. Differences in responses by gender

and educational level are not significant, but the contrast in age bracket responses as well as city makes a difference. Figure 7-33 depicts an interesting phenomenon; both the very young and the very old fall together in significant percentages as bearers of ‘very low’ levels of trust. The 20-29 year old age bracket and the 30-39 bracket fall out together in the ‘moderate’ category. This is a sign, perhaps, not only of the influence that the older generation may bear on the very young, but of the fact that integration is occurring in the young adult population as they begin to work and assume their position as part of the ‘system’. This could possibly explain why their levels of trust are significantly higher than that of their younger siblings/children and parents.

**Figure 7-32: Overall Trust in Government**



**Figure 7-33: Overall Trust by Age Bracket**

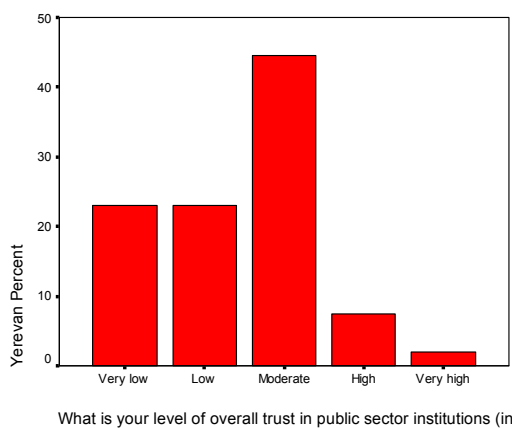


Source: Author's analysis.

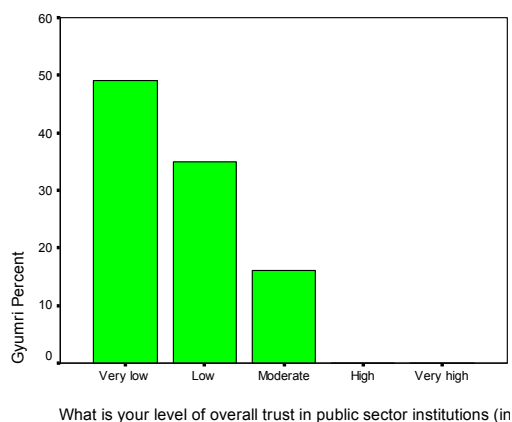
Taking a closer look at the differences by city in Figures 7-34, 7-35, and 7-36, it is evident that a clear majority of citizens in Yerevan are more apt to have ‘moderate’ levels of trust, as compared to Gyumri and Kapan. The results in Gyumri are not at all surprising given the experience of the city over the last 17 years; as the epicenter of the devastating earthquake in 1988, this city has been in

construction ever since. To this day, administrative horror stories abound amidst the people, the majority of whom are still relegated to metal trailers, without running water, in temporary housing. Although the situation of the city has improved, the nightmare of dealing with bureaucracy is very much alive. Kapan demonstrates somewhat more balanced trust levels between ‘low’ and ‘moderate’.

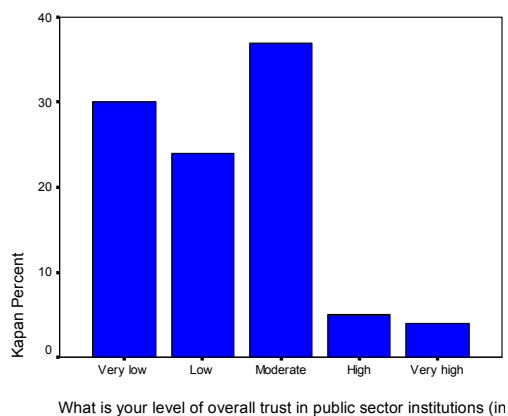
**Figure 7-34: Overall Trust in Government Levels in Yerevan**



**Figure 7-35: Overall Trust in Government Levels in Gyumri**



**Figure 7-36: Overall Trust in Government Levels in Kapan**



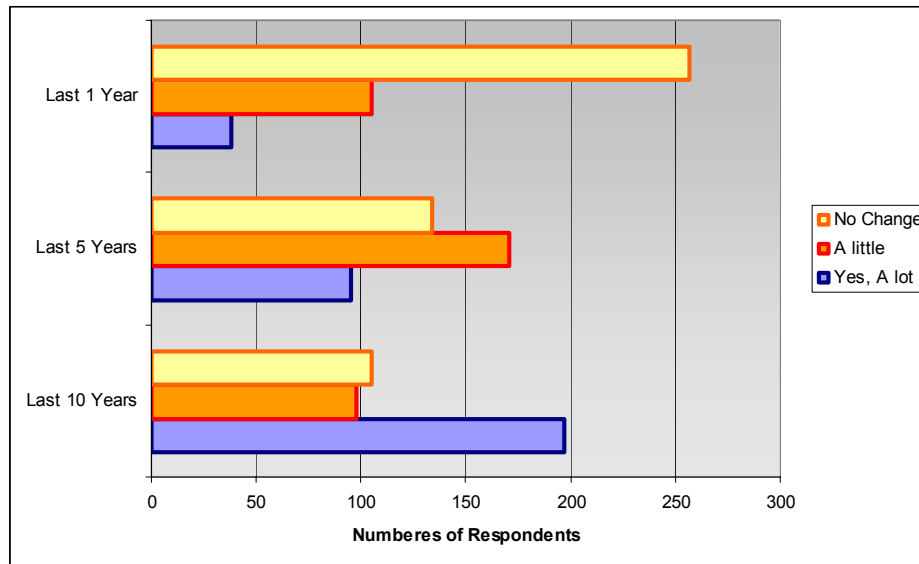
Source: Author's analysis.

Despite the fact that 70% of respondents earlier agreed that websites were ‘useful’ in Armenia, when asked more specifically about whether the use of Internet and websites can shape levels of trust in government, 58% said ‘no’, and 41% said

‘yes’. These responses are consistent across the board, and do not contain any hint of significant differences by any of the population-characterizing indicators. When asked whether their levels of trust were contingent upon dealing with local/municipal institutions vs. federal/national ones, 84% of respondents declared that there was no difference in their perceptions as far as trust is concerned. 9% stated that they trust local/municipal institutions more, while 7.3% stated the reverse. As with the previous question, these answers reflect opinions consistent across the breadth of this sample population.

Finally, when it comes to perceptions of change in the nature and quality of interaction with government institutions, a comparison between the last 10 years, 5 years and 1 year appears to yield significant results in terms of respondents’ perceptions of change. (See Figure 7-37) By and large, respondents tend to believe that although much has changed – presumably toward the better – over the last ten years, the pace of that change has evidently slowed to the point that in the past year, the vast majority see ‘no change’ in the interactions between citizens and government.

**Figure 7-37: Respondents' Perceptions of Change over Last 10 yrs, 5 yrs and 1 yr**

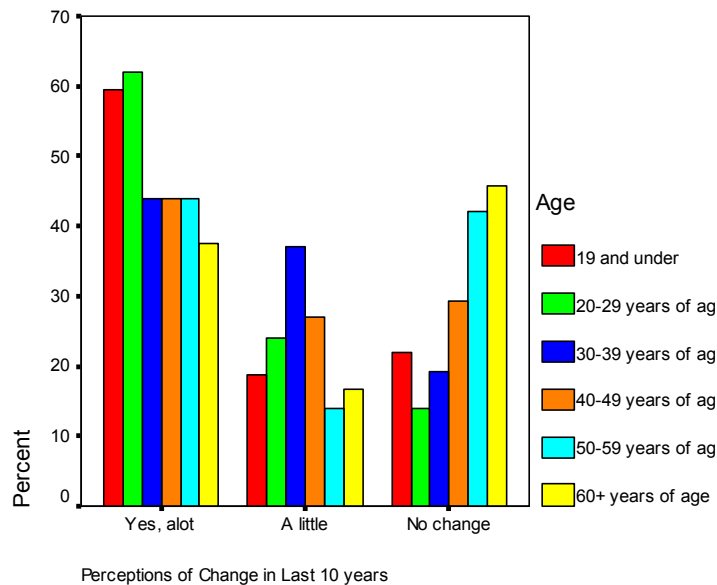


Source: Author's analysis.

To a certain extent, this can be considered an indicator of the extent to which donor-funded public sector reform programs are hitting their mark. Considering that – as stated in Chapter 5 – vast amounts of money have been spent on ICTs in Armenia in the last 1-2 years alone, these survey results are discouraging. Predictably, the difference between age brackets on their responses to this question (specifically as regards the 10-year transformational period) is significant; the fact that the younger generation (up to 30 years of age) perceives ‘a lot’ of change in the last ten years is a direct function of their direct experience and therefore somewhat irrelevant. (See Figure 7-38) That said, however, the fact that the older generation is divided in half over whether things have really changed for the better or not is interesting, because it reflects the complexity of the transition experience.



**Figure 7-38: Perceptions of Change in the Last 10 Years by Age Bracket**



Source: Author's analysis.

## 7.8 Conclusion

It is evident from the results of this survey that the sample population of 400 households across three major cities in Armenia is significantly disillusioned with the effectiveness of their government institutions. Basic levels of internet connectivity are extremely low, as is wireless technology penetration. The sophistication of the citizenry's demand for public information is highly questionable, and the predominant modes of information retrieval are primitive; together, these are reflective of patterns of communication that hearken back to an extremely non-interactive, 'broadcast' (i.e., from a focal point, outward to the mass) model of information flow typical of communist regimes. This is not to say, of course, that the population is not aware of the existence of ICTs and of the positive impact they may have on 'supply' of information; they feel the need to learn, even

though they are not convinced that using these technologies will change the dynamic of government-to-constituent relations.

Generally speaking, it appears that the provision of ICT-driven transactional functionality on the outermost surface of government institutions (i.e., websites) is unlikely to find a responsive audience; the demand for service delivery is not yet discernible in this country. As an initial finding, this already negates the relevance of deterministic approaches to using technology in the sphere of political development work. The lack of necessary demand is reflected not only in the modes of contact that citizens would employ to contact their government, but in their perceptions of potential problems that lie therein. Levels of trust vary considerably, from capital to smaller to city, and between age brackets, but it is fair to say that the vast majority of respondents do not have higher than ‘moderate’ levels of trust in the capacity, consistency and fairness of their government institutions.

What we find in this survey is not unlike what is published in most reports that deal with the issues of digital divide; the usual distinctions between urban and rural experiences are significant, as are those between the lowest and highest ranges of age bracket and education level. Nearly 30% of those surveyed use the Internet with some frequency, and more than half of them are online to check their email; the fact that only 4% have ever sent an email to a government organization is not surprising – and as expected, they tend to be those with higher education. What is interesting about the Armenia case is that a clear majority - 87% of households in the sample – recognized the necessity of learning about new technologies that are

emerging in their country, and 70% agreed that government websites were ‘useful’ (although more than half of those indicated that this would not necessarily help build trust in government). This indicates that there is capacity in the sample population to appreciate the significance of new technologies in the political sphere, although there is no shared obvious impression as to what those ICTs may accomplish. Based on personal interactions with individuals in the capital city as well as in village areas, I venture to state that what exists in Armenia is a very broad-based, pervasive and common hesitation to hope that any single element may successfully transform the institutions that have been heretofore so extremely opaque and un-conducive to political participation and information-sharing.

## 8 Conclusions

This dissertation asks a fundamental question based on underlying assumptions about the role of technology in society and its concomitant impact on the institutions that govern that society. The history of technology (and of communication technologies in particular), is replete with examples of how technologies, such as the telephone, evolved with social practices in ways that departed dramatically from the usage originally intended.<sup>397</sup> The question of whether ICTs make government institutions more transparent in a specific regional context is addressed from a number of different angles in this dissertation, starting with an empirical exploration of global aggregated data, moving to a regional analysis that provides important historical and cultural context to the question, and then to an elaboration upon the unit of analysis (and perceptions thereof) through an in-depth country case study and survey.

I posited several working hypotheses in Chapter 3, including that (H<sub>1</sub>) – depending on the interaction of a series of critical intervening and antecedent variables, ICTs can actually reinforce non-transparent and non-service-oriented institutions in the post-communist setting; (H<sub>2</sub>) – when ICT capacity is sub-optimal, modern technologies can contribute to the emergence of ‘cosmetic’ democracy; and (H<sub>3</sub>) – a byproduct of a ‘cosmetic’ democracy is a continued and sustained

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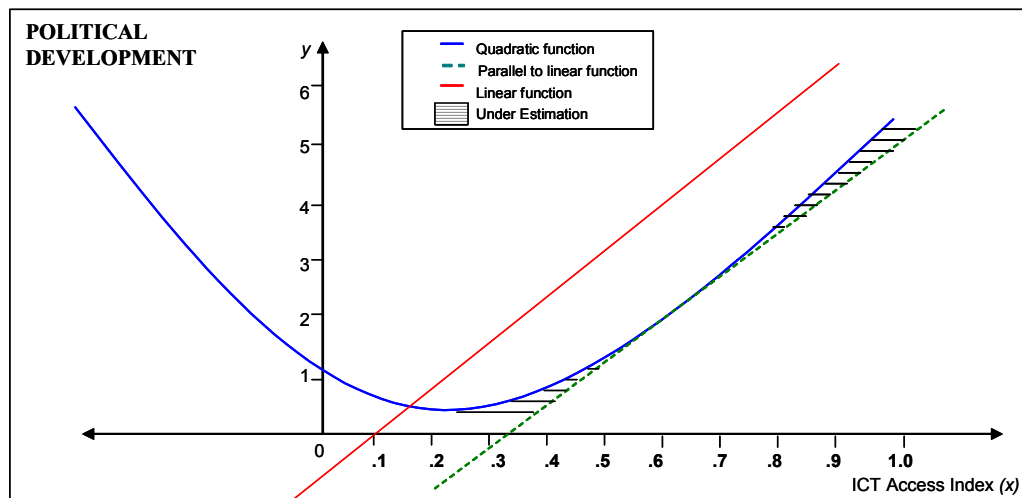
<sup>397</sup> Vedres Balazs, Laszlo Bruszt, and David Stark, “Organizing Technologies: Genre Forms of Online Civic Association in Eastern Europe” in *Cultural Production in a Digital Age*, ed. Erik Klinenberg. (Philadelphia, PA: The Annals of the American Academy of Political and Social Science 597, 2005), 4. (accessed February 2005); available from [http://www.sociology.columbia.edu/people/faculty/stark/papers/organizing\\_technologies.pdf](http://www.sociology.columbia.edu/people/faculty/stark/papers/organizing_technologies.pdf).

dependency on donor streams. Each of these is addressed and validated through the analyses in this dissertation.

## **8.1 Key Findings**

Insofar as the validity of global aggregated estimates in the ICT Digital Access index is accepted, the regression results found in Chapter 4 tell an interesting story. Regressing ICT penetration data against five proxy variables for political development (including Transparency International's Corruption Index, Freedom House's Political Rights and Civil Liberties index, and the World Bank's indicators of 'government effectiveness', 'rule of law', and 'voice and accountability', separately as well as aggregated together) shows us that while the linearity of the deterministic assumption is not incorrect, it is nuanced. This nuance translates to the realization that what is typically thought of as a positive, causally based line is actually a quadratic curve, meaning that the impact of one extra unit of ICT does not always yield one extra unit of transparency, effectiveness, or aggregated political development in the political sphere. (See Figure 8-1) The fact that there is empirical evidence supporting the hypothesis that the deterministic assumption overestimates ICT impact in the vast majority of non-OECD nation states opens the door to the work of theory-building based on case study work.

**Figure 8-1: Theoretical Implications of Quantitative Analysis Using Global Data**



### 8.1.1 Theory-Building Outcomes

The process of theory-building itself is a highly iterative one, requiring many steps backward and forward between theory and literature, method, case study work and data analysis. Looking to the case study we found that in Armenia, over the last year there have been approximately 106 ICT-related projects underway<sup>398</sup>, the majority of which have been allocated to the development of human capital, and to digital government and service delivery work. A review of the capacity of the cross-section of institutions in terms of organizational, human, financial and technical components (as shown in Chapter 6) yields evidence, however, of two things: the first is that the Armenian government's capacity to absorb and use ICTs on all fronts is sub-optimal, and second, that strong links exist between these various kinds of capacity. Both of these are likely to be circumstances highly replicable in countries that share the post-communist heritage in the regions of the Caucasus and Central Asia. A key assumption of this theory

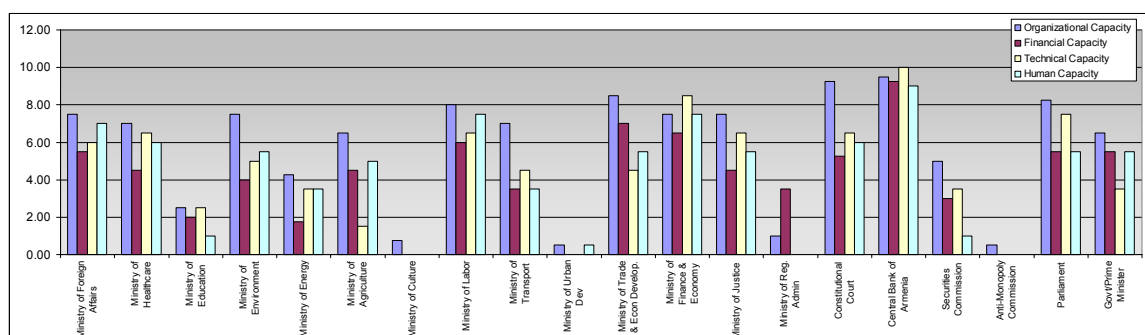
<sup>398</sup> This is according to data compiled by the Information Technology Development Support Council (ITDSC), the IT arm of the Prime Minister's Office of the Armenian Government.

building process is that states with advanced, mature governmental institutions use ICTs differently than their transitioning counterparts – not for transformational purposes as much as for the reinforcement (and likely automation) of existing bureaucratic rationality. The end of Chapter 4 presents evidence that the order in which the proxy indicators of political development emerge is significantly different between the OECD and non-OECD contexts.

The structure of the explanatory hypothesis presented in Chapter 3 posits that only *if* the exogenous and endogenous drivers of technical, financial, human, and organizational capacity are in place will ICT penetration yield its desired results (in the form of transparent institutions capable of effectively providing service to their citizenry). We found that organizations with the widest spread between the four capacity components (in Figure 8-2) consistently show relative high organizational competence - hindered mainly by low technical/financial ability. Human capacity appears to be tied to organizational capacity in these institutions, and exhibits the least amount of standard deviation across all the institutions (after the financial component). This is most likely because 1) the resilience of the post-Soviet political culture in Armenia is formidable and 2) the financial support of all ICT work in Armenian government is consistently dismal, if not non-existent. Harkening back to the literature in Chapter 2, we have found here the practical grounds upon which to agree with theorists like Orlikowski, who re-conceptualize ‘hard’ determinist thinking in favor of incorporating human agency as a crucial factor. Indeed, the tension between endogenous factors associated with political culture, and exogenous factors like donor funding and diaspora involvement (i.e., in

the form of hardware/equipment gifts, reform programs, etc.) results in a divergence between the capacity for government effectiveness - and the outward appearance of it. In the telling words of an advisor to one of the most ICT-savvy ministries in government: “If the Diaspora factor was not there, they’d still be learning how to spell ‘e-government’.”

**Figure 8-2: The Four Main Components of ICT Capacity Across Armenian Government Institutions**



Source: Author's analysis.

This divergence in various types of capacity is associated to the proposed theory that cosmetic democracy can be the end product of ICT penetration coupled with suboptimal capacity configurations in institutions. In the case of Armenia, the most (and least) successful governmental institutions (in terms of service delivery and transparency) across the board have the least amount of inconsistency between their various capacity measures (with standard deviations  $<1$ ). Accordingly the most interesting stories related to the influence of exogenous variables (i.e., like donor projects that started and were never consolidated or sustained) arise most often in those organizations with higher standard deviations ( $>1$ ) across their capacity scores. (See Figure 8-3 and Appendix A, for further detail by Ministry)

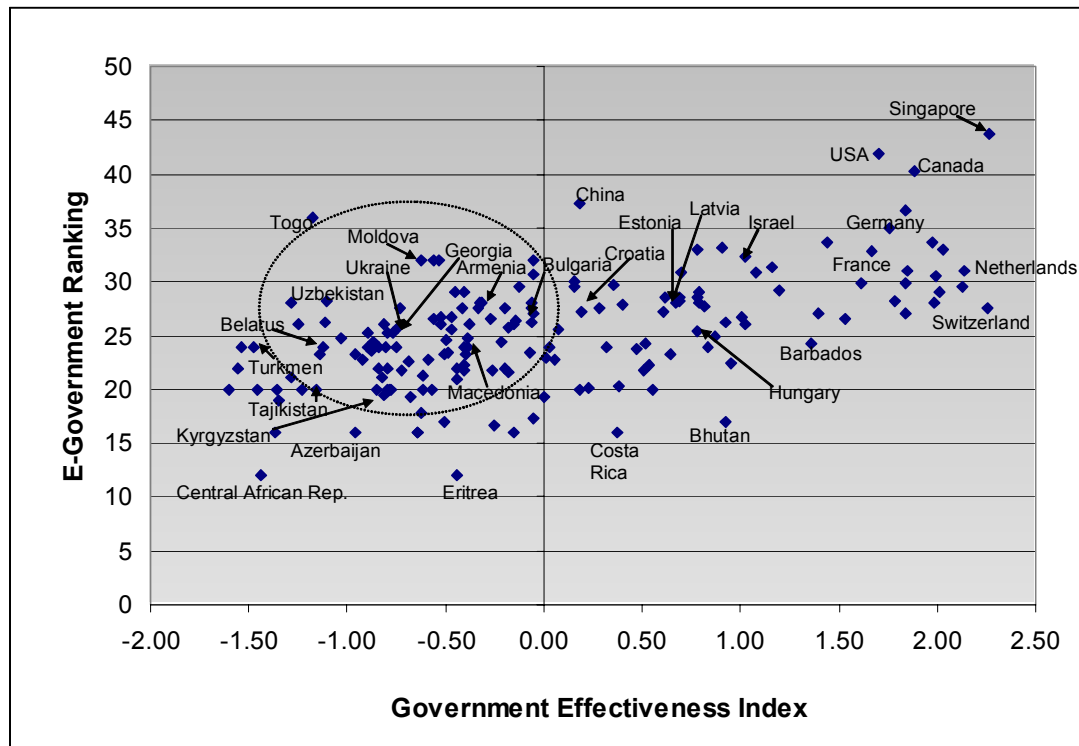


**Figure 8-3: Standard Deviations of Measures across Capacity Components**

<b>Standard Deviation</b> <b>&lt;1</b>	<b>Highest ICT Capacity</b> Central Bank of Armenia (0.43) Ministry of Finance & Economy (0.82) Ministry of Foreign Affairs (0.91) Ministry of Labor (0.91)	<b>Lowest ICT Capacity</b> Ministry of Culture (0.38) Ministry of Education (0.71) Ministry of Urban Development (0.29) Anti-Monopoly Commission (0.25)
	<b>Mixed ICT Capacity</b> Ministry of Energy (1.06) Ministry of Healthcare (1.08) Gov't/Prime Minister's Office (1.26) Ministry of Justice (1.29) National Assembly/Parliament (1.40) Ministry of Environment (1.47)	
<b>Standard Deviation</b> <b>&gt;1</b>	Ministry of Transport (1.65) Securities Commission (1.65) Constitutional Court (1.74) Ministry of Trade & Economic Development (1.75) Ministry of Agriculture (2.10)	

Institutions with ‘Highest ICT Capacity’ shown in Figure 8-3 also happen to be those with the highest amount of interaction with external international banking and trade regimes, including the WTO (with the possible exception of the Ministry of Labor, which has been the beneficiary of a massive, outsourced ICT initiative in 2004 led by PADCO, a private consulting firm based in Washington DC working with USAID). The functions and operations of the rest of the ministries shown to have mixed capacity levels tend to be more inward and citizen-oriented. Collectively, these institutions are contributors to findings in Figure 8-4, which depict the simple scatter plot analysis presented in Chapter 5 of West’s e-government index against the World Bank ‘government effectiveness’ index.

**Figure 8-4: E-Government Rank vs. Government Effectiveness**



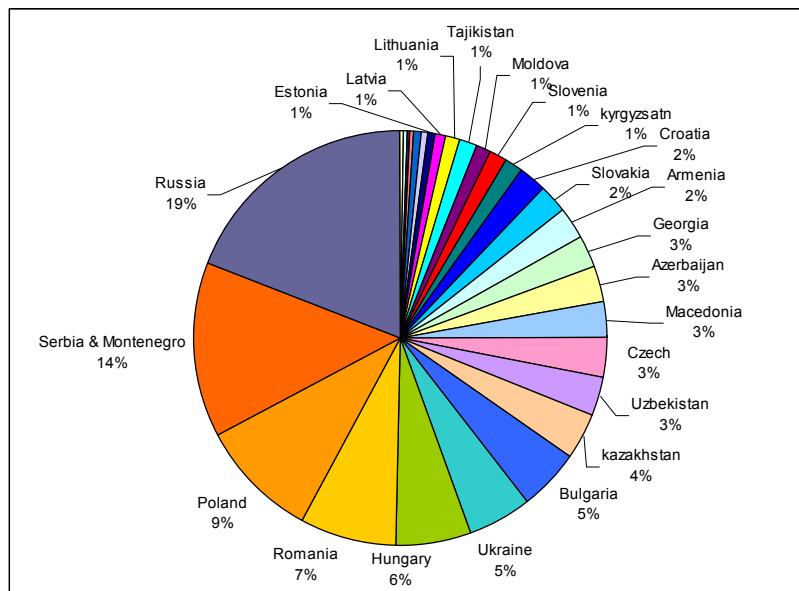
Source: Author's analysis.

This figure provides a simple foundation for the assumption that there is a story behind the clustering of points that depict the lower-than-average government effectiveness rankings coupled with higher-than-average e-government rankings of countries in the Caucasian /Central Asian portions of the post-communist bloc. The survey results in Chapter 7 complement and validate the ‘cosmetic democracy’ hypothesis by exposing the underbelly of personal experience with Armenia’s democratic institutions; the bleak reality of the constituents of the Armenian government should be a compelling guide for its policymakers. Citizens face immense challenges of access/connectivity and generally dread interaction with their governing institutions; they are mistrustful, and exhibit a level of apathy that is tied directly to the lack of demand (or pressure of ‘inputs’ to the political system, as

Easton would see it) that reinforces their position. This is made all the more frustrating by the fact that there is shared acknowledgement of the need to learn about new technologies, and the fact that social and human capital exists in relative abundance (albeit idiosyncratically).

The role of donor organizations has been emphasized throughout this dissertation as a critical factor in ICT development projects. Currently, little has been compiled and written about aggregate donor aid flows to the post-communist bloc; Chapter 5 presented detailed as well as aggregate breakouts of funding being sent to the region. These numbers reflect just a minimum of spending, incorporating the top ten major international organizations dedicated to international development. In the case of Armenia, for example, aid flows from Diaspora are not counted in this analysis. Figure 8-5 captures the percentage breakouts by country.

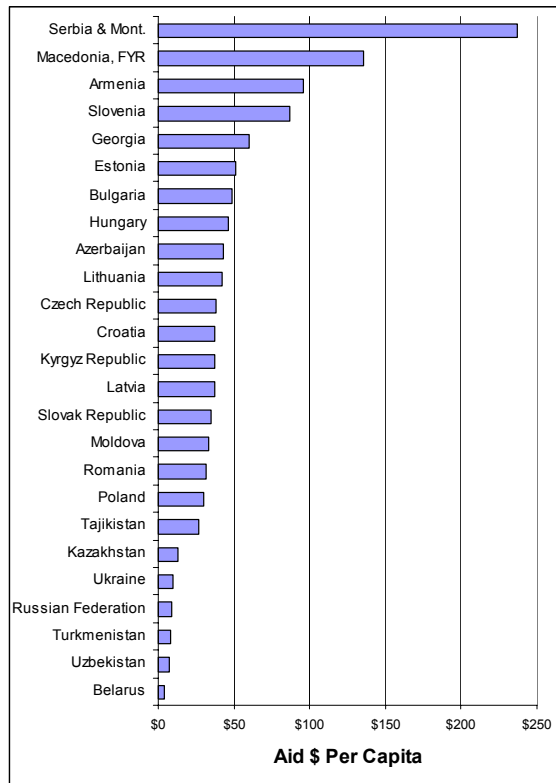
**Figure 8-5: Global Aid Recipients by Country Percent (2003)**



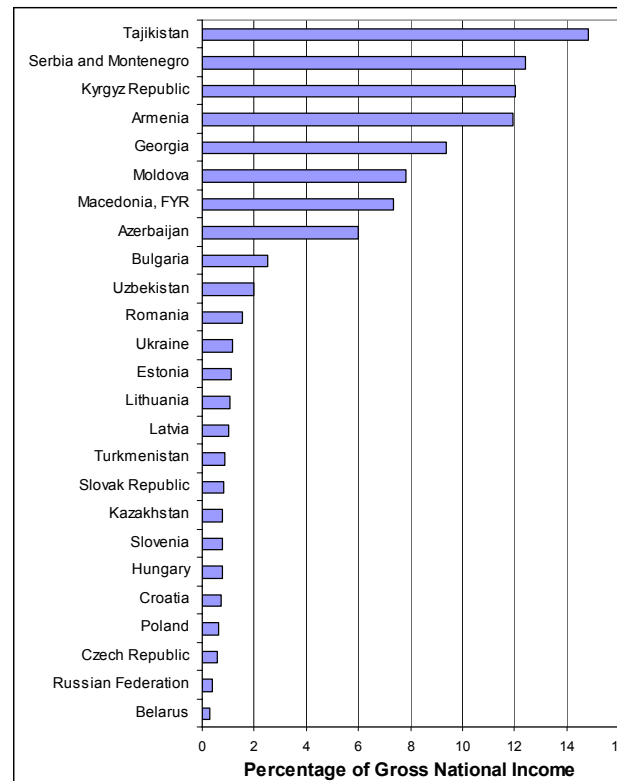
Source: Author's analysis. Note: Those representing less than 1% of total donor aid were removed from this pie chart for clarity.

Figures 8-6 and 8-7 illustrate the breakouts of donor aid spending per capita and donor aid as a percentage of gross national income, respectively. Although this is conjecture that must be followed up in further research, it appears likely that those countries benefiting from higher levels of donor aid per capita who also have donor flows as large percentages of their national income are likely candidates for achieving the status of ‘cosmetic democracy’. Based on findings in the Armenia case, it is clear that an unfortunate culture of dependency has been fostered. The fragmented status of ICT development in the country will reinforce this pattern, only to be resolved if the 106 projects currently underway both: 1) complete and achieve their objectives, and 2) plan for sustainability and proper transfer of ownership. Up until the present, these features combined have rarely been a defining characteristic of donor work in post-Communist Armenia.

**Figure 8-6: Donor Aid \$ Per Capita**



**Figure 8-7: Donor Aid as %age of Gross National Income**



Source: Author's analysis.

### 8.1.2 Confirming Constructivist Thinking

Upon the conclusion of the literature review in Chapter 2, it became clear that it is necessary to look beyond the formal structures and patterns of political interaction if one wants to assess the potential of ICTs. We must look at a political system and its machinery in conjunction with the system of beliefs and values of which it is part. Only when this is understood, can a state be positioned relative to the prevailing development paradigm that is responsible for the forces of transformation acting upon it. Theoretically, thus, the relevance of constructivist theory to the role of ICTs in the political sphere is confirmed throughout this

dissertation. Institutions can be said to be endowed with a set of identities and interests, many of which tend to be the result of antecedent variables, and codified in a series of formal and informal rules and norms. Since these are a function of the extent to which concerned actors share collective knowledge about these rules and norms, we can assume that an important part of the effectiveness or transparency of government institutions lies in the perceptions of constituents. The other realm in which these perceptions lie is in the regional and international; small states like Armenia must walk a fine line between ‘preaching the party line’ about their journey toward democracy, yet not advancing so fast that they lose relevance to the budget allocation criteria of donor organizations. Needless to say, economies and politics in the transitioning world are not the first, or the last, to suffer from ‘donor-dependency syndrome’.

Thinking about ICTs as a tool for reforming bureaucracy is often hampered by the unfortunate reality that ICT initiatives often fail as a consequence of that bureaucracy. In the case of post-communist Armenia, one can argue of course that the elegance of Weberian conceptions of bureaucracy is shattered before they can even begin to apply. As it is, the issue of how digital government and bureaucracy impact one another is undetermined and lacking in clarity in the literature. Although various researchers like Bardach<sup>399</sup> and Lazer<sup>400</sup> have used different lenses to study digital government – (stakeholder approaches, network theory and diffusion of innovations phenomena) as a means of understanding the

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<sup>399</sup> Eugene Bardach, *A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving* (New York: Chatham House Publishers, 2000).

<sup>400</sup> David Lazer, “Governing Networks,” *Brooklyn Journal of International Law*, 27, no. 3 (2002): 819-851.

conditions under which ICTs can improve the functioning of government<sup>401</sup>, less appears to be written about how to think about ICTs as a transformative catalyst for states in economic and political transition.

### 8.1.3 Research Implications

The real implications of this research are intended to be more practical than theoretical. One of them is that persistent selection of the low-hanging fruit of providing technical and financial assistance to government institutions may be perpetuating cycles of ineffective ICT absorption; the real challenges lie in the human and organizational capacity aspects of these institutions. This is confirmed by one of the more memorable quotes from the case interview process from one of the Information Analytical Centers associated with a Ministry: ‘We don’t want half the technical equipment we’re getting; what we need is knowledge’. While this analysis is not to dismiss the positive impact that many donor programs have achieved to date, it is an attempt to emphasize the fact that ‘low’ to ‘moderate’ government service delivery performance cannot be attributed to the lag of systemic transition forever. There will come a time after which the excuses of transition will no longer suffice. This is reminiscent of Mancur Olson’s descriptions of ‘roving bandits’ in feudal societies, and how only after they became ‘stationary’ did their private interest in ensuring more fair and effective public service mechanisms become heightened. According to Olson, it is when the (private) agents of

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<sup>401</sup> Aby Jain, *Using the Lens of Max Weber's Theory of Bureaucracy to Examine E-Government Research*, Proceedings of the 37th Hawaii International Conference on System Sciences (Hawaii, 2004), 2.

collective action – with perverted interests that run contrary to the public good – divert resources out of the productive economy and into their own pockets that societal ‘sclerosis’ ensues. This is highly relevant to and characteristic of post-communist states in Eurasia today, and relates also to the problems of ‘state capture’ as elaborated upon by Kaufmann and Hellman in 2000.<sup>402</sup>

The degree of understanding of the role of technology in the development of society on the part of legal, executive and political elites is extraordinarily important<sup>403</sup>, at least if one believes that the gap between citizens and government is to eventually converge through the process of democratization. Coming back to the question of whether increased ICT penetration can comprise the ‘necessary infrastructure’ for effective service delivery to citizenry, it is important to point out that this line of enquiry does not assume that institutional capacity gives ICTs license to re-negotiate the existence of organizational hierarchy. Fountain states, “... it is certain that a solid core of hierarchy and functional specialization will remain in information-based organizations.”<sup>404</sup> Assuming that the institutions of government tend to be information-based, the case of Armenia, if nothing else, points to the fact that the problems of effective governance and service delivery can not be addressed from the bottom-up. This is despite the fact that the root of the

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<sup>402</sup> In a decade of transition, fear of a leviathan state is giving way to increased focus on oligarchs who “capture the state.” In the capture economy, the policy and legal environment is shaped to the captor firm's huge advantage, at the expense of the rest of the enterprise sector. The evidence suggests that improved property rights protection and civil liberties can significantly reduce the capture economy. In J. Hellman, G. Jones, D. Kaufmann, and M. Schankerman, *Measuring Governance, Corruption, and State Capture: How Firms and Bureaucrats Shape the Business Environment in Transition Economies* (World Bank Policy Research Working Paper 2312), April 2000.

<sup>403</sup> Lech Zacher, “Poland: Typical Problems in a Transition Economy” in Dyker, *The Technology of Transition: Science and Technology Policies for Transition Countries*, 31.

<sup>404</sup> Jane E. Fountain, *Building the Virtual State: Information Technology and Institutional Change* (Washington, DC: Brookings Institution Press, 2001), 131.



problems of executing upon strategy also lies at the top. They require leadership and strong top-down articulation of commitment; meaning however, commitment not in its plain sense of being simply bound intellectually to a course of action, but in its strategic sense, as articulated by Ghemawat in 1991.<sup>405</sup>

Practically speaking, a number of prescriptions can be derived from this research. The first one is not new: the importance of considering human and organizational capacity over the provision of more tangible technical and financial support is critical. Another idea is that there should be clear analysis and categorization of the variety of government-to-constituent actions prior to a deployment of ‘digital government’ initiatives.<sup>406</sup> It is imperative that institutions identify what it is they are seeking to automate prior to the provision of technological interactivity, and consider in what ways their existing administrative processes themselves may be flawed. Without this level of collective introspection, the likelihood of a ‘cosmetic’ democracy ever becoming a ‘real’ democracy is low.

Moreover, accepting to work with all donors on all technology projects may not lend itself to the best interest of a transition country; therefore the existence of a functioning equivalent to Armenia’s Information Technology Development Support Council (ITDSC) is a good measure for maintaining strategic control of projects, objectives and coordination. Considering that 86% of survey respondents

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<sup>405</sup> Commitment can be thought of as a cumulative, dynamic constraint on strategy. Once one has committed, there are costs associated with change, and initial choice constrains subsequent behavior. In this way, commitment is defined as the degree of difficulty of changing organizational strategy. Pankaj Ghemawat, *Commitment: The Dynamic of Strategy* (New York: Free Press; Toronto; New York: Maxwell Macmillan Canada; Maxwell Macmillan International, 1991), 178.

