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POLICY REFORM TOOLKIT FOR E-COMMERCE AND DEVELOPMENT¹

Prepared by

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Policy Reform Toolkit for E-commerce and Development

EXECUTIVE SUMMARY

The prospects for accelerated growth and development offered by electronic commerce are leading most developing countries to turn their attention toward information and communication technologies (ICTs) and an assorted array of related policy areas. ICTs are now recognized by technologists and economists alike to be drivers of economic growth, productivity, competitiveness, and democracy. The widespread deployment and utilization of ICTs by developing countries can improve intellectual capital, workforce skills, productivity, market access and social structures, and enable them to become more competitive, both regionally and globally.

ICT or e-readiness assessments have been conducted in many developing countries. Invariably, these exercises result in a long list of initiatives that need to be undertaken to enable the target country to actually realize the benefits of ICTs and leverage them to achieve desired results. This is usually the point where indecision sets in and donor organizations and government officials alike ponder priorities and wonder which tasks to tackle given the limited resources at hand. There are numerous inter-relationships and inter-dependencies that must be considered, and turning paper ICT assessments into projects that create synergies and yield social and economic gains is a difficult task.

The Toolkit presented in this report was developed to assist governments and donors in their efforts to establish priorities for establishing a policy environment supportive of e-commerce for development. Many current ICT assessment methodologies lack a process for analyzing critical factors, matching identified needs with country goals and capabilities, and determining policy or project priorities in a manner that provides maximum benefit for economic growth and development. Many also lack the ability to compare the target country against comparator countries to help it make policy reform decisions with the goal of gaining in regional and global competitiveness. The Toolkit helps fill these voids and is part of USAID's goal of establishing a competitive policy environment enabling the private sector to take the lead in global e-commerce.

The Toolkit builds on the strengths of existing ICT assessment methodologies and provides a series of tools that can be used by donor program officials and public and private sector entities in developing countries to help them assess the policy steps they need to take—and in what order of priority—to advance e-commerce and ICTs in their country. The Toolkit was designed by a team of experts who have conducted in-country ICT assessments and undertaken policy, legal, and economic initiatives in a large number of developing countries. Their expertise encompasses communications infrastructure and ICT applications, legal and policy reform, trade and finance, SME development, and economic analysis.

The Toolkit recognizes that truly relevant and targeted policy advice needs to focus on a number of factors and data sets. For example, development of the ICT sector, if not accompanied by specific improvements in the overall business environment, financial reform, trade and investment incentives, legal reform, and initiatives in improving education and intellectual capital, has limited impact on electronic commerce, enterprise growth, and poverty alleviation. The Toolkit methodology is based on the fact that enterprises increasingly operate in a global economy. It matches identified needs with the fiscal and political capabilities of these countries. It also takes into account the fact that the policy environment of geographically or culturally distant countries is a direct factor in investors' decisions about resource allocation. Therefore, it also analyzes critical foreign direct investment factors.

Placing the client country in a global perspective, the Toolkit relies on a series of filters to gradually reduce the number of possible policy interventions to those that will have the broadest and deepest impact on the country's e-competitiveness for development. These filters are built on the basis of publicly available data, in-country data collection, and lessons learned by a multi-disciplinary team of experts.

Selecting Comparator Countries

The first filter selects the countries that are the most direct global competitors for the client country. This selection is based on the assumption that -- faced with a number of equally attractive options -- global investors will direct their resources at the countries that present the most attractive technological options, the most supportive policy environment, the most vibrant private sector, and the better educated workforce. The ten comparator countries ranked directly above and below the target country are selected based upon publicly available global index data pertaining to:

- ◆ Level of development
- ◆ Technology factors
- ◆ Business environment
- ◆ Sector export competitiveness.

The index data for these countries is entered into an Excel spreadsheet and histograms are produced to identify the five comparator countries that are used in the rest of the methodology.

Identify Priority Areas

The second filter contrasts the client country with its comparator countries on a series of policy indicators to identify and prioritize areas critical for successful policy reform and attainment of ICT goals. It is based on a detailed assessment of critical factors for five areas:

- ◆ ICT infrastructure and technology in use
- ◆ Legal, regulatory, and policy environment
- ◆ Private sector environment and non-governmental organization activity
- ◆ Human capital
- ◆ Donor projects and multinational initiatives.

The Toolkit methodology uses information gathered from public databases for the target and comparator countries and in-country interviews and research. It then analyzes and ranks the six countries (the target country and five comparator countries) based on the index data and defined criteria.

The third filter organizes these areas of policy relevance according to logical groupings that highlight the synergies among them. The critical factors for the five categories are broken into primary, secondary and tertiary logical groups. The logical groups for the first four categories are:

A. ICT Infrastructure and Technology in Use

Internet
Telephone
Government use of technology

B. Legal/Regulatory/Policy

ICT Policy/Legal
Telecommunication regulatory structure
Business laws and compliance costs

C. Private Sector & NGO
Private sector use of technology
ICT industry sector
Private sector environment

D. Human Capital
ICT Education
Schools' use of technology
Basic education

Priority action items are then identified by analyzing the target country rankings in these logical groups, entering them to a Venn diagram, and marking them on a country scorecard. The critical factor areas in which the target country did not rank high enough to be included on the Venn diagram are listed as priority action areas.

Prioritizing Action Areas

The fourth filter analyzes the identified priority action areas against data pertaining to donor and multinational initiatives. This process eliminates priority items that are either underway or planned by a donor or multinational organization, thereby setting aside redundant efforts and enabling resources to be used more efficiently. Finally, the fifth filter analyzes remaining priority action areas against country goals and the global context and a pre-determined prioritization within the primary, secondary, and tertiary logical groups.

At the end of the exercise, policymakers and donors have identified clear priorities in the policy areas that require attention, they understand the synergies between the items, and have developed a prioritization that helps them reach their goals within fiscal constraints. An added advantage of the Toolkit methodology is its ability to be used as a platform for developing a national blueprint from which the country can better take control of its own economic destiny. The significant involvement of client country's public and private sector representatives in the implementation of the Toolkit significantly increases the likelihood of local ownership—and sustainable success—of the resulting reforms.

Conclusion

This report describes the methodologies applied in the Toolkit, and applies them to the example of Mexico. The methodologies rely on a number of spreadsheets and graphics that assist in the selection of comparators, the computation of the rankings, and the in-country collection of technical data.

The implementation of the Toolkit does not represent an additional assessment; it relies on publicly available data and a limited information collection process in-country, and can even make good use of the information included in previous assessments. Accordingly the Toolkit represents a cost-effective and locally-owned approach to identify priority policy areas. The identification of policy agendas, however, is not an automatic and mechanistic process. Policy strategy is too complex, and subject to too many intangible factors, to be left to a standalone report or electronic file. Accordingly, and although it combines lessons learned in different institutional environments with the innovative use of electronic computing and data retrieving capabilities, the present Toolkit is not intended to automatically produce policy recommendations. Its value lies in the provision to policymakers of a series of tools that they can use to dramatically narrow the range of possible policy interventions. Although the limited assistance of outside experts in the later stages of the process is recommended, this transfer of policy strategy development from expatriate consultants to local policymakers results in significant savings for governments and donors. More importantly, it dramatically increases the sense of local ownership and control over the directions for the use of ICTs for sustainable economic development.

Policy Reform Toolkit for E-commerce and Development

INTRODUCTION: THE PROMISE AND CHALLENGES OF E-COMMERCE FOR DEVELOPMENT

Electronic Commerce (e-commerce) is a generic term that encompasses various forms of trade of goods and services, all of which rely on the Internet and interconnected networks to market, identify, select, pay for, and/or deliver these goods and services. As noted by Kofi Annan, Secretary-General of the United Nations:

*E-commerce is one of the most visible examples of the way in which information and communication technologies (ICT) can contribute to economic growth. It helps countries improve trade efficiency and facilitates the integration of developing countries into the global economy. It allows businesses and entrepreneurs to become more competitive. And it provides jobs, thereby creating wealth.*²

The Internet is here to stay: no country can afford to exclude itself from its benefits lest it is left behind the rest of the world. Hence the potential benefits of inclusion in global economy are as high as the risks of exclusion. In a rapidly connecting global environment, the ability of developing countries to compete effectively will be dependent upon their active involvement in the ever-increasing commercial, scientific and cultural possibilities offered by the Internet.