<sup>406</sup> Further research in this area has already been initiated in collaboration with Dr. Mysore Ramaswamy, Associate Professor at the College of Business, in the Department of Management and Marketing at Southern University and Agricultural and Mechanical College in Baton Rouge, LA.

in this dissertation indicated that they interact more with their local government than federal, it may also be useful to focus ICT development work in rural areas at the municipal/local level in conjunction with more centralized institutional transformation projects. In this sense, Armenia has planned well; the Ministry of Regional Administration benefits from a decentralized structure that leverages connectivity with the regions effectively, and maintains advancement of municipal level ICT capacity on par with its federal/central government reform projects. Finally, the imperative role of local ‘champions’ or ‘innovators’ in each country cannot be overemphasized; without exception, from the Ministry of Foreign Affairs, to the Ministry of Regional Administration, to the Ministry of Finance, to the Central Bank of Armenia, the role of assertive leadership that ‘makes the donors work for them’ (rather than vice versa) is vital. Fostering communities in which such potential leadership may be molded and grown is an ideal step toward the implementation of successful ICT development in the political sphere.

## **8.2 Further Directions for Future Research & Final Thoughts**

It is evident that in the process of transition, the capabilities of a political system are not fixed, and its political culture is dynamic as well as sensitive to traditional patterns of interaction. The experience of states in the post-communist bloc presents the idea that there is nothing teleological about development<sup>407</sup>, and that to assume so may compromise accurate characterizations of a nation’s polity. As Rose states, “... the factors [like ICT] that keep a democracy stable may not be

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<sup>407</sup> Rose states similarly that there is nothing teleological about changes between regimes. In Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*, 3.

the ones that brought it into existence; explanations of democracy must distinguish between function and genesis.”<sup>408</sup> In reference to the frameworks of systems thinking referred to in Chapter 2, I think that the application of system dynamic methodology to the questions of ICT impact on government presents a fascinating area of research for the future. Elaborating on existing approaches using new systems methodologies and tools would very nicely manage some of the issues of feedback and simultaneity (i.e., dual effects hypotheses) that feature so prominently in this area of research.

Another interesting area of possible research may help to augment alternative approaches to the dominant techno-globalist and techno-nationalist literature streams through the introduction of critical frameworks. Given the obvious direction of global technology transfers and information flows from core to periphery, it is not a secret that the liberal capitalist states foster the best conditions under which it is possible to efficiently innovate and diffuse innovation. Accepting the assumption that the products (i.e., ICTs) of a system empower its agents of change (i.e., donors) that act upon that system, a number of scenarios can result. These ideas can be encapsulated and developed in the framework of an adapted principle-agent model. For example, the ‘user’ (or agent) of a technology may act in the best interest of its ‘innovator’ (i.e., the principle source of the technology) even when the ‘user’ may have an advantage over (or different interests from) the innovator. Alternatively, the ‘user’ may not, opting instead to pursue his/her own interest due to a number of other antecedent or current conditions. What is often lost in the overarching determinism of development work in this field is that while

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<sup>408</sup> Ibid., 5.

agents of change can be adapted to reinforce the system, they can also undermine it. In other words, there may be different, useful approaches here to explaining how and why ICTs are used to support phenomena antithetical to the principles of liberalism, sharing, and innovation that create them.

While this dissertation has stated that high level macro-analysis of global data is not necessarily an approach to be employed unilaterally, there is still considerable room for further statistical analysis of the global aggregated data using aid per capita and total aid figures as a substitute for traditional income variables like GDP, GDP growth, GDP per capita, etc. The dynamic of the interactions between aid figures and ICT variables could uncover new areas of thinking for policymakers, particularly when they are functioning in the context of donor-driven economies. Any movement toward more evolved, refined gradations of deterministic thinking may be helpful toward addressing the peculiarities of case by case analysis, and enriching conventional wisdoms. On a related note, Nagy Hanna of the World Bank states, “Aid agencies [should] ... take a strategic and holistic view of ICT, beyond ad-hoc assistance to ICT components in investment projects and stand-alone telecommunications operations.”<sup>409</sup> Thus, we acknowledge that the need for academic contributions toward the achievement of this end is considerable.

Schmitter warns that “... current ideological hegemony could well fade as disillusionment with the actual performance of neo-democracies mounts and as

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<sup>409</sup> Nagy K. Hanna, Senior Advisor Information Solutions Group (ISG) and World Bank, *Why National Strategies are Needed for ICT-Enabled Development*, 3, June 2003 (accessed March 30, 2005); available from [http://www.apdip.net/documents/policy/misc/policy\\_strategy1.pdf](http://www.apdip.net/documents/policy/misc/policy_strategy1.pdf).

disaffected actors revive old authoritarian themes or invent new ones.”<sup>410</sup> Rose states, however, that political scientists like Almond & Powell have argued that people can tell the difference between failures in policy and failures in a democratic constitution, and that the latter can be valued precisely because it can provide a remedy for the former.<sup>411</sup> Pulling the lens away for a moment from a single nation state and a single set of causal variables toward broader social theory, it is appealing to consider whether an alternative objective, ‘middle ground’<sup>412</sup>, or ‘third way’ may be suitable for post-communist transitioning states that are not yet able to merge their aspirations with their reality. This is not to discredit the value of the objectives of development (and its purveyors) and the efficiency that can be brought by the use of ICT, but rather to reiterate Landes’ idea that development as an objective has been not an end in itself, but a ‘long, complex and often ugly process’.<sup>413</sup> Neither do I imply that fifteen years of transition from the Soviet system has been ‘long enough’ at the present point to judge development outcomes. Rather, these ideas question whether stated objectives can be redefined in a way that can relax the teleological tendons pulling at the skeleton of struggling nation states, and thus afford more flexibility to the use of tools (like ICT) for institutional

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<sup>410</sup> J. Rogers Hollingsworth, Philippe C. Schmitter, and Wolfgang Streeck, *Governing Capitalist Economies: Performance and Control of Economic Sectors* (New York: Oxford University Press, 1994), 77.

<sup>411</sup> Rose, Mishler, and Haerpfer, *Democracy and its Alternatives: Understanding Post-Communist Societies*, 144.

<sup>412</sup> Such a middle ground might be comprised of levels of political participation reflecting a more communitarian system that is focused on the social consequences of market-based decisions; a new social contract wherein human and social capital are central to economic success in the ‘knowledge and information society’. Etzioni touches upon these subjects in his work *The Moral Dimension*, suggesting that a dimension of moral commitment be considered as a driver of collective action, which should be included in policy decision-making, particularly as it pertains to institutional change. Amitai Etzioni, *The Moral Dimension: Toward a New Economics*, (New York; London: Free Press; Collier Macmillan, 1988), 314.

<sup>413</sup> Landes, David S., *The Wealth and Poverty of Nations: Why some are so Rich and some so Poor*, 1st ed. (New York: W.W. Norton, 1998).

change. While we can accept the idea that closed systems (such as those of the Soviet era) were ultimately costly<sup>414</sup>, there is reason to further explore the sufficiency of imitative arrangements and procedures suggested by notions of “information society”, particularly as it applies to the transformation of organizational and human dimensions of government. These ideas as well as their implications for technology and development policies are all examples of new dimensions to be considered for future research.

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<sup>414</sup> The notion of cost here is based on the idea of compromising efficiency in the allocation of scarce institutional resources. Elaine Ciulla Kamarck, Joseph S. Nye, eds. *Governance.com: Democracy in the Information Age*, (Washington, DC: Brookings Institution Press, 2002), 175-6.

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**APPENDIX A – Summary Field Work Findings: Comparative Inventory  
Analysis of Government Institutions in Armenia (June-December 2004)**

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## **A. Ministry of Foreign Affairs**

Address: Government Building 2, Republic Square, Yerevan. Tel.: 52-35-31

Website: <http://www.armeniaforeignministry.am/>

*“The lack of information is also power...”*

**Number of Employees:** ~350

**Percentage of Computer Usage:** ~90%

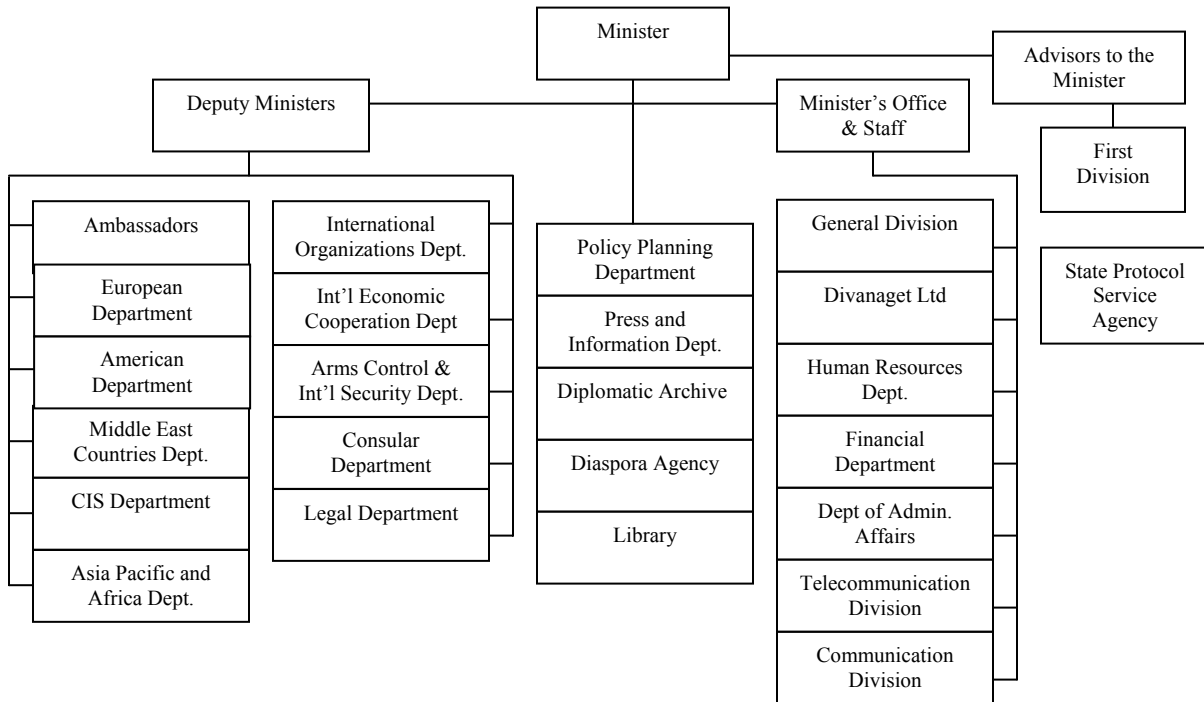
**Description:** According to the official [www.gov.am](http://www.gov.am) website, Armenia’s Ministry of Foreign Affairs (MFA) “... is a republican body of executive authority, which implements the foreign affairs policies of the Republic of Armenia Government, organizing and managing the diplomatic services within the scope of the authority vested in it.”

Publicly available information on the Ministry website includes a ministry calendar, an outline of the political structure of government (in the form of a directory), an overview of visa regulations, embassy/consulate information, the ministry’s membership in international organizations, Diaspora/Genocide information, and an online library and database (funded by Mr. Aso Tavitian). Key features on the site that indicate some level of advanced web architecture include the existence of a search bar, language options (English/Armenian), as well as access to an online library. It is important to note that ICT strategy at the MFA, according to those in key IT Advisory roles, is a very bottom-up process. There is little formal oversight of plans other than general review, and while there are consequences for those who overstep boundaries, feedback between those involved in web development or information services does not appear to feature as a very important aspect of ministry operations. Only in the coming months (October/November 2004) is the content management and updating of the ministry website, for example, being handed over to ministry employees from an external team under the supervision of a consultant.

The Ministry of Foreign Affairs appears to be one of the few government institutions in Armenia that has managed to capture an element of innovation within the confines of its Organizational Structure:. A good example of this kind of innovation is the E-Visa project, which allows for visiting parties to Armenia to apply and receive their visas online through the MFA website, without having to interact at all with a person, either at an embassy or at the airport upon arrival. The significance of this project lies in its accomplishment of closing off two more point of interaction with public authorities that could otherwise be prone to corrupt behavior. This has been possible primarily because the social fabric of this institution is comprised of individuals who have had educational and professional exposure abroad, and who have been able to import and manifest some of the entrepreneurial values that appear not to be indigenous to the Armenian political landscape.

### **Organizational Structure:**

Aside from the research functions of the regionally focused departments and various cross-functional policy departments, it is evident that the departments most obviously charged with the task of dealing in public information concerns are the Consular department, and the Press and Information Department. The Diaspora Agency and the Library (equipped with 6 flat-screen computers/printer and a database housing a wide variety of documents relevant to foreign affairs) also have a significant information infrastructure component to them, although the departments most explicitly tasked with the provision and maintenance of technology equipment and hardware are the Telecommunication/Communications Departments. The status of departments associated with institutional operations, such Human Resources, Legal, and Administrative Affairs, also reflect a good deal of the internal capacity of the institution to effectively utilize information systems.



### Human Component

A total of 6 people aside from the advisor to the Minister work in two units that are related to web and communication work. These include the Web Division comprised of 4 people and the Communication Department, comprised of 2 people. They run the Armenian Diaspora website (comprised of approximately 900 pages), and maintain the MFA website (comprised of approximately 120 pages). While some of these employees have certified technical backgrounds, there appears to be no unified standard that applies to all MFA employees in this area.

In terms of the management of human resource capacity, there is very little independent decision-making that can be made in most Ministries; the process of hiring/firing is not at the personal discretion of department managers. The culture of nepotism is one that is pervasive in this country; few people are hired into jobs by others to whom they have no personal connection. Decisions regarding the appropriation of work are taken from higher up, and there is no strategically derived plan from which training and investment in staff is funded. Over the last five years, there have been between fifteen and twenty individuals who have worked on ICT-related projects; there tend to be on average three people working at any given time. Two tend to be full employees, one works on an on-call basis (i.e. part-time), and one with basic manual support tasks.

Employee salaries are very limited, and are a main reason for the prevailing apathy that one sees in the IT department of the average government ministry in Armenia. While IT departments in ministries should be paying their employees somewhere in the realm of \$250-\$300/month (to compete with the vast amount of private sector technology work that pays in this range), often times they are not able to give their employees more than \$50/month. This sharply limits the number of young people helping to develop ICT usage in government, as well as marginalizes those who could really make a difference, but who are simply obliged to base their decision-making on the highest bidder.

Needless to say, it is important to point out that Internet connectivity in an institution is not in and of itself sufficient indication of 'imported values'. Likewise, the relevance of the following quote by an interviewee: "... we don't have to have CPUs to have IT in an organization". Indeed, three times a week, the MFA opens its doors at the back of its building, allowing citizens to come forth, stand in queue (taking numbers and waiting to be called), and address their personal queries in matters

related to the Ministry. In the context of the environment at the MFA, it is very much the case that IT implementation is viewed as a means of mitigating corruption.

Since the work of the Ministry of Foreign Affairs is 90% directed to a non-Armenian audience outside the country, this institution may not best exemplify the success (or failure) of technology application in government relative to its peer institutions. It has, nonetheless, been making strides toward providing public access points, in a project funded by UNDP – to deploy computer ‘stands’ in various parts of the capital – that offer Internet access and public information to the citizenry. Two prototypes of the hardware equipment exist thus far, one manufactured by IBM (at a cost of \$6,000), the other a local replica (costing \$1,500). Once ready for deployment, these are ideally to be maintained and managed by the private sector.

The majority of information with which MFA employees work (which appears to be largely news-based) appears to come from online sources on the Internet. In terms of internal perceptions and practices regarding new ICTs, considerable progress remains to be accomplished. Many employees in the MFA apparently continue to use their private yahoo/hotmail addresses rather than mfa.am domain email. This is indicative of a blurred line in collective conceptions of private vs. public work, and there is clearly a need for discipline vis-à-vis the professionalism of using work email for work. That said, however, in some cases the functionality of local (.am) web servers are not sufficient to support frequent access to webmail.

### **Technical Component**

In terms of technical infrastructure, the Ministry of Foreign Affairs has six servers in all (including mail, proxy, DNS, and file servers; two computers are currently acting as servers) in their Web and Communications Department. Hubs have been upgraded 3 months ago from 10 Megabits to 100 Megabits capacity, and the general status of equipment is good. The local network connects 24 departments on one main server, and Internet connectivity is provided via optical line, with a back up cable modem. Approximately 350 people work in the ministry, approximately 90% of which have computers, although the standards associated with the operating system of these machines vary considerably. There are network printers on each floor.

The issue of software licensing is one of fundamental importance that is often overlooked as a priority in government, given the overwhelming culture of software pirating in Armenia (as in most peer former Soviet republics). Upon trying to acquire quantitative information about operating systems and desktop applications, it quickly appears that licenses of any kind are not available, much less information regarding whether there are enough licenses to cover total numbers of users. 100% of software being used in the MFA is pirated, with the rare exception of those machines/servers that have been granted by donors that come with their own licenses already paid for. These tend to become outdated relatively quickly.

### **Financial Component**

Identifying a separate line item entitled “IT budget”, even in the advanced Ministry of Foreign Affairs, is not possible. The IT budget for the projects of the MFA has come almost entirely through the efforts of Advisor to the Minister, Mr. Vahe Aghabegians. Projects have been initiated with funding from a variety of sources not related to the government budget, and a model has been created through which advertising money can be funneled through the site to keep it up and running. Through the e-visa system, \$5 of every visa issued online is theoretically meant to be allocated to keeping the system running (covering overhead costs, etc.); unsurprisingly, this margin does not always successfully reach its intended destination.

In the case of the MFA, it appears that there is no consolidated accounting; and that donation and/or external contributions are not part of their investment or operational budgets.

### **Work with Donors: New Projects**

With the help of TACIS, the MFA is now aiming to make their ministry paperless by January, working through the process of mimicking current workflows, which include the processing of

incoming information, information filtering (i.e., based on sensitivity of information contained), necessity of response and associated time frame, and the identification of those whose responsibility it is to follow up.

According to Antony Jagus, Programme Director in charge of the implementation, the initial project will be finished by the end of 2005. Following successful implementation the project is intended to serve as a model for deployment throughout the whole Armenian government; no immediate plans or funding for this exist, and it is not apparent what kind of workflow application they are using to this end. The project creates a single government network, computerizing paper-based processes, and retraining government users. Following a successful trial of issuing visas electronically, the Foreign Ministry is linking up with the Ministry of Justice to issue 'no previous conviction' e-certificates for those seeking jobs abroad. To accomplish this project the two ministries will share a unified information network, the first of its kind within Armenia's public sector

The overall objective of the TACIS project is to enhance the use of information and communication technology in Armenia. The objectives and target groups for the two project components include 1) education and training, and 2) work on the legal and regulatory framework. With regard to the former component, work is being undertaken toward the development of a "European Regional Institute for Information and Communication Technology in Armenia" (ERIICTA), in order for a regional center of excellence for tertiary level information and communication technology education to emerge. ERIICTA is slated to have the ICT infrastructure, library facilities and administrative systems to support the delivery of degree programs, encompassing courses in IT Engineering, Software Engineering, IT Business Management, and Media & Computing. In terms of the technology component of this work, the tender for the "individual supply contract forecast" offered in 2004 includes computer hardware for both ERIICTA and the Ministry, cabling of ERIICTA buildings, connection of ERIICTA to the existing ARENA network<sup>415</sup>, the provision of general application software, Electronic Document Management software and a web context management system for the Ministry, and language laboratory control equipment

The target group in the latter component includes the officials and staff of the MFA, and indirectly, citizens, businesses and commercial organizations of Armenia. Project activities include the development of an electronic document management system, a web content management system to make legislation and regulations relating to the MFA (as well as international treaties and conventions ratified by Armenia) available online, a pilot introduction of public access points for free access to government information online, and the further advancement of e-consular service in Armenia and abroad.

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<sup>415</sup> ARENA is the "Armenian Research Educational Networking Association" Foundation founded in Yerevan in December 2000. It aims at the establishment and administration of research and educational networks in Armenia, and works toward enlarging exchange of information between scientific communities, libraries, museums, and other non-profit organizations. Projects associated with ARENA include the "Virtual Silk Highway" program, the establishment of a joint Armenian-Azerbaijani-Georgian Association, the development of networking infrastructure financed by the NATO Science Program's Networking Infrastructure Grant, a Eurasia Foundation Grant to create a 'virtual communications website', a grant from Open Society Institute to install VSAT networking equipment and to legally use the satellite dish located in Yerevan within the framework of the "silk highway" project, etc.

**ICT Capacity Metric: 26/40**

<b>Organizational Components</b>		
1	Transparency: If yes	1
a	General propensity to divulge information	0.25
b	Evidence of PR + IT depts. work together? If yes	0.25
c	Does Chief of Staff facilitate ICT work? If yes	0.25
d	Org chart available? If yes	0.25
2	Target audience for ICT projects: who do they benefit? If society (1)	0.5
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	0.5
4	Digitizing info for back office automation: If yes (1)	0.5
5	Efforts donor driven, simply for absorbing funding? If no (1)	1
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if de-centralized/outsourced (1)	0.5
10	Is IT mission critical for high %age of total functions? If yes (1)	0.5
	<b>Total</b>	<b>7.5</b>
<b>Financial Components</b>		
1	Is there indication of institutional commitment? (1)	1
2	Is there an explicit IT budget? If yes (1)	0
3	Is there evidence of external support? (1)	1
4	Extent and involvement of external support	1
4a	If financial? Yes	0.25
4b	If design? Yes	0.25
4c	If technical? Yes	0.25
4d	If organizational, strategic? Yes	0.25
5	Evidence for sustainability & transfer ownership? If yes (1)	1
6	Are upgrades of equipment planned? If yes (1)	0.5
7	Is there budget tracking? If yes (1)	0
8	Is the budget executed through the year? If yes (1)	0
9	If no budget, where does resource come from? If gov't (1)	0.5
10	How does IT interact with other factors of organization? If ubiquitous (1)	0.5
	<b>Total</b>	<b>5.5</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80% (1)	1
2	Is security a priority? If yes (1)	1
3	If MS Windows (default) (0), If OS presence (1)	0
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes (1)	0
5	Web-based, client-server, terminal? If any (1)	0
6	Is there local network? If yes (1)	1
7	Status Internet connectivity (low- 0, medium -.5, high-1)	1
8	How critical is Internet to work? If M or H (1)	0.5
9	How many servers service network? If > 2 (1)	1
10	Level of upgrade necessary is low, If yes (1)	0.5
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>6</b>
<b>Human Components</b>		

1	How many total IT staff supporting Ministry? If > 2 or 3 (1)	1
2	Does human capacity management feed back into planning? (1)	0
3	Is there adequate ICT support? (1)	1
4	If IT center: external (1), if internal (.5)	1
5	Salaries: If > average \$50 (1)	1
6	If background is technical, and regulated (1)	0.5
7	Career path? If yes (1)	0
8	Employee turnover: If low (1)	0.5
9	Presence of innovators: If yes (1)	1
10	Leadership: If subjective assessment is good. If Yes (1)	1
	<b>Total</b>	<b>7</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>26</b>

## B. Ministry of Healthcare

Address: Government Building 3, Republic Square, Yerevan, Tel.58-24-13

Website: <http://www.arminhealth.am>

**Number of Employees:** ~ 100-120

**Percentage of Computer Usage:** 75%- 80%

**Description:** According to its official description, “The Republic of Armenia Ministry of Healthcare is a republican body of executive authority, which elaborates and implements the policies of the Republic of Armenia Government in the healthcare sector.”

Publicly available information includes: Statistics/National Database (Population, Characteristics of Population Health, Resources for Health Care, Maternal and Child Health); legal Information (Law on Drugs, Law on Reproductive Health and Rights); Programs and Action Plans (National Environmental Health Action Plan of Armenia (NEHAP) (including a program on tuberculosis control in Armenia, a program on malaria control in Armenia; the Armenian-American ophthalmology program; family medicine in the Primary Health Care; National Response to HIV/AIDS in Armenia; programs and strategies to improve child health and development; and programs and strategies to improve reproductive health). There is also information available on International Cooperation Programs, as well as key features including webmail capabilities, and English/Armenian language options. This Ministry’s website, relative to others sites, has been developed with the help and collaboration of the World Health Organization in Geneva, Switzerland.

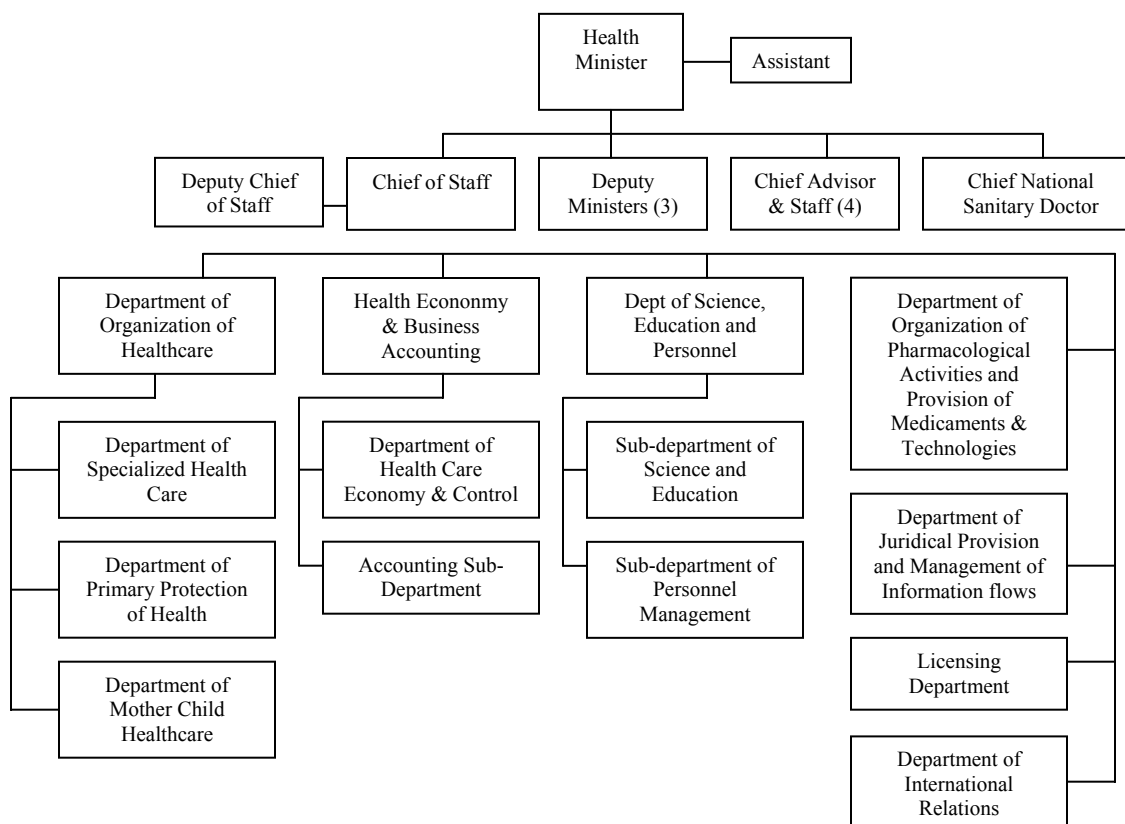
### Organizational Structure:

In each department, on average, one will find a Head of Department, a Deputy Head of Department and/or various Heads of Sub-Departments, a Chief Specialist, a Leading Specialist and/or a Primary Specialist, and a Secretary. The Licensing Department, the International Relations Department, the Department of Juridical Provision and Management, and the Department of Organization of Pharmacological Activities and Provision of Medicaments and Technologies are smaller than their counterparts in the Organizational Structure: of the Ministry.

Three main layers of enquiry were associated with a *Health Information System Assessment* which occurred from 2001-2 (it is unclear as to the source of this initiative), and included an evaluation of associated ministries (Ministry of Health/National Statistical Service/Ministry of Social Welfare), municipal centers, and medical facilities in the regions. Although it is not immediately explicit on the organizational chart of the Ministry, an Information Department exists (as part of the Judicial Provision and Management of Information Flows Department) and was created approximately 2 years ago, having been previously split into three separate information/technology-related centers. The Minister of Health decided to centralize the work of the ministry’s information and

communication infrastructure in 2001, and work with the World Health Organization on an “ICT implementation” project.

As a result, the Ministry of Health has a moderately advanced information and communication technology infrastructure, supported in part by their own servers (mail, file), and in part by the services of MedInfo, run by Mr. Ara Tadevossian. MedInfo was created in 2001, as a private health information systems provider working primarily with the Ministry of Health. Part of the result of this project is the ministry website, which by Armenian ministry standards, is well developed and navigable. The impact of the individual initiative and entrepreneurial spirit behind this work is palpable.



MedInfo works with the Hygiene Agency, and on the SANIBIT database, which is an information bank housing 87 types of disease indicators. Their work is devoted to health related data processing, system design, and the provision of support to the technical projects of the Health Ministry and related units. Prior to the creation of MedInfo, there was a Health Information Analytical Center in existence from 1996-2001; service was generally incompetent and the lack of adequate financial resources to maintain the department internally rendered it ineffective. After 2001, work toward a functioning social security system began, along with development of the NEMRUT system<sup>416</sup>, and the National Information System (under the auspices of the Ministry of Transport and Communication), among others. Since the ‘privatization’ of the Information Analytical Center one year ago into MedInfo, IT service has improved in quality, and appears to be more answerable and responsive to Ministry technology needs.

<sup>416</sup> This is another manifestation of external ‘information analytical center’ associated with the Ministry of Social Security.



The primary challenge of the ICT environment in the Ministry of Health appears to be one related to facilities, and education/IT training. The last major training occurred approximately three years ago, and there are still issues surrounding the fact that some of the reporting forms they use to collect information date back to the former Soviet system. There is considerable duplication of effort in the procedures associated with reporting/recording data. Attempting to interact with comparable institutions – for the purpose of leveraging information or looking at benchmarks/best practices is problematic for this Ministry.

The problem of norms surrounding the provision of information to the citizenry is a serious one, in large part because the key target audience of the Ministry is the people. Citizens, when they contact this ministry, must write official letters; emails or online forms are not part of the communication norms of this institution. ICT infrastructure, from an organizational perspective, is seen as an enabler not necessarily for standardizing the presentation of public information (an area in which they have already made some organic progress), but as an opportunity for comparing national data with international data sets. In theory, ICTs are seen as potential enablers of facilitated collaboration and the prevention of duplication of effort, the capacity to leverage them to achieve these ends is still clearly sub-optimal. .

### **Human Component**

There are between 100 and 120 employees in the Ministry of Health, of whom 80% have PCs. A total of seven people work for the in-house Information Division under Director Elvira Mirzoyan, which is dedicated to the collection and analysis of data; two technical staff who focus on network maintenance/systems) are hired in from Medinfo, and there are an additional three statisticians who work on reports and methodology. The Ministry itself does not employ the real technical specialists necessary for system design. While the work of MedInfo is indispensable to the functionality of the Ministry, the use of new technologies appears to be moderately “mission-critical” to its operations.

In terms of the composition of the MedInfo group that supports the Ministry’s technical needs (from the standpoint of equipment maintenance, upgrades, accessories, etc.), there are twelve people currently employed, including engineers, programmers and network administrators. Some of these work part-time. They typically have low employee turnover and a consistent, high level of training for the employees, and thereby represent what could be a viable model to be replicated in other ministries with the capacity to manage outsourced ICT development.

### **Technical Component**

MedInfo have created a LAN, and established an Internet connection via satellite. As is the case with almost all other government ministries, financial limitations are the main problem associated with maintaining Internet connectivity on a consistent basis. Their ‘knowledge management’ systems, which are actually comprised of more primitive means of managing ‘working documents’ between departments, are comprised mostly of local file servers, which reside at the Ministry in conjunction with a number of print servers. This is by no means equitable to the standard ‘knowledge management systems’ found in western government institutions; this is in part because there is no clear criteria for what distinguishes ‘information’ from ‘knowledge’. This interview was conducted with the assumption that the working output generated by each department in this ministry – whether in the form of data or in written report – adheres to certain internally- determined criteria for institutionalizing knowledge in respective areas of specialization. The Ministry’s internal “knowledge” network is equipped with search functionality. An internal Ministry ‘webmail’ system based on the ministry’s own domain is available and in frequent use. They have a functioning framework to connect with information systems in the marzes<sup>417</sup>, three of which currently have functioning IT centers thus far. This essentially means that they have dial-up connectivity and are using their capabilities to send information electronically back to the Ministry of Health. These regional centers contribute to the aggregation of updated information about mortality, diagnoses, etc. for international classification of diseases.

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<sup>417</sup> The word ‘marz’ is a reference to ‘region’ in the Armenian language.

In terms of physical infrastructure at the Ministry, there are 3 (Acer) servers in place (Mail, File/Print, Web), and a number of computers with varying levels of processor capacity. There are: 1 Pentium IV computer, 4 Pentium III's, 14 Pentium II's, 18 Pentium I's, 7 old Celeron processors, and 33 Celeron IIk; this means there are just under 80 machines. The Ministry has 8 copy machines (5 of which must be upgraded) and 44 printers, half of which are in acceptable shape. Across the board, approximately 50% of this equipment must be upgraded. There is a fiber optic line available for the provision of connectivity that should be physically ready for the Ministry in 1-2 months, but which will be more expensive than the connectivity that MedInfo currently provides to the Ministry as an Internet service provider. The issue of Armentel's telecommunication monopoly features prominently here as everywhere else; they have a downlink of 1 Mb, and a radio modem uplink of 128 Kbps.

### **Financial Component**

There is no separate designated budget for Information Technology development in this Ministry. Resources are allocated in general aggregated departmental budgets, and are utilized on an "as-needed" basis.

According to MedInfo, the total money allocated to health care in the national budget has been augmented year upon year, starting from 18 billion dram in 2003, 24 billion drams in 2004, and 34 billion drams slated for 2005. MedInfo works with the Ministry of Finance, as well as with UNICEF, USAID and the World Bank in the development of a nation-wide immunization program. Interestingly, the interview with MedInfo yielded a fact that is seldom articulated in Armenia; that government funding for such programs is at an order of magnitude above the collective funding pool brought together by donor organizations, and that more of it comes from the state than from outside. For example, the immunization program mentioned above apparently consists of 80% government funding, and 20% donor funding. Whether it is possible to discern the extent to which this is true, depends on how transparent the sources of the government's general budget can be. As it stands, this kind of information is not available to the public. In any case, such statements stand in stark contrast to the culture of donor dependence that appears to be present in the majority of government Ministries in Armenia.

### **Work with Donors**

The Ministry of Health of Armenia has been working in collaboration with the World Bank, the World Health Organization, and USAID in an information development program, for the purpose of developing a computerized system of reporting. They have been gathering information for a National Database for the last 20 years, and have plans to add analyses which they eventually want to make publicly available online. They collect data on an ongoing basis from 600 facilities, creating the "Health System of Armenia" in conjunction with the National Statistical Service. They also deal with death and birth certificates, etc. One notable challenge to this work lies in the fact that there have been known to be significant discrepancies between figures stated in the medical and the state systems – in large part because people who move or emigrate rarely report their change of status. For this reason, the integrity of the constantly updated health systems database is more likely to be accurate than any other digitized registry, according to the Director of Information Services.

MedInfo has worked with the World Health Organization on data presentation systems, aggregating national indicators of various kinds (social, demographic, health) through the end of 2004. They are active in collaborating with the Director of the SANIBIT indicators database (headed by the equivalent of the 'U.S. Surgeon General' in Armenia), as well as with their own Hygiene Agency, and have applied to the International Science and Technology Center (ISTC), a program specializing in science research supporting thousands of Russian and CIS scientists.<sup>418</sup> There is also work

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<sup>418</sup> Through 2003, the ISTC funded over 58,000 scientists and their team members in 765 research institutes, with 91 projects in Armenia receiving funding totaling

underway with PADCO – in a social transition program – which has been responsible for financing the well-known NEMRUT center, and the Global Health Information Systems (GHIS) electronic network.

#### ICT Capacity Metric: 24

Organizational Components		
1	Transparency: If yes	1
a	General propensity to divulge information	.25
b	Evidence of PR + IT depts. work together? If yes	.25
c	Does Chief of Staff facilitate ICT work? If yes	.25
d	Org chart available? If yes	.25
2	Target audience for ICT projects: who do they benefit? If society (1)	.5
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	0
4	Digitizing info for back office automation: If yes (1)	.5
5	Efforts donor driven, simply for absorbing funding? If no (1)	.5
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	1
10	Is IT mission critical for high %age of total functions? If yes (1)	.5
<b>Total</b>		<b>7</b>
Financial Components		
1	Is there indication of institutional commitment?	.5
2	Is there an explicit IT budget? If yes	0
3	Is there evidence of external support?	1
4	Extent and involvement of external support	1
4a	If financial? Yes	.25
4b	If design? Yes	.25
4c	If technical? Yes	.25
4d	If organizational, strategic? Yes	.25
5	Evidence for sustainability & transfer ownership? If yes	1
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	.5
10	How does IT interact with other factors of organization? If ubiquitous	.5
<b>Total</b>		<b>4.5</b>
Technical Components		
1	How many computer/relative to total staff? If > 80%	.5
2	Is security a priority? If yes	1
3	If MS Windows (default) (0), If OS presence	.5
3a	Do they do application development in house?	

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a 5 value is inserted, indicating that the institution is being given the benefit of the doubt.

\$16.9 million. (accessed February 2005); available from <http://www.istc.ru/ISTC/sc.nsf/html/branch-offices-armenia.htm>.