The stakes are important: UNCTAD estimates that the compound annual growth rate business-to-business (B2B) and business-to-consumer (B2C) e-commerce in the developing world will amount to 67 percent over the 2002-2006 period, compared with 54 percent in developed countries.³ UNCTAD also estimates that, under the "most optimistic" forecast, about 18 % of global sales in 2006 will take place through e-commerce.⁴

Non-involvement in e-commerce is not an option for countries that want to retain their global commercial status. Export markets secured by any developing country before the advent of e-commerce could be seriously damaged if the country does not take advantage of ICTs and e-commerce to enhance their competitiveness and retain or improve their market share. E-commerce potentially benefits all echelons of the economic scale, from the large already well-established entrepreneurs to the smallest enterprises struggling to compete, and even the traditionally disadvantaged poor.

However, *e-commerce is not a "silver bullet."* It can only produce real long-term benefits in countries where a series of determined and concerted efforts are made to improve the fundamental infrastructure, policy environment, and legal framework. As noted in the UN's *E-Commerce and Development Report 2002*:

*The effects of Internet-induced changes in the global economy and their implications for developing countries will depend to a significant extent on factors that policy-makers, business players and other stakeholders can influence. Policies must be designed, articulated in coherent e-strategies and implemented in partnership with all the relevant players*⁵

² *E-Commerce and Development Report 2002*, United Nations Conference on Trade and Development, foreword (<http://www.unctad.org/ecommerce/>).

³ Id., p.7.

⁴ Id., p.6.

⁵ Id., p.xx.

Opportunities

For consumers, the benefits of e-commerce include (1) increased availability of information about products, (2) higher quality, quantity and variety of goods and services, and (3) reduced prices from increased competition and from bypassing commercial intermediaries. *For businesses*, the benefits include the enormous potential of the Web as a marketing and distribution channel, resulting in lower marketing costs (as buyers and sellers are able to communicate directly with each other), lower distribution costs (as the use of commercial intermediaries is no longer essential), and therefore a greater range of profitable market niches can be served. *For governments*, e-commerce provides a chance to showcase the country's products and investment potential on the world scene, support a new form of commerce that benefits all classes of society, increase foreign export earnings, and increase tax revenues.

The Main Imperative: A Facilitating Policy Environment

Countries where e-commerce has been successful share *a number of characteristics with regard to their policy environment*. In these countries, the government has taken the initiative (1) in encouraging the deployment of ICTs for e-government, academia, and the private sector and (2) developing a policy environment and legal framework that supports and promotes e-commerce. The private sector plays a critical role in the development of a supportive policy environment through public-private interaction and utilization of e-commerce to improve its core efficiencies, overcome communication impediments, and enhance its trading position. The development of such an environment has involved a *joint focus* on a number of policy areas:

- ICT infrastructure and government use of technology;
- Legal/regulatory framework issues involving numerous areas, including communication liberalization and regulation, competition, ICT-related laws, the general business environment, financial laws, and small and medium-sized enterprise support;
- Private sector and activities of non-governmental organizations, the financial environment, the ICT industry sector, private sector use of technology;
- Human capital and education, including basic education, the use of ICTs in education and administration, and specialized ICT education.

Communications policies, for instance, directly affect infrastructure development, connectivity costs, and the uptake of the Internet by business and citizens. For example, competition among communications providers and a supportive regulatory environment can significantly lower the price of a telephone call, which encourages business use of e-commerce as well as Internet “surfing” and thus the exploration of new information, products, and business opportunities available online.

Likewise, the performance of financial intermediaries affects the benefits and the global linkages offered by electronic commerce. For example, a financial sector that can swiftly and securely process transactions electronically will significantly enhance the global reach of local firms. Failure to use globally available technical know-how to improve the performance of local financial intermediaries will significantly hamper commercial development, both at home and in the global marketplace.