4	Software licenses? For each user? If yes	0
5	Web-based, client-server, terminal? If any	.5
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high-1)	.5
8	How critical is Internet to work? If M or H	.5
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	1
10a	Is there defunct equipment, unused equipment?	✓
	<b>Total</b>	<b>6.5</b>
	<b>Human Components</b>	
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	.5
4	If IT center: external (1), if internal (.5)	1
5	Salaries: If > average \$50	1
6	If background is technical, and regulated	0
7	Career path? If yes	0
8	Employee turnover: If low	.5
9	Presence of innovators: If yes	1
10	Leadership: If subjective assessment is good (Yes =1)	1
	<b>Total</b>	<b>6</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>24</b>

### C. Ministry of Education and Science

Government Building 3, Republic Square, Yerevan Tel.: 52-66-02

E-mail: <http://www.edu.am>

**Number of Employees:** 140

**Percentage of Computer Usage:** 80%

*“The efficiency of the Ministry can be improved several times over if an IT structure comes into place...”*

*“Transparency can be possible” ...*

**Description:** According to its official description, “The Republic of Armenia Ministry of Education and Science is a republican body of executive authority, which elaborates and implements the policies of the Republic of Armenia Government in the education and science sectors.” The current education system has been established during the short existence of the first Republic in Armenia in (1918 –1920), and was further developed during the Soviet Era (through 1990).

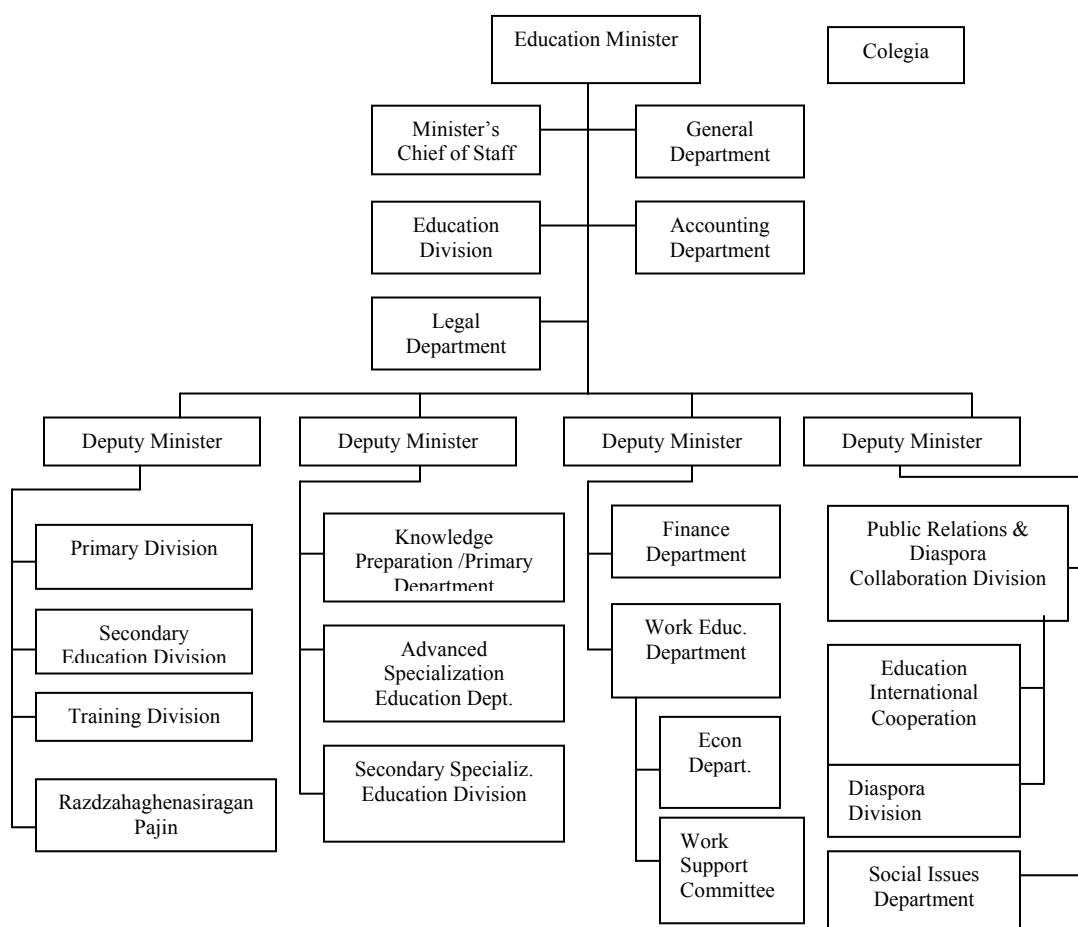
This Ministry develops education development plans, state education standards and controls their implementation; it ensures the development and publication of general education curriculum and subject syllabi, provides textbooks and handbooks, provides state license and accreditation to education institutions, develops model charters for the state education institutions and approves the accreditation procedures for the pedagogical and managing staff in the education institutions. It also develops the lists of specialization in universities, refines the standards for general, middle professional and higher professional education, and approves entrance examination guidelines. Much of what this Ministry is tasked with can be improved through the use of ICTs; this includes the management of their relationships with state and licensed, private middle and higher educational

institutions, many of whom have been developing IT capability as a result of internal initiatives and the work of NGOs like Project Harmony. The work of developing models of graduation documentation at all education levels, defining guidelines and criteria for the acknowledgement of foreign education graduation documentation, and ensuring the creation of development plans for the implementation and supervision of state education institutions is highly amenable to the use of digital technologies. This is because all of these tasks are fundamentally centered on the effective dissemination of information.

Publicly available information on the Ministry of Education website is very limited in content, and is available in Armenian language only. This site was online in 2003 and supported in cooperation with IATP/IREX ([www.iatp.am](http://www.iatp.am)), at the time directed in part by Mr. Gregor Vahanian, who is no longer involved with this project but who currently has been making strides in the technological advancement of the Constitutional Court. It appears that in the sector of education, non-governmental entities like Project Harmony (directed by Mr. Eric Nankervis) have been as active (and generally more successful than) in servicing the educational and connectivity needs of communities as the governmental ministry.

### Organizational Structure:

The Ministry of Education is broken out into a variety of structural subdivisions, including a number of Administrations (Public Education, Specialized/ Professional Education, Unit to prepare Science and Scientific-Pedagogical human resources/specialists, International Collaboration and Diaspora Relations, Financial, Economic, and Accounting Unit, Human Resources, Regulatory and Legal/Judicial Unit), a Secretariat body, two Departments (Physical Training and Military and External (to School) Pedagogical Department, and an Information, Analytical and Development Programs Department), as well as a number of Agencies (Higher Qualification Status Committee and Licensing and Certification Services) and Oversight Agencies (State Agency for Language).



### **Human Component**

The Ministry of Education has no designated IT department or capacity. No information was available regarding the existence of technology support staff, and only the presence of an internal “Information Analytical Center” was articulated (directed by Mr. Robert Stepanyan). According to an interviewee, it is implicit from the standpoint of the personalities working in the ministry that it may be too soon for mass Ministry-wide digitization efforts. By digitization, we refer to the simple issue of technology access and connectivity, which can easily be addressed through the acquisition of internet-enabled PCs. There appears to be little culture of IT-use in this organization. In terms of the information that the Ministry should be using internally and providing publicly, according to an interviewee, “it is already late.” This critical capacity should already have been in place.

For updates to the Ministry of Education website, it appears that there is no plan or strategy involved vis-à-vis content development or stated objectives. Decisions to alter/improve the content of the site are taken by one person. The Ministry of Education does operate an Education Center through the World Bank, and plans are in place for an Internet based information management system. In future, the Ministry aims to create a separate IT department, but for the time being the existing budget is not large enough to support one.

### **Technical Component**

There is no functioning network connectivity, with the exception of one local area network in one room of the Ministry – in existence only because of the personal initiative of a few ministry employees. In terms of the Ministry website, they have wanted to change the situation of their webmail server, which happens to be located at a Conservatory in another part of town. It apparently often happens that those housing the server make the mistake of turning it “off” from time to time, along with whatever else is in that building. From a security and control standpoint, this is highly problematic – but few alternatives (and initiatives for change) appear to be in evidence. Whatever computers exist in Ministry offices are gifts from donors. What sporadic Internet access exists in support of basic information retrieval needs and email comes from employees who are using personal dial-up accounts; these appear to be partially subsidized by the ministry, although exact figures were not possible to obtain. According to the Director of the Information Analytical Center, most of the research that employees must do *does* depend on Internet connectivity; however, connections are few and slow.

Generally, in terms of connectivity and information infrastructure, this Ministry has no shortage of challenges to face. Some of these challenges appear to be a result of the fact that the Ministry moved buildings approximately one year ago, into the popular Government Building #3 where six other Ministries are currently housed. Since that move, many logistical issues and all technological ones have remained unaddressed; this is a rather strong indicator of the fact that technology is not a mission-critical component to the work of this institution. According to the interviewee, looking to the example of the CIS in terms of their digitization and institutional reform efforts is important, although from a geo-political perspective, the urgency for making information available publicly is more for the benefit of Armenia’s orientation toward the EU than it is for its relationship with Russia. It is actually ironic to note that this Ministry, tasked with the coordination and management of *all* the institutions that have been deemed most critical to the realization of Armenia’s strategic positioning as an IT regional ‘hub’, is itself so woefully under-equipped to face its own technology and information challenges.

### **Financial Component**

There is no IT budget to speak of in this Ministry. The only information cited was vague reference to a forthcoming deal with the World Bank, estimated to be worth about \$30 million with the World Bank, of which \$3 million is supposedly to be allocated to “technical support”.

### **Work with Donors & Civil Society Highlight:**

The Ministry of Education appears to have a track record of collaboration with UNDP, UNICEF, the European Union, UNHCR, and USAID. It is currently undertaking a 4 year project (planned through 2008) that will ensure that “all schools will be hooked up with the Ministry”; unfortunately, it was difficult through the interview to determine how much of that work comes from what has

already been accomplished by Project Harmony, and what is the result of the Ministry's own initiative and resources. As with many of its ministry counterparts, one of the main challenges identified to the process of ICT development include the usual impending access barriers posed by Armentel's communication blockade.

Project Harmony has worked in conjunction with the Ministry to undertake connectivity projects in schools throughout the country; they have made remarkable progress and implemented highly successful projects particularly in the area of training. The Armenia School Connectivity Program (ASCP), a program of the US Department of State Bureau of Educational and Cultural Affairs, funded through the FREEDOM Support Act and implemented by Project Harmony, builds local, regional, and national capacity to assume responsibility for the long-term sustainability of the program. The three main focus areas for this program are technology, education, and community.

The program provides resources, Internet access, and training for a network of schools across all 11 regions of Armenia. ASCP allows students, educators, and community members opportunities to access and share information, to engage in online collaborative projects, and to develop technical skills marketable in a digital world. It increases school-community interaction, US-Armenian partnerships at the school and community levels, and civic engagement on the local, national, and international levels. ASCP supports the integration of educational technologies in a way that strengthens democracy and support civil society and cultural understanding.

Another project, entitled the Armenian Legal Socialization Project (ALSP) and known as "ZANG" (an acronym for "Developing Knowledge and Promoting Justice" in Armenian), funded by the US Department of State Bureau for International Narcotics and Law Enforcement Affairs and implemented by Project Harmony, fosters collaboration between Armenian and American educators and law enforcement officers as well as creates an opportunity for Armenian professionals to study American legal socialization models. The main focus of the project is to implement the idea of legal socialization within the Armenian education environment. Legal socialization is the process of learning attitudes, ideas, and behaviors, and the development of legal reasoning. A draft manual has been developed, and trainings have thus far piloted in twenty-two schools in four marzes of Armenia (Tavush, Lori, Syunik, and Yerevan). These were the schools where the principals and teachers expressed their will to pilot the classes and send their comments and suggestions to the working group members. Currently the manual is being modified and prepared for final publication to further serve to the law enforcement officers, working with schoolteachers and students. The lessons are aimed at equipping young generations with information and civic proficiency, enabling them to develop knowledge and skills, necessary for living in a legal state.

#### ICT Capacity Metric: 8

Organizational Components		
1	Transparency: If yes	
a	General propensity to divulge information	
b	Evidence of PR + IT depts. work together? If yes	
c	Does Chief of Staff facilitate ICT work? If yes	
d	Org chart available? If yes	
2	Target audience for ICT projects: who do they benefit? If society (1)	
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	
4	Digitizing info for back office automation: If yes (1)	0
5	Efforts donor driven, simply for absorbing funding? If no (1)	0
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	0
8	Is IT work of individuals or institutionalized? Do they	0

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a 5 value is inserted, indicating that the institution is being given the benefit of the doubt.

	report to senior management? If institutionalized and yes (1)	
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	.5
10	Is IT mission critical for high %age of total functions? If yes (1)	0
	<b>Total</b>	<b>2.5</b>
<b>Financial Components</b>		
1	Is there indication of institutional commitment?	0
2	Is there an explicit IT budget? If yes	0
3	Is there evidence of external support?	1
4	Extent and involvement of external support	.5
4a	If financial? Yes	.25
4b	If design? Yes	.25
4c	If technical? Yes	0
4d	If organizational, strategic? Yes	0
5	Evidence for sustainability & transfer ownership? If yes	.5
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	0
10	How does IT interact with other factors of organization? If ubiquitous	0
	<b>Total</b>	<b>2.0</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	1
2	Is security a priority? If yes	0
3	If MS Windows (default) (0), If OS presence	0
3a	Do they do application development in house?	0
4	Software licenses? For each user? If yes	0
5	Web-based, client-server, terminal? If any	0
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high- 1)	.5
8	How critical is Internet to work? If M or H	0
9	How many servers service network? If > 2	0
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>2.5</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	0
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	0
4	If IT center: external (1), if internal (.5)	0
5	Salaries: If > average \$50	0
6	If background is technical, and regulated	0
7	Career path? If yes	0
8	Employee turnover: If low	1
9	Presence of innovators: If yes	0
10	Leadership: If subjective assessment is good (Yes =1)	0
	<b>Total</b>	<b>1.0</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>8.0</b>



## **D. Ministry of Environmental Protection**

Government Building 3, Republic Square, Yerevan Tel.: 52-10-99

Website: <http://www.mnpiac.am>

*"IT is simply not a priority."*

*"Just give me the money being spent on printing paper, and that's a sum I can work with..."*

*Joke about Consultants/Donors: A shepherd was tending his flock in a remote pasture when suddenly a dust cloud approached at high speed, out of which emerged a shiny silver BMW. The driver, a young man in an Armani suit, poked his head out the window and asked the shepherd, "Hey! If I can tell you how many sheep you have in your flock, will you give me one?" The shepherd looked at the man, then glanced at his peacefully grazing flock and answered, "Sure." The driver parked his car, plugged his microscopic cell phone into a laptop and briskly surfed to a GPS satellite navigation system on the Internet and initiated a remote body-heat scan of the area. While the computer was occupied, he sent some e-mail via his Blackberry and, after a few minutes, nodded solemnly at the responses. Finally, he printed a 150 page report on the little laser printer in his glove compartment, turned to the shepherd, waving the sheaves of paper, and pronounced "You have exactly 1,586 sheep." "Impressive. One of my sheep is yours." said the shepherd. He watched the young man select an animal and bundle it into his car. Then the shepherd said: "If I can tell you exactly what your business is, will you give me back my sheep?" Pleased to meet a fellow sportsman, the young man replied "You're on." "You are a consultant." said the shepherd without hesitation. "That's correct," said the young man, impressed. "How ever did you guess?" "It wasn't a guess," replied the shepherd. "You drive into my field uninvited. You ask me to pay you for information I already know, answer questions I haven't asked, and you know nothing about my business. Now give me back my dog."*

**Number of Employees:** 600-700

**Percentage of Computer Usage:** N/A

**Description:** According to its official description, "The Ministry of Environmental Protection is a republican body of executive authority, which elaborates and implements the policies of the Republic of Armenia Government in the areas of environmental protection and sustainable use of natural resources."

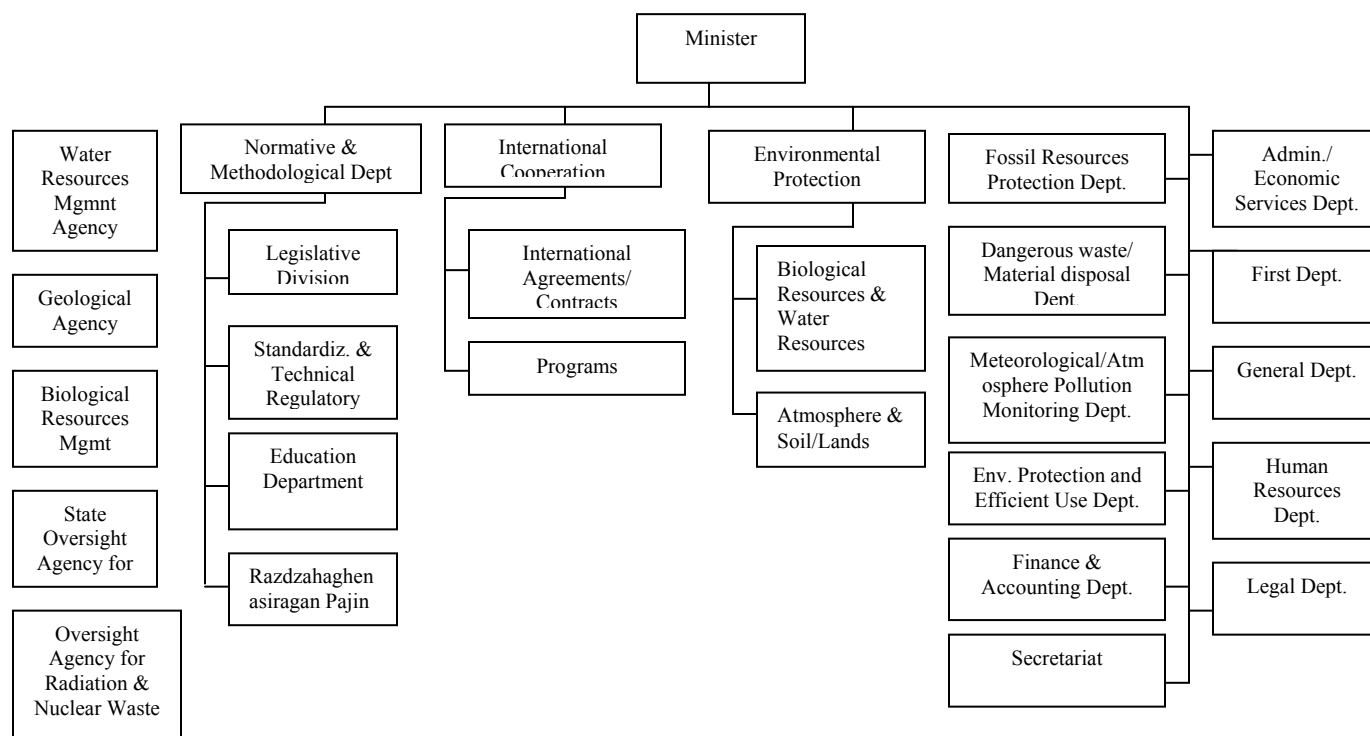
Available public information includes international agreements and conventions, ministerial programs/initiatives financed by external donors, the National Report on State of Environment 2000-2, information on the National BioSafety Framework in Armenia, links to the "Environmental Monitoring Center", and to "Yerevan Eco". The website offers both English and Armenian language (currently under construction), although its appearance is relatively primitive.

Fortunately, the emergence of standards in the international environmental regulatory sphere has had an effect on information practices in Armenia. The Orkhus Convention has had a particularly strong impact on the way in which public environmental information provision is being conceived and dealt with in Armenia. It heralds the availability of information and justice in situations claiming protection of environment, and entitles any citizen to bring a suit against apparent violators of environmental health even if the violation has not damaged him/her directly. It includes Ukraine, Belarus, Moldova, Azerbaijan, Georgia, & Armenia. TACIS has been active in the creation of a Public Environmental Information Center (PEIC) in Yerevan, for which there is an advisory directed by Vardan Vardanyan. Their work includes the preparation of user guides providing public information, and they run 3 websites, including the Ministry website, "YerevanEco", and another for monitoring purposes. NGOs and international organizations appear to use these sites more often than local citizens or Diasporans.

On a domestic level, of course, the trouble of adherence to standards in terms of information output and assessment continues to be serious. There is very little guidance and means by which the objectives of information provision are fulfilled.

### Organizational Structure:

In addition to the basic structure provided on the website, further available information includes the list and names of state non-commercial organizations, state institutions, and state closed joint stock companies. They also provide the names of the people who are directing these units and departments.



### Human Component

Due to the scientific nature of the information that is collected and analyzed at this Ministry, there appears to be a relatively high level of human capacity encompassed within its Organizational Structure:. There are approximately 600 people in the Ministry, across various separate centers and marzes, although connection with the marzes is not fully operational in any consistent way. For example – the area of Dilijan is not connected, while in city of Sevan, the Ministry now has 3-4 people using dial-up connections. This is upon the initiative of the external Analytical Center that set up this facility, and for which it is now asking 20,000 dram/month (equivalent of \$40/month) in order to support at least one persons' salary. Without maintaining at least one person for oversight and maintenance purposes, such a center in a marz would not be workable.

In terms of IT capacity, the Ministry has an external Information Analytical Center that was formed three years ago (2000-1), an independent servicing group responsible for developing databases, a website, and secure networks; this is directed by Mr. Lev Harutyunyan and employs 12 people, most of whom have to do other work by contract to keep afloat. Their webmaster only works for them 25% of the time, making updates on site from home and spending most of his time on other projects. Salaries are poor; relative to their counterpart (semi-private) IT Center of the Ministry of Labor and Social Affairs called NORK where those working in the IT division get paid \$300/month, these workers associated with the Ministry of Environment make \$50/month.

This Information Analytical Center is charged with a number of tasks and awareness raising activities, including the administration of a journalistic competition on environmental themes, a brochure for skill building, running international meetings/advisories (i.e., on the Rio Convention), bringing together UNDP, OSCE and UNEP for an Energy and Security meetings, training with journalists in Dzakhgadzor (a city about one hour drive from Yerevan) to encourage “active information” dissemination and best practices in dealing with the legal system, examining seismic activity – from a regional and environmental standpoint, and general mandates to do various projects with OSCE.

Naturally, there are other projects that are realized via other channels, such as the World Bank work through the Water Management Agency, or TACIS through work on the Clean Development Mechanism (i.e., in providing computers, web consultancy, etc). Each such agency associated with the Ministry tends to have its own technical base, thereby lending to a considerably fragmented ICT infrastructure. The Eurasia Foundation also has created a place (the Akhtala Center) for public environmental information to be disseminated. Once the funding ends, the center will close. With a little institutional support the Information Analytical Center could serve as a focal point in a local network, exchange critical data, and enhance the scope of the ministry’s reach.

### **Technical Component**

In theory, all Ministry of Environmental Protection employees are meant to have a computer on their desk. For example, the Water and Biodiversity Departments are apparently fully equipped, with news arrived in September/October 2004 of the arrival of 50 more PCs coming in as a gift from an undisclosed source. The Ministry works on a functioning local network, with email access and Internet connectivity for all. Internet connectivity is expensive, especially if it is through fiber optic cable; it can be as high as \$120-\$150/month. Government Building #3 houses a number of the main government ministries actually has usable fiber optic cable running to it already; however, none of the Ministries appear to be taking advantage of this fact at present.

The Information Analytical Center has a DNS/Web server which resides at Arminco, as well as two local servers in their office (one for system administration, and another as a database server). Approximately \$6,000 was allocated to the development of the intranet/Internet and IT infrastructure of the Ministry. While this Center has had plans to develop an information portal, the barriers of limited funding are apparently a key problem. As part of the strategy of the Ministry, it has been made explicit in the Ministry Action Plan to develop a website – although according to the Director of IAC, it has happened often before that sites are created and then die, after they are put online because of a lack of follow-up.

### **Financial Component**

The main obstacle to the successful deployment of IT-related development projects here appears to be one associated with sources of funding. The sums that are given to the Information Analytical Center (IAC) from the Ministry appear to be very small; possibly on the order of less than a few thousand dollars per year (exact numbers were not available). There was little awareness, at least on the part of the IAC leadership, as to the existence of a designated IT budget – but as with most ministries who do on some level outsource their ICT work, there must be some official flow of funds. There is some evidence to indicate that funding for technology related activities is merely drawn from a general, ‘administrative’ line item in the ministry’s budget.

The international organizations involved with allocating funding and undertaking advisory/consultancy work are important stakeholders in a process, but an interviewee’s statement that “... projects and programs are written in the sky, not on the ground...” demonstrates the fact that the way some of these development projects come about is flawed. For example, Germans (through GTZ, a company that consults on complex reforms and change processes toward the goal of sustainable development) came in to do a consulting project – dispensing advice on setting up GIS systems, with various kinds of suggestions on the configuration of equipment between the Information Analytical Center and the Ministry. The Ministry-side employees were ready to take

about half of those suggestions, demonstrating mostly that they were ready to keep all the donated equipment to themselves. According to the interviewee, this is one example of the tragedy of donor projects that end up being leveraged by the people who are least capable or able to effect positive institutional change.

#### Donor Coordination efforts:

In December 2002, the Ministry of Environmental Protection asked UNDP, the World Bank, TACIS, and USAID to sit in collective advisory board to address the issues of redundancy and overlapping. As a first step, it seems to have been understood that the base of knowledge necessary to implement projects is intact, as is human capacity and the required networks of contacts in what is a small development community; and yet, problems of coordination have continued to abound in Armenia. This need to determine which NGO is working on what area has since been addressed; the IT Development Support Council in the last few months has pulled together an "ICT Matrix" of activities documenting all ICT-related activities in Armenia. According to the director of the IAC, there is an endemic problem to the functioning of small development communities in countries like Armenia, of "... always the same people making the same decisions". This issue will be explored further towards the end of this paper.

#### ICT Capacity Metric: 22

Organizational Components		
1	Transparency: If yes	.5
a	General propensity to divulge information	.25
b	Evidence of PR + IT depts. work together? If yes	0
c	Does Chief of Staff facilitate ICT work? If yes	0
d	Org chart available? If yes	.25
2	Target audience for ICT projects: who do they benefit? If society (1)	1
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	0
4	Digitizing info for back office automation: If yes (1)	.5
5	Efforts donor driven, simply for absorbing funding? If no (1)	.5
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if decentralized/outourced (1)	1
10	Is IT mission critical for high %age of total functions? If yes (1)	1
<b>Total</b>		<b>7.5</b>
Financial Components		
1	Is there indication of institutional commitment?	.5
2	Is there an explicit IT budget? If yes	.5
3	Is there evidence of external support?	1
4	Extent and involvement of external support	.5
4a	If financial? Yes	.25
4b	If design? Yes	0
4c	If technical? Yes	.25
4d	If organizational, strategic? Yes	0
5	Evidence for sustainability & transfer ownership? If yes	.5
6	Are upgrades of equipment planned? If yes	0

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is being given the benefit of the doubt.

7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	.5
10	How does IT interact with other factors of organization? If ubiquitous	.5
	<b>Total</b>	<b>4.0</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	.5
2	Is security a priority? If yes	1
3	If MS Windows (default) (0), If OS presence	0
3a	Do they do application development in house?	0
4	Software licenses? For each user? If yes	0
5	Web-based, client-server, terminal? If any	.5
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high- 1)	.5
8	How critical is Internet to work? If M or H	.5
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	0
	<b>Total</b>	<b>5.0</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	.5
4	If IT center: external (1), if internal (.5)	1
5	Salaries: If > average \$50	0
6	If background is technical, and regulated	.5
7	Career path? If yes	.5
8	Employee turnover: If low	1
9	Presence of innovators: If yes	1
10	Leadership: If subjective assessment is good (Yes =1)	0
	<b>Total</b>	<b>5.5</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>22.0</b>

### E. Ministry of Energy

Government Building 2, Republic Square, Yerevan Tel.: 52-19-64

Website: <http://www.minenergy.am>

**Number of Employees:** 131

**Percentage of Computer Usage:** ~38%

“The Republic of Armenia Ministry of Energy is a republican body of executive authority, which elaborates and implements the policies of the Republic of Armenia Government in the energy sector.”

**Description:**

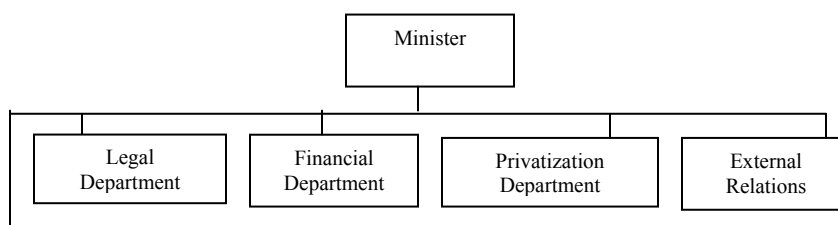
The Ministry of Energy was established in 1991 with the task of developing energy policy in Armenia, and overseeing and guiding the reform process in the field of energy. Energy security and independence represent two important elements of national security strategy of Armenia, and thus the development of the energy sector has been an important aspect of the ministry’s agenda of the reform. The ministry’s principal responsibility is to achieve a coordinated and integrated energy policy. Key aspects of the policy work of the Ministry of Energy include the re-structuring of inter-connected energy complexes based on the selection of strategic investors, the privatization of non-strategic facilities, the development of new energy complexes by private investors under various BOT/BOOT schemes, etc.

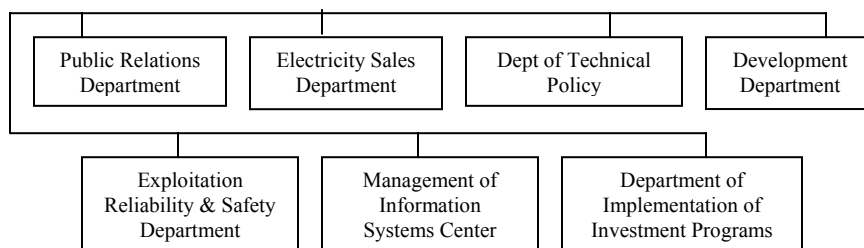
The Ministry is supported by organizations such as the Energy Institute and the Energy Strategy Center (ESC), funded by TACIS in 1994. The main activities of ESC have included the elaboration of the energy policy, the feasibility and audits of energy projects, demand side management and renewable energy. The priorities of the energy sector policies include the reduction of dependence on imported fuel, maximized safety of nuclear energy, the restoration and development of electricity and gas inter-connections with neighboring countries, the rehabilitation and modernization of energy infrastructure, the creation of an efficient investment infrastructure, the improvement of pricing policy, overall energy efficiency, and the training and development of personnel in the energy sector. In accordance with the Energy Law, the Ministry of Energy is in charge of policy-making, while the Public Services Regulatory Commission (PSRC) assumes regulatory functions in this sector. The electricity distribution network in Armenia is owned, operated and maintained by the privately owned joint stock company, Electrical Network of Armenia CJSC.

The state of publicly available information for the Ministry of Energy, on its website, has evolved considerably over the last few months through January 2005. Whereas in the summer of 2004 there was little information to be found online (albeit in both English and Armenian), by early 2005 there is considerable and significant change in the quality and appearance of online ministry information. The Ministry was previously using an outdated website that was designed for them with the help of USAID in 2000-1. Since then, it seems that PA consulting has played an instrumental role in improving its appearance. There is now information about mission statement, current projects, statistics, Organizational Structure, reforms, investor information as well as feedback capability; all of this reflects a tremendous improvement on previously available content.

**Organizational Structure:**

The execution of IT work is institutionalized and centralized; a separate Public Relations department appears to guide the information that is available online, although through the course of this research, it has become apparent that the PR department is not extremely keen to share information. The organization, while limited in terms of its formal adoption of ICTs, does have a sufficient information infrastructure to the extent that each morning, a bulletin is distributed, citing latest relevant and interesting percentages, numbers, etc. According to the interviewees, the target audience for ICT work (in the form of Internet content development) is interested citizens, international organizations, and researchers. The extent to which back office ICT development is advancing was extremely hard to gauge through the interview process.





### Human Component

The Ministry of Energy has a small number (3) of individuals who take care of IT related issues, within the framework of a centralized IT department. There appears to be little strategic direction or information regarding the utilization of IT in the Ministry; the transparency of the institution as reflected on its website is not echoed in the receptiveness of its upper level personnel to public information queries. There are 131 total employees in the Ministry, 50 of which are connected to and using the internal network; apparently of those 50, 30 of them are actually active (based on looking at IP addresses). This information was provided by an IT division employee during the interview. All mandates for new projects come from the level of the Minister, in communication with other governmental authorities; it appears quite clear that through this process, IT is not a big priority area for this ministry.

The Director of IT at this Ministry has been in his position for 6 months; hence there is limited institutional/departamental history available to incorporate.

### Technical Component

While there is Internet connectivity available to the PCs in the Ministry, and there is a functioning local area network, there was only sparse reference as to the pervasiveness of usage/access by the employees in the Ministry. People do not use the IT infrastructure available to them, in large part because IT adoption in the work culture is minimal and meets considerable resistance. There are four servers (three of which are Pentium III, one of which is a Pentium II) including 1 network, 1 print server, 1 webserver, all of which are stable and protected. The Ministry has 50 PCs, 85% of which are running Windows 98, and the rest of which run XP. There is an effective firewall and security appears to be well on track. In terms of software licenses, the Ministry of Energy had licenses in '95, although there is no indication that those have been updated.

### Financial Component

There is no special budget for ICT related activities at the Ministry of Energy, and according to the interviewee from the PR department, they are by regulation prohibited from creating such a budget. It appears that they had some financial support from PA Consulting in 1995<sup>419</sup>; since then, there is no significant institutional memory other than the USAID project from 2000-1.

### ICT Capacity Metric

Organizational Components	
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<sup>419</sup> PA Consulting Group is a leading management, systems and tech consulting firm. Operating worldwide in more than 35 countries, PA works the private and public sectors, with particular focus on financial services, life sciences & healthcare, government & public services, manufacturing telecommunications. (accessed December 2004); available <http://www.paconsulting.com/home/>.

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is being given the benefit of the doubt.

1	Transparency: If yes	0.25
a	General propensity to divulge information	0
b	Evidence of PR + IT depts. work together? If yes	
c	Does Chief of Staff facilitate ICT work? If yes	0
d	Org chart available? If yes	0.25
2	Target audience for ICT projects: who do they benefit? If society (1)	0.5
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	0.5
4	Digitizing info for back office automation: If yes (1)	0.5
5	Efforts donor driven, simply for absorbing funding? If no (1)	0
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	0.5
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	0.5
9	If IT dept. is centralized/inhouse(.5), if de-centralized/outsourced (1)	0.5
10	Is IT mission critical for high %age of total functions? If yes (1)	0
	<b>Total</b>	<b>4.25</b>
<b>Financial Components</b>		
1	Is there indication of institutional commitment?	0
2	Is there an explicit IT budget? If yes	0
3	Is there evidence of external support?	1
4	Extent and involvement of external support	.75
4a	If financial? Yes	.25
4b	If design? Yes	.25
4c	If technical? Yes	0
4d	If organizational, strategic? Yes	.25
5	Evidence for sustainability & transfer ownership? If yes	0
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	0
10	How does IT interact with other factors of organization? If ubiquitous	0
	<b>Total</b>	<b>1.75</b>
<b>Technical Components</b>		
1	How many computers/relative to total staff? If > 80%	0
2	Is security a priority? If yes	1
3	If MS Windows (default) (0), If OS presence	0
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	0
5	Web-based, client-server, terminal? If any	0
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high-1)	.5
8	How critical is Internet to work? If M or H	0
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>3.5</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	0



3	Is there adequate ICT support?	.5
4	If IT center: external (1), if internal (.5)	.5
5	Salaries: If > average \$50	0
6	If background is technical, and regulated	1
7	Career path? If yes	0
8	Employee turnover: If low	.5
9	Presence of innovators: If yes	0
10	Leadership: If subjective assessment is good (Yes =2)	0
	<b>Total</b>	<b>3.5</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>13.00</b>

## **F. Ministry of Agriculture**

Government Building 3, Republic Square, Yerevan Tel.: 52-46-41

Website: <http://www.minagro.am>

**Number of Employees:** 212

**Percentage of Computer Usage:** ~33%

“The Republic of Armenia Ministry of Agriculture is a republican body of executive authority, which elaborates and implements the policies of the Republic of Armenia Government in the agriculture sector.”

### **Description**

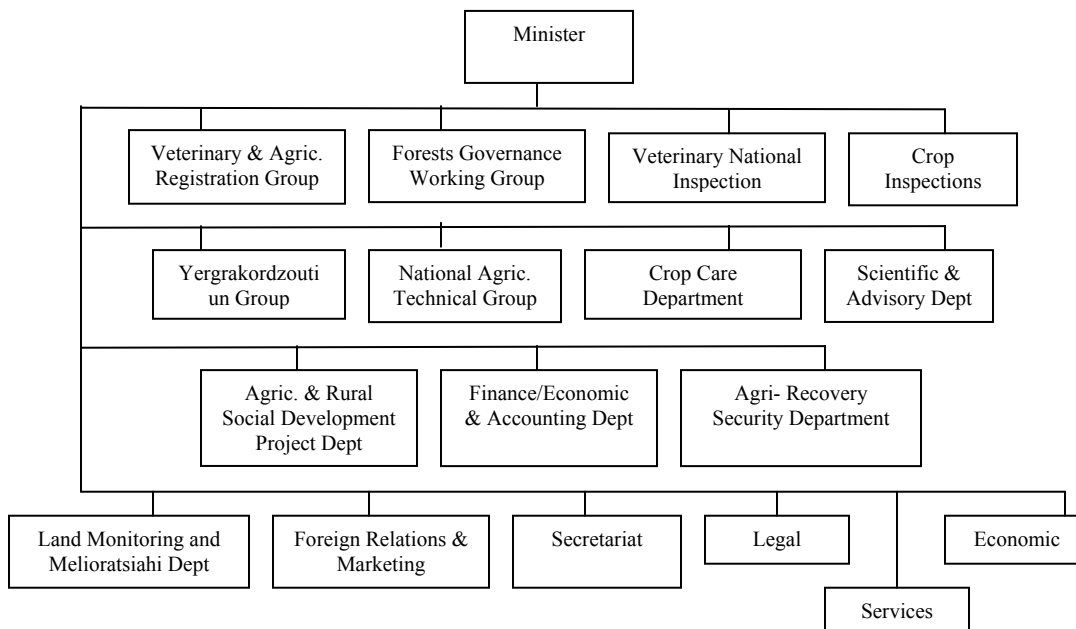
The Ministry of Agriculture presents a website with limited information and interactivity, and is available only in Armenian language – major links include information about the Ministry, about its initiatives, about its projects and links with international organizations. Considerable interaction and collaboration takes places between this Ministry and others, including Environmental Protection, Social Welfare, Water Management (State), and Healthcare – Veterinary. This website work began in 2003, and was improved and developed with the help the Agricultural Services Program Coordination office.

Aside from the official ministry website, there is a very well-executed project sponsored by the United National Development Program (UNDP) in order to establish an Agricultural and Rural Development Coordination Unit. This unit is supported by an excellent website and information infrastructure, which features information including history/mission and objectives of the unit, partners, projects, news, NGOs, best practices, agricultural forum, maps, etc.

### **Organizational Structure:**

The organization reflects a de-centralized structure in terms of the way ICT development is undertaken; it is unique from other ministries because it possesses a specially designated IT-driven unit that is physically situated in the Ministry building, but yet derives its mandate, direction, and support from an external source. In this case, that source is the UNDP. This ‘information unit’ provides clear and consistent content directly related to the work of the Ministry, and provides deliverables for researchers and organizations interested in the area of agriculture. Perhaps as a result of the UNDP collaboration, there appears to be a discernible awareness of the importance and necessity of developing communication infrastructure in this Ministry. Previous collaboration with the FAO to develop and complement existing initiatives has also taken place.

According to an interviewee, the main challenge to the appropriate utilization and leverage of new technologies introduced by donors is that the majority of users speak Russian and not English – and that the use of standard tools like MS Powerpoint are still not sufficiently manifest. This may serve as a form of benchmark indicating the extent of computer usage in the Ministry, although it does not provide us an effective gauge for understanding how critical the Internet is to employee productivity (particularly for those working in research units). The current challenge consists of the transfer of ownership of this UNDP-initiated unit once the funding comes to an end; there will be a need to locate persons capable of network maintenance, content development, technical support, and general quality control in Ministry deliverables posted online after the current specialist leaves.



### Human Component

The Ministry of Agriculture has no functioning local network, although they do have a ‘direct link’ to the government. This ‘direct link’ is something common to every Ministry in the government, and is based on what appears to be a basic yet highly exclusive government ‘network’. It appears basic insofar as the way it is leveraged (i.e., for common document sharing), and is exclusive because there appears to be access available to it on a very small number of PCs (most likely those belonging to Chiefs of Staff or Deputy Ministers). In any case, the Ministry of Agriculture has this capability to ‘connect’ to the central government, but this appears to have little or no influence on the extent to which an ICT-savvy culture has emerged there. The Ministry employs 212 people; upon initial interviews, it was conveyed that approximately 100 computers are in service throughout the Ministry; however, upon further questioning, it became apparent that the ministry actually has 72 computers, 52 of which were acquired in 1999, and 20 of which were acquired in 2000. All of these are running Windows as an operating system. Based on the information center that is the result of a public sector reform project by PricewaterhouseCoopers in Armenia, the Ministry makes use of the Public Information Center that is located in the reception area of the Government Building #3, which is home to about half of the Ministries in Armenia.

Salary levels at the Ministry of Agriculture are at an average \$50/month. The questions of incentives and motivation are big ones in this Ministry – as they are in many others. As a result, people with good skills are avoiding government jobs, preferring rather to find employment in international organizations and NGOs. In terms of productivity as well as in terms of making use of time – there are better employment opportunities.

### Technical Component

It appears that the bulk of the information available through the auspices of this Ministry reside at the center/site created by UNDP for agricultural information ([www.agrounit.am](http://www.agrounit.am)). They created an information center for ministry needs, including a training program for the use of the Internet and Microsoft Office. They have future plans to establish a local network, and of course they seek to have computers in each office in the Ministry; unfortunately, however, budgetary constraints are quite serious, and this has as of yet not been possible. The Agro unit hosts its own impressive database of agricultural information. When the funding for this project ends, it is likely that the Ministry will have to take over maintenance work and network management of the web servers, and will have to contract support services.

### Financial Component

According to the interview within the Agro-unit, there appears to be no ministry financing or organic IT advancement in the Ministry of Agriculture; however, according to a report by the Ministry, over the past two years, the ministry budget allocated for ICT development is at 30 million drams (or the equivalent of \$60,000). More realistically, the allocation of even the minimal \$50/month for technically skilled workers to boost the organization's ICT infrastructure is already a stretch for what appears to be an extremely limited budgetary base.

### ICT Capacity Metric: 17.5

Organizational Components		
1	Transparency: If yes	1
a	General propensity to divulge information	.25
b	Evidence of PR + IT depts. work together? If yes	.25
c	Does Chief of Staff facilitate ICT work? If yes	.25
d	Org chart available? If yes	.25
2	Target audience for ICT projects: who do they benefit? If society (1)	.5
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	.5
4	Digitizing info for back office automation: If yes (1)	0
5	Efforts donor driven, simply for absorbing funding? If no (1)	.5
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	1
10	Is IT mission critical for high %age of total functions? If yes (1)	0
<b>Total</b>		<b>6.5</b>
Financial Components		
1	Is there indication of institutional commitment?	.5
2	Is there an explicit IT budget? If yes	1
3	Is there evidence of external support?	1
4	Extent and involvement of external support	1
4a	If financial? Yes	.25
4b	If design? Yes	.25
4c	If technical? Yes	.25
4d	If organizational, strategic? Yes	.25
5	Evidence for sustainability & transfer ownership? If yes	.5
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	0
10	How does IT interact with other factors of organization? If ubiquitous	.5

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\*Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is being given the benefit of the doubt.

	<b>Total</b>	<b>4.5</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	0
2	Is security a priority? If yes	1
3	If MS Windows (default) (0), If OS presence	0
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	.5
5	Web-based, client-server, terminal? If any	0
6	Is there local network? If yes	0
7	Status Internet connectivity (low- 0, medium -.5, high-1)	.5
8	How critical is Internet to work? If M or H	0
9	How many servers service network? If > 2	0
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>1.5</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	1
4	If IT center: external (1), if internal (.5)	1
5	Salaries: If > average \$50	0
6	If background is technical, and regulated	1
7	Career path? If yes	0
8	Employee turnover: If low	0
9	Presence of innovators: If yes	.5
10	Leadership: If subjective assessment is good (Yes =2)	.5
	<b>Total</b>	<b>5</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>17.5</b>

## G. Ministry of Culture and Youth Affairs

Government Building 3, Republic Square, Yerevan Tel.: 52-93-49

*“... External donors visualize the “peak of the mountain” when they plan their projects, when in fact there is no base to hold it up.”*

*“... a poor economic base and poor budgetary conditions can never lead to the optimization of whatever knowledge can exist...”*

**Number of Employees:** 150

**Percentage of Computer Usage:** N/A

“The Republic of Armenia Ministry of Culture and Youth Affairs is a republican body of executive authority, which elaborates and implements the policies of the Republic of Armenia Government in the culture and youth affairs sector.”

### Description

The Ministry of Culture and Youth Affairs implements a large number of projects through its youth policy department, as well as collaborates with NGOs working in Armenia. A State Youth Policy Implementation Centre was established in 2003, and plans are underway to establish youth centers in Yerevan as well as in 3 regions of the country; over the 2 years – plans are underway to do the same in all the regions of the country, with the help of donors. State youth policy is concerned with the creation of a legal framework, the provision of youth employment, assistance to youth entrepreneurship, assistance to young families, women and disadvantaged people, the encouragement of youth participation in state and local self-governmental bodies, the support of activities of youth organizations, and the formation of appropriate conditions for the promotion of spiritual and physical development among young people.

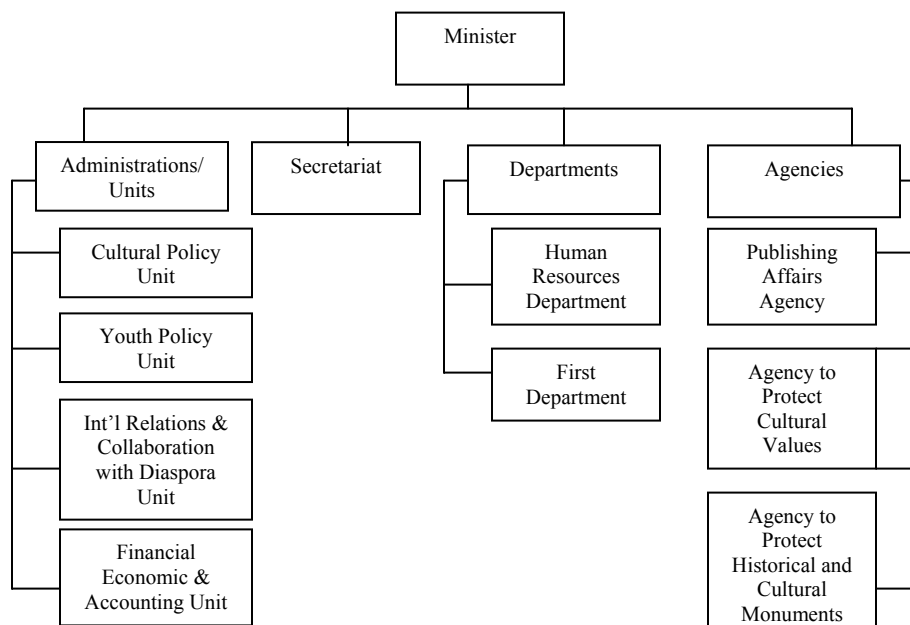
This ministry is among the poorest of all the ministries – with no functioning active network, no equipment, and no provision of training. Also, there is no base of English language skills anywhere in the institution, which is particularly detrimental given the role that it can play collaborating with organizations that deal with youth in the Diaspora.

The interviewee spoke at length about the importance of the ‘natural journey’ that Armenia must traverse (a reference to organic growth) – in moving in the direction of developed political and social standards for institutions in Armenia.

### Organizational Structure:

This ministry is geared toward catering to the information needs of citizens and outsiders, ironically. It appears that the ability of the organization to follow up on projects is limited, and their tendency to opt for top-down solutions (with corresponding lack of bottom-up attention) is problematic.

The act of entering this space with development advice that is formulated as per the standards and objectives of externally determined norms is a futile one. It is also irresponsible – given that the money being spent in Armenia does matter. It has an impact, which is mostly to reinforce the position and power of incumbents in power.



### Human Component

About 150 people work in the Ministry; there are 6-7 places from which they can use computers. They have one young technical support employee who works primarily with the few

machines/equipment that are present in the institution; there is no department or capacity for institutionalized IT infrastructure advancement in this Ministry.

### Technical Component

For all the range of activities of the Ministry that pertain to the most technically savvy segment of the population, there is no website, nor does the institution have any ties to the Internet. Existing technology in this Ministry is comprised of faxes, printers, and recording devices. Very few PCs are available to employees, and none were visible at the time of this interview. The same government-ministry 'link' mentioned at the Ministry of Agriculture appears to exist here; the Ministry is 'tied' to the Government insofar as it shares access to some form of basic document exchange, but this is limited again to one or two PCs and is not in any way pervasively applied.

### Financial Component

There is no IT budget whatsoever in the Ministry of Culture and Youth Affairs. The government response to requests for budgetary support to the Ministry basically has been that no financial support can be extended to it until 2007. Apparently, even phone calls from the Ministry are limited, with limited local calls allowed, and no dialing to cellular numbers. Communication fees get no financial support from the Ministry, and there is one place to call from if long distance calls need to be made. As an institution, they have debts in their telecommunication bills.

### ICT Capacity Metric: 0.75

Organizational Components		
1	Transparency: If yes	0.25
a	General propensity to divulge information	0
b	Evidence of PR + IT depts. work together? If yes	0
c	Does Chief of Staff facilitate ICT work? If yes	0
d	Org chart available? If yes	0.25
2	Target audience for ICT projects: who do they benefit? If society (1)	0.5
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	0
4	Digitizing info for back office automation: If yes (1)	0
5	Efforts donor driven, simply for absorbing funding? If no (1)	0
6	Does the institution manage websites? If yes (1)	0
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	0
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	0
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	0
10	Is IT mission critical for high %age of total functions? If yes (1)	0
<b>Total</b>		<b>0.75</b>
Financial Components		
1	Is there indication of institutional commitment?	0
2	Is there an explicit IT budget? If yes	0
3	Is there evidence of external support?	0
4	Extent and involvement of external support	0
4a	If financial? Yes	
4b	If design? Yes	
4c	If technical? Yes	
4d	If organizational, strategic? Yes	

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is being given the benefit of the doubt.

5	Evidence for sustainability & transfer ownership? If yes	0
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	0
10	How does IT interact with other factors of organization? If ubiquitous	0
	<b>Total</b>	<b>0</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	0
2	Is security a priority? If yes	0
3	If MS Windows (default) (0), If OS presence	0
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	0
5	Web-based, client-server, terminal? If any	0
6	Is there local network? If yes	0
7	Status Internet connectivity (low- 0, medium -.5, high-1)	0
8	How critical is Internet to work? If M or H	0
9	How many servers service network? If > 2	0
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>0</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	0
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	0
4	If IT center: external (1), if internal (.5)	0
5	Salaries: If > average \$50	0
6	If background is technical, and regulated	0
7	Career path? If yes	0
8	Employee turnover: If low	0
9	Presence of innovators: If yes	0
10	Leadership: If subjective assessment is good (Yes =2)	0
	<b>Total</b>	<b>0</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>0.75</b>



## **H. Ministry of Labor and Social Affairs**

Government Building 3, Republic Square, Yerevan, Tel.: 52-68-31

**Number of Employees:** 140

**Percentage of Computer Usage:** 98%

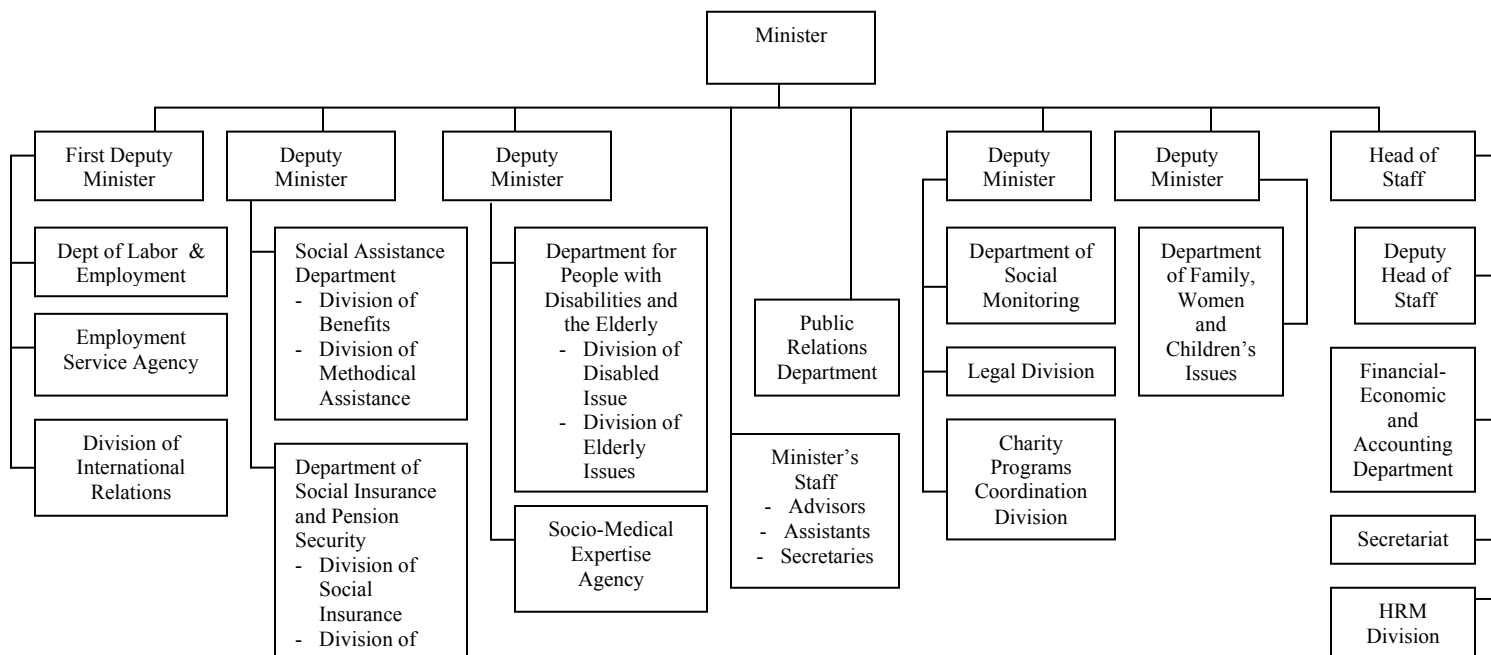
“The Republic of Armenia Ministry of Labor and Social Affairs is a republican body of executive authority, which elaborates and implements the policies of the Republic of Armenia Government in the labor and social security sectors.”

### **Description:**

Although the website of the Ministry of Labor and Social Affairs is available only in Armenian for the time being, it is well structured and supplemented effectively by informative material printed by the Public Relations Department of the Ministry. These materials are available in English, and include information including key social statistics, program details (monitoring and management programs), organizational (department) information, and contact information. The public relations department works with NGOs, but few divisions in general have technical capability to work with advanced equipment other than scanners, digital cameras, printers, and VCRs. That said, however, it is clear that given the nature of the work of this Ministry – and the sheer volume of service delivery that it must provide, IT is mission critical for this Ministry. Unlike other ministries that must deal with particular aspects of life in Armenia, this one has the challenge of being faced with the entirety of the scope of social ills that are endemic to a developing country. It appears clear that the importance and prioritization of effective ICT use is understood at the Ministry of Labor and Social Affairs, and that effective automaton and information management systems are essential to the effectiveness of this institution. Whether this clarity is a function of effective top-down leadership in this Ministry, or whether it is a function of having worked with numerous (and effective) IT consultants or donors, remains unclear. As always the challenge of applying a retrospective lens is a formidable one; institutional memory – despite the size of the bureaucracy – is very seldom captured in writing, and even more difficult to come across in person.

### **Organizational Structure:**

The Ministry of Labor is comprised of a very wide range of divisions that deal with virtually every aspect of Armenian society; from the very young to the very old, from those in need of social assistance, to those who qualify for particular forms of employment or benefits. The breadth of their challenge in the area of direct service delivery is nearly unparalleled as compared to its counterpart ministries.



### Human Component

The Ministry of Labor & Social Welfare has about 140 employees, 138 of which have computers. Most of the IT related work for this Ministry takes place at an external information technology center called “NORK”. NORK provides technical service and support; it was previously internal, and was subsequently moved out from within the Ministry, growing to employ today 165 people.

Nork was established in October 2000 by Government Decree, as part of a technical assistance plan from USAID/PADCO and the World Bank. All shares of NORK belong to the Government, and the Ministry of Labor and Social Affairs is the sole authorized representative. NORK is charged with the introduction, operation and maintenance of computer and network technologies, actuarial analyses, development and installation of information systems, the repair and maintenance of computer equipment and hardware, the organization of training, retraining courses, computer and software skills trainings, the drafting, design, maintenance and operation of web pages, and the publication of activities.

Thus far, NORK has been critical to the development of a regression model used as a tool for determining needs eligibility, as well as to the analysis of the poverty family benefits system, and of the mandatory medical insurance system. It has been crucial in the identification of errors in different databases, the matching of databases with the social security cards database and others, and the preparation of the operation of the (PROST) pension reforms package. Moreover, the disabilities database, the social security cards database, and the employment databases were all reviewed, thereby addressing problems of incorrect dates entered, omitted fields, contradictory information in different fields, and duplicate registrations. The social

security database was then subsequently matched with records on citizens with disabilities, sole entrepreneurs, beneficiaries, and job seekers. This allowed for the identification of those with social security cards, those without cards, and inconsistencies in personal data identified by data field and type.

### **Technical Component**

The Secretariat of the Ministry has a direct link with the government, which is the standard IT infrastructure of all ministries, but they are not using the fiber link that is available to them in their building. There is no institutionalized Internet connection for external connectivity at the Ministry. They have a well functioning local network run on Linux, with an external (Compaq) server. The ministry has 46 printers, though generally resources appear to be quite limited. LANs allows for the propagation of well used templates, and have helped to heighten “response time” of the Ministry (thanks to the previous work of DFID). The Ministry itself has 6 Pentium Is, 70 Pentium IIs, 43 Pentium IIIs, and 22 Pentium IVs.

NORK appears to have “abiding contracts” with USAID and World Bank and other functional support roles, but is not responsible for articulating a technology strategy; it is more involved with the administration and management of a type of welfare/dole system. The Internet connectivity fees for NORK are paid for by USAID (at an average rate of 500 megabytes/month), while 13 various divisions associated with NORK are similarly supported (on average using 20 megabytes/month each).

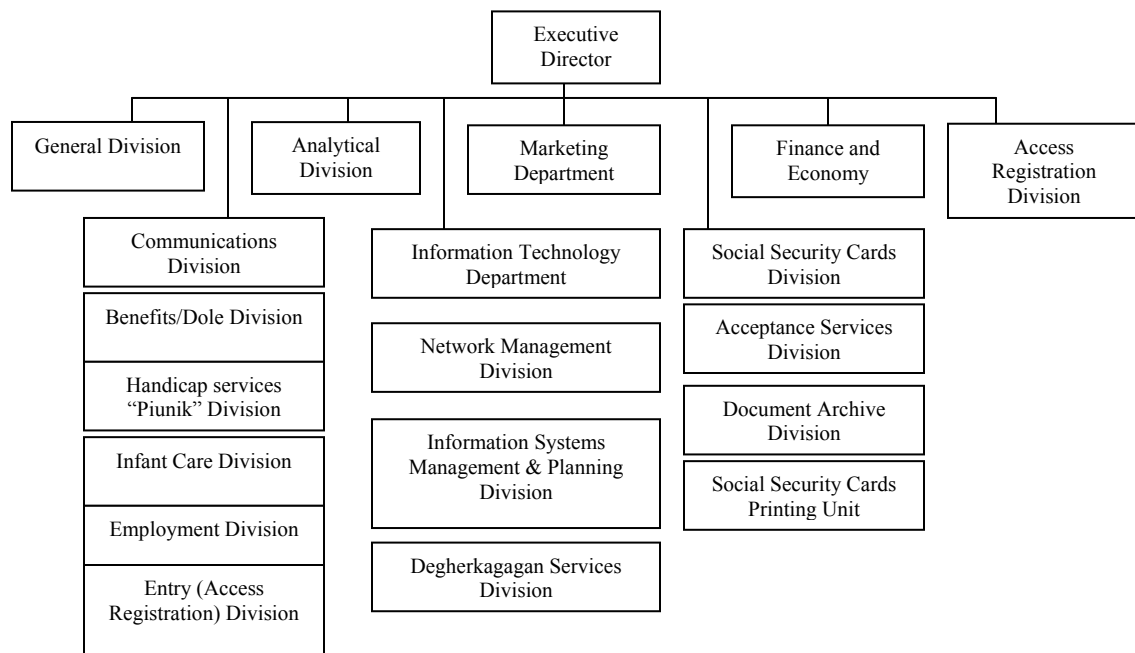
NORK has created databases that deal with matters of press and social security, and is involved in the publication and distribution of relevant brochures and public information packets, as well as general program administration. With the technical assistance of USAID/PADCO, it has successfully installed systems (in cities like Vanadzor and Masis) that enables each of the offices in the Integrated Social Services Center to access certain limited data sets from key state social service office databases. The sharing of database information helps ensure that the most vulnerable citizens in the country are included in the allocation of state welfare budgets, while increasing the quality and efficiency of service provided to customers. This is not to say, of course, that there are not many underprivileged, disadvantaged citizens in Armenia who are falling through administrative cracks. Nevertheless, without the use of technology, paper work could not be minimized in each office, and the time and effort necessary for application and appeals processing would remain in the order of months, as opposed to weeks. They appear to be responsive and able to deliver service, although detailed information regarding response times ‘pre-‘ and ‘post-‘ ICT implementation is not currently available.

NORK has 40-50 employees at its core, with the rest of its employees affiliated to it through various kinds of short-term contracts; often it is the higher level specialists who deal with the claims issues. NORK also services the Ministry of Labor and Social Welfare’s 55 regional centers for welfare programs, as well as a medical employment service. These centers are outfitted with 240 computers in total, and are complemented by fifty-one employment service agencies in Yerevan and the

regions, which themselves also work with a total of 150 computers. In conjunction to these social services offices, twenty-three small Socio-Medical Expertise Commissions exist, each of which has approximately one PC.

In terms of examples of the volume of data/information that the Ministry must process, the Family Benefits Database holds approximately 700,000 entries (including those that have applied and not been accepted); the Employment database holds 170,000 entries; the Social Security Numbers Database holds about 1.5 million entries, while the Handicapped/Disabled Database holds about 110,000 entries. The challenges of maintaining these databases are not unique to the Ministry of Labor; currently the Ministry of Justice is facing similar challenges in the development of a social security card program based on a national registration database.

### Feature: NORK Organizational Structure:



### Financial Component

The money for NORK has apparently come out of the national government budget, and the design and technical structure of the institution has come from collaboration with PADCO. This is highly unique relative to other Ministries; although substantial funding also comes from the World Bank and USAID (exact figures not available). One hundred percent of the approximately 500 machines being used by the Ministry and NORK together have been the gifts of international organizations/donors like USAID (which has apparently given about \$5 million for the technical improvement of social services delivery), the World Bank, UNDP and UNICEF. Although most of this equipment comes with software licenses, more often than not, these licenses expire and are not renewed. NGOs also contribute in some instances to the updates of content associated with social security projects, pension work, and unemployment.

**ICT Capacity Metric (includes NORK substructure): 28**

<b>Organizational Components</b>		
1	Transparency: If yes	1
a	General propensity to divulge information	0.25
b	Evidence of PR + IT depts. work together? If yes	0.25
c	Does Chief of Staff facilitate ICT work? If yes	0.25
d	Org chart available? If yes	0.25
2	Target audience for ICT projects: who do they benefit? If society (1)	1
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	0
4	Digitizing info for back office automation: If yes (1)	1
5	Efforts donor driven, simply for absorbing funding? If no (1)	0.5
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	0.5
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	1
10	Is IT mission critical for high %age of total functions? If yes (1)	1
<b>Total</b>		<b>8</b>
<b>Financial Components</b>		
1	Is there indication of institutional commitment?	0.5
2	Is there an explicit IT budget? If yes	0.5
3	Is there evidence of external support?	1
4	Extent and involvement of external support	1
4a	If financial? Yes	0.25
4b	If design? Yes	0.25
4c	If technical? Yes	0.25
4d	If organizational, strategic? Yes	0.25
5	Evidence for sustainability & transfer ownership? If yes	0.5
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0.5
8	Is the budget executed through the year? If yes	0.5
9	If no budget, where does resource come from? If gov't	0.5
10	How does IT interact with other factors of organization? If ubiquitous	1
<b>Total</b>		<b>6</b>
<b>Technical Components</b>		
1	How many computers/relative to total staff? If > 80%	1
2	Is security a priority? If yes	1
3	If MS Windows (default) (0), If OS presence	.5
3a	Do they do application development in house?	✓
4	Software licenses? For each user? If yes	.5
5	Web-based, client-server, terminal? If any	0
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5,	.5

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\*Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is being given the benefit of the doubt.

	high-1)	
8	How critical is Internet to work? If M or H	.5
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	.5
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>6.5</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	0.5
3	Is there adequate ICT support?	1
4	If IT center: external (1), if internal (.5)	1
5	Salaries: If > average \$50	1
6	If background is technical, and regulated	0.5
7	Career path? If yes	0.5
8	Employee turnover: If low	0.5
9	Presence of innovators: If yes	0.5
10	Leadership: If subjective assessment is good (Yes =2)	1
	<b>Total</b>	<b>7.5</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>28</b>

## I. Ministry of Transport and Communication

Address: 28 Nalbandyan, Yerevan, Tel.: 56-33-91

Website: <http://www.mtc.am>

*“...When people start investing themselves, there will start to be a visible difference.”*

**Number of Employees:** 160

**Percentage of Computer Usage:** 66%

“The Republic of Armenia Ministry of Transport and Communication is a republican body of executive authority, which elaborates and implements the policies of the Republic of Armenia Government in the transport, communication, and information technologies sectors.”

### Description

The Ministry of Transport and Communication offers a reasonably well designed and presented website, which is available in Armenian only, and was created in cooperation with IATP/IREX. There are clear connections on the site with a regional program sponsored by TACIS called TRACECA (Transport Corridor Europe-Caucasus-Asia), which is part of an international effort to implement an EU funded technical assistance program to develop the transport corridor of west-east axis from Europe, across the Black Sea -- from the Caucasus and the Caspian Sea to Central Asia. The website also has information about the ministry, its structure and leadership, ties with partner organizations, links, and reference documents. The content in the site looks comprehensive but static.

The Ministry of Transport and Communication has a few projects upon which it works simultaneously. One of them that is quite far off from realization is the deployment of fiber optic lines around the entire country; this would require 100,000 lines and would cost approximately \$500 million. Needless to say this is an idealized objective; at the moment even if there was

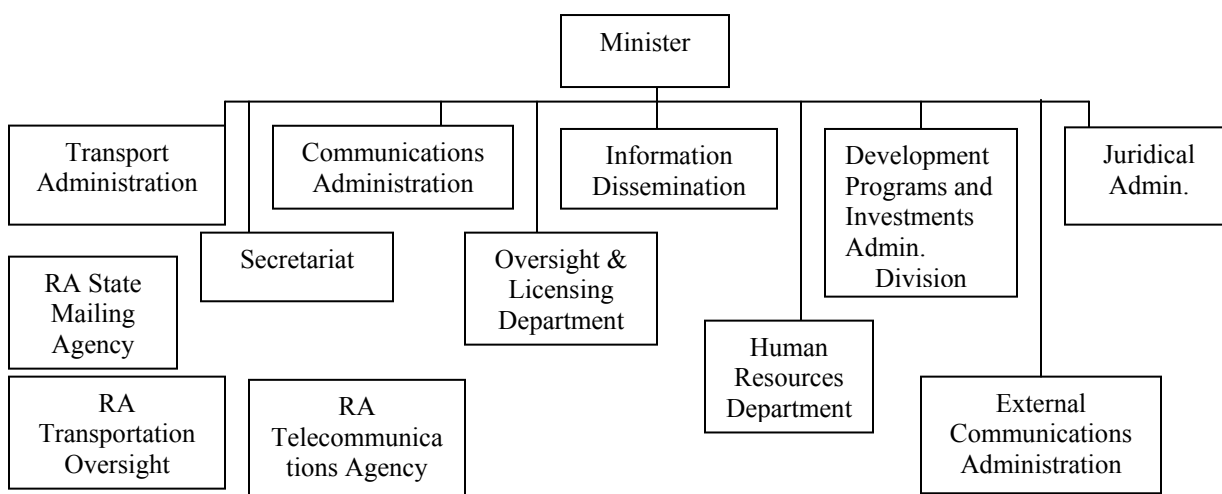
ubiquitous access for the whole country, most people would not know what to do with it. As a case in point, one of the main government buildings (#3) located near Republic Square is already outfitted with fiber optic lines, over 90% of which appears to remain untouched and unused for lack of an IT organization. Aside from this, the Ministry is involved in work for rural area development, the development of a technical e-translator for the purpose of making content accessible, as well as with an e-government project.

Overall, state efforts to effectively develop communication infrastructure appear not to have been very successful thus far, although there is hope for the future. The development of rural centers is plagued by the challenge of locating willing investors; naturally, the costs of working toward development objectives in rural areas are very high. There are, however, some valuable anecdotes about the results of such work; for example, the case of a 57-year old woman who is now learning how to use computers. According to the interviewee at this Ministry, 64% of new ICT learners in the rural areas of Armenia are girls.

The regions being developed include Gavar, Martuni, Armavir, and Lori – although based on the work of the Ministry of Regional Administration, all of the 11 regions of Armenia have some work being implemented in them in the realm of critical communication infrastructure. Currently, for example, 67 centers have been built by CIDA's Central Asian office (presumably through CIDA's Public Policy Knowledge Network program which started in 2003, although this was not cited specifically during the interview), entailing the acquisition of one year of funding (pushed in 2004 to three years), and including the training of 750 people to sustain these centers. According to the interviewee, the World Bank also has been involved in the creation of 900 centers in a telenetwork around the country, consisting presumably of several PCs and a minimum of dial-up internet connectivity. Further information is necessary on this work.

#### Organizational Structure:

The Organizational Structure: of the Ministry of Transport and Communication was adopted and enforced in November 2002. While the Ministry in terms of subject matter does concern itself with topics related to the development of communication infrastructure, the institution itself does not have an explicitly IT-oriented department.



#### Human Capacity

The Ministry of Transport and Communication has 107 computers on a network, while approximately 160 people work in the Ministry. This reflects about a 66% PC penetration level in institution. The department of informatization (in other words, the equivalent of the Ministry's internal IT department), was organized in May of 2001, with one director and two assistants. Since

December of 2003, there were additions made to this group, and today there are 12 people working there. The appointment of new positions in this Ministry, as in many others, is subject to various rules/regulations and oversight in government; thus, in the same way that organic growth is somewhat impinged upon by the work of donors, it is also suppressed from within. Decisions regarding the strategic addition or deletion of staff are guided from above.

### **Technical Component**

The Ministry uses a reasonably advanced knowledge management system for document exchange – and while not all users are equally active, it is still functional and a good stepping stone for further add-on IT-related efforts toward information digitization. They use a local network via an optical network connection, and have three servers (web server, backup, and mail) in addition to the document exchange server. Their intranet servers, upon which an internal portal has been designed using web technology, are also used in an archival capacity. Naturally, there are “administrator” privileges ascribed to certain users that others do not have; nevertheless, the general transparency of information across the board, in terms of what is posted, what is updated, and by whom, is quite impressive.

### **Financial Component**

All budget allocations within the Ministry of Transport and Communication have been evenly spread across all departments. There has been no evidence of particular emphasis on the development of an IT department. Upon questioning, the main figures cited during this interview turned immediately to the sums being expended on the outside by the World Bank, including the \$1.5 million given to Internews to develop the nation’s ICT Master Strategy, the \$6.2 million given to the enterprise incubator (EIF) project, and the \$3.6 million allotted for e-government work (much of which has yet to be launched/deployed).

### **Connectivity Projects**

One year ago, a group was formed at the Ministry to undertake development in the area of communication infrastructure in Armenia; to this end, they have made strides in the country’s infrastructure by employing Network PABXs (Private Automatic Branch Exchanges), which comprise an automatic telephone switching system. Currently, 71 stations have been set up. This work began in 1997 thanks to collaboration with the Greek government in the wake of the ARMENTEL fiasco; the gift of the PABXs came along with approximately 1.2 million euros in technical support. The system itself was realized in 2001.

Government workers have not had certificates to operate these stations; the Ministry has arranged with Alcatel for certification to be made possible for 18 specialists, with the capacity to install and operate these machines. A learning and training center has been developed, and will continue to work within the Ministry – creating future system administrators who can operate from the Ministry.

24 national nodes are connected, as well as seven of the marzes via this system. This is a telephone network used for data (between 64 Kb to 2 Gb between any two nodes). So far, they have 6,000 numbers working; they can push this capacity to 8,000 and ultimately to 55,000 with the right planning. There are probably a total of 8,500 people working in government public sector bodies within Yerevan, and in total about 155 bodies that would benefit from being part of this system (not including local government entities).

The two main rationales for the existence of this network are linked to the status of the ARMENTEL telecommunications predicament in Armenia.<sup>420</sup> The privatization of telecommunications in Armenia in 1997, which relegated 90% of shares to OTE (a Greek company) and 10% to the Government, has been a complete disaster for the country, to the extent that national interest – even

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<sup>420</sup> ARMENTEL has been using old copper lines for its basic telephone network that are .04 cm in diameter; apparently, as a matter of capacity they should be using something between .06 and 1.25cm in diameter for their lines.



insofar as some speculate it may concern national security – can be potentially compromised. Therefore the Ministry of Transport and Communication has created this alternative to the existing telephone network – that is free and unencumbered by private interests. In the coming year, they are apparently plans to bring in ten marzes as well as seven additional bodies into this network. Altogether there will eventually be 41 organizations hooked up, representing a 55% cost savings to the government.

Many other post-Soviet countries in the Balkans, as well as Georgia, Kyrgyzsatn, Tajikistan, and others have agreed to create closed telecommunications lines for their chief ministries. Uzbekistan, Kazakhstan, Moldova, and the Ukraine already have that kind of strategic infrastructure functioning under the jurisdiction of their nations' respective Prime Ministers; Armenia does not. While the state has made declarations about e-government work, there are many who believe that the Government is not ready for this, including a few in this key Ministry.