Finally, transport and distribution methods as well as customs efficiency influence the speed and ease by which buyers and sellers can complete their transactions. A multi-modal and competitive transport sector combined with efficient cross-border customs will enable global production facilities to be spread out to rural areas, benefiting the residents there and reducing urban density and pollution.

Experience has shown that *policymakers must direct their attention to all these factors simultaneously*. Indeed, there is little point in developing fast online systems for the payment of goods if it takes several weeks to secure a letter of credit to export these goods. Similarly, a rapid rate of connection to the Internet is of limited use if the goods to be exported languish for several days in customs, or if servers offering Internet connections face unpredictable power surges or outages. While efforts to facilitate such an environment are critical to the growth of e-commerce in developing countries, they also affect the growth of small and medium enterprises, and the economy at large, since *many laws and policies that govern the physical world are also applicable to the Internet*. Hence e-commerce creates a unique incentive and impetus for reforming policies that have, on their own merits, wider poverty-alleviation implications.

BACKGROUND AND MOTIVATION FOR THE TOOLKIT

The prospects for accelerated growth and development offered by electronic commerce are leading most developing countries to turn their attention toward information and communication technologies (ICTs) and an assorted array of related policy areas. ICTs are now recognized by technologists and economists alike to be drivers of economic growth, productivity, competitiveness, and democracy. The widespread deployment and utilization of ICTs by developing countries can improve intellectual capital, workforce skills, productivity, market access and social structures, and enable them to become more competitive, both regionally and globally.

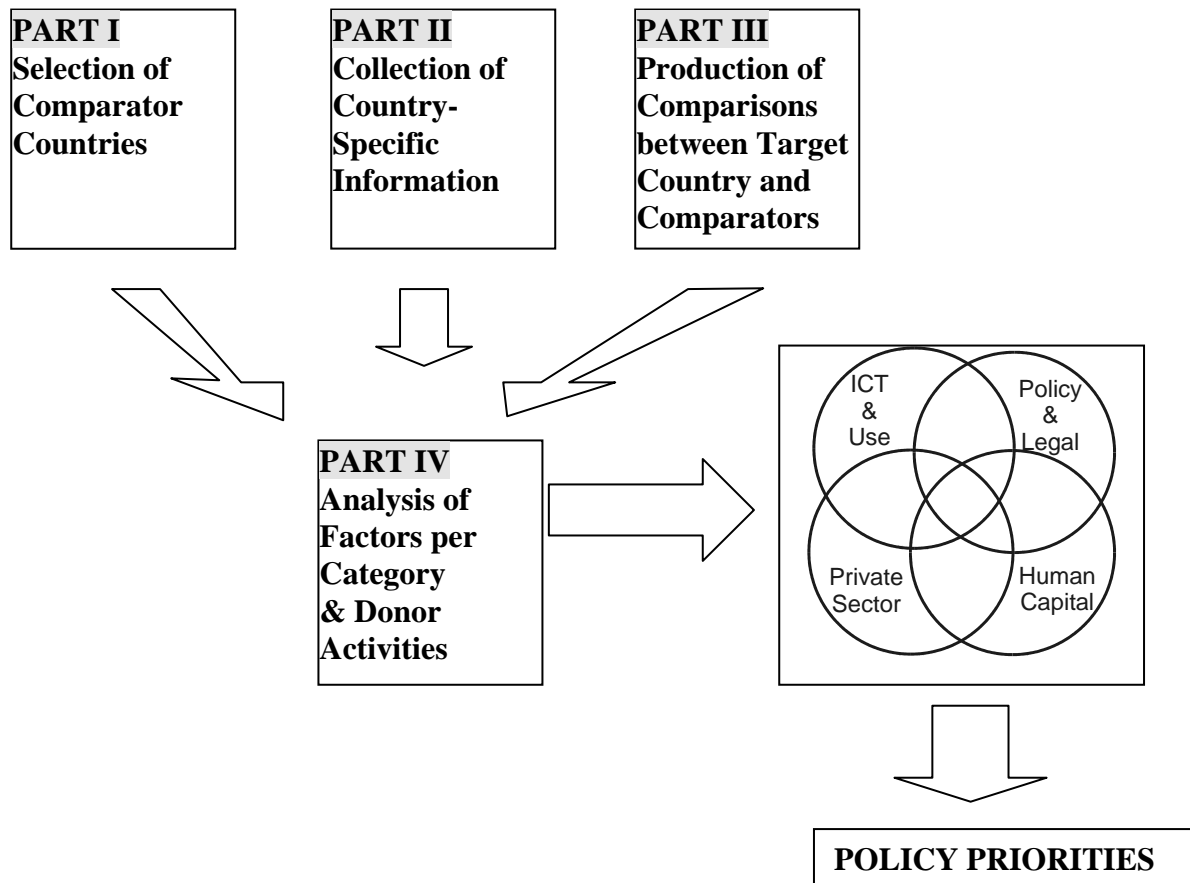
ICT or e-readiness assessments have been conducted in many developing countries. Invariably, these exercises result in a long list of initiatives that need to be undertaken to enable the target country to actually realize the benefits of ICTs and leverage them to achieve desired results. This is usually the point where indecision sets in and donor organizations and government officials alike ponder priorities and wonder which tasks to tackle given the limited resources at hand. There are numerous inter-relationships and inter-dependencies that must be considered, and turning paper ICT assessments into projects that create synergies and yield social and economic gains is a difficult task.

The present Toolkit was developed to assist governments and donors in their efforts to establish priorities for e-commerce and ICT reform. It provides a series of tools that can be used by experts in technical assistance exercises, donor program officials, and public and private sector entities in developing countries to help them assess the policy steps they need to take – and in what order of priority – to advance e-commerce and ICTs in their country. The Toolkit was designed by a team of experts who have conducted in-country ICT assessments and undertaken policy, legal, and economic initiatives in a large number of developing countries. Their expertise encompasses communications infrastructure and ICT applications, legal and policy reform, trade and finance, SME development, and economic analysis. The development of the Toolkit was funded by USAID, as part of the Agency's goal of establishing a pro-competitive policy environment enabling the private sector to take the lead in global e-commerce.

METHODOLOGY OVERVIEW

The general approach of the Toolkit is as follows. The EC/ICT environment of the country under review is first compared, using publicly available data, with that of a number of similar countries. These countries are selected on the basis of their comparable levels of development, technology, business environment, and sectoral trade focus. Second, information about the target country that is not available in public databases or cannot conceptually be used for comparisons is collected from country counterparts. Third, these two sets of information are fed into a multi-step prioritization exercise that helps focus the target country's policymaking attention and resources to these areas of the policy environment where the country is at a disadvantage vis-à-vis its competitors. This methodology relies on a series of spreadsheets and graphics that assist in the selection of comparators, the computation of the rankings, and the in-country collection of technical data. The spreadsheets include a very detailed list of policy items that make up the various critical policy factors subjected to the prioritization exercise; they are used to develop the example of Mexico described below, and are the core of in-country implementation of the Toolkit.

See the following graph for an illustration of the process.



PART I: SELECTION OF COMPARATOR COUNTRIES

The first step in establishing the target country's strengths and weaknesses relative to its comparator countries is the selection of this latter group of countries. The following publicly available databases provide the data for this exercise.⁶