### ICT Capacity Metric: 18.5

Organizational Components		
1	Transparency: If yes	.5
a	General propensity to divulge information	.25
b	Evidence of PR + IT depts. work together? If yes	0
c	Does Chief of Staff facilitate ICT work? If yes	0
d	Org chart available? If yes	.25
2	Target audience for ICT projects: who do they benefit? If society (1)	.5
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	0
4	Digitizing info for back office automation: If yes (1)	1
5	Efforts donor driven, simply for absorbing funding? If no (1)	.5
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if de-centralized/outsourced (1)	.5
10	Is IT mission critical for high %age of total functions? If yes (1)	1
<b>Total</b>		<b>7</b>
Financial Components		
1	Is there indication of institutional commitment?	.5
2	Is there an explicit IT budget? If yes	0
3	Is there evidence of external support?	1
4	Extent and involvement of external support	.5
4a	If financial? Yes	.25
4b	If design? Yes	0
4c	If technical? Yes	.25
4d	If organizational, strategic? Yes	0
5	Evidence for sustainability & transfer ownership? If yes	.5
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is being given the benefit of the doubt.

9	If no budget, where does resource come from? If gov't	.5
10	How does IT interact with other factors of organization? If ubiquitous	.5
	<b>Total</b>	<b>3.5</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	0
2	Is security a priority? If yes	.5
3	If MS Windows (default) (0), If OS presence	.5
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	0
5	Web-based, client-server, terminal? If any	1
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high-1)	.5
8	How critical is Internet to work? If M or H	0
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>4.5</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	.5
4	If IT center: external (1), if internal (.5)	.5
5	Salaries: If > average \$50	0
6	If background is technical, and regulated	.5
7	Career path? If yes	0
8	Employee turnover: If low	.5
9	Presence of innovators: If yes	.5
10	Leadership: If subjective assessment is good (Yes =2)	0
	<b>Total</b>	<b>3.5</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>18.5</b>

## J. Ministry of Urban Development

Government Building 3, Republic Square, Yerevan Tel.: 58-90-80

**Total Employees:** N/A

**Number of PCs:** 44

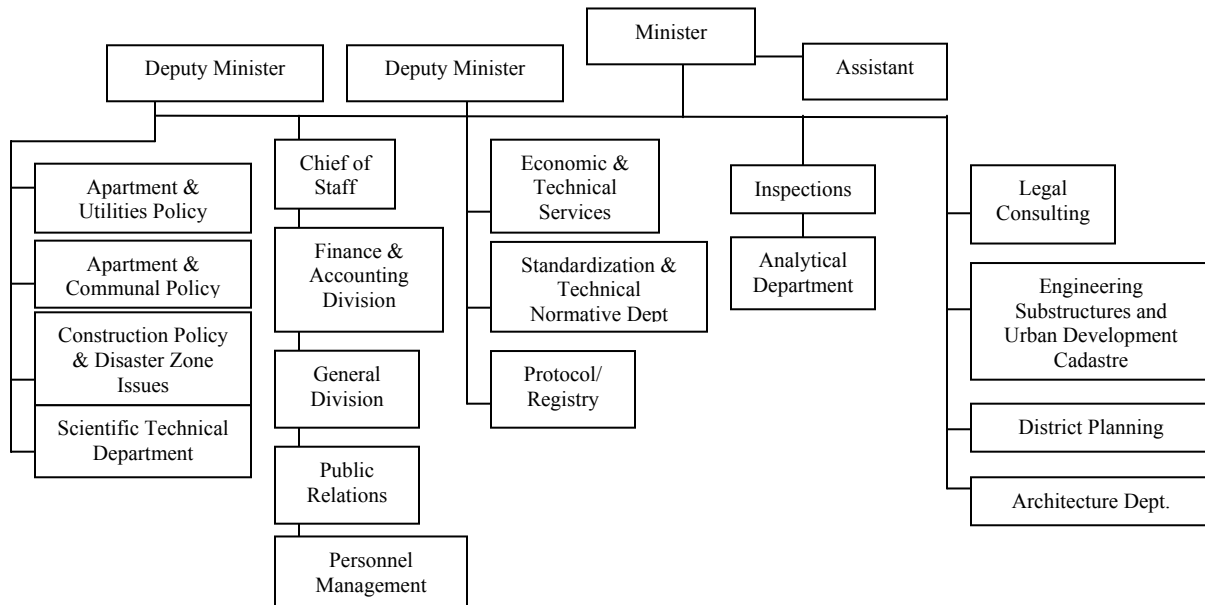
“The Republic of Armenia Ministry of Urban Development is a republican body of executive authority, which elaborates and implements the policies of the Republic of Armenia Government in the urban development sector.”

### Description

Overall, the Ministry of Urban Development is very poorly outfitted in terms of technology. Citizens prefer to come to them directly in person with information requests and inquiries; the PricewaterhouseCoopers-initiated public information center in the reception area of their ministry building serves as a critical interface, filtering general requests from the public. Unfortunately, this Ministry has no functioning website, nor does there appear to be any plan in place to deploy one in the coming year. For the purpose of answering standard public relations-related questions, there tends to be just one single computer in use for this purpose at any one time.

The Ministry works in collaboration with other government bodies, which ensures that some proficiency in relationship and knowledge management is retained. Work is undertaken with the Ministry of Environmental Protection, the National “Cadastré” (i.e., Registry), the Ministry of Agriculture, the Agency for Cultural Heritage, and the Water Commission. One of the main challenges to this Ministry appears to be that of landing a project that can improve the connectivity status and ICT capacity of the institution.

### Organizational Structure:



There are 14 departments in the ministry, amongst which information flow is not optimized. It appears that there is no functioning local network that ties the various departments together, and thus the possibility of creating a system for knowledge management (or even simple document management) falls way beyond the scope of this institution’s capacities. If this ministry had the technical infrastructure to support information sharing and general digitization of information, it is already well understood that its efficiency would be vastly enhanced.

### Human Component

The Ministry of Urban Development does not have an explicitly designated IT services department, nor is there any plan or budget to provide for one in the coming year. They employ 1 person who administers technical support for the machines that they have; this person earns 15,000 (\$30) drams a month for his work. In terms of the broader capacity in the institution, the majority of civil servants here have yet to be trained and taught how to use computers for their work.

### Technical Component

The Ministry of Urban Development has on average 2 computers in each department of the Ministry, one often being more modern and up-to-date (Pentium IV), and one being older. Very often there is no printer to go with the PC. In at least one case, 11 people are sharing one computer. Although a (fiber) link exists in the building that could make Internet access (as well as the use of an intranet) a feasible thing – the Ministry has clear access and know-how issues. For the time being, the few (3 or 4) that do access the Internet are using personal account dial-up connections. Servers need to be set up and made functional, in a room with dedicated support staff that can manage and administrate networks. There are 44 PCs installed through the Ministry, and 30 printers.

### Financial Component

The Ministry does not have the means to allocate money toward an explicitly dedicated IT budget. According to the Chief of Staff, "... if there was such a possibility of receiving funds for such an objective, it would have happened by now."

### ICT Capacity Metric

Organizational Components		
1	Transparency: If yes	.5
a	General propensity to divulge information	.25
b	Evidence of PR + IT depts. work together? If yes	0
c	Does Chief of Staff facilitate ICT work? If yes	.25
d	Org chart available? If yes	0
2	Target audience for ICT projects: who do they benefit? If society (1)	0
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	0
4	Digitizing info for back office automation: If yes (1)	0
5	Efforts donor driven, simply for absorbing funding? If no (1)	0
6	Does the institution manage websites? If yes (1)	0
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	0
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	0
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	0
10	Is IT mission critical for high %age of total functions? If yes (1)	0
Total		.5
Financial Components		
1	Is there indication of institutional commitment?	0
2	Is there an explicit IT budget? If yes	0
3	Is there evidence of external support?	0
4	Extent and involvement of external support	0
4a	If financial? Yes	0
4b	If design? Yes	0

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is being given the benefit of the doubt.

4c	If technical? Yes	0
4d	If organizational, strategic? Yes	0
5	Evidence for sustainability & transfer ownership? If yes	0
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	0
10	How does IT interact with other factors of organization? If ubiquitous	0
	<b>Total</b>	<b>0</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	0
2	Is security a priority? If yes	0
3	If MS Windows (default) (0), If OS presence	0
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	0
5	Web-based, client-server, terminal? If any	0
6	Is there local network? If yes	0
7	Status Internet connectivity (low- 0, medium -.5, high-1)	0
8	How critical is Internet to work? If M or H	0
9	How many servers service network? If > 2	0
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>0</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	0
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	0
4	If IT center: external (1), if internal (.5)	0
5	Salaries: If > average \$50	0
6	If background is technical, and regulated	.5
7	Career path? If yes	0
8	Employee turnover: If low	0
9	Presence of innovators: If yes	0
10	Leadership: If subjective assessment is good (Yes =2)	0
	<b>Total</b>	<b>0.0</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>1.0</b>

## **K. Ministry of Trade and Economic Development**

Address: 5 M. Mkrtchyan street, Yerevan, Tel.: 52-61-34

Website: <http://www.minted.am>

**Number of Employees:** 200

**Percentage of Computer Usage:** ~35%

“The Republic of Armenia Ministry of Trade and Economic Development is a republican body of executive authority, which elaborates the economic development policies of the Republic of Armenia Government.”

### **Description**

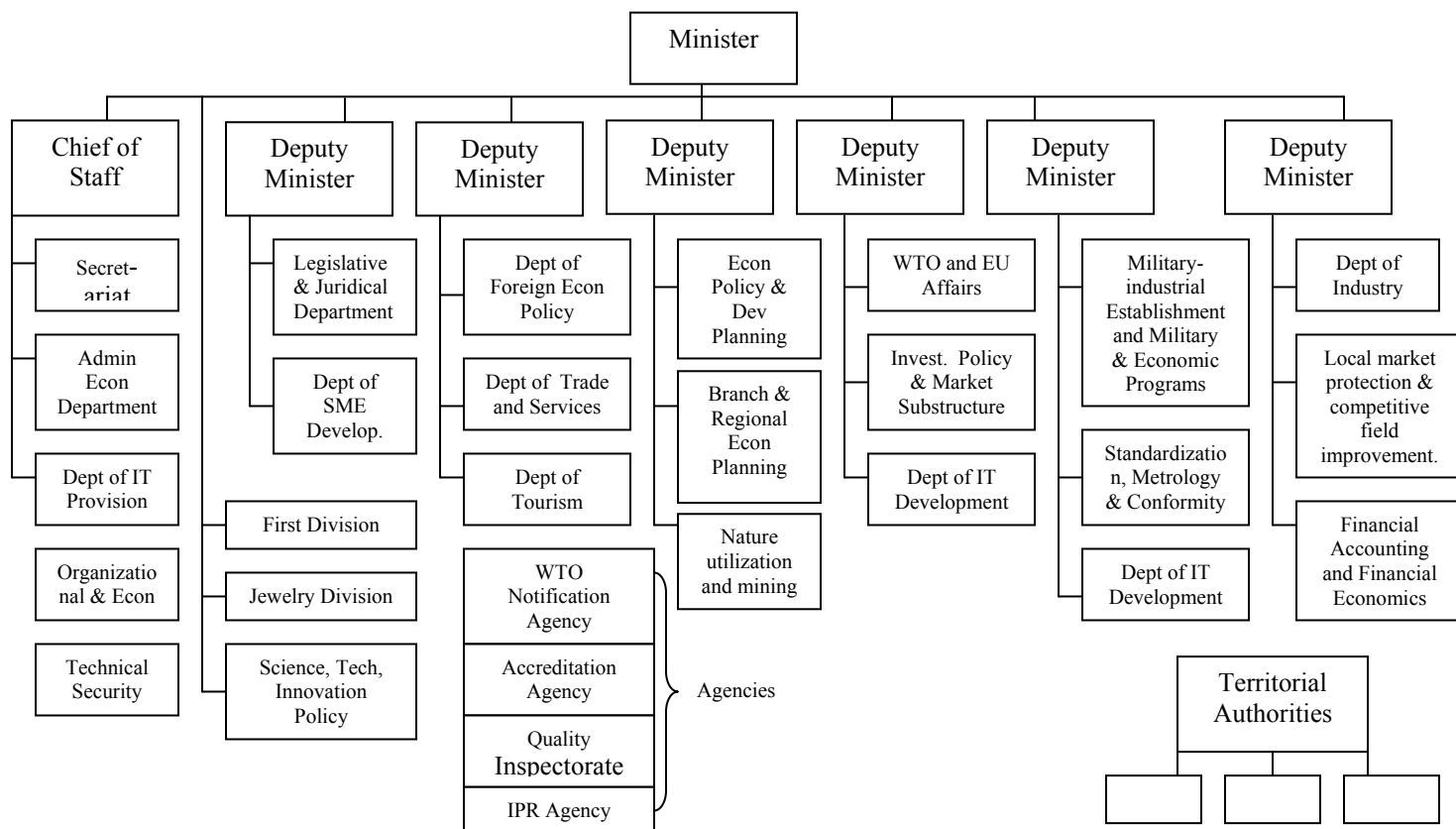
The Ministry of Trade and Economic Development has a unique role in Armenia relative to other ministries; it is answerable to the challenges of national IT development, and is actively involved in the deployment of communication technology projects for development. That said, the Ministry itself presents an impressive (albeit static) website available both in English and Armenian, with considerable information about Organizational Structure:, regulatory guidance (in the form of drafts of legal acts), statistics, news/press information, documents provision, as well as archives. A full range of policy links are offered, with significant background information under each, as well as an extensive list of contacts within the ministry along with email information. Compared to other ministries, the accessibility of persons via email is unparalleled. The primary audience for the website, according to the interviewee, is the wider public.

The activities and objectives of the current Ministry of Trade and Economic Development were formally established in 2002, based on presidential decree and upon the reorganization of the previous Ministry of Industry and Trade. This was done for the purposes of clarifying more effective economic development policies, developing the private sector, raising the general living standard of the population, and generally improving the legal environment and creating favorable conditions for the full utilization of existing industrial potential. The Ministry also has a role in promoting investment in the high tech sector of the economy, assisting SMEs, and fostering an export-oriented environment while stimulating the development of a solid consumer market. This is one of the few ministries aimed at effectively managing privatization programs, and managing shares associated with state property and property rights. The Ministry is active in the passage of laws by the National Assembly (Parliament) in a vast number of areas, including bankruptcy and financial reorganization, civil procedure, customs codes, trademarks, and all subjects related to the creation of a favorable investment environment. While there is no de facto competition with the Ministry of Transport and Communication, there does appear to be some element of overlap in main areas of activity.

### **Organizational Structure:**

In 1997, the Ministry of Trade, Services and Tourism of the Republic of Armenia was merged with the Ministry of Trade, Services and Tourism, the Ministry of Industry, and the Ministry of Economy to create the Ministry of Industry and Trade. By 2002, this Ministry was reorganized again by presidential decree, to form the Ministry of Trade and Economic Development as we know it today.

The Ministry has two forms of IT development “department” within its Organizational Structure:; it has both a general “IT Development Division”, as well as an internal group tasked with IT service provision for the institution. The larger Division is tasked with policy work, while the internal IT group is 100% in-house and private.



### Human Component

The Ministry has approximately 200 people working in it, with another 200 working in associated agencies; between 60-70 computers are in use in the institution, although some departments have higher PC penetration than others. There are 4-5 people working in the Ministry's internal IT department, tasked with technical support provision for both hardware and software, as well as 2 people dedicated solely to network management and administration.

### Technical Component

Internet connectivity in the Ministry is limited to 20-25 points of access. The management of working documents between departments appears to be undertaken through a local area network. No information was available regarding the number of servers in operation.

As an indicator of the processing capacity of the Ministry, in 2002 it received 6,383 documents, 130 being from the President's offices, 15 from Parliament/the National Assembly, 32 from the Constitutional Court, 1,384 from Central Government, and 311 from the citizens. The compliance of 4,161 documents in all was taken under control, and all were processed.

It is interesting to note that among other things, the Ministry has been active in deploying a new technological solution for cash payments in Armenia: DramCash (paycash.am). This is an Internet payment system which allows for the safe payment of purchases and exchange of funds over the Internet, for example - in paying for mobile telephones, for public services or for exchanging funds with the other system participants. DramCash operates solely in the territory of Armenia, based on the electronic dram (e-dram) as monetary unit. The basis of DramCash is the payment technology (PayCash) that guarantees safety of funds and accuracy between system's participants. This

functionality extends from Armenia to include Ukraine, Belarus and Russia, and the project itself does not appear to have links with the Central Bank or with its ARCA project.

### Financial Component

The government system does not support the technological advancement of the Ministry of Trade and Economic Development; and the Ministry is indeed a beneficiary of donor projects. Often, 'IT budgets' are not labeled as such, but rather tend to fall under general 'administrative' line items that include resources for electricity, telecommunications and other infrastructure costs for government institutions. According to the interview at this Ministry, an explicit '[paraphrase]... IT budget has appeared for the first time this year as a line item, and apparently comprises approximately 15-20% of the total budget of the Ministry.'

### ICT Capacity Metric

Organizational Components		
1	Transparency: If yes	1
a	General propensity to divulge information	.25
b	Evidence of PR + IT depts. work together? If yes	.25
c	Does Chief of Staff facilitate ICT work? If yes	.25
d	Org chart available? If yes	.25
2	Target audience for ICT projects: who do they benefit? If society (1)	1
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	.5
4	Digitizing info for back office automation: If yes (1)	1
5	Efforts donor driven, simply for absorbing funding? If no (1)	.5
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	.5
10	Is IT mission critical for high %age of total functions? If yes (1)	1
Total		8.5
Financial Components		
1	Is there indication of institutional commitment?	1
2	Is there an explicit IT budget? If yes	1
3	Is there evidence of external support?	1
4	Extent and involvement of external support	.5
4a	If financial? Yes	.25
4b	If design? Yes	0
4c	If technical? Yes	.25
4d	If organizational, strategic? Yes	0
5	Evidence for sustainability & transfer ownership? If yes	1
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	1
9	If no budget, where does resource come from? If gov't	.5

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is being given the benefit of the doubt.



10	How does IT interact with other factors of organization? If ubiquitous	1
	<b>Total</b>	<b>7.0</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	0
2	Is security a priority? If yes	1
3	If MS Windows (default) (0), If OS presence	0
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	.5
5	Web-based, client-server, terminal? If any	.5
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high-1)	.5
8	How critical is Internet to work? If M or H	.5
9	How many servers service network? If > 2	.5
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>4.5</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	.5
3	Is there adequate ICT support?	1
4	If IT center: external (1), if internal (.5)	.5
5	Salaries: If > average \$50	.5
6	If background is technical, and regulated	.5
7	Career path? If yes	0
8	Employee turnover: If low	.5
9	Presence of innovators: If yes	.5
10	Leadership: If subjective assessment is good (Yes =2)	.5
	<b>Total</b>	<b>5.0</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>25.5</b>

## L. Ministry of Finance and Economy

Address: 1 Melik-Adamyan, Yerevan, Tel.: 59-53-04

Website: <http://www.mfe.gov.am>

**Number of Employees:** 400-500

**Percentage of Computer Usage:** ~70-88%

“The Republic of Armenia Ministry of Finance and Economy is a republican body of executive authority, which elaborates and implements the policies of the Republic of Armenia Government in the areas of fiscal revenue collection, public finance administration, and the coordination of social-economic development programs.”

### Description

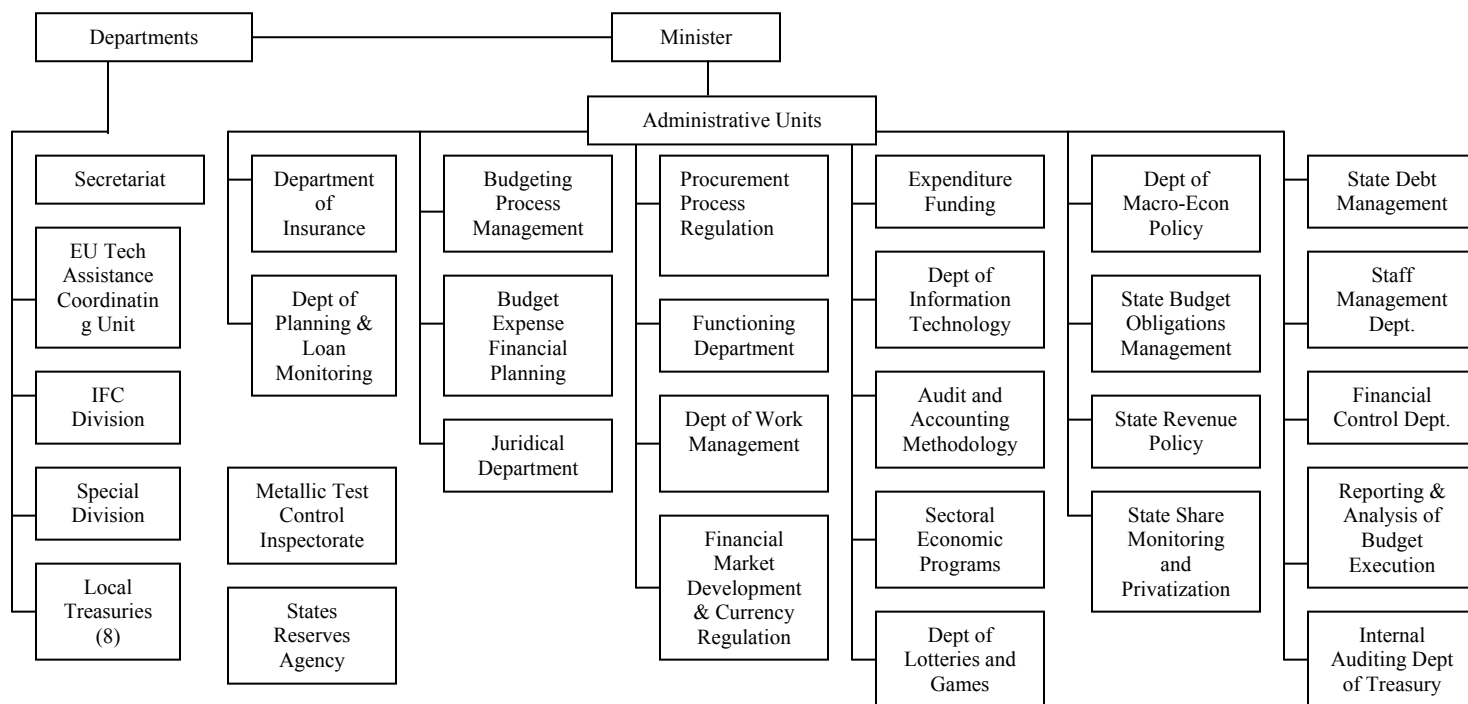
The website of the Ministry of Finance and Economy is moderately advanced, and displays qualitative as well as quantitative information in both English and Armenian. There is no search

function on the site and the information is static, but the organization of information is well executed. The website was created in 2002, and is currently on its second iteration; the press department was previously responsible for its design and updating, and all departments would send their respective update information files to them for posting. The development of ICTs undertaken at this Ministry appears to be beneficial above all else to the Ministry itself, and was designed and implemented in-house; the Ministry of Finance is also responsible for the design of [www.procurement.am](http://www.procurement.am), a website aimed at the management of government tenders.

The areas of activity of the Ministry of Finance and Economy lie chiefly in state revenue formation, state finance management, and the coordination of social-economic development programs. The objectives and goals of the Ministry include the organization of budgetary process for Government, and the elaboration of legal and financial acts on the regulation of various financial activities, and of state budget revenue formation policy. They also include the elaboration of methodology for auditing, accounting and financial reports, coordinating loans and grants of international organizations, monitoring program implementations, protecting state property interests, and coordinating state procurement processes.

### Organizational Component

The IT department at the Ministry of Finance is divided in two branches, one in the area of soft networks development and maintenance, and the other in the area of equipment management and repair. In effect, they are responsible for maintaining the integrity of an information infrastructure that is mission-critical to the work of this institution. The Organizational Structure: of the Ministry has not changed as a result of the adoption of PCs, but it is nonetheless mission critical for this institution.



### Human Component

This Ministry employs approximately 15 people for the purpose of IT service and support provision. There are between 350 and 400 PCs in use at the Ministry, all at varying levels of capacity, servicing an employee pool of somewhere between 400 and 500 people. Each of the employees in the Ministry have administrator access to the website, and according to the interviewee, it is evident that

the culture of the organization has changed as a result of the introduction of IT. Employees are now answerable for their capacity to use their machines, and some have apparently even been terminated as a result of their lack of computer skills. Turnover is relatively low, averaging approximately three years; the current director of the IT department is junior in terms of years served to only two employees who preceded him.

### Financial Component

The design and security of the web work at the Ministry, as well as of IT advancement in general, is the result of support from external donors, both international and local. The necessity for funding is high, and at least \$30K is allocated projects related to Internet development. Further details regarding IT budget in this Ministry were not available.

### Technical Component

A high priority in the Ministry of Finance is technical security in the form of firewalls for PCs and servers. The Ministry has between 18-20 functioning servers, including a DNS server, a domain server (Active Directory), print servers, Novell (backup servers), and servers that work in conjunction with the Central Bank. Considerable open source work exists at the Ministry, and they are running Linux, as well as Windows NT/2000/2003. They have extensive infrastructure that services the marzes (through UNDP regional development work), and most of the machines in the regions are Pentium II's. It appears that there is very little knowledge/document management between departments, although there is a functioning local network.

In terms of the network itself, it currently has three switches and employees about thirty hubs throughout various parts of the organization; there is segmentation of this kind in order to isolate problems areas without affecting the entirety of the network. Routing in some cases is taking place through PCs. Ideally, the entire network should be replaced, and rebuilt using optical connections. The Ministry runs on a Linux operating system, and employs a webmail interface; thus it is evident that the propensity to use open source solutions in this institution is high. With regard to licenses, the standard response prevails in this Ministry as in all others; there are no sums available within Ministry budgets to be allocated to them.

### Work with Donors

The Ministry of Finance has worked in collaboration with USAID, as well as BearingPoint and Parents Group; for example, a program was undertaken to revise internal budgeting systems, including reporting and general task automation. The general feeling about work with donors is that while these projects can be helpful, they are also at the same time 'dangerous'; many projects are started but do not reach fruition, and automation is taking place at times without the review and analysis of the process underlying it.

### ICT Capacity Metric: 30

Organizational Components		
1	Transparency: If yes	1
a	General propensity to divulge information	.25
b	Evidence of PR + IT depts. work together? If yes	.25
c	Does Chief of Staff facilitate ICT work? If yes	.25
d	Org chart available? If yes	.25
2	Target audience for ICT projects: who do they benefit? If society (1)	0
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	0
4	Digitizing info for back office automation: If yes (1)	1
5	Efforts donor driven, simply for absorbing funding? If no (1)	1
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for	1

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is being given the benefit of the doubt.

	back office automation? If yes (1)	
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	.5
10	Is IT mission critical for high %age of total functions? If yes (1)	1
	<b>Total</b>	<b>7.5</b>
<b>Financial Components</b>		
1	Is there indication of institutional commitment?	1
2	Is there an explicit IT budget? If yes	0.5
3	Is there evidence of external support?	1
4	Extent and involvement of external support	1
4a	If financial? Yes	0.25
4b	If design? Yes	0.25
4c	If technical? Yes	0.25
4d	If organizational, strategic? Yes	0.25
5	Evidence for sustainability & transfer ownership? If yes	1
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0.5
8	Is the budget executed through the year? If yes	0.5
9	If no budget, where does resource come from? If gov't	0
10	How does IT interact with other factors of organization? If ubiquitous	1
	<b>Total</b>	<b>6.5</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	1
2	Is security a priority? If yes	1
3	If MS Windows (default) (0), If OS presence	1
3a	Do they do application development in house?	✓
4	Software licenses? For each user? If yes	.5
5	Web-based, client-server, terminal? If any	1
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high-1)	.5
8	How critical is Internet to work? If M or H	1
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	.5
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>8.5</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	1
4	If IT center: external (1), if internal (.5)	0.5
5	Salaries: If > average \$50	1
6	If background is technical, and regulated	1
7	Career path? If yes	1
8	Employee turnover: If low	1

9	Presence of innovators: If yes	0.5
10	Leadership: If subjective assessment is good (Yes =1)	0.5
	<b>Total</b>	<b>7</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>30</b>

## **M. Ministry of Justice**

Address: 3 Vazgen Sargsyan street, Tel.: 58-21-57

Website: <http://www.justice.am>

**Number of Employees:** 100

**Percentage of Computer Usage:** 80-90%

“The Republic of Armenia Ministry of Justice is a republican body of executive authority, which elaborates and implements policies of the Republic of Armenia Government in sectors which belong to the authority of the Ministry in accordance with laws, other legal acts, and its by-laws.”

### **Description**

As of early 2005, the website for the Ministry of Justice is not functional, although it has been active in its work with international entities over the last decade to warrant having a well presented website for those who seek information. Thanks in part to this Ministry, Armenia has managed since 2001 to reach minimum standards in the fields of legal affairs and human rights required for membership in the Council of Europe.

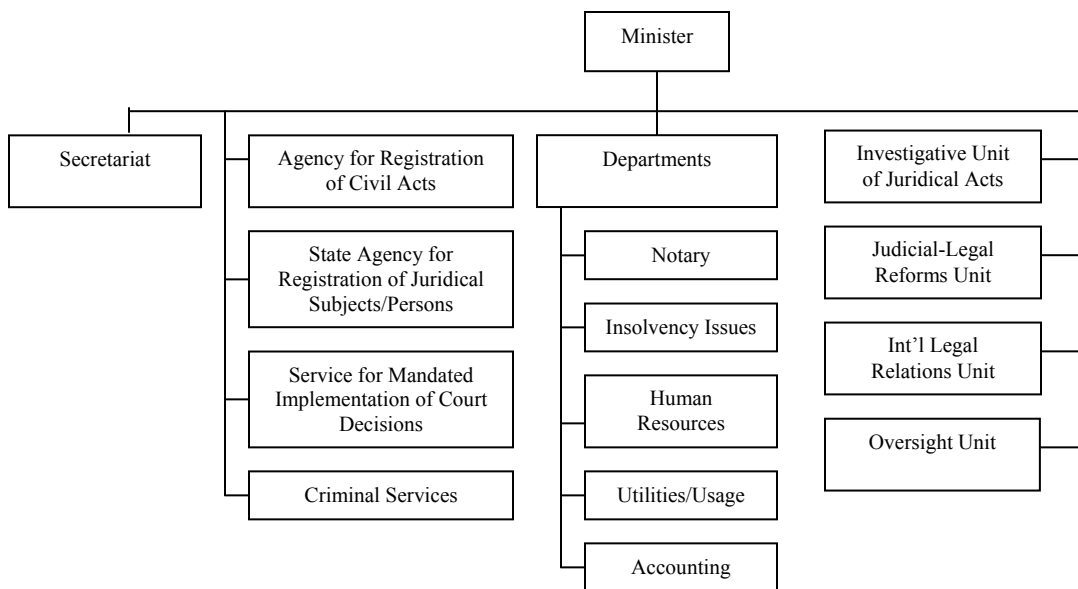
### **Organizational Structure:**

Although it is well known that the Ministry of Justice leverages an advanced IT infrastructure, there is no indication within its Organizational Structure: that a specialized IT department exists. There are various projects in place that are in process, including the creation of a legal database in collaboration with the World Bank, and there is – as in all Ministries – the requisite direct ‘network communication link’ with the central government. Whether or not the database of legal information for the public will actually be available online remains to be seen; there are issues surrounding the protection of digitized public information vis-à-vis the monopoly position of a firm called IRTEK. IRTEK is a private entity affiliated to the Ministry of Justice through private ties, and undertaking much of the digitization work necessary for the dissemination of legal and regulatory information to the citizenry. Unfortunately the work being done is not publicly available, and is being used in a for-profit scheme that benefits private individuals. They have built databases on the subject of Armenian legislation, with information on accounting instructions, laws and other standard acts, tax reporting instructions, accounting regulations, legal acts of Armenian legislation, standard acts in civil law, and all other related subject areas. A journalist summarizes the essence of the problem:

“... it is extremely difficult to familiarize oneself with even simple documents in a country where the dissemination of official information has become the private business of the officials, as in the case of the IRTEK system. Since IRTEK sells information, apparently state agencies have agreed not to publish information. Isn't it ridiculous that the government of Armenia needs to get Irtek's consent, and perhaps even to pay, in order to publish its own decisions in the Official Reference Book?”<sup>421</sup>

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<sup>421</sup> “What do Armenia's Official Websites Offer?” in Hetq Online [database online]. Available from <http://www.hetq.am/eng/ict/h-1102-spetrossyan.html>.



### Human Component

Approximately 100 people are employed at the Ministry of Justice, and the level of PC penetration is somewhere between 80-90%. It appears that the use of the IRTEK databases is common for staff that has terminals, with access in at least one room in the Ministry.

### Technical Component

The level of Internet connectivity at the Ministry appears to be moderate, and connection is established via DSL. There is no information available about numbers of servers or functioning local area networks (which very likely exist). Those servers that are in operation came with licenses, not all of which appear to have been renewed or upgraded.

### Financial Component

There is no explicit budget for IT development at the Ministry, and they appear as an organization to function on a needs-basis, for the replacement or upgrade of equipment.

### Work with Donors/Special Projects

One of the key IT-related projects of the Ministry of Justice is that related to the creation of an independent National Register, which effectively comprises a digitized database of legally valid entities (businesses, social organizations, NGOs, etc.) and their status. The creation of such a register allows for the issuance of official documentation and certificates equivalent to identification papers. In 1986, this work began with 8 local committees in Yerevan who decided to compile this information in about 40 or so regions in Armenia. In 1990, a new system was formed, and by 1994 it was updated yet again and made independent based on the passage of new laws in 1993. This was a period of time during which the usage of information systems in Armenia became increasingly prevalent.

The National Statistics Office (NSS) was the most advanced of institutions in the mid 1990s, and the National Register was formed to create one unifying body – an umbrella for all the information pertaining to the identity and status of legal entities. At the time of system deployment in 1994, the database housed 64,000 entries on legal entities, and 86,000 on individual entrepreneurs. The local network in 1994 was developed using FoxPro, and updated over the years. In 2001, a new law was passed, taking into account advancements in information technology; 53 departments were in existence, 49 of them in regions. Up until the late 1990s, people would bring information cards (in template form) individually to registration centers throughout the regions and capital. The task of data entry for the purpose of compiling the registry was voluminous, handled by a local network comprised of 10 computers and 8 employees in an IT division. Since 2000, new technology initiatives have emerged; three years ago in 2001, USAID became involved in the creation of a new

network with the help of CIT, connecting more than 18 computers to central servers in 10 regions and in the capital.

In 2001, the national ICT Master Strategy observed, "... Although during the last two years the registration process has improved, it is still highly bureaucratic and time-consuming. ... the existing Registration Law... does not provide sufficient safeguards from the arbitrary and subjective treatment by the agencies in charge of implementing the registration of entities. ... [This] creates an opportunity for artificial complications to be created by registry employees, in hope of receiving "facilitation fees" to accept the registration documents."<sup>422</sup>

By the ten year anniversary of the National Registry, however, the workforce associated with it has tripled (from 45 to nearly 150). A current project is underway to scrutinize old functions of the network and to add efficiency and functionality, particularly as it pertains to the entry of data from the regions. As of June 2004, a server with updated capacity now sits on the cusp of the central offices' network and the external network; currently, 3 servers exist in total: one for Internet, one for the 'new' network, and one for the local network. Connectivity is established via modem for this work, and poses a capacity problem that has yet to be addressed. The data server for the Registrar of Legal Entities has been re-designed using MySQL in Windows (previous version created on FoxPro in DOS), indicating that open source work is underway; however, some data entry is still taking place in the FoxPro interface. Remote access servers for the regions have been made possible, and Internet service has made it possible to update data every day. A web interface has been introduced, thereby increasing the time and process efficiency of the registration process. Basic registration takes place on average over 5 days, while the same process for entrepreneurs takes 2 days.

According to the interviewee, the challenges to the National Registry project include finding an international organization that will be willing to support the continued acquisition of new hardware and equipment. It is not evident as to exactly why this is necessary given the comprehensiveness of USAID's involvement; this is subject to further research. Moreover, certain basic changes must be implemented within Armenia's legal system, namely in the area of electronic signatures, so that the full functionality of these information systems can one day be realized. The budget for this automation and digitization work comes from the Ministry of Justice itself, specifically to the "Agency of State Registry of Legal Entities of the Ministry of Justice of the Republic of Armenia".

#### ICT Capacity Metric: 24<sup>423</sup>

Organizational Components		
1	Transparency: If yes	.5
a	General propensity to divulge information	0
b	Evidence of PR + IT depts. work together? If yes	0
c	Does Chief of Staff facilitate ICT work? If yes	.25
d	Org chart available? If yes	.25
2	Target audience for ICT projects: who do they benefit? If society (1)	0
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	0
4	Digitizing info for back office automation: If yes (1)	1
5	Efforts donor driven, simply for absorbing funding? If	1

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is being given the benefit of the doubt.

<sup>422</sup> USAID, World Bank, Government of Armenia, *ICT Master Strategy for Republic of Armenia*,

<sup>423</sup> It is important to note that access to information regarding the full breadth of Ministry of Justice activities was limited; therefore the 'capacity' components outlined above are not necessarily reflective of the full capabilities of this institution.

	no (1)	
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	1
10	Is IT mission critical for high %age of total functions? If yes (1)	1
	<b>Total</b>	<b>7.5</b>
<b>Financial Components</b>		
1	Is there indication of institutional commitment?	1
2	Is there an explicit IT budget? If yes	0
3	Is there evidence of external support?	1
4	Extent and involvement of external support	.5
4a	If financial? Yes	.25
4b	If design? Yes	0
4c	If technical? Yes	.25
4d	If organizational, strategic? Yes	0
5	Evidence for sustainability & transfer ownership? If yes	.5
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	1
10	How does IT interact with other factors of organization? If ubiquitous	.5
	<b>Total</b>	<b>4.5</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	1
2	Is security a priority? If yes	1
3	If MS Windows (default) (0), If OS presence	1
3a	Do they do application development in house?	✓
4	Software licenses? For each user? If yes	.5
5	Web-based, client-server, terminal? If any	1
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high- 1)	0
8	How critical is Internet to work? If M or H	0
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>6.5</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	1
4	If IT center: external (1), if internal (.5)	1
5	Salaries: If > average \$50	.5
6	If background is technical, and regulated	1



7	Career path? If yes	.5
8	Employee turnover: If low	.5
9	Presence of innovators: If yes	0
10	Leadership: If subjective assessment is good (Yes =2)	0
	<b>Total</b>	<b>5.5</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>24</b>

## **N. Ministry for Regional Administration and Infrastructure Coordination**

Regional Information Systems Development, Website: [www.region.am](http://www.region.am)

*“Continuing to work in the old way is not interesting to anyone...”*

**Number of Employees:** N/A

**Percentage of Computer Usage:** N/A

### **Description**

This ministry is vastly different from the others, mostly because it is a small office comprised of approximately 10 people. For this reason, application of the ‘ICT Capacity Metric’ template is not relevant, although what little information exists about the central office ICT capacity is shown below. There is no large staff because, as the Yerevan office, they deal primarily with managing links across their 10 regional administrations around the country. As a result, the standard framework for inventory analysis does not apply well to this institution.

The Ministry has a networked system through which to interact with other ministries concerned with social issues, including the Ministries of Urban Development, Health, Environmental Protection, and the Cadastre. For the moment, the ministry deals with 930 communities in 10 marzes around the country, with whom they maintain intensive links. The United Nations Development Program (UNDP) has created the infrastructure for an electronic domain, through which machines are acquired, computer networks are deployed and Internet connections are developed in each marz, with its own site. They have 2 rooms in each municipal marz office.

Based on conversations with the administrator of the region.am website, it appears that those districts with higher levels of connectivity include Lori, Shirak, Siunik, and Vayots Dzor. The region.am work began in early 2004. Citizens can gather information, and interact with their municipal authorities through the respective regional websites; to a large extent, it appears that the advancement of UNDP’s work in the regions is not easily surpassed by ICT work in the capital. UNDP has created Public Access Points (PAPs), including access from the National Academy of Sciences; standards for these access points around the country are in fact being raised as a result of these projects.

From a technical standpoint, the Ministry itself has 1 functioning server, 4 computers, and Internet connectivity via DSL. UNDP deployed this ICT infrastructure, in conjunction with the Regional Governance Project of the Ministry of Territorial Administration.

### **Work with Donors/Special Projects**

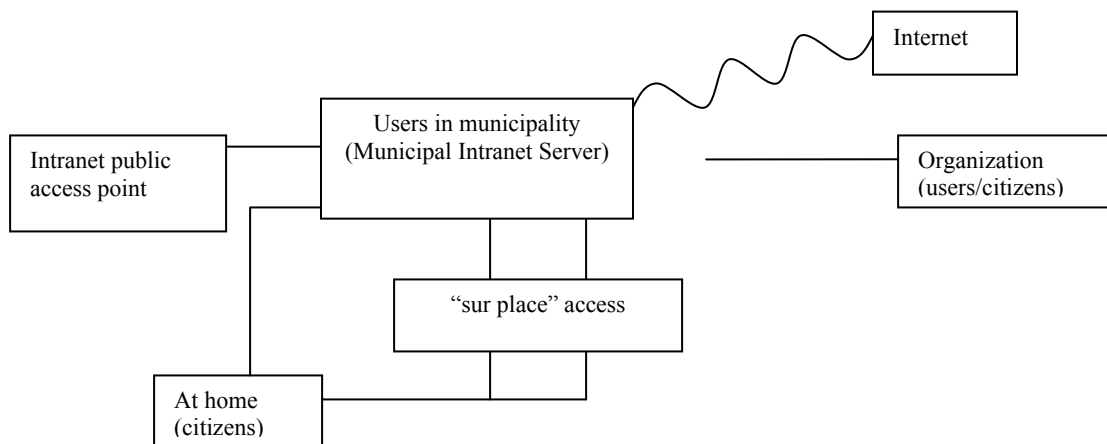
UNDP, and the Eurasia Foundation, among others, have been building toward the unification of communication systems in Armenia to give opportunity to cities around the country to build ICT centers. It appears that the continuity of projects undertaken by groups like the Eurasia Foundation is based on the idea of new systems being tied together to leverage existing ones. In the same way, it is important to point out the need for social networks – particularly of groups of existing NGOs – to also be leveraged the same way.

According to a presentation at the end of Sept. 2004 at the Tekeyan Center in Yerevan on the subject of regional ICT development, a considerable transformation is taking place in local government in Armenia, making it more agile, dynamic and able to transform. There are qualitative and valuable changes taking place, not only for local government but for the nation. The availability of financial resources in the nation, as well as resource allocation as related to state budget is being addressed throughout 2004 and 2005; presumably, if resources are allocated adequately, new levels of quality can be generated in local institutions, and transparency can result. The acknowledgement of the importance of clearer and more expeditious decision-making, as well as of bottom-up empowerment appears to be collective.

Communities in Armenia, thanks to a wide variety of donor projects, are being informatized; most cities have some kind of system linked through a network. At the time of the last elections in Parliament, for example, 60-70% of citizen registrations were handled locally at municipal offices. Differentiation between urban and rural regional IT infrastructure is quite stark; since 1996, the capacity of municipal offices to address technical and network issues has been enhanced, in some cases surpassing the facilities available to the public in Yerevan.

Since 1999, for example, the city of Charentsavan has come to serve as a good model demonstrating how a unified information structure can be developed, tying in organizational and public access points. Proper information infrastructure with servers and networks are in place in the municipal buildings, along with several modems, two hubs and at least one server. Support – both active and passive – for these systems is necessary, in the form of both actual maintenance and administrative level changes. A wide number of issues are being addressed, concerning information flow between departments and individuals, budgetary questions, news, projects, sustainability and digital signature issues.

**Figure 8: Sample ICT Municipal Infrastructure - The Case of Charentsavan**



The features included in such a local website and intranet includes databases, budget numbers, Organizational Structure, open/public letters (accompanied by responses), and publicly available decisions. They also include full directories, registries of inhabitants, forms for sending emails, receiving updates, and search bars for documents by month/year.

In the region of Martuni, for example, GTZ and Eurasia Foundation created an opportunity for the citizenry to interact with municipal authorities and to learn. This is one of the successful pilot projects in rendering 'City Hall' more transparent; there is some noticeable overlap here with the work of Project Harmony. In another presentation about ICT development in the city of Goris, reference was made to two laws, one about the "population register", and another from the mayor &

council that “all laws have to be made public”, in accordance with the country’s law on the freedom of information.<sup>424</sup> The lack of knowledge and the extent of economic and social problems in such cities are endemic problems. TACIS has also undertaken 2 marz projects in Yevastyan and Vayotz Dzor.

It appears that the importance of ‘critical mass’ when it comes to using information systems in government is well understood in Armenia; systems will lose their relevance and salience if they remain limited to the local sphere; they must be functional in both a local and national context, and according to national standards. Unfortunately, the area of ICT policy for government remains underdeveloped and inconsistent; this is not because of a lack of information or content, but rather a question of political will and leadership.

**ICT Capacity Metric: 4.5\*<sup>425</sup>**

Organizational Components		
1	Transparency: If yes	1
a	General propensity to divulge information	0.25
b	Evidence of PR + IT depts. work together? If yes	0.25
c	Does Chief of Staff facilitate ICT work? If yes	0.25
d	Org chart available? If yes	0.25
2	Target audience for ICT projects: who do they benefit? If society (1)	
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	
4	Digitizing info for back office automation: If yes (1)	
5	Efforts donor driven, simply for absorbing funding? If no (1)	
6	Does the institution manage websites? If yes (1)	
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	
10	Is IT mission critical for high %age of total functions? If yes (1)	
<b>Total</b>		<b>1</b>
Financial Components		
1	Is there indication of institutional commitment?	1
2	Is there an explicit IT budget? If yes	
3	Is there evidence of external support?	1
4	Extent and involvement of external support	1
4a	If financial? Yes	
4b	If design? Yes	
4c	If technical? Yes	

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is

<sup>424</sup> National Parliament of the RA, *Law on the Republic of Armenia on Freedom of Information*, Adopted on September 23, 2003.

<sup>425</sup> The ICT Capacity Metric in the case of the Ministry of Regional Administration does not capture the essence of the ICT development of the institution. Its highly decentralized structure, as well as the emphasis of infrastructure creation at the local/municipal level did not allow for this interview to yield the kind of information necessary to categorize this Ministry relative to its counterparts.

4d	If organizational, strategic? Yes	
5	Evidence for sustainability & transfer ownership? If yes	0.5
6	Are upgrades of equipment planned? If yes	
7	Is there budget tracking? If yes	
8	Is the budget executed through the year? If yes	
9	If no budget, where does resource come from? If gov't	
10	How does IT interact with other factors of organization? If ubiquitous	
	<b>Total</b>	<b>3.5</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	
2	Is security a priority? If yes	
3	If MS Windows (default) (0), If OS presence	
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	
5	Web-based, client-server, terminal? If any	
6	Is there local network? If yes	
7	Status Internet connectivity (low- 0, medium -.5, high-1)	
8	How critical is Internet to work? If M or H	
9	How many servers service network? If > 2	
10	Level of upgrade necessary is low, If yes	
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>0</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	
2	Does human capacity management feed back into planning?	
3	Is there adequate ICT support?	
4	If IT center: external (1), if internal (.5)	
5	Salaries: If > average \$50	
6	If background is technical, and regulated	
7	Career path? If yes	
8	Employee turnover: If low	
9	Presence of innovators: If yes	
10	Leadership: If subjective assessment is good (Yes =2)	
	<b>Total</b>	<b>0</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>4.5</b>

## O. Securities Commission

Website: <http://www.sca.am>

*"We don't need to have an IT budget... we have USAID."*

**Number of PCs:** 65-70

**Total Employees:** N/A

### Description

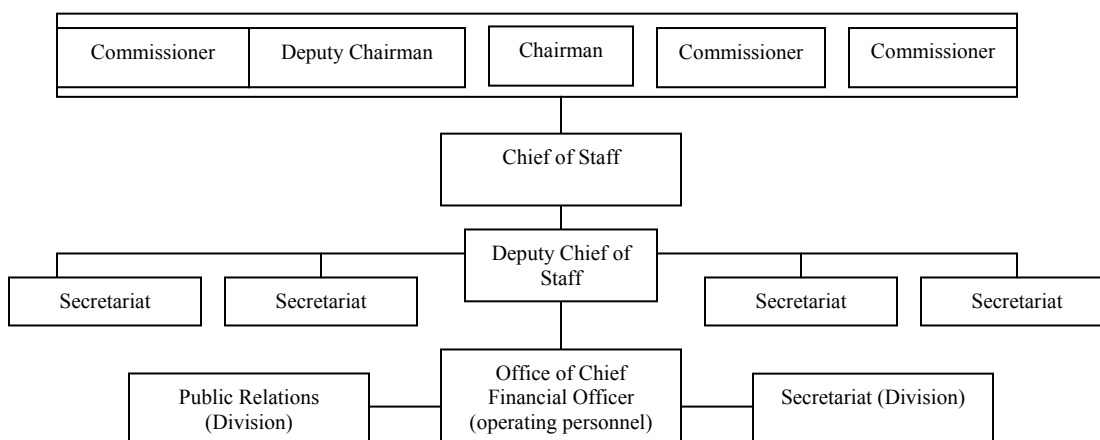
The objective of the Securities Commission (SC) is the regulation of securities markets in order to protect investors' interests, in order to ensure their confidence and effective participation in the Armenia's economy. The primary mission of the Securities Commission is to protect investors and maintain the integrity of the securities market in the country.

The Commission requires public companies to disclose material financial and other information to the public, and also oversees key participants in the securities industry, including the stock exchange, the Central Depository of Armenia, broker-dealers, portfolio managers and investment companies. The Commission is concerned primarily with promoting disclosure of important information, preventing conflicts of interest, reducing systemic risks, enforcing securities laws, and protecting investors who interact with various institutions and professional of the securities market. Crucial to the regulatory effectiveness of the Commission is its supervision and enforcement authority.

The SC offers the public educational information through its website, which is available both in English and Armenian and appears to be easily navigable and well presented. Content for the website comes from different departments, and it appears the primary audience for it is the mass media. The Commission also works closely with other institutions, including parliament, governmental departments and agencies, including other law enforcement agencies, the self-regulatory organizations (e.g. Armex and CDA), and various private sector organizations. The activities of the Commission are regulated by the Securities Market Regulation Law passed by the National Assembly of Armenia in 2000. The Securities Commission was established in August 2000 to enforce the newly-passed securities laws, to promote stability in the markets and, most importantly, to protect investors.

#### **Organizational Structure:**

The only equivalent of an IT department at the Securities Commission is a room in which two employees provide system and network support/maintenance.



#### **Human Component**

In terms of the background of IT workers at the Commission, they tend to vary; there is little training other than 'on-the-job' exposure. The public relations department appears to coordinate and manage the dissemination of information via the Internet; information is updated every thirty days, including publications, news and information on entrepreneurship.

#### **Technical Component**

The Securities Commission of Armenia is outfitted with approximately 65-70 PCs, about one third of which are laptops, and the rest are desktops. The PCs are running a variety of operating systems, including 2000/XP, 98, 95 and Millennium edition. They have 4 server workstations, including DNS, FTP, Mail and SQL/Internet server.

### Financial Component

USAID gave substantial support to the Securities Commission several years ago (2000 time frame), but funding was cut shortly thereafter and the Commission has since been unable to move advance. Currently, the Commission appears to receive very modest funding support from the government.

### ICT Capacity Metric: 10

Organizational Components		
1	Transparency: If yes	0.5
a	General propensity to divulge information	0.25
b	Evidence of PR + IT depts. work together? If yes	0
c	Does Chief of Staff facilitate ICT work? If yes	0
d	Org chart available? If yes	0.25
2	Target audience for ICT projects: who do they benefit? If society (1)	0.5
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	0.5
4	Digitizing info for back office automation: If yes (1)	0
5	Efforts donor driven, simply for absorbing funding? If no (1)	0.5
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	0.5
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	0
9	If IT dept. is centralized/inhouse(.5), if de-centralized/outsourced (1)	0.5
10	Is IT mission critical for high %age of total functions? If yes (1)	0
<b>Total</b>		<b>4</b>
Financial Components		
1	Is there indication of institutional commitment?	0.5
2	Is there an explicit IT budget? If yes	0
3	Is there evidence of external support?	0.5
4	Extent and involvement of external support	0.5
4a	If financial? Yes	0.25
4b	If design? Yes	0
4c	If technical? Yes	0.25
4d	If organizational, strategic? Yes	0
5	Evidence for sustainability & transfer ownership? If yes	0
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	0.5
10	How does IT interact with other factors of organization? If ubiquitous	0
<b>Total</b>		<b>2</b>
Technical Components		
1	How many computer/relative to total staff? If > 80%	0
2	Is security a priority? If yes	0.5
3	If MS Windows (default) (0), If OS presence	0.5
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	0

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is

5	Web-based, client-server, terminal? If any	0
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high-1)	0
8	How critical is Internet to work? If M or H	0
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>3</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	0
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	0
4	If IT center: external (1), if internal (.5)	0.5
5	Salaries: If > average \$50	0
6	If background is technical, and regulated	0.5
7	Career path? If yes	0
8	Employee turnover: If low	0
9	Presence of innovators: If yes	0
10	Leadership: If subjective assessment is good (Yes =2)	0
	<b>Total</b>	<b>1</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>10</b>

#### **P. State Commission on the Protection of Economic Competition Commission**

Website: <http://competitionpolicy.ww.am/>

**Number of Employees:** 40

**Percentage of Computer Usage:** N/A

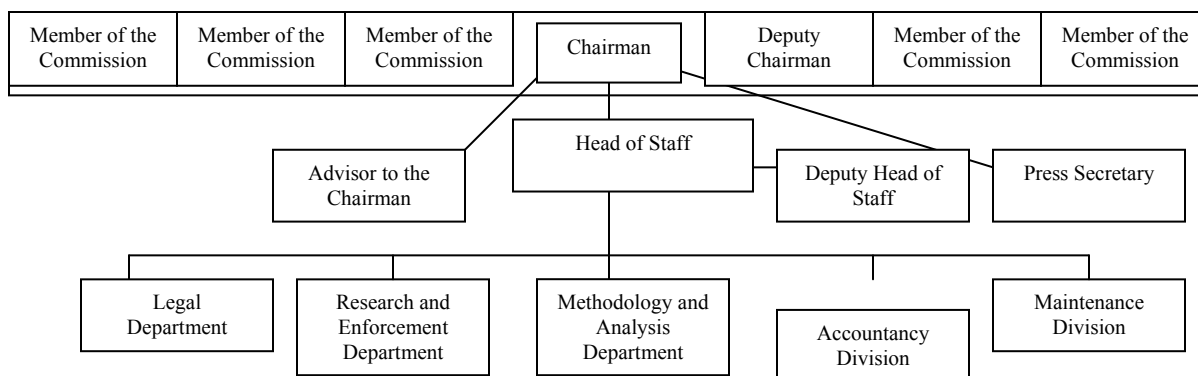
#### **Description**

The State Commission for the Protection of Economic Competition was established in 2001 based on Armenia's Law on the Protection of Economic Competition adopted November 6, 2000. The Commission is independent from other state bodies, and is geared toward defending and encouraging economic competition, promoting the development of entrepreneurship and protecting consumers' interests in the Republic of Armenia.

The Commission also maintains a centralized register of economic subjects, applies to the court system in cases of violation, handles publicity in the form of an information booklet, and manages public education work. It can pass decisions concerning facts of violation, implement measures, and

issue conclusions about the contradiction of acts adopted by state/local governmental bodies. It is recognized that the main prerequisites for the success of bodies defending competition are independence, knowledge, skills, the power to get information, make instruction and adopt sub-legislative acts, and to manage publicity and transparency, and awareness campaigns. Most of these conditions are theoretically based on the capacity of the institution to leverage tools of information and communication technology. However, the complete lack of ICT infrastructure, by the admission of commissioner, renders it irrelevant to even apply the “ICT Capacity Metric” template.

### Organizational Structure:



### Human Component

The Commission consists of 7 members: a chairman, a deputy chairman and 5 members. There are a total of 40 employees at the Commission, but no staff for IT support of any kind. There is some collaborative work underway with USAID, and certainly hosting of the Commission’s website on the OSCE Yerevan office homepage is indicative of collaboration and support.

### Technical Component

This Commission has little/no equipment to speak of, with currently 2 (and a half) functional computers, and no network of any kind. There is some evidence to indicate that employees can at times bring in and use their own personal machines; however, there is institutional infrastructure to support the tasks of the Commission. Unfortunately, this appears to be a function of the fact that clients of the Commission themselves are not ready to use IT.

### Financial Component

There is no evidence of financial commitment to IT work at the Commission.

### ICT Capacity Metric: 10

Organizational Components		
1	Transparency: If yes	0.5
a	General propensity to divulge information	0.25
b	Evidence of PR + IT depts. work together? If yes	
c	Does Chief of Staff facilitate ICT work? If yes	
d	Org chart available? If yes	0.25
2	Target audience for ICT projects: who do they benefit? If society (1)	
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	
4	Digitizing info for back office automation: If yes (1)	
5	Efforts donor driven, simply for absorbing funding? If no (1)	
6	Does the institution manage websites? If yes (1)	

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is



7	Do they use local networks and maintain DBs for back office automation? If yes (1)	
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	
10	Is IT mission critical for high %age of total functions? If yes (1)	
	<b>Total</b>	<b>.5</b>
<b>Financial Components</b>		
1	Is there indication of institutional commitment?	0
2	Is there an explicit IT budget? If yes	0
3	Is there evidence of external support?	0
4	Extent and involvement of external support	0
4a	If financial? Yes	0
4b	If design? Yes	0
4c	If technical? Yes	0
4d	If organizational, strategic? Yes	0
5	Evidence for sustainability & transfer ownership? If yes	0
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	0
10	How does IT interact with other factors of organization? If ubiquitous	0
	<b>Total</b>	<b>0</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	0
2	Is security a priority? If yes	0
3	If MS Windows (default) (0), If OS presence	0
3a	Do they do application development in house?	0
4	Software licenses? For each user? If yes	0
5	Web-based, client-server, terminal? If any	0
6	Is there local network? If yes	0
7	Status Internet connectivity (low- 0, medium -.5, high-1)	0
8	How critical is Internet to work? If M or H	0
9	How many servers service network? If > 2	0
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	0
	<b>Total</b>	<b>0</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	0
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	0
4	If IT center: external (1), if internal (.5)	0
5	Salaries: If > average \$50	0
6	If background is technical, and regulated	0
7	Career path? If yes	0

8	Employee turnover: If low	0
9	Presence of innovators: If yes	0
10	Leadership: If subjective assessment is good (Yes =2)	0
	<b>Total</b>	<b>0</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>0.5</b>

## Q. The Constitutional Court of the Republic of Armenia

Address: Baghramyan Avenue, Yerevan, Armenia

Website: <http://www.concourt.am>

**Number of Employees:** 70 total, 35 core staff

**Percentage of Computer Usage:** 100% (of core)

### Description

The website of the Constitutional Court was launched in 1997, and provides access to decisions (over 430) and other information resources pertaining to the activities of the court and its members. It has been recognized by Google.com country ratings in March 2004 as advanced and in good standing relative to both developed countries, and peer post-communist countries. (See Figures 6 and 7)

It is worth mentioning that electronic documentation is now being recognized as written evidence in civil legal proceedings. The Civil Procedure Code of the Republic of Armenia allows for the submission of evidence to courts in writing in electronic form on the condition that their validity is verifiable.<sup>426</sup>

**Figure 9: Rating of the websites of the Constitutional Courts and Equivalent Bodies by Google.com**

	Country	URL	# of documents & links
	USA: Supreme Court Collection (LII)	<a href="http://supct.law.cornell.edu/supct/">supct.law.cornell.edu/supct/</a>	35300
	Italy: Constitutional Court v. 1	<a href="http://www.giurcost.org/">www.giurcost.org/</a>	20700
	USA: Supreme Court	<a href="http://www.supremecourtus.gov/">www.supremecourtus.gov/</a>	16100
	European Court of Human Right	<a href="http://www.echr.coe.int/">www.echr.coe.int/</a>	15300
	France: Constitutional Council	<a href="http://www.conseil-constitutionnel.fr/">www.conseil-constitutionnel.fr/</a>	13100
	Germany: Federal Constitutional Court v. 1	<a href="http://www.bverfg.de/">www.bverfg.de/</a>	11600
	Portugal: Constitutional Court	<a href="http://www.tribunalconstitucional.pt/">www.tribunalconstitucional.pt/</a>	7810
	Brazil: Supreme Court	<a href="http://www.stf.gov.br/">www.stf.gov.br/</a>	7480
	Canada: Supreme Court	<a href="http://www.scc-csc.gc.ca/">www.scc-csc.gc.ca/</a>	7130
	Belgium: Court of Arbitration	<a href="http://www.arbitrage.be/">www.arbitrage.be/</a>	6130
	Finland: Supreme Court	<a href="http://www.kho.fi/">www.kho.fi/</a>	4360
	Germany: Federal Constitutional Court v.2	<a href="http://www.bundesverfassungsgericht.de">www.bundesverfassungsgericht.de</a>	4350
	Armenia: Constitutional Court	<a href="http://www.concourt.am">www.concourt.am</a>	4170
	Italy: Constitutional Court v. 2	<a href="http://www.cortecostituzionale.it/">www.cortecostituzionale.it/</a>	4160
	Japan: Supreme Court	<a href="http://www.courts.go.jp/">www.courts.go.jp/</a>	3530

<sup>426</sup> Global Internet Policy Initiative (GIPI), "Overview of the Information Legislation of the Republic of Armenia", (accessed February 2005); available from [http://www.ict.am/pr\\_images/GIPI.pdf](http://www.ict.am/pr_images/GIPI.pdf).

**Figure 10: Rating of the Website of the Constitutional Courts of the Former USSR Countries by Google.com**

N	Country	URL	# of documents & links
1	Armenia: Constitutional Court	www.concourt.am	4170
2	Estonia: Supreme Court	www.nc.ee/	1270
3	Lithuania: Constitutional Court	www.lrkt.lt/	1130
4	Russian Federation: Constitutional Court	ks.rfnet.ru/	1130
5	Azerbaijan: Constitutional Court	www.constitutional-court-az.org/	602
6	Moldova: Constitutional Court	www.ccrm.rol.md	528
7	Latvia: Constitutional Court	www.satv.tiesa.gov.lv/	492
8	Belarus: Constitutional Court	ncpi.gov.by/ConstSud/eng	396
9	Kazakstan: Constitutional Council	www.constcouncil.kz/	373
10	Georgia: Constitutional Court	constcourt.gov.ge	91

### **Organizational Component**

The Constitutional Court has created an “electronic court”, which is a significant step toward e-government; information is disseminated through an internet-based newsletter newsletter in collaboration with its Communications Division, including the electronic versions of decisions. This Division is instrumental in examining decisions, comparing them with old ones and those in development, and allowing for analysis from external entities for the purpose of comparison with international standards. In some ways, this Court is considered to actually be a center for knowledge flow for all CIS countries.

### **Human Component**

The work of IT advancement in the context of the Constitutional Court of Armenia began in 1997 with one person. In 1998, a department was established, comprised of 2 employees and several volunteers; the size of the department remains the same today. The Chief of Staff organized special training, geared toward the adoption of a community approach to digitization. All 9 judges of the Constitutional Court have and use computers; for a total staff of 70 people (including peripheral facilities support and administrative staff) where about 35 are core staff, more than 40 computers are in use. All court employees have email addresses and access to necessary resources and legal information bases. The available electronic resources are useful for distance-learning and the administration of legal bodies, lawyers, tutors and candidates.

### **Technical Component**

The Constitutional Court is committed to maintaining a ‘conveyor belt’ of information, from the highest judges through all departments. Decisions are brought out on floppy disks, and turned into content for the website and fed into a searchable (English, not Armenian) database. The Court built its own information system and database, and has a local area network which is not connected to the Internet. The Court has 2 servers, and fiber optic connectivity as of one year ago, although it does not appear to be in use.

The Court is hooked into the Constitutional Court Network known as “CODICES” (Council of Europe), an electronic project of the Venice Commission. The Venice Commission was established in 1990 and is also known as the European Commission for Democracy through Law; it is the Council of Europe's advisory body on constitutional matters. The Commission has played a leading

role in the adoption of constitutions that conform to standards of European constitutional heritage; since 2002, it has become broader, allowing non-European states to become full members.

CODICES allows for regular reporting on the case-law of Constitutional Courts and Courts of equivalent jurisdiction in Europe, as well as in other parts of the world together with case-law of the European Court of Human Rights and the Court of Justice of the European Communities. With more than 4000 summaries of decisions (called 'précis'), CODICES contains a thesaurus for easy access to information, including about 5000 full texts of decisions made available to the Venice Commission, description of participating Courts, laws on the Courts as well as complete texts and extracts of constitutions including the Convention for the Protection of Human Rights and Fundamental Freedoms.

### Financial Component

Various projects are underway through the work of the Ministry of Justice with other lower level courts, through NGOs who work in the area, and by donors like the World Bank or USAID. USAID helped the Constitutional Court with its first few computers through a gift of \$15K, but since that it appears that little donor activity is underway. USAID has apparently been offering cheaper solutions that the Constitutional Court has not wanted, while the World Bank has not wanted to work their system, preferring instead to work with IRTEK.

### ICT Capacity Metric: 27

Organizational Components		
1	Transparency: If yes	0.75
a	General propensity to divulge information	0.25
b	Evidence of PR + IT depts. work together? If yes	0.25
c	Does Chief of Staff facilitate ICT work? If yes	0.25
d	Org chart available? If yes	0
2	Target audience for ICT projects: who do they benefit? If society (1)	1
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	1
4	Digitizing info for back office automation: If yes (1)	1
5	Efforts donor driven, simply for absorbing funding? If no (1)	1
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if decentralized/outourced (1)	0.5
10	Is IT mission critical for high %age of total functions? If yes (1)	1
Total		9.25
Financial Components		
1	Is there indication of institutional commitment?	1
2	Is there an explicit IT budget? If yes	0
3	Is there evidence of external support?	0.5
4	Extent and involvement of external support	0.25
4a	If financial? Yes	0.25
4b	If design? Yes	0
4c	If technical? Yes	0
4d	If organizational, strategic? Yes	0
5	Evidence for sustainability & transfer ownership? If	1

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is

	yes	
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0.5
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	1
10	How does IT interact with other factors of organization? If ubiquitous	1
	<b>Total</b>	<b>5.25</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	1
2	Is security a priority? If yes	1
3	If MS Windows (default) (0), If OS presence	1
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	.5
5	Web-based, client-server, terminal? If any	0
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high-1)	0
8	How critical is Internet to work? If M or H	.5
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	.5
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>6.5</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	0.5
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	1
4	If IT center: external (1), if internal (.5)	0.5
5	Salaries: If > average \$50	0.5
6	If background is technical, and regulated	0.5
7	Career path? If yes	0
8	Employee turnover: If low	1
9	Presence of innovators: If yes	1
10	Leadership: If subjective assessment is good (Yes =2)	1
	<b>Total</b>	<b>6</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>27</b>

## **R. Central Bank of Republic of Armenia**

Website: <http://www.cba.am>

**Number of Employees:** 450

**Percentage of Computer Usage:** 100%

### **Description**

According to the ICT Master Strategy written for Armenia in 2000, it has been well recognized that "... there has been considerable progress in providing critical automation to the Central Bank of Armenia (CBA)".<sup>427</sup> IT is mission critical for the Central Bank, part of an essential automation strategy that was revised five years ago. The website for the Central Bank is advanced and developed internally; the default interface is in English, and offers a wide variety of links to information about monetary policy, national currency, the banking system, financial operations, the payment system, publications and statistics, and press releases. One of the priorities in revising IT strategy has been that of establishing duty segregation in the control of IT development and capacity; this prevents conflicts of interest, enhances quality control, and ensures proper ownership of process.

### **Organizational Component**

Between 1996-8, the formation of IT strategy began at the Central Bank; at that time, there was one computer for every division. Knowledge and information management systems were just in development. There are about 15 functioning systems, which have been grown organically since 1996, including electronic payment systems, credit registry, government security trading system, and inter-bank telecommunications network. Two years ago, IT development was decentralized; currently, there are 5 departments, including Banking Automation Systems (30 employees), Banking Technical Department (30 employees), Information Security Division (5 employees), IT Audit (3 employees), and Support & Maintenance (6 employees). From 2004-6, there has been a concerted move toward the development of a unified database platform; this could have been either in the direction of Informix, or Oracle.

From a strategic perspective, the Central Bank faces a number of challenges, mostly associated with the optimal structure of information systems, the operation and network environment, the structure of databases, and the preferred technologies for building integrated systems. Questions about the diversification of operating systems, database management systems and programming languages are among the types of challenges facing the institution today.

There are two layers of internal controlling that reflect the process to which IT contributes: compliance with regulations, and the analysis of business processes. Considerable effort has and continues to be allocated to ensuring that systems are developed in accordance with regulations, that the proper persons have ownership of their portions of work, and above all that security is considered as a foremost priority. The IT audit department, for example, has made 500-600 proposals over the last two years, 65% of which have been related to security concerns.

### **Human Component**

The employee base at the helm of IT development at the Central Bank is well trained, well-paid and has an average turnover of about 25% per annum. One problem appears to be that young people come in, receive excellent training, and then move toward private sector work. In terms of the background of those entering the Bank, there have been no direct requirements, although entrants have largely had polytechnic backgrounds or training in economics. Of the approximately 450 people who work at the Bank (including 80 administrative staff), 100% of them have PCs; there are currently 300 users of the interbank CBANet. Last year, the Bank stopped accepting paper-based requests for interbank transfers.

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<sup>427</sup> USAID, World Bank, Government of Armenia, *ICT Master Strategy for Republic of Armenia*, 34.

The caliber and advanced status of IT work at the Central Bank appears to be unparalleled in Armenia in other government branches. Employees are working across a wide range of programming tools and languages, including Borland C++ Builder 5/6, T-SQL, MS Visual Basic 6.0, MS Visual C++ 6.0, Lotus Domino R5, VBA, Crystal Reports 8.0, VIP 2.0, Clipper and Borland Delphi; they are also working with a range of computer-aided software engineering languages like Rational Rose 2002, ErWin 4.1, and MS Visio 2002.

### **Technical Component**

IT processes, infrastructure, and systems in the Central Bank of America involve a number of departments, including those in banking technologies development, banking automation systems management, information security, IT audit, and Administration. The resources being used include 21 servers (including 8 main application systems servers and 5 reserve, 2 CBANet network servers, and 4 Internet servers), 432 workstations, 430 users of a local area network, 218 users of a global network, and 50 Internet users.

The Central Bank created CBANet in 1992-3 as an initiative with relatively small expenses, a private network that connects 26 commercial banks, 137 branches of banks, 45 treasury and 10 other entities; 11 servers are allocated to it, with a total of 50 nodes in Yerevan and other cities, and the protocols in use include Frame Relay, X.25, PPP, and TCP/IP. The communication equipment in use includes Motorola modems and routers. CBANet is connected to the banking supervision system (known as FINA), currency “buy and sell” in financial markets, credit registry, to the electronic payments system, and to the securities bookkeeping and settlement system. The Management Information Systems for the Central Bank also include SWIFT, Monitoring, Economic Analysis systems, Licensing and Attestation systems, Document Circulation, digital library, and Internal Accounting systems. CBANet work is highly codified in terms of procedure, addresses contingency issues and is supported by documentation.

They also include “Operational Day”, the main banking application run on Oracle, programmed with C++, and based on Win2000 and Novell systems. This application processes approximately 8,000 messages a day, over 52 workstations. Document circulation is being handled on a database management system (MS Access 2000), programmed in MS Visual Basic 6, and on a Win9x/Win 2000 operating system. The number of workstations included here is roughly 50. Information Management, on the other hand, is handled on Lotus Domino, and spans to 202 workstations. The Licensing and Attestation systems are both facilitated on MS SQL database management systems.

Internet connectivity is made possible through radio modem (Arminco) satellite dishes tied to a Cisco router, which is connected to a security server and then to a switch, which in turn is linked to Web and Email servers.

### **Financial Component**

The IT Budget of the Central Bank is very roughly at about 10% of the total budget; every three years, two tenders are introduced for the acquisition of new equipment. For example, they currently have 127 new Dell computers, whereas two years ago they had HPs. In terms of revenue, 2% of the revenue generated by the Central Bank comes back to the Central Bank, while the rest goes to government. The advancement of the IT infrastructure of the Central Bank is in large part due to the commitment and support of the Armenian government.

### **Work with Donors**

The major donor to the Central Bank has been USAID in the form of equipment and Technical Assistance. Currently, the Bank has attained standards worthy of benchmarking in the CIS. USAID counts its work with the Central Bank as one of its success stories; this includes the \$1.5 million spent by USAID on the ARCA project (automation in the Armenian consumer credit via introduction of local credit/debit cards). A number of related ministries have undertaken work in adjacent areas. For example, a Ministry of Finance project on e-government has also been notable in this sphere, not specifically for banking, but for the entirety of financial infrastructure in Armenia, including the Tax Administration and the Customs Office. The Ministry of Justice for its part has



been instrumental in the facilitation of a registration process for private entities as they assert their legal status as businesses.

### ICT Capacity Metric: 37.75

Organizational Components		
1	Transparency: If yes	1
a	General propensity to divulge information	.25
b	Evidence of PR + IT depts. work together? If yes	.25
c	Does Chief of Staff facilitate ICT work? If yes	.25
d	Org chart available? If yes	.25
2	Target audience for ICT projects: who do they benefit? If society (1)	1
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	1
4	Digitizing info for back office automation: If yes (1)	1
5	Efforts donor driven, simply for absorbing funding? If no (1)	1
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if de-centralized/outsourced (1)	.5
10	Is IT mission critical for high %age of total functions? If yes (1)	1
<b>Total</b>		<b>9.5</b>
Financial Components		
1	Is there indication of institutional commitment?	1
2	Is there an explicit IT budget? If yes	1
3	Is there evidence of external support?	1
4	Extent and involvement of external support	.25
4a	If financial? Yes	.25
4b	If design? Yes	
4c	If technical? Yes	
4d	If organizational, strategic? Yes	
5	Evidence for sustainability & transfer ownership? If yes	1
6	Are upgrades of equipment planned? If yes	1
7	Is there budget tracking? If yes	1
8	Is the budget executed through the year? If yes	1
9	If no budget, where does resource come from? If gov't	1
10	How does IT interact with other factors of organization? If ubiquitous	1
<b>Total</b>		<b>9.25</b>
Technical Components		
1	How many computer/relative to total staff? If > 80%	1
2	Is security a priority? If yes	1
3	If MS Windows (default) (0), If OS presence	1
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	1
5	Web-based, client-server, terminal? If any	1
6	Is there local network? If yes	1

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is

7	Status Internet connectivity (low- 0, medium -.5, high-1)	1
8	How critical is Internet to work? If M or H	1
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	1
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>10</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	.5
3	Is there adequate ICT support?	1
4	If IT center: external (1), if internal (.5)	.5
5	Salaries: If > average \$50	1
6	If background is technical, and regulated	1
7	Career path? If yes	1
8	Employee turnover: If low	1
9	Presence of innovators: If yes	1
10	Leadership: If subjective assessment is good (Yes =2)	1
	<b>Total</b>	<b>9</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>37.75</b>

## S. The National Assembly of Armenia / Parliament

Website: <http://www.parliament.am>

**Number of Employees:** 500 total, 200 on premises

**Percentage of Computer Usage:** 80-100%

**Description:** The website of Armenia's National Assembly is advanced, the product of USAID donor work over the last three years. It is presented in English, Armenian and Russian, and gives a large number of links to information about deputies, about the history of parliament, access to archives, the Constitution, Committees, legislation, as well as information about foreign relations. News about official meetings, press conferences, interviews, as well as briefings is available. Theoretically, citizens can also search a database of draft legislation and the most recently adopted laws in Armenia, as well as contact their elected representatives, although in practice it appears that this database is rather sparsely populated. In terms of legislative 'tracking system', it does not appear possible to track the development or debate of law electronically; rather, what appears to be offered is an option to read about what has been decided *ex post facto*. In December 2003 six months after its launch, Parliament.am was named Armenia's "Best Official Internet Site" by the Armenian Civil Initiative on Freedom of Information, a coalition of civil society organizations, including the Center of Freedom of Information, Civil Society Institute and the Institute of Information Rights. The website redesign was supported by Development Associates Inc., as part of the Armenia Legislative Strengthening Program (ALSP) supported by USAID.