- *Global Competitiveness Report*, Peter Cornelius and Klaus Schwab (editors), World Economic Forum (referenced as GCR in the following pages) (<http://www.weforum.org/site/homepublic.nsf/Content/Global+Competitiveness+Programme%5CReports%5CGlobal+Competitiveness+Report+2002-2003>).
- *World Competitiveness Yearbook*, International Institute for Management Development (IMD), Geneva, Switzerland (referenced as WCY) (<http://www02.imd.ch/wcy/>).
- *The Global Information Technology Report*, Geoffrey Kirkman, Peter K. Cornelius, Jeffrey D. Sachs, Klaus Schwab (editors), World Economic Forum (referenced as GITR) (http://www.cid.harvard.edu/cr/gittr_030202.html).
- *Freedom in the World*, Freedom House ((referenced as FH) (<http://www.freedomhouse.org/research/freeworld/2000/countries.htm>).
- Daniel Kaufman, Aart Kraay, and Pablo Zoido-Lobaton, World Bank Policy Research Working Papers: “Aggregating Governance Indicators” (no. 2195), and “Governance Matters” (no. 2196), 1999 (referenced as KKZ) (<http://www.worldbank.org/wbi/governance/govdata2001.htm>).
- *Human Development Report*, United Nations Development Programme, <http://www.undp.org/hdr2001/> (referenced as HDR).
- *World Telecommunications Development Report-- World Telecommunications Indicators*, International Telecommunications Union, Geneva, March 2001 (referenced as ITU and used for Part III only) (<http://www.itu.int/ITU-D/ict/>).

Several data sources are consulted for the selection of comparators in order to enhance robustness of the results and to avoid dependence on a single source.

Development Metrics

These databases provide information about two classes of indicators that are used to select the comparator countries. The first class can be called the “development metrics” class and includes three categories of information (submetrics):

⁶ Although private and/or for-fee databases provide additional or more detailed information, the team decided to limit its identification of data sources to those that can be easily accessible by policymakers in developing countries.

1. Level of Development
 - Human Development Index (HDR)
 - GDP per Capita

2. Technology
 - Technology Achievement Index (HDR)
 - Extent to which technology, science, and human resources meet business needs (WCY)
 - Technology Index (GCR)
 - Innovation Capacity Index (GCR)

3. Business Environment
 - Current Competitiveness Index (GCR)
 - Macro Environment Index (GCR)
 - Domestic Economic Performance Index (WCR)

Export Competitiveness Metrics

The second class of information used for the selection of comparators relates to export competitiveness, and is hence known as the “export competitiveness metrics.” The top four sectors in which the target country exhibits global competitiveness are selected utilizing the Current Export Competitiveness Index (GCR).

Methodology for Selecting Comparator Countries

For each of the above metrics, the ten countries ranked above and the ten countries ranked below the target country are listed. A worksheet is then developed listing the number of times each country was referenced in the each metrics and sub-metrics categories. A histogram is then generated based on (1) the development metrics, (2) the export competitiveness metrics, and (3) the sum of the development and export metrics. Those countries that are included the most often in the latter set (or that feature the highest bars in the histogram) are included among the comparators for the target country.

In order to confirm that the comparator countries provide the most relevant set for the global comparison of the target countries institutions for EC and ICT, various types of graphs can be produced. Possibilities include radar graphs and basic data metric bar graphs showing how the target and comparator countries compare to a normalized “global best” country for each metric, and a basic data metric bar graph with the target country shown directly in reference to the comparator countries.

CRITICAL FACTORS FOR POLICY REFORM FOR E-COMMERCE AND ICT

Factors critical to the widespread deployment and utilization of ICTs and e-commerce are identified by drawing on (a) extensive in-country ICT assessment experiences, (b) expertise in ICT applications, project management, and telecommunications infrastructure, (c) an examination of legal and regulatory issues for ICTs, private sector development, trade and competitiveness, and foreign direct investment, (d) broad business and

non-governmental organization expertise, and (e) a thorough review of ICT assessment methodologies.⁷

An array of factors were compiled in four categories:

- A. ICT Infrastructure & Technology in Use
- B. Legal, Regulatory, and Policy Environment
- C. Private Sector & NGO Activity
- D. Human Capital.

Each of these categories is further broken into logical groups. For example, logical groups within Category A—“ICT Infrastructure & Technology in Use”—includes a “Telephone” logical group with subsets of information for (1) teledensity, (2) quality, (3) costs, and (4) speed. See the tables on the following pages for a breakdown of logical groups within each category.