Legislative independence in Armenia has been traditionally hindered by legal constraints, a weak democratic tradition, and the tendency of most international donors to focus on support on the

executive branch.<sup>428</sup> However, the legislature is now better prepared for democratic debate, with staff who have the technical expertise and institutional sanction to respond quickly and As of July 2004, individuals accessed the Web site more than 258,000 times and viewed more than 3.5 million pages.

### Organizational Structure:

The IT department at the National Assembly is divided into two entities, one focused on technical/network support, and the other focused solely on the maintenance of its website. The organization in general has improved in efficiency – and while it is not yet paperless, it does offer enhanced access to information and to laws, in particular. Parliament generates an electronic newsletter, and has been working for the past three years with USAID contractors. The Chief of Staff plays a central role at the National Assembly, working on the development of content as well as on knowledge management.

### Human Component

There are 500 people employed at the National Assembly, although actually 200 of them are on the premises at all times; approximately 200 PCs are in use. The IT staff consists of a web division and technical support team, directed by Ms. Lusineh Hovhannesian. The IT department appears to be very effective and responsive, and is physically situated in a wing of the Parliament building; they are active in content development, network and website maintenance, as well as all tasks related to generic IT support to employees and staff in the National Assembly.

### Technical Component

The underlying IT infrastructure of Parliament is comprised of 6 servers, 2 of which are being run on Linux; servers include web, mail, and directory. Considerable open source development work is evident, and proficiency with MySQL and Linux appears to be ‘in-house’. The organization has a functioning intranet (portal) upon which document management and general organization-wide information dissemination take place. The Parliament building has a fiber optic connection to service provider Arminco, and web-mail usage extends to roughly 150 users.

### Financial Component

As part of an Armenian Legislative Strengthening Project, Development Alternatives Incorporated (DAI) has been working with USAID to improve the web site on the Armenian Parliament, and laws & bills (in Armenian) have been posted on the web to increase public knowledge about parliamentary activities. There was no information divulged on whether or not there exists an IT budget in Parliament.

### ICT Capacity Metric

Organizational Components		
1	Transparency: If yes	.75
a	General propensity to divulge information	.25
b	Evidence of PR + IT depts. work together? If yes	.25
c	Does Chief of Staff facilitate ICT work? If yes	.25
d	Org chart available? If yes	
2	Target audience for ICT projects: who do they benefit? If society (1)	1
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	1
4	Digitizing info for back office automation: If yes (1)	1
5	Efforts donor driven, simply for absorbing funding? If no (1)	.5

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is

<sup>428</sup> Development Associates Incorporated, *Using the Web, Armenians Expand Their Democracy: The Armenian Parliament's new Web site offers citizens the freedom to be informed*, (Yerevan, Armenia: DAI, October 2004)

6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if decentralized/outsourced (1)	.5
10	Is IT mission critical for high %age of total functions? If yes (1)	.5
	<b>Total</b>	<b>8.25</b>
<b>Financial Components</b>		
1	Is there indication of institutional commitment?	1
2	Is there an explicit IT budget? If yes	.5
3	Is there evidence of external support?	1
4	Extent and involvement of external support	1
4a	If financial? Yes	.25
4b	If design? Yes	.25
4c	If technical? Yes	.25
4d	If organizational, strategic? Yes	.25
5	Evidence for sustainability & transfer ownership? If yes	1
6	Are upgrades of equipment planned? If yes	0
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	0
9	If no budget, where does resource come from? If gov't	.5
10	How does IT interact with other factors of organization? If ubiquitous	.5
	<b>Total</b>	<b>5.5</b>
<b>Technical Components</b>		
1	How many computer/relative to total staff? If > 80%	.5
2	Is security a priority? If yes	1
3	If MS Windows (default) (0), If OS presence	1
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	.5
5	Web-based, client-server, terminal? If any	1
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high-1)	.5
8	How critical is Internet to work? If M or H	.5
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	.5
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>7.5</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	1
4	If IT center: external (1), if internal (.5)	.5
5	Salaries: If > average \$50	.5
6	If background is technical, and regulated	1

7	Career path? If yes	.5
8	Employee turnover: If low	.5
9	Presence of innovators: If yes	0
10	Leadership: If subjective assessment is good (Yes =2)	.5
	<b>Total</b>	<b>5.5</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>26.75</b>

## **T. The Information Technology Development Support Council/ Central Government**

Website: [www.gov.am](http://www.gov.am)

*“We don’t want half the technical equipment we’re getting; what we need is knowledge and training...”*

**Number of Employees:** 220

**Percentage of Computer Usage:** ~60%

According to a 2001 Presidential decree, the IT Development Support Council (ITDSC) was established, aimed at creating an ICT Master Plan for the use of information technologies in all aspects of society. This included the encouragement of more business-oriented legislation, the prioritization of innovation, and identification of ways to prevent the exodus of IT specialists from Armenia. The ITDSC is chaired by the Prime Minister’s Office, and includes the participation of various ministries, private IT companies, educational and academic institutions and NGOs. The ITDSC itself is well outfitted with excellent equipment and connectivity, and generates research for the ICT sector at large.

The Armenian government, as mentioned throughout this inventory analysis, possesses a basic interdepartmental network that facilitates information flows between the Prime Minister’s Office, Parliament, the Central Bank, various ministries and Ombudsmen. Previously, documents were delivered from office to office in special pouches; although the capacity to exchange data through this local network exists in theory, there was no opportunity to observe this network or to understand the extent of its relevance and utility through the course of this research from September through December 2004. In 2004, apparently, procedures have evolved considerably; computer rooms are used, agendas are written out on diskette, and citizens have access to the [www.gov.am](http://www.gov.am) website.

The Information and Communication department of Government is comprised of 6-7 people, who work as IT support and specialists. Twenty machines are connected on a local network, with ASUS computers set up in a high-tech government conference room with cutting edge presentation and meeting facilities. The World Bank has thus far invested \$1.5 million into an equipment upgrade; while there is no explicitly ICT-oriented budget line, \$60,000 was allocated just for government facilities – according to the Department of Information and Special Programs. 50% of government workers, particularly among those who work in Building #2, have network connections; there are 130 PCs in the whole building for 220 employees. 20 of these computers are Pentium IVs, 15 are Pentium IIIs, 40 are Pentium IIs, and the rest are Pentiums Is or equivalent.

The biggest issue in government is one of training; there is simply not an established minimum standard when it comes to ICT proficiency – neither in the Ministries nor in the central government. The state network mentioned above connects 40 entities on a local network, using lines that are rented from Armentel<sup>429</sup>; however, there is no standard Internet connectivity, apparently because issues of security are “simply not guaranteed until encryption and digital signature issues become regulated properly”, according to an interviewee. Without minimizing the importance of legal and regulatory frameworks, it is nevertheless interesting to note that the more advanced institutions like the Central Bank, the Ministry of Finance and Economy or the Ministry of Trade are not hindered by this problem to the extent that they allow the fiascos of Armentel to hinder their development. In terms of budget, the Information Technology and Services Department asked for the equivalent of \$80K in 2004, and received only \$26K. Their objectives include the updating of equipment in a timely manner, the maintenance of a local network, and the provision of service to the various divisions and departments that depend on them. Currently, there are three functioning servers in the IT offices of the central government.

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<sup>429</sup> Mention of the PABX stations acquired in 1997 by the Ministry of Transport and Communication elicited the response that they are considered to be obsolete.

### ICT Capacity Metric

Organizational Components		
1	Transparency: If yes	.5
a	General propensity to divulge information	.25
b	Evidence of PR + IT depts. work together? If yes	.25
c	Does Chief of Staff facilitate ICT work? If yes	0
d	Org chart available? If yes	0
2	Target audience for ICT projects: who do they benefit? If society (1)	.5
3	Digitizing info for galvanizing citizenry (via interactivity): If yes (1)	.5
4	Digitizing info for back office automation: If yes (1)	1
5	Efforts donor driven, simply for absorbing funding? If no (1)	.5
6	Does the institution manage websites? If yes (1)	1
7	Do they use local networks and maintain DBs for back office automation? If yes (1)	1
8	Is IT work of individuals or institutionalized? Do they report to senior management? If institutionalized and yes (1)	1
9	If IT dept. is centralized/inhouse(.5), if de-centralized/outsourced (1)	.5
10	Is IT mission critical for high %age of total functions? If yes (1)	0
<b>Total</b>		<b>6.5</b>
Financial Components		
1	Is there indication of institutional commitment?	.5
2	Is there an explicit IT budget? If yes	1
3	Is there evidence of external support?	.5
4	Extent and involvement of external support	.5
4a	If financial? Yes	.25
4b	If design? Yes	
4c	If technical? Yes	.25
4d	If organizational, strategic? Yes	
5	Evidence for sustainability & transfer ownership? If yes	.5
6	Are upgrades of equipment planned? If yes	1
7	Is there budget tracking? If yes	0
8	Is the budget executed through the year? If yes	.5
9	If no budget, where does resource come from? If gov't	1
10	How does IT interact with other factors of organization? If ubiquitous	0
<b>Total</b>		<b>5.5</b>
Technical Components		
1	How many computer/relative to total staff? If > 80%	0
2	Is security a priority? If yes	.5
3	If MS Windows (default) (0), If OS presence	1
3a	Do they do application development in house?	
4	Software licenses? For each user? If yes	0
5	Web-based, client-server, terminal? If any	0
6	Is there local network? If yes	1
7	Status Internet connectivity (low- 0, medium -.5, high-	0

0 = No evidence  
.5 = Some evidence  
1 = Great evidence

\* Where information is sparse, spotty, or withheld, a yellow field with a .5 value is inserted, indicating that the institution is

	1)	
8	How critical is Internet to work? If M or H	0
9	How many servers service network? If > 2	1
10	Level of upgrade necessary is low, If yes	0
10a	Is there defunct equipment, unused equipment?	
	<b>Total</b>	<b>3.5</b>
<b>Human Components</b>		
1	How many total IT staff supporting Ministry? If > 2 or 3	1
2	Does human capacity management feed back into planning?	0
3	Is there adequate ICT support?	.5
4	If IT center: external (1), if internal (.5)	.5
5	Salaries: If > average \$50	.5
6	If background is technical, and regulated	1
7	Career path? If yes	.5
8	Employee turnover: If low	1
9	Presence of innovators: If yes	0
10	Leadership: If subjective assessment is good (Yes =2)	.5
	<b>Total</b>	<b>5.5</b>
<b>Grand Total</b>	<b>Out of possible 40</b>	<b>21</b>



## CONTACTS LIST

(in no particular order)

External Interviews and Facilitators	Ministry Interviews
<p>Mr. David W. Mendoza, Alexius International  Mr. Darrell E. Owen, Owen &amp; Owen Consulting  Mr. Garegin Chookaszian, ITF  Mr. Padraic Murray, Armenian Development Agency  Mr. Eric Nankervis, Project Harmony  Mr. Aram Hovannisyan, ADA  Ms. Blanka Hancilova, OSCE  Mr. Artashes Darbinyan, UNDP  Mr. Stepan Kanayan, UNDP  Mr. David Sandukchyan, Internews  Mr. Vahagn Mkhitarian, TACIS  Mr. Alex Sardar, Parliamentary Consultant  Mr. Grischa Markaryan, Government IT Services  Mr. Aram Badalyan, Government of RA  Mr. Bagrat Yengibaryan, Enterprise Incubator Found.  Mr. Vigen Sargsyan, President's Office  Ms. Lilit Avakian, President's Office  Mr. Armen Shahverdyan, Open Source Armenia  Dr. Lucig Danielyan, Political Science Dept., AUA  Mr. Garik Hayrapetian, AIPRG  Dr. Mysore Ramaswamy, Visiting Scholar, MIS, YSU  Mr. Raffi Kojian, USAID  Ms. Arousiak Mirzakhanian, Ministry of Foreign Affairs  Dr. Heghine Manasyan, CRRC, YSU  Mr. Hrach Bayadyan, ITF/ICT Specialist, Hetq Online  Ms. Edith Khachatouryan, ARLEX  Ms. Bella Markarian, USAID  Mr. Artur Drampian, Urban Institute/AIPRG  Mr. Arman Kuchukian, Yerevan Computer Res. &amp; Dev.  Mr. Hovannes Margaryants, Ministry of Health  Ms. Zaruhi Darbinyan, Ministry of Health  Mr. Mika Shahinian  Dr. Gevorg Poghosyan, Institute of Philos., Soc., &amp; Law  Mr. Grisha Khachatryan, Info. Systems Dev./Training  Mr. Ara Grigorian, World Bank  Mr. Berge Ayzvazian, Armenian High Tech Council  Mr. Samvel Markosyan, TIB/SiliconArmenia  Mr. Joseph Traficanti, Armenian Court Moderniz. Proj.  Mr. Gagik Aghajanyan, Central Bank of Armenia  Ms. Carine Escoffier, PricewaterhouseCoopers LLP  Ms. Lusine Khachatryan, Open Society Institute  Mr. Arman Grigoryan, ITDSC  Ms. Taguhi Tumanyan, ITDSC  Ms. Arevik Taroyan, ITDSC  Ms. Astghik Hayriyan, ITDSC</p>	<p>Ms. Mary Harutiunyan and staff, PR Government of RA  Mr. Vahe Aghabegians, Ministry of Foreign Affairs  Mr. Ashot Sargsyan, Ministry Transport &amp; Communic.  Ms. Elvira Mirzoyan, Ministry of Health  Mr. Araik Tadevossian, Medinfo, Ministry of Health  Mr. V. Davitians, Surgeon General, Ministry of Health  Mr. Artashes Bakhshyan, Competition Commission  Mr. Aleksandr Baghdasaryan et al, Securities Comm.  Ms. Lusine Margaryan, Commission for Securities  Mr. Tatoul Sghomonyan, National Assembly of RA  Ms. Lusine Hovannisyan, National Assembly of RA  Mr. David Atanessian, Ministry of Finance and Economy  Mr. Arthur Zaprotyan, Ministry of Finance and Economy  Mr. Vache Terteryan, Ministry of Regional Admin.  Mr. Masis Baghdassaryan, Ministry of Urban Develop.  Mr. Ara Saghatelian, Ministry of Justice  Mr. Armen Sargsyan, Ministry of Justice  Mr. Gurgen Sargsyan, State Registry/Ministry of Justice  Mr. Aram Badalyan, Deputy Minister, Gov't of RA  Mr. Grigor Margaryan, Head of IT, Gov't of RA  Ms. Hasmik Khachatryan, Ministry of Labor  Mr. Hayk Chobanyan, Norq IAC/Ministry of Labor  Mr. Vahan Danielyan, Norq IAC/Ministry of Labor  Dr. Gregor Vahanian, Constitutional Court  Mr. Vakhtang Abrahamyan, Central Bank of Armenia  Dr. Gevorg Machanyan, Central Bank of Armenia  Dr. Samvel Arakelyan, Central Bank of Armenia  Mr. Vartan Vartanyan, Ministry of Environment  Mr. Lev Harutyunyan, IAC/Ministry of Environment  Mr. Garen Grigoryan, Ministry of Energy  Mr. Ghahramanyan, Ministry of Energy  Mr. Melik Melik-Bakhshian, Ministry of Education  Mr. Robert Stepanyan, Ministry of Education &amp; Science  Ms. Gayane Durgarian, Ministry of Culture and Youth  Mr. Michaelian, Ministry of Agriculture  Ms. Meri Duryan, Ministry of Agriculture/Agrounit  Ms. Anahit Simonian, Ministry of Agriculture</p>

## USEFUL ACRONYMS

ADA	Armenian Development Agency
ADG	Armenian Development Gateway
ALSP	Armenian Legal Socialization Project
ARCA	Armenian Card (Joint Stock Company)
ARMENTEL	National Telecommunication Operator of the Republic of Armenia
ASCP	Armenia School Connectivity Program
BOT/BOOT	Build, Own and Transfer/ Build, Own, Operate and Transfer
CBA	Central Bank of Armenia
CIDA	Canadian International Development Agency
CIS	Commonwealth of Independent States
CODICES	Council of Europe Constitutional Court Network
DAI	Development Alternatives Incorporated
DFID	UK Department for International Development
DNS	Domain Name Server
ERIICTA	European Regional Institute for ICT in Armenia
ESC	Energy Strategy Center
GIS	Geographic Information Systems
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit
IAC	Information Analytical Center
IATP	Internet Access and Training Program
ICT	Information and Communication Technology
InfoDev	Information for Development Program
IPR	Intellectual Property Rights
IREX	International Research Exchanges Board
IRTEK	Legal Information Center in Armenia
IT	Information Technology
ITDSC	Information Technologies Development Support Council
ITF	Information Technologies Foundation
MFA	Ministry of Foreign Affairs
NA	National Assembly
NGO	Non Governmental Organization
NSS	National Statistics Office
OSA	Open Source Armenia
OSCE	Organization for Security and Cooperation in Europe
OSS	Open Source Software
OTE	Hellenic Telecommunications Organization
PABX	Private Automatic Branch Exchanges
PAP	Public Access Point
PR	Public Relations
PWC	PricewaterhouseCoopers
RA	Republic of Armenia
SC	Securities Commission
SME	Small and Medium Sized Enterprises
TACIS	Technical Assistance to the Commonwealth of Independent States
TRACECA	Transport Corridor Europe-Caucasus-Asia
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
USAID	United States Aid Development Agency

**Appendix B: Global e-Government Index**  
**Based on Research of Prof. Darrell West, Brown University<sup>430</sup>**

<b>Global E-Government Index</b>	<b>2003.0</b>	<b>2004.0</b>
Albania	28.3	25.6
Algeria	28.0	22.8
Angola	24.0	20.0
Antigua & Barbuda	28.0	20.0
Argentina	29.4	23.5
Armenia	30.9	27.5
Australia	41.5	36.7
Austria	36.0	28.2
Azerbaijan	32.0	16.0
Bahamas	32.0	27.0
Bahrain	33.8	33.0
Bangladesh	30.7	26.8
Barbados	29.0	24.3
Belarus	30.0	24.7
Belgium	34.0	31.1
Belize	32.0	28.0
Benin	24.0	20.0
Bhutan	24.0	17.0
Bolivia	28.0	32.0
Bosnia and Herzegovina	30.1	25.3
Botswana	30.0	25.0
Brazil	29.4	24.4
Brunei Darussalam	32.8	22.4
Bulgaria	31.4	26.3
Burkina Faso	27.4	22.6
Burundi	28.0	20.0
Cambodia	31.0	26.5
Cameroon	25.1	17.9
Canada	42.4	40.3
Cape Verde	26.4	22.0
Central African Republic	24.0	12.0
Chad	24.0	24.0
Chile	32.0	29.2
China	35.9	37.3
Colombia	33.9	24.8
Comoros	28.0	24.0
Congo	24.0	26.0
Costa Rica	24.0	16.0
Côte d'Ivoire	32.0	24.0

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<sup>430</sup> Darrell M. West, *Global E-Government 2004*, Center for Public Policy at Brown University, (Providence, Rhode Island: [www.InsidePolitics.org](http://www.InsidePolitics.org), 2004).

Croatia	33.2	27.2
Cuba	26.2	21.8
Cyprus	33.3	26.8
Czech Republic	33.8	30.9
Congo, Dem. Rep. of the	32.0	20.0
Denmark	35.5	30.6
Djibouti	31.7	23.6
Dominica	28.7	24.0
Dominican Republic	28.7	24.0
Ecuador	28.3	23.2
Egypt	28.0	28.0
El Salvador	28.1	26.1
Equatorial Guinea	24.0	16.0
Eritrea	24.0	12.0
Estonia	30.9	28.5
Ethiopia	30.3	24.0
Fiji	30.4	22.8
Finland	35.5	29.1
France	33.8	32.8
Gabon	16.0	21.0
Gambia	29.4	26.0
Georgia	30.8	25.3
Germany	34.4	35.0
Ghana	26.3	23.0
Greece	30.9	28.1
Grenada	25.0	20.3
Guatemala	28.0	21.3
Guinea	22.7	20.0
Guinea-Bissau	29.0	20.0
Guyana	26.0	28.0
Haiti	30.0	22.0
Honduras	28.2	21.7
Hong Kong, China (SAR)	34.5	33.7
Hungary	29.9	25.4
Iceland	34.3	28.1
India	30.1	29.6
Indonesia	24.0	32.0
Iran, Islamic Rep. of	28.0	29.0
Ireland	29.4	29.9
Israel	33.3	32.3
Italy	33.2	33.2
Jamaica	28.9	23.4
Japan	34.2	30.8
Jordan	30.8	29.7
Kazakhstan	28.4	24.0
Kenya	25.7	20.0
Kuwait	30.7	30.1
Kyrgyzstan	26.9	19.4

Lao People's Dem. Rep.	19.0	25.3
Latvia	30.9	28.0
Lebanon	30.7	29.0
Lesotho	21.7	16.7
Libya	24.0	24.0
Lithuania	30.5	27.3
Luxembourg	28.7	29.6
Madagascar	24.0	26.0
Malawi	22.7	19.3
Malaysia	36.7	26.2
Maldives	35.2	29.0
Mali	28.0	22.0
Malta	27.6	31.4
Mauritania	28.0	26.0
Mauritius	26.5	22.2
Mexico	33.7	29.6
Moldova, Rep. of	28.0	32.0
Mongolia	28.6	25.7
Morocco	28.9	25.6
Mozambique	25.5	22.3
Myanmar	28.0	28.0
Namibia	26.2	20.0
Nepal	32.5	23.2
Netherlands	34.3	31.0
New Zealand	35.5	33.6
Nicaragua	29.2	23.9
Niger	26.0	20.0
Nigeria	29.0	24.0
Norway	33.2	27.0
Occupied Palestinian Territories		
Oman	29.8	28.5
Pakistan	29.1	24.6
Panama	28.0	26.4
Papua New Guinea	22.4	19.9
Paraguay	26.7	21.2
Peru	31.3	26.7
Philippines	35.5	27.6
Poland	32.2	28.6
Portugal	33.6	26.0
Qatar	32.0	28.3
Romania	32.8	27.5
Russian Federation	29.3	23.3
Rwanda	25.3	21.2
Saint Kitts and Nevis	28.0	17.3
Saint Lucia	35.0	27.0
Saint Vincent and the Grenadines	28.0	32.0
Samoa (Western)	28.0	20.2

São Tomé and Príncipe	32.0	16.0
Saudi Arabia	31.8	30.7
Senegal	28.0	21.6
Serbia & Montenegro	32.2	27.5
Seychelles	28.0	19.3
Sierra Leone	24.0	24.0
Singapore	46.3	43.8
Slovakia	32.8	27.9
Slovenia	32.0	27.7
Solomon Islands	19.2	19.0
South Africa	31.8	24.2
Spain	31.3	26.5
Sri Lanka	24.0	24.0
Sudan	30.0	26.3
Suriname	20.0	16.0
Swaziland	25.0	22.0
Sweden	31.8	29.8
Switzerland	35.9	27.6
Syria	32.0	20.0
Tajikistan	34.0	20.0
Tanzania, U. Rep. of	23.3	17.0
TFYR Macedonia	28.0	24.0
Thailand	32.4	27.6
Togo	32.0	36.0
Trinidad and Tobago	29.5	23.8
Tunisia	32.2	23.2
Turkey	38.3	27.6
Turkmenistan	28.0	24.0
Uganda	27.7	21.8
Ukraine	31.6	25.8
United Arab Emirates	27.4	24.0
United Kingdom	37.7	33.0
United States	45.3	41.9
Uruguay	28.5	21.7
Uzbekistan	32.0	28.3
Vanuatu	20.0	16.0
Venezuela	28.7	23.2
Viet Nam	30.5	26.5
Yemen	28.9	24.5
Zambia	26.1	22.7
Zimbabwe	24.0	22.0

## Appendix C: Survey Instrument

### PERCEPTIONS of PUBLIC SECTOR ADMINISTRATION

#### *Survey – ARMENIA 2004*

*District/Marz:* \_\_\_\_\_

#### **General Technology Access**

1. Do you have a telephone at home? 1. Yes 2. No

2. Do you have a wireless/mobile phone? 1. Yes 2. No

3. How often do you use the internet?

1 (never)

2 (rarely/once every few weeks)

3 (sometimes/about once a week)

4 (often/2-3 times a week)

5 (very often/every day)

4. If you are using Internet, for what purpose?: (please check all that apply)

1 \_\_\_ emailing

2 \_\_\_ chatting with friends (instant messaging, i.e., Yahoo, MSN)

3 \_\_\_ downloading music or movies, etc?

4 \_\_\_ work or business

5 \_\_\_ home-oriented/private tasks

6 \_\_\_ for school / research

7 \_\_\_ reading news

8 \_\_\_ administrative tasks (ie., paying bills)

9 \_\_\_ shopping

10 \_\_\_ accessing public information

10 \_\_\_ getting info on recreational/tourism activities

11 \_\_\_ Other \_\_\_\_\_

5. If you are using Internet, from where do you use it most often? (Please check only one response)

1 \_\_\_ At home

2 \_\_\_ At work

3 \_\_\_ At an internet café

4 \_\_\_ At a friend's house

5 \_\_\_ At school

6 \_\_\_ Other

6. Do you think there is a necessity to learn how to use these new technologies?

1. Yes

2. No

7. Where do you get necessary public information? (Please check only one response)

- 1\_\_\_ In written media – magazines, newspapers
- 2\_\_\_ From the television/radio
- 3\_\_\_ Word of mouth (through friends, relatives, etc.)
- 4\_\_\_ From the internet
- 5\_\_\_ Other (please list: \_\_\_\_\_ )

8.If you wanted to contact a governmental organization/bureau/ministry with a question for information, how would you normally go about it? (Please check only one response)

- 1\_\_\_ Telephone
- 2\_\_\_ Write a letter
- 3\_\_\_ Through friends and relatives
- 4\_\_\_ Go there in person
- 5\_\_\_ Send an email/ go to website
- 6\_\_\_ Other (Please list: \_\_\_\_\_ )

9.In your opinion, what is the biggest problem with contacting public/ governmental organizations? (Please check only one response)

- 1\_\_\_ Time
- 2\_\_\_ Money
- 3\_\_\_ Need for contacts on the inside to help you
- 4\_\_\_ Lack of clear instructions to follow
- 5\_\_\_ Other \_\_\_\_\_

10. What was the reason for your last contact with government bodies?

- 1\_\_\_ A Transaction
- 2\_\_\_ To answer a specific Question
- 3\_\_\_ To express your opinion
- 4\_\_\_ To solve a problem
- 5\_\_\_ Some other purpose
- 6\_\_\_ A combination of the above
- 7\_\_\_ I have not

11. What level of government do you contact more often?

- 1\_\_\_ Federal (i.e., State bodies of RA)
- 2\_\_\_ Municipal (i.e., local)

### **Federal Public Sector Institutions**

12. Have you interacted with any of the following governmental organizations? (please check all that apply)

- 1\_\_\_ Ministry of Healthcare
- 18\_\_\_ “Extra” Situations
- Dept



- |  |   |
|--|---|
| 2___ Min. of Trade & Econ. Development   | 19___ Dep. of Statistics/State                      |
| Regist                                   |   |
| 3___ Min. of Justice                     | 20___ Public Television                             |
| 4___ Min. of Foreign Affairs             | 21___ ArmenPress                                    |
| 5___ Min. of Environmental Protection    | 22___ Markets/Exchange Office                       |
| 6___ Min. of Agriculture                 | 23___ Taxation Bodies                               |
| 7___ Min. of Energy                      | 24___ Driving license                               |
| 8___ Min. of Education and Science       | 25___ General Registration (passport)               |
| 9___ Min. of Culture and Youth Affairs   | 26___ Real Estate                                   |
| Registration                             |   |
| 10___ Min. of Defense                    | 27___ Marriage Registration                         |
| 11___ Min. of Labor and Social Affairs   | 28___ Judicial (Courts of 1 <sup>st</sup> Instance) |
| Bodies                                   |   |
| 12___ Min. of Transport & Communication  | 29___ Public Health/Medical Agencies                |
| 13___ Min. Urban Development             | 30___ Marz-Village                                  |
| Municipal Bodies                         |   |
| 14___ Min. of Finance and Economy        | 31___ Zingom  |
| 15___ Marz-level Regional Administration | 32___ Other   |
| 16___ Central Bank                       |   |
| 17___ Depart. of Migration/Refugees      |   |

13. Do you know that the Government of RA and ministries have websites on the internet?

1. Yes 2. No

14. Have you ever used the internet to access websites of any of the above organizations? 1. Yes 2. No

15. If no to Question 14, why not? (Please check all that apply)

- 1\_\_\_ I don't know how  
 2\_\_\_ No access to internet  
 3\_\_\_ It's too expensive to get online  
 4\_\_\_ Language (English) is a problem  
 5\_\_\_ This is not the way things work in Armenia  
 6\_\_\_ I don't need to  
 7\_\_\_ Other \_\_\_\_\_

16. Do you think such websites are useful in Armenia? 1. Yes  
 2. No

17. Have you ever sent email to any of the above organizations? 1. Yes  
 2. No

18. If you answered "yes" to Question 18, did you get a response?  
 1. Yes 2. No

Please pick ONE of your most recent (or most memorable) interactions with either a federal level ministry or a municipal/local public service governmental office, and answer the following questions:

19. Please name the office, institution, department, or ministry:

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20. Please describe the nature of your transaction (i.e., what you were trying to achieve):

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21. When, most recently? (Please check only one response)

1. More than 5 years ago
2. Between 3 and 5 years ago
3. Between 1 and 3 years ago
4. Within the last year
5. Within last 3 months

22. Was your problem, issue, or question successfully resolved?      1. Yes  
2.No

23. How long did it take for your matter/issue to be resolved from start to finish?

1. Still Unresolved
2. More than 1 Year
3. Between 6 months and 1 Year
4. Between 3 months and 6 months
5. Between 1 month and 3 months
6. Between 1 week and 1 month
- 7.A few days to 1 week

24. Did the people you interacted with use computers?  
1.Yes      2.No      3. Do not know

25. Is information regarding such a fee anywhere publicly stated or codified?  
1.Yes      2.No      3.Do not know/Not applicable

26. Overall, how would you rate your satisfaction level with this experience?  
1.very unsatisfied  
2.somewhat unsatisfied  
3.neutral  
4.satisfied

5.very satisfied

**Perceptions of Technology Use and Trust issues**

27. Do you think that computers make government institutions MORE or LESS transparent to citizens?

1.More                      2.No Difference                      3.Less

28. Do you trust:

	Yes	No
1.That your personal information is handled appropriately when you interact with government agencies or institutions?		
2. That your request, if you have one, will be addressed and resolved?		

29. What is your level of overall trust in public sector institutions (in government at all levels)?

1. very low
2. low
3. moderate
4. high
5. very high

30. Does the use of internet and websites by government administration help change this level of trust?

1.Yes                      2.No

31. Do you trust local/municipal institutions more than federal/national institutions?

1. Yes                      2. No difference between them                      3. No

32. Do you feel that the experience of the average Armenian citizen's interaction with public sector and government institutions has changed in any way?

	Yes, a lot of change	A little change	No change
1) Compared to 10 years ago?			
2) Compared to 5 years ago?			
3) Compared to 1 year ago?			

Comments

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**Demographic data**

33. Age:

- 1) <19
- 2) 20-29
- 3) 30-39
- 4) 40-49
- 5) 50-59
- 6) 60+

34. Gender:

- 1) Male
- 2) Female

35. Education Level:

- 1) Middle/Secondary School
- 3) University Studies
- 4. Graduate/Masters and above

36. Occupation: \_\_\_\_\_

Audrey Selian,  
PhD Candidate, Tufts University,  
Research Fellow, American University of Armenia

Thank you for your time!  
Please contact Audrey Selian at [aselian@aua.am](mailto:aselian@aua.am) if  
you have any questions.