⁷ These sources include: Bridges.org. "Comparison of E-Readiness Assessment Models," v8.13f, 2001 (<http://www.bridges.org/ereadiness/report.html>); *Computer Systems Policy Project Readiness Guide for Living in the Networked World*, 1998 (<http://www.cspp.org/projects/readiness/>); *E-Commerce Readiness Guide*, Electronic Commerce Steering Group, Asian Pacific Economic Cooperation (APEC), V 5.0, 2000 (http://www.pecc.org/ptiif/documents/APEC_E-comm_Readiness_Guide_5.doc); *International Survey Of E-Commerce 2000*, World Information Technology and Services Alliance, 2000, (<http://www.witsa.org/papers/EComSurv.pdf>); "Leland Initiative End-User Applications," USAID Leland Initiative: Africa Global Information Infrastructure Project (<http://www.usaid.gov/regions/afr/leland/enduser.htm>); *Readiness for the Networked World*, Center for International Development, Harvard University, 2000 (<http://www.readinessguide.org/>); McConnell International. "Risk E-Business: Seizing the Opportunity of Global E-Readiness," August 2000 (<http://www.mcconnellinternational.com/ereadiness/default.cfm>); Wolcott, Peter, Larry Press, William McHenry, Seymour E Goodman, and William Foster, *A Framework for Assessing the Global Diffusion of the Internet*, *Journal of the AIS*, November, 2001, v. 2 article 6 (http://mosaic.unomaha.edu/2001_GDI_Framework.htm); Wolcott, Peter, Seymour Goodman, and Grey Burkhart, "The Information Technology Capability of Nations: A Framework for Analysis," Working Paper, The MOSAIC Group, Dec. 1996 (<http://mosaic.unomaha.edu/gdi.html>).

Logical Groups and Subsets for Category A

A. ICT Infrastructure & Technology in Use

Infrastructure, Connectivity & Access

Telephone

- Teledensity
- Quality
- Costs
- Speed

Mobile

- Teledensity
- Costs

Satellite & Broadcast

Internet

- Connectivity
- Cost
- Quality
- Access

Cable

- Connectivity
- Services offered in addition to cable TV

Use of Technology

Government Use of Technology

- Intra-Government
- e-Government
- e-Courts

Logical Groups and Subsets for Category B

B. Legal & Regulatory Policy Environment

ICT Policy/Legal

- Government support
- Government controls
- e-Laws
- e-Security

ICT/Investment Incentives

Business Laws & Regulatory Compliance Costs

- General business environment
- Small and medium-sized enterprise support (SME)
- Financial laws
- Judiciary & Enforcement of Laws

Telecom Regulatory Structure

- Privatization (Government ownership of providers)
- Liberalization

Logical Groups and Subsets for Category C

C. Private Sector & NGO Activity

Non-Governmental Organization Activities

- Business NGOs
- ICT NGOs
- Civil society

Private Sector Environment

- Competitive environment
- General business environment
- Financial environment
- Advocacy
- Diaspora

ICT Industry Sector

- Workforce
- ICT industry sector at present

Desired ICT Industry Sector Opportunities

Private Sector Use of Technology

- e-Business
- Business use of software applications
- ICT sophistication

Trade Indicators

Logical Groups and Subsets for Category D

D. Human Capital

Basic Education

- Basic education system
- Basic education using ICTs

ICT Education

- Quality of ICT education
- ICT in primary schools
- ICT in secondary schools
- ICT in tertiary schools

Schools' Use of Technology

- e-Education
- e-School administration

Interdependencies exist *within* each Category and *among* the four Categories. For example, “Telephone” and “Internet” logical groups are interdependent within the ICT Infrastructure & Technology in Use Category because without telephony, broad use of the Internet is difficult. Although wireless capabilities can jumpstart some activities and provide access in remote or geographically disadvantaged areas, these technologies are not yet developed to the point that they can be a driver of widespread Internet access without telephony infrastructure. An example of interdependencies between Categories is between the “Internet and Telephone” logical group and the “Private Sector Use of Technology” logical group in the “Private Sector & NGO Activity” Category and the “ICT Education” logical group in the “Human Capital” Category. This is due to the critical role that telephony and Internet access play in private sector use of technology and ICT education in the classroom.