## ՀԱՐՑԱԹԵՐԹ

Այս հարցումը անց է կացվում, որպեսզի հասկանալ Հայաստանի քաղաքացիների փորձը – այն, թե ինչպես են նրանք հաղորդակցվում պետական / հասարակական սեկտորի ինստիտուտների հետ:

Մարզ / համայնք \_\_\_\_\_

### Տեխնիկայի առկայություն

1. Արդյո՞ք ունեք հեռախոս Ձեր տանը

1. Այո 2. Ոչ

2. Արդյո՞ք ունեք բջջային հեռախոս

1. Այո 2. Ոչ

3. Ո՞րքան հաճախ եք օգտագործում ինտերնետ

- 1) Երբեք
- 2) Ամիսը մեկ
- 3) Շաբաթը մեկ
- 4) Շաբաթը մեկ-երկու անգամ
- 5) Ամեն օր

4. Ի՞նչ նպատակով եք օգտվում ինտերնետից

- 1) Էլ-փոստ
- 2) Չաթ (օր., MSN, Yahoo Chat)
- 3) Երաժշտություն կամ կինոների բեռնաթափում
- 4) Աշխատանք կամ բիզնես
- 5) Տնային աշխատանք կատարելու
- 6) Ուսումնասիրություն
- 7) Նորություններ կարդալու
- 8) Կոմունալ գործերով (վճարումներ կատարելու)
- 9) Գնումներ կատարելու
- 10) Հասարակական ծառայությունների մասին ինֆորմացիա ստանալու \_\_\_\_\_
- 11) Տուրիստական ինֆորմացիա որոնելու
- 12) Այլ \_\_\_\_\_

5. Որտեղի՞ց եք օգտվում ինտերնետից (նշեք միայն մեկ պատասխան)

- 1) Տանից
- 2) Աշխատանքի վայրից
- 3) Ինտերնետ սրճարաններից
- 4) Ընկերների տներից
- 5) Դպրոցից
- 6) Այլ \_\_\_\_\_

6. Կարծու՞մ եք կարիք կա սովորելու նոր տեխնոլոգիաներից օգտվելու եղանակները

1. Այո 2. Ոչ

7. Որտեղի՞ց եք ստանում անհրաժեշտ տեղեկատվություն (նշեք միայն մեկ պատասխան)

- 1) Թերթեր, ամսագրեր
- 2) Հեռուստացույց, ռադիո
- 3) Ընկերներ, հարազատներ
- 4) Ինտերնետ
- 5) Այլ \_\_\_\_\_

8. Ի՞նչ միջոցներով եք դիմում կառավարական կառույցներին անհրաժեշտ ինֆորմացիա ստանալու համար (նշեք միայն մեկ պատասխան)

- 1) Հեռախոս
- 2) Նամակագրություն
- 3) Ընկերներ, հարազատներ
- 4) Անձամբ
- 5) Էլ-փոստ / website

Այլ \_\_\_\_\_

9. Ձեր կարծիքով ո՞րն է պետական մարմինների հետ հաղորդակցվելու հիմնական խոչնդոտը (նշեք միայն մեկ պատասխան)

- 1) Ժամանակ
- 2) Դրամ
- 3) Անձնական կապերի բացակայությունը
- 4) Ճշգրիտ ուղեցույցների բացակայությունը
- 5) Այլ \_\_\_\_\_

10. Ի՞նչ նպատակով եք վերջին անգամ հաղորդակցվել պետական մարմինների հետ (նշեք միայն մեկ պատասխան)

- 1) Գործարք
- 2) Կոնկրետ հարցադրման պատասխան ստանալու նպատակով
- 3) Հայտնելու ձեր կարծիքը
- 4) Լուծելու ձեր խնդիրը
- 5) Այլ նպատակներով
- 6) Վերոնշյալ բոլոր կետերի համադրությամբ
- 7) Ձեմ հաղորդակցվել

11. Որո՞ մակարդակի կառավարական մարմինն եք դիմում ավելի հաճախ (նշեք միայն մեկ պատասխան)

- 1) Կենտրոնական (օր. ՀՀ կառավարություն)
- 2) Տեղական ինքնակառավարման մարմիններ (օր. քաղաքապետարան, համայնքային)

## Պետական կառույցներ

12. Երբ-իցե շփվե՞լ եք կառավարական կամ վարչական հետ-յալ կառույցների հետ

- 1) Առողջապահության նախարարություն
- 2) Առ-տրի – տնտեսական զարգացման նախարարություն
- 3) Արդարադատության նախարարություն
- 4) Արտաքին գործերի նախարարություն
- 5) Բնապահպանության նախարարություն
- 6) Գյուղատնտեսության նախարարություն
- 7) Էներգետիկայի նախարարություն
- 8) Կրթության – գիտության նախարարություն
- 9) Մշակույթի – երիտասարդության հարցերի նախարարություն
- 10) Պաշտպանության նախարարություն
- 11) Տրանսպորտի – կապի նախարարություն
- 12) Աշխատանքի – սոցիալական հարցերի նախարարություն
- 13) Զաղաքաշինության նախարարություն
- 14) Ֆինանսների – Էկոնոմիկայի նախարարություն
- 15) Տարածքային կառավարման – ենթակառուցվածքների գործունեությունը համակարգող նախարարություն
- 16) Կենտրոնական Բանկ

- 17) Միգրացիայի – փախստականների վարչություն
- 18) Արտակարգ իրավիճակների վարչություն
- 19) Վիճակագրության վարչություն
- 20) Հանրային հեռուստատեսություն
- 21) Արմենպրես
- 22) Առ-տրի պալատ
- 23) Հարկային մարմիններ
- 24) Ավտոճանապարհային / վարորդական իրավունքի ձեռք բերման բաժին \_\_\_\_\_
- 25) Անձնագրային բաժին
- 26) Անշարժ գույքի գործակալություն/ Կադաստրի վարչություն
- 27) Ամուսնությունների գրառման բաժին «Չագս»
- 28) Դատական մարմիններ
- 29) Առողջապահական հիմնարկություններ
- 30) Մարզպետարաններ, թաղապետարաններ
- 31) Չինկոմ
- 32) Այլ \_\_\_\_\_

13. Կարծում ե՞ք Հայաստանի Կառավարությունը – Նախարարությունները ունեն վեբ կայքեր (website)

1. Այո
2. Ոչ

14. Երբ-իցե օգտվե՞լ եք վերոհիշյալ հաստատությունների վեբ կայքերից (website)

1. Այո
2. Ոչ

15. Եթե Ոչ, ինչու՞

- 1) \_\_\_\_\_ Չ գիտեմ
- 2) \_\_\_\_\_ Չունեմ ինտերնետի մուտք
- 3) \_\_\_\_\_ Ինտերնետից օգտվելը շատ թանկ է
- 4) \_\_\_\_\_ Լեզվի (անգլերենի) չիմանալը խոչնդոտ է
- 5) \_\_\_\_\_ Այս ծ-ը ընդունված չէ Հայաստանում
- 6) \_\_\_\_\_ Կարիք չունեմ
- 7) Այլ \_\_\_\_\_

16. Կարծո՞ւմ եք Որ վեբ կայքերը (websites) օգտակար են Հայաստանում

1. Այո
2. Ոչ

17. Արդյո՞ք կառավարական կառույցների հետ խնդիր ունենալու դեպքում օգտվում եք ԷԼ-փոստից

1. Այո
2. Ոչ

18. Եթե այո, երբեվից է ստացե՞լ եք պատասխան

1. Այո
2. Ոչ

**Ո՞րն է Ձեր վերջին ( կամ հիշարժան հիշողությունը) կապված վերոհիշյալ հաստատությունների հետ: Ըստ այդմ պատասխանեք հետ-յալ հարցերին**

19. Նշեք կառույցի անվանումը

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20. Նշեք խնդրո առարկան

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21. Ե՞րբ եք շփվել վերոհիշյալ հաստատությունների հետ: (նշեք միայն մեկ պատասխան)

- 1) 5 – ավելի տարի առաջ

- 2) 3- 5 տարի առաջ
- 3) 1-3 տարի առաջ
- 4) Անցած տարվա ընթացքում
- 5) Վերջին երեք ամիսների ընթացքում

22. Ձեր խնդիրը, հարցը ստացել է դրական լուծում  
1. Այո 2. Ոչ

23. Ի՞նչ ժամանակահատվածում լուծվեց Ձեր խնդիրը (նշեք միայն մեկ պատասխան)

- 1) Դեռ-ս լուծված չէ
- 2) Տարի – ավելի
- 3) 6 ամսից 1 տարի
- 4) 3-6 ամիս
- 5) 1-3 ամիս
- 6) 1 շաբաթից 3 ամիս
- 7) 1 շաբաթվա ընթացքում

24. Արդյո՞ք տվյալ հաստատությունում օգտագործում էին համակարգիչներ  
1. Այո 2. Ոչ 3. Չգիտեմ

25. Արդյո՞ք վարձավճարի չափը հրապարակայնորեն հայտնի է  
1.Այո 2. Ոչ 3. Չգիտեմ/Պատ.չկա

26. Գո՞հ եք նման փորձառությունից: (նշեք միայն մեկ պատասխան)

- 1) Շատ դժգոհ եմ
- 2) Մասամբ դժգոհ եմ
- 3) Չեզոք
- 4) Մասամբ գոհ եմ
- 5) Շատ գոհ եմ

### Տեխնիկայի օգտագործում – վստահություն

27. Կարծում ե՞ք համակարգչի օգտագործումը նպաստում է պետական կառույցների ՖթափանցիկությանըՄՆ  
1. Այո 2. Ոչ մի տարբերություն 3. Ոչ

28. Վստահում ե՞ք արդյոք

	Այո	Ոչ
1. Որ մասնագիտական մոտեցում է ցուցաբերվում Ձեր անձնական գործի նկատմամբ		
2. Որ Ձեր խնդրանքը համապատասխան ընթացք կստանա – լուծում կգտնի		

29. Որքանո՞վ եք վստահում պետական մարմիններին: (նշեք միայն մեկ պատասխան)

- 1) Ընդհանրապես չեմ վստահում
- 2) Չեմ վստահում
- 3) Չափավոր
- 4) Վստահում եմ
- 5) Շատ եմ վստահում

30. Արդյո՞ք կառավարական կառույցների կողմից ինտերնետի օգտագործումը – վեբ կայքի առկայությունը Ձեզ վստահություն է ներշնչում



1.Այո

2.Ոչ

31. Արդյ/ոք ավելի շատ եք վստահում տեղական քան կենտրոնական իշխանություններին

1.Այո

2 Ոչ մի տարբերություն

3.Ոչ

32. Կարծում ե՞ք Հայաստանի քաղաքացու շփումը կառավարական – մասնավոր սեկտորի հետ որ–է կերպ փոխվել է:

	շատ տարբերությու ն	միջին տարբերությու ն	Ոչ մի տարբերությու ն
1) 10 տարի առաջվա համեմատ			
2) 5 տարի առաջվա համեմատ			
3) մեկ տարի առաջվա համեմատ			

Մեկնաբանություններ – լրացումներ

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#### Ժողովրդագրական տվյալներ

33. Տարիքը

1)

<19

2)

20-29

3)

30-39

4)

40-49

5)

50-59

6)

60 – ավելին

34.

Սեռը

1)

Տղամարդ

2)

Կին

35.

Կրթությունը

1)

Միջնակարգ

2)

Բարձրագույն /բակալավր/

3)

Մագիստրատուրա/ թեկնածու

36. Մասնագիտությունը\_\_\_\_\_

Օդրի Ն. Սելյան  
Գիտությունների թեկնածու, Տաֆտս Համալսարան  
Փորձագետ, Հայաստանի Ամերիկյան Համալսարան

Շնորհակալություն Ձեր տրամադրած ժամանակի համար:  
Եթե հարցեր ունեք, կարող եք դիմել Օդրի Սելյանին [aselian@aua.am](mailto:aselian@aua.am),  
(Հայաստանի Ամերիկյան Համալսարան).

APPENDIX D: The Network Society Map



COUNTRY NAME	Independent	Control			Dependent												
	ITU Digital Access Index 2003	OECD Dummy Variable	GDP Growth 2002	GDP Growth 2002	Political Development Aggregate (poldev)	Transparency International 2003	Transparency International 2002	Transparency Int'l 2003 (Normalized)	Transparency Int'l 2002 (Normalized)	WB Voice & Accountability 2002	WB Voice & Accountability (Normalized) 2002	WB Government Effectiveness 2002	WB Government Effectiveness (Normalized) 2002	WB Rule of Law 2002	WB Rule of Law (Normalized) 2002	Freedom House Political Rights 2003	Freedom House Civil Liberties 2003
Albania	0.39	0	4.70	6.00	0.43	2.5	0.25	2.5	0.25	-0.04	0.49	-0.47	0.41	-0.92	0.32	3.00	3.00
Algeria	0.37	0	4.10	6.84	0.32	2.6	0.26			-0.96	0.31	-0.59	0.38	-0.54	0.39	6.00	5.00
Angola	0.11	0	15.30	4.50	0.22	1.8	0.18	1.7	0.17	-1.39	0.22	-1.16	0.27	-1.56	0.19	6.00	5.00
Antigua & Barbuda	0.57	0	2.94	3.20	0.50					0.17	0.53	0.56	0.61	1.02	0.70	4.00	2.00
Argentina	0.53	0	-10.89	8.72	0.44	2.5	0.25	2.8	0.28	0.12	0.52	-0.49	0.40	-0.73	0.35	3.00	3.00
Armenia	0.30	0	12.86	13.90	0.41	3	0.3			-0.42	0.42	-0.42	0.42	-0.44	0.41	4.00	4.00
Australia	0.74	1	2.74	2.40	0.88	8.8	0.88	8.6	0.86	1.50	0.80	1.84	0.87	1.85	0.87	1.00	1.00
Austria	0.75	1	1.04	0.70	0.86	8	0.8	7.8	0.78	1.32	0.76	1.79	0.86	1.91	0.88	1.00	1.00
Azerbaijan	0.24	0	10.58	11.20	0.28	1.8	0.18	2	0.2	-0.97	0.31	-0.96	0.31	-0.79	0.34	6.00	5.00
Bahamas	0.62	0	0.70		0.66					1.18	0.74	1.40	0.78	1.34	0.77	1.00	1.00
Bahrain	0.60	0	5.10		0.53	6.1	0.61			-0.74	0.35	0.78	0.66	0.92	0.68	5.00	5.00
Bangladesh	0.18	0	4.42	5.33	0.35	1.3	0.13	1.2	0.12	-0.57	0.39	-0.53	0.39	-0.78	0.34	4.00	4.00
Barbados	0.57	0	-2.05	1.60	0.67					1.39	0.78	1.36	0.77	1.43	0.79	1.00	1.00
Belarus	0.49	0	4.70	6.80	0.27	4.2	0.42	4.8	0.48	-1.45	0.21	-1.03	0.29	-1.12	0.28	6.00	6.00
Belgium	0.74	1	0.68	1.10	0.84	7.6	0.76	7.1	0.71	1.44	0.79	1.85	0.87	1.45	0.79	1.00	1.00
Belize	0.47	0	4.26		0.61	4.5	0.45			0.83	0.67	-0.06	0.49	0.05	0.51	1.00	2.00
Benin	0.12	0	6.01	5.58	0.41					0.03	0.51	-0.62	0.38	-0.42	0.42	3.00	2.00
Bhutan	0.13	0	7.69	6.70	0.34					-1.17	0.27	0.93	0.69	0.10	0.52	6.00	5.00
Bolivia	0.38	0	2.75	2.45	0.45	2.3	0.23	2.2	0.22	0.01	0.50	-0.53	0.39	-0.60	0.38	2.00	3.00
Bosnia and Herzegovina	0.46	0	3.90	3.50	0.38	3.3	0.33			-0.25	0.45	-0.90	0.32	-0.88	0.32	4.00	4.00
Botswana	0.43	0	3.94	4.66	0.67	5.7	0.57	6.4	0.64	0.73	0.65	0.87	0.67	0.72	0.64	2.00	2.00
Brazil	0.50	0	1.50	-0.20	0.52	3.9	0.39	4	0.4	0.28	0.56	-0.22	0.46	-0.30	0.44	2.00	3.00
Brunei Darussalam	0.55	0			0.38					-0.82	0.34	0.96	0.69	0.64	0.63	6.00	5.00
Bulgaria	0.53	0	4.90	4.28	0.58	3.9	0.39	4	0.4	0.56	0.61	-0.06	0.49	0.05	0.51	1.00	2.00
Burkina Faso	0.08	0	4.40	6.50	0.34					-0.27	0.45	-0.69	0.36	-0.55	0.39	4.00	4.00
Burundi	0.10	0	3.60	-1.02	0.19					-1.16	0.27	-1.46	0.21	-1.49	0.20	6.00	5.00
Cambodia	0.17	0	5.48	7.64	0.27					-0.56	0.39	-0.56	0.39	-0.86	0.33	6.00	5.00
Cameroon	0.16	0	4.20	4.20	0.25	1.8	0.18	2.2	0.22	-1.10	0.28	-0.62	0.38	-1.28	0.24	6.00	6.00
Canada	0.78	1	3.26	1.80	0.88	8.7	0.87	9	0.9	1.50	0.80	1.88	0.88	1.79	0.86	1.00	1.00
Cape Verde	0.39	0	4.30	5.00	0.50					0.41	0.58	-0.20	0.46	0.19	0.54	1.00	2.00
Central African Republic	0.10	0	-0.80	-7.30	0.24					-0.79	0.34	-1.43	0.21	-0.88	0.32	5.00	5.00
Chad	0.10	0	9.90	9.90	0.24					-0.95	0.31	-0.75	0.35	-0.93	0.31	6.00	5.00
Chile	0.58	0	2.20	3.30	0.78	7.4	0.74	7.5	0.75	1.12	0.72	1.19	0.74	1.30	0.76	2.00	1.00
China	0.43	0	8.00	9.10	0.33	3.4	0.34	3.5	0.35	-1.38	0.22	0.18	0.54	-0.22	0.46	7.00	6.00
Colombia	0.45	0	1.62	3.74	0.41	3.7	0.37	3.6	0.36	-0.55	0.39	-0.39	0.42	-0.75	0.35	4.00	4.00
Comoros	0.13	0	2.50	2.50	0.30					-0.51	0.40	-0.84	0.33	-0.84	0.33	5.00	4.00
Congo	0.17	0	3.50	1.00	0.22					-1.10	0.28	-1.25	0.25	-1.22	0.26	6.00	4.00
Costa Rica	0.52	0	3.00	5.00	0.51	4.3	0.43	4.5	0.45	1.16	0.73	0.37	0.57	0.67	0.63	1.00	2.00
Côte d'Ivoire	0.13	0	3.04	5.60	0.39	2.1	0.21	2.7	0.27	-1.25	0.25	-0.89	0.32	-1.21	0.26	6.00	6.00
Croatia	0.59	0	-1.56	-3.77	0.44	3.7	0.37	3.8	0.38	0.46	0.59	0.19	0.54	0.11	0.52	2.00	2.00
Cuba	0.38	0	5.23	4.30	0.44	4.6	0.46			-1.77	0.15	-0.26	0.45	-0.94	0.31	7.00	7.00
Cyprus	0.68	0	1.10		0.53	6.1	0.61			0.94	0.69	1.00	0.70	0.83	0.67	1.00	1.00
Czech Republic	0.66	1	2.00	4.00	0.67	3.9	0.39	3.7	0.37	0.90	0.68	0.70	0.64	0.74	0.65	1.00	2.00
Congo, Dem. Rep. of the	0.12	0	1.96	2.92	0.32	2.2	0.22			-1.89	0.12	-1.60	0.18	-1.79	0.14	6.00	6.00
Denmark	0.83	1	2.06	0.40	0.92	9.5	0.95	9.5	0.95	1.72	0.84	1.99	0.90	1.97	0.89	1.00	1.00
Djibouti	0.15	0	2.55	3.53	0.30					-0.69	0.36	-0.88	0.32	-0.51	0.40	4.00	5.00
Dominica	0.54	0	-5.19	-0.65	0.58					1.05	0.71	0.32	0.56	0.67	0.63	1.00	1.00
Dominican Republic	0.42	0	4.10	-1.25	0.51	3.3	0.33	3.5	0.35	0.19	0.54	-0.41	0.42	-0.43	0.41	2.00	2.00
Ecuador	0.41	0	3.41	2.57	0.41	2.2	0.22	2.2	0.22	-0.06	0.49	-0.96	0.31	-0.60	0.38	3.00	3.00
Egypt	0.40	0	3.20	3.20	0.36	3.3	0.33	3.4	0.34	-0.87	0.33	-0.32	0.44	0.09	0.52	6.00	6.00
El Salvador	0.38	0	2.11	1.98	0.49	3.7	0.37	3.4	0.34	0.06	0.51	-0.53	0.39	-0.46	0.41	2.00	3.00
Equatorial Guinea	0.20	0	16.20	15.60	0.16					-1.44	0.21	-1.37	0.23	-1.19	0.26	7.00	6.00
Eritrea	0.13	0	1.81	5.04	0.20					-2.05	0.09	-0.44	0.41	-0.51	0.40	7.00	6.00

## Appendix E: Data Set for Quantitative Analysis

Estonia	0.67	0	5.98	4.73	0.70	5.5	0.55	5.6	0.56	1.05	0.71	0.78	0.66	0.80	0.66	1.00	2.00
Ethiopia	0.10	0	1.90	-3.89	0.32	2.5	0.25	3.5	0.35	-1.13	0.27	-0.89	0.32	-0.44	0.41	5.00	5.00
Fiji	0.43	0	4.08	4.99	0.40					-0.06	0.49	0.06	0.51	-0.39	0.42	4.00	3.00
Finland	0.79	1	1.63	1.90	0.92	9.7	0.97	9.7	0.97	1.70	0.84	2.01	0.90	1.99	0.90	1.00	1.00
France	0.72	1	1.21	0.10	0.81	6.9	0.69	6.3	0.63	1.29	0.76	1.67	0.83	1.33	0.77	1.00	1.00
Gabon	0.34	0	3.00	3.40	0.34					-0.42	0.42	-0.45	0.41	-0.27	0.45	5.00	4.00
Gambia	0.13	0	-3.10	8.80	0.36	2.5	0.25			-1.03	0.29	-0.81	0.34	-0.50	0.40	4.00	4.00
Georgia	0.37	0	5.50	8.60	0.35	1.8	0.18	2.4	0.24	-0.30	0.44	-0.77	0.35	-1.17	0.27	4.00	4.00
Germany	0.74	1	0.18	0.00	0.85	7.7	0.77	7.3	0.73	1.51	0.80	1.76	0.85	1.73	0.85	1.00	1.00
Ghana	0.16	0	4.50	5.20	0.51	3.3	0.33	3.9	0.39	0.01	0.50	0.01	0.50	-0.15	0.47	2.00	3.00
Greece	0.66	1	3.95	4.70	0.68	4.3	0.43	4.2	0.42	1.05	0.71	0.79	0.66	0.79	0.66	1.00	2.00
Grenada	0.51	0	1.18	2.47	0.54					0.68	0.64	0.38	0.58	0.28	0.56	1.00	2.00
Guatemala	0.38	0	2.25	2.12	0.37	2.4	0.24	2.5	0.25	-0.48	0.40	-0.61	0.38	-0.84	0.33	4.00	4.00
Guinea	0.10	0	4.20	2.10	0.28					-1.19	0.26	-0.78	0.34	-0.75	0.35	6.00	5.00
Guinea-Bissau	0.10	0	-7.20	-1.20	0.23					-0.74	0.35	-1.35	0.23	-1.00	0.30	4.00	5.00
Guyana	0.43	0	-1.08	-0.65	0.46					0.65	0.63	-0.32	0.44	-0.43	0.41	2.00	2.00
Haiti	0.15	0	-0.89	0.00	0.19	1.5	0.15	2.2	0.22	-1.11	0.28	-1.56	0.19	-1.76	0.15	6.00	6.00
Honduras	0.29	0	1.99	3.01	0.41	2.3	0.23	2.7	0.27	-0.15	0.47	-0.73	0.35	-0.79	0.34	3.00	3.00
Hong Kong, China (SAR)	0.79	0	2.27	3.32		8	0.8	8.2	0.82	0.15	0.53	1.44	0.79	1.30	0.76		
Hungary	0.63	1	3.50	2.90	0.69	4.8	0.48	4.9	0.49	1.17	0.73	0.78	0.66	0.90	0.68	1.00	2.00
Iceland	0.82	1	-0.48	1.90	0.91	9.6	0.96	9.4	0.94	1.52	0.80	1.98	0.90	2.00	0.90	1.00	1.00
India	0.32	0	4.59	8.00	0.52	2.8	0.28	2.7	0.27	0.38	0.58	-0.13	0.47	0.07	0.51	2.00	3.00
Indonesia	0.34	0	3.69	4.12	0.38	1.9	0.19	1.9	0.19	-0.49	0.40	-0.56	0.39	-0.80	0.34	3.00	4.00
Iran, Islamic Rep. of	0.43	0	7.22	5.90	0.31	3	0.3			-1.04	0.29	-0.46	0.41	-0.58	0.38	6.00	6.00
Ireland	0.69	1	6.92	1.80	0.84	7.5	0.75	6.9	0.69	1.40	0.78	1.62	0.82	1.72	0.84	1.00	1.00
Israel	0.70	0	-0.79	1.03	0.71	7	0.7	7.3	0.73	0.61	0.62	1.02	0.70	0.97	0.69	1.00	3.00
Italy	0.72	1	0.37	0.30	0.72	5.3	0.53	5.2	0.52	1.11	0.72	0.91	0.68	0.82	0.66	1.00	1.00
Jamaica	0.53	0	1.13	2.10	0.53	3.8	0.38	4	0.4	0.51	0.60	-0.07	0.49	-0.38	0.42	2.00	3.00
Japan	0.75	1	0.32	2.70	0.76	7	0.7	7.1	0.71	0.99	0.70	1.07	0.71	1.41	0.78	1.00	2.00
Jordan	0.45	0	5.00	3.16	0.45	4.6	0.46	4.5	0.45	-0.41	0.42	0.36	0.57	0.33	0.57	6.00	5.00
Kazakhstan	0.41	0	9.80	9.20	0.29	2.4	0.24	2.3	0.23	-1.05	0.29	-0.80	0.34	-0.90	0.32	6.00	5.00
Kenya	0.19	0	1.03	1.26	0.34	1.9	0.19	1.9	0.19	-0.58	0.38	-0.85	0.33	-1.04	0.29	4.00	4.00
Kuwait	0.51	0	-1.03		0.52	5.3	0.53			-0.29	0.44	0.16	0.53	0.81	0.66	4.00	5.00
Kyrgyzstan	0.32	0	-0.49	5.35	0.29	2.1	0.21			-0.96	0.31	-0.81	0.34	-0.83	0.33	6.00	5.00
Lao People's Dem. Rep.	0.15	0	5.00	5.00	0.17					-1.73	0.15	-0.80	0.34	-1.05	0.29	7.00	6.00
Latvia	0.54	0	6.07	7.45	0.64	3.8	0.38	3.7	0.37	0.91	0.68	0.67	0.63	0.46	0.59	1.00	2.00
Lebanon	0.48	0	2.24	2.70	0.36	3	0.3			-0.54	0.39	-0.41	0.42	-0.27	0.45	6.00	5.00
Lesotho	0.19	0	3.80	3.90	0.43					-0.16	0.47	-0.26	0.45	-0.01	0.50	2.00	3.00
Libya	0.42	0			0.20	2.1	0.21			-1.70	0.16	-0.87	0.33	-0.91	0.32	7.00	7.00
Lithuania	0.56	0	6.76	6.51	0.66	4.7	0.47	4.8	0.48	0.89	0.68	0.61	0.62	0.48	0.60	1.00	2.00
Luxembourg	0.75	1	1.14	1.20	0.90	8.7	0.87	9	0.9	1.41	0.78	2.13	0.93	2.00	0.90	1.00	1.00
Madagascar	0.15	0	-12.70	9.65	0.44	2.6	0.26	1.7	0.17	-0.05	0.49	-0.38	0.42	-0.19	0.46	3.00	4.00
Malawi	0.15	0	1.82	5.93	0.39	2.8	0.28	2.9	0.29	-0.56	0.39	-0.68	0.36	-0.34	0.43	4.00	4.00
Malaysia	0.57	0	4.19	5.20	0.52	5.2	0.52	4.9	0.49	-0.27	0.45	0.92	0.68	0.58	0.62	5.00	5.00
Maldives	0.43	0	5.61	8.44	0.37					-0.74	0.35	0.78	0.66	0.44	0.59	6.00	5.00
Mali	0.09	0	4.39	6.00	0.46	3	0.3			0.18	0.54	-0.84	0.33	-0.54	0.39	2.00	3.00
Malta	0.67	0	1.54		0.64					1.29	0.76	1.16	0.73	1.08	0.72	1.00	1.00
Mauritania	0.14	0	3.34	5.40	0.32					-0.67	0.37	-0.16	0.47	-0.33	0.43	5.00	5.00
Mauritius	0.50	0	4.40	3.20	0.66	4.4	0.44	4.5	0.45	0.80	0.66	0.53	0.61	0.89	0.68	1.00	2.00
Mexico	0.50	1	0.73	1.30	0.55	3.6	0.36	3.6	0.36	0.33	0.57	0.15	0.53	-0.22	0.46	2.00	2.00
Moldova, Rep. of	0.37	0	7.81	6.29	0.41	2.4	0.24	2.1	0.21	-0.30	0.44	-0.63	0.37	-0.49	0.40	3.00	4.00
Mongolia	0.35	0	4.00	4.70	0.49					0.44	0.59	-0.18	0.46	0.36	0.57	2.00	2.00
Morocco	0.33	0	3.19	5.50	0.43	3.3	0.33	3.7	0.37	-0.30	0.44	0.07	0.51	0.11	0.52	5.00	5.00
Mozambique	0.12	0	7.70	7.00	0.42	2.7	0.27			-0.26	0.45	-0.41	0.42	-0.65	0.37	3.00	4.00
Myanmar	0.17	0			0.13	1.6	0.16			-2.05	0.09	-1.29	0.24	-1.62	0.18	7.00	7.00
Namibia	0.39	0	2.72	3.72	0.58	4.7	0.47	5.7	0.57	0.33	0.57	0.18	0.54	0.45	0.59	2.00	3.00
Nepal	0.19	0	-0.61	2.98	0.34					-0.52	0.40	-0.51	0.40	-0.50	0.40	4.00	4.00



COUNTRY NAME	Independent	Control		Dependent													
	ITU Digital Access Index 2003	OECD Dummy Variable	GDP Growth 2002	Political Development Aggregate (poldev)	Transparency International 2003	Transparency Int'l 2003 (Normalized)	Transparency International 2002	Transparency Int'l 2002 (Normalized)	WB Voice & Accountability 2002	WB Voice & Accountability (Normalized) 2002	WB Government Effectiveness 2002	WB Government Effectiveness (Normalized) 2002	WB Rule of Law 2002	WB Rule of Law (Normalized) 2002	Freedom House Political Rights 2003	Freedom House Civil Liberties 2003	
Netherlands	0.79	1	0.24 -0.50	0.90	8.9	0.89	9	0.9	1.63	0.83	2.14	0.93	1.83	0.87	1.00	1.00	
New Zealand	0.72	1	4.35 2.70	0.91	9.5	0.95	9.5	0.95	1.60	0.82	1.97	0.89	1.91	0.88	1.00	1.00	
Nicaragua	0.19	0	1.02 2.30	0.43	2.6	0.26	2.5	0.25	0.09	0.52	-0.87	0.33	-0.63	0.37	3.00	3.00	
Niger	0.04	0	2.98 4.00	0.33					-0.18	0.46	-0.79	0.34	-0.78	0.34	4.00	4.00	
Nigeria	0.15	0	1.55 10.61	0.29	1.4	0.14	1.6	0.16	-0.70	0.36	-1.12	0.28	-1.35	0.23	4.00	5.00	
Norway	0.79	1	0.95 0.30	0.89	8.8	0.88	8.5	0.85	1.64	0.83	1.84	0.87	1.96	0.89	1.00	1.00	
Occupied Palestinian Territories	0.38	0			3	0.3			-1.08	0.28	-1.04	0.29	-0.31	0.44			
Oman	0.43	0	0.03	0.51	6.3	0.63			-0.55	0.39	0.69	0.64	0.83	0.67	6.00	5.00	
Pakistan	0.24	0	2.85 5.82	0.31	2.5	0.25	2.6	0.26	-1.10	0.28	-0.50	0.40	-0.70	0.36	6.00	5.00	
Panama	0.47	0	0.75 3.90	0.57	3.4	0.34	3	0.3	0.50	0.60	-0.14	0.47	0.00	0.50	1.00	2.00	
Papua New Guinea	0.26	0	-0.60 2.50	0.42	2.1	0.21			-0.15	0.47	-0.78	0.34	-0.82	0.34	2.00	3.00	
Paraguay	0.39	0	-2.30 2.10	0.33	1.6	0.16	1.7	0.17	-0.53	0.39	-1.29	0.24	-1.12	0.28	4.00	3.00	
Peru	0.44	0	4.85 3.97	0.50	3.7	0.37	4	0.4	0.22	0.54	-0.47	0.41	-0.44	0.41	2.00	3.00	
Philippines	0.43	0	4.43 4.52	0.48	2.5	0.25	2.6	0.26	0.17	0.53	-0.06	0.49	-0.50	0.40	2.00	3.00	
Poland	0.59	0	1.02 3.75	0.65	3.6	0.36	4	0.4	1.11	0.72	0.61	0.62	0.65	0.63	1.00	2.00	
Portugal	0.65	1	0.43 -0.80	0.78	6.6	0.66	6.3	0.63	1.31	0.76	1.03	0.71	1.30	0.76	1.00	1.00	
Qatar	0.55	0		0.49	5.6	0.56			-0.52	0.40	0.69	0.64	0.84	0.67	6.00	6.00	
Romania	0.48	0	4.30 7.58	0.52	2.8	0.28	2.6	0.26	0.38	0.58	-0.33	0.43	-0.12	0.48	2.00	2.00	
Russian Federation	0.50	0	4.70 7.30	0.35	2.7	0.27	2.7	0.27	-0.52	0.40	-0.40	0.42	-0.78	0.34	5.00	5.00	
Rwanda	0.15	0	9.38 3.19	0.20					-1.41	0.22	-0.82	0.34	-1.01	0.30	7.00	5.00	
Saint Kitts and Nevis	0.60	0	2.08 2.42	0.53					0.96	0.69	-0.06	0.49	0.33	0.57	1.00	2.00	
Saint Lucia	0.52	0	2.52 1.70	0.54					1.04	0.71	-0.06	0.49	0.33	0.57	1.00	2.00	
Saint Vincent and the Grenadines	0.46	0	2.18 2.80	0.55					0.98	0.70	-0.06	0.49	0.66	0.63	2.00	1.00	
Samoa (Western)	0.37	0	1.78 3.10	0.54					0.67	0.63	0.23	0.55	0.94	0.69	2.00	2.00	
São Tomé and Príncipe	0.23	0	4.10 4.50	0.46					0.48	0.60	-0.64	0.37	-0.45	0.41	1.00	2.00	
Saudi Arabia	0.44	0	1.02	0.35	4.5	0.45			-1.40	0.22	-0.05	0.49	0.44	0.59	7.00	7.00	
Senegal	0.14	0	1.14 6.45	0.51	3.2	0.32	3.1	0.31	0.15	0.53	-0.18	0.46	-0.20	0.46	2.00	3.00	
Serbia & Montenegro	0.45	0	3.99 3.00	0.42	2.3	0.23			-0.20	0.46	-0.73	0.35	-0.95	0.31	3.00	2.00	
Seychelles	0.54	0	0.31 -5.08	0.46					0.19	0.54	0.00	0.50	0.52	0.60	3.00	3.00	
Sierra Leone	0.10	0	6.30 6.50	0.31	2.2	0.22			-0.57	0.39	-1.54	0.19	-1.25	0.25	4.00	4.00	
Singapore	0.75	0	3.29 1.09	0.75	9.4	0.94	9.3	0.93	0.51	0.60	2.26	0.95	1.75	0.85	5.00	4.00	
Slovakia	0.59	1	4.40 4.21	0.63	3.7	0.37	3.7	0.37	0.92	0.68	0.40	0.58	0.40	0.58	1.00	2.00	
Slovenia	0.72	0	2.95 2.26	0.74	5.9	0.59	6	0.6	1.10	0.72	0.82	0.66	1.09	0.72	1.00	1.00	
Solomon Islands	0.17	0	-2.70 3.80	0.37					0.37	0.57	-1.34	0.23	-0.64	0.37	3.00	3.00	
South Africa	0.45	0	3.56 1.85	0.63	4.4	0.44	4.8	0.48	0.73	0.65	0.52	0.60	0.19	0.54	1.00	2.00	
Spain	0.67	1	2.01 2.40	0.79	6.9	0.69	7.1	0.71	1.24	0.75	1.53	0.81	1.15	0.73	1.00	1.00	
Sri Lanka	0.38	0	3.95 5.50	0.49	3.4	0.34	3.7	0.37	-0.06	0.49	0.03	0.51	0.23	0.55	3.00	4.00	
Sudan	0.13	0	6.00 6.00	0.18	2.3	0.23			-1.71	0.16	-1.11	0.28	-1.36	0.23	7.00	7.00	
Suriname	0.46	0	3.05	0.48					0.29	0.56	-0.16	0.47	-0.33	0.43	1.00	2.00	
Swaziland	0.37	0	3.57 2.20	0.26					-1.18	0.26	-0.44	0.41	-0.67	0.37	6.00	5.00	
Sweden	0.85	1	1.89 1.60	0.90	9.3	0.93	9.3	0.93	1.65	0.83	1.84	0.87	1.92	0.88	1.00	1.00	
Switzerland	0.76	1	0.08 -0.50	0.91	8.8	0.88	8.5	0.85	1.63	0.83	2.26	0.95	2.03	0.91	1.00	1.00	
Syria	0.28	0	3.23 2.48	0.27	3.4	0.34			-1.56	0.19	-0.57	0.39	-0.41	0.42	7.00	7.00	
Tajikistan	0.21	0	9.50 10.20	0.25	1.8	0.18			-0.95	0.31	-1.23	0.25	-1.27	0.25	6.00	5.00	
Tanzania, U. Rep. of	0.15	0	6.32 5.56	0.41	2.5	0.25	2.7	0.27	-0.41	0.42	-0.51	0.40	-0.49	0.40	4.00	3.00	
TFYR Macedonia	0.48	0	0.85 3.10	0.44	2.3	0.23			-0.29	0.44	-0.39	0.42	-0.41	0.42	3.00	3.00	
Thailand	0.48	0	5.41 6.74	0.55	3.3	0.33	3.2	0.32	0.20	0.54	0.28	0.56	0.30	0.56	2.00	3.00	
Togo	0.18	0	4.61 3.08	0.23					-1.20	0.26	-1.17	0.27	-0.67	0.37	6.00	5.00	
Trinidad and Tobago	0.53	0	2.70 3.80	0.58	4.6	0.46	4.9	0.49	0.56	0.61	0.47	0.59	0.34	0.57	3.00	3.00	
Tunisia	0.41	0	1.68 5.50	0.45	4.9	0.49	4.8	0.48	-0.83	0.33	0.65	0.63	0.27	0.55	6.00	5.00	
Turkey	0.48	1	7.94 5.79	0.45	3.1	0.31	3.2	0.32	-0.47	0.41	-0.20	0.46	0.00	0.50	3.00	4.00	
Turkmenistan	0.37	0	19.76 16.92	0.12					-1.85	0.13	-1.47	0.21	-1.16	0.27	7.00	7.00	
Uganda	0.17	0	6.71 4.88	0.33	2.2	0.22	2.1	0.21	-0.77	0.35	-0.41	0.42	-0.84	0.33	6.00	4.00	

Ukraine	0.43	0	5.20	9.40	0.36	2.3	0.23	2.4	0.24	-0.59	0.38	-0.74	0.35	-0.79	0.34	4.00	4.00
United Arab Emirates	0.64	0	1.80		0.51	5.2	0.52			-0.47	0.41	0.83	0.67	0.95	0.69	6.00	5.00
United Kingdom	0.77	1	1.80	2.20	0.89	8.7	0.87	8.7	0.87	1.47	0.79	2.03	0.91	1.81	0.86	1.00	1.00
United States	0.78	1	2.43	2.90	0.84	7.5	0.75	7.7	0.77	1.32	0.76	1.70	0.84	1.70	0.84	1.00	1.00
Uruguay	0.54	0	-11.03	2.50	0.69	5.5	0.55	5.1	0.51	0.95	0.69	0.51	0.60	0.56	0.61	1.00	1.00
Uzbekistan	0.31	0	4.20	4.40	0.21	2.4	0.24	2.9	0.29	-1.66	0.17	-1.10	0.28	-1.16	0.27	7.00	6.00
Vanuatu	0.24	0	-0.30	2.00	0.48					0.89	0.68	-0.64	0.37	-0.32	0.44	1.00	2.00
Venezuela	0.47	0	-8.90	-9.22	0.36	2.4	0.24	2.5	0.25	-0.41	0.42	-1.14	0.27	-1.04	0.29	3.00	4.00
Viet Nam	0.31	0	7.04	7.24	0.28	2.4	0.24	2.4	0.24	-1.36	0.23	-0.27	0.45	-0.39	0.42	7.00	6.00
Yemen	0.18	0	3.57	3.80	0.28	2.6	0.26			-0.88	0.32	-0.87	0.33	-1.23	0.25	6.00	5.00
Zambia	0.17	0	3.30	5.12	0.38	2.5	0.25	2.6	0.26	-0.40	0.42	-0.93	0.31	-0.52	0.40	4.00	4.00
Zimbabwe	0.29	0	-5.58		0.23	2.3	0.23	2.7	0.27	-1.50	0.20	-0.80	0.34	-1.33	0.23	6.00	6.00

Note: The Political Development Aggregate (polidev) is an average of equally weighted normalized variables including Transparency International (2003), Gov't Effectiveness (2002), Voice and Accountability (2002), Rule of