PART II: COLLECTION OF TARGET COUNTRY-SPECIFIC INFORMATION

Parts II and III are comprised of two Worksheets that, when completed, provide a compilation of data for the critical factors for the target country and its comparator countries.

The Part II Worksheet lists all the critical factors and collects information on specific questions relating to the target country, and for which data is not publicly available or unsuitable for comparisons under Part III (in this document, data from Part II is referred to as “technical data”). The answers to these target country-specific questions are sought from informed public or private sector representatives, and preferably a group of them.

PART III: PRODUCTION OF COMPARISONS BETWEEN TARGET COUNTRY AND COMPARATORS

The comparisons that constitute the core of Part III are produced as follows. For the target country and each of its comparator countries, data is collected for each indicator in the four categories mentioned above (ICT Infrastructure & Technology in Use, Legal, Regulatory, and Policy Environment, Private Sector & NGO Activity, and Human Capital). This data (known as “index data”) originates from the sources listed under Part I above, and is entered on the Part III Worksheet for the target country and its comparators. Each logical group data line is then examined and a “rank” of 1-6 for each country is determined for that data line, with 1 indicating the top-ranked country for that line. The ranking numbers are then averaged for each logical group in each country. The averaged numbers determine the *overall ranking for each country* for each logical group. It is important to note that the *lower* the average, the higher the ranking.

Data for Mexico were used by the authors to develop an example of the application of the Toolkit. This data indicates that Mexico’s averaged ranking for the Telephone logical group is 2.55, putting it in first place for that logical group. Slovakia and Thailand tied for second place ranking with 3.09. Malaysia was ranked third with 3.55, Poland was fourth with 3.82, and the Philippines was fifth with an average ranking of 4.18.

A further analysis of the results of Parts II and III, detailed in Part IV, results in a final ranking for the target country for certain critical factors. *As noted in Part IV below, however, the technical data from Part II may improve or lower a country’s ranking from Part III by altering the comparative result.*

PART IV: ANALYSIS OF FACTORS AND IDENTIFICATION OF POLICY PRIORITIES

Selection of Logical Groups

In order to take the various interdependencies of the critical factors into account and to identify priority areas for policy reform to advance e-commerce and ICTs in the target country, logical groups within each Category are assigned an order of primary, secondary, and tertiary importance. The selection of the primary, secondary, and tertiary logical groups for each Category is based upon extensive in-country experience in ICT readiness, project implementation, country case studies, and analysis of the impact of ICTs on development. There is a logical progression between the primary, secondary, and tertiary logical groups and an interdependency that is important when determining priorities.

Based on the above tables, the primary, secondary, and tertiary logical groups within each Category are designated by a A1, A2, A3 for Category A; B1, B2, B3 for Category B; C1, C2, C3 for Category C; and D1, D2, D3 for Category D. For example, “Telephone,” “Internet,” and “Government Use of Technology” are the primary (A1), secondary (A2), and tertiary (A3) logical groups within the “ICT Infrastructure & Technology in Use” Category (Category A). The remaining logical groups in Category A (for example, “Mobile,” “Satellite & Broadcast,” and “Cable”) are important, but grouped together as fourth place considerations.

The primary, secondary, and tertiary logical groups for each Category are:

A. ICT Infrastructure & Technology in Use

- A1 Internet
- A2 Telephone
- A3 Government Use of Technology

B. Legal/Regulatory/Policy Environment

- B1 ICT Policy/Legal
- B2 Telecom Regulatory Structure
- B3 Business Laws & Compliance Costs

C. Private Sector & NGO

- C1 Private Sector Use of Technology
- C2 ICT Industry Sector
- C3 Private Sector Environment

D. Human Capital

- D1 ICT Education
- D2 Schools' Use of Technology
- D3 Basic Education

The logic behind the choice of the logical groups for each category is explained below.

Category A: ICT Infrastructure & Technology in Use

The primary, secondary, and tertiary logical groups for this category are “Internet,” “Telephone,” and “Government Use of Technology,” respectively. “Internet” is the primary logical group because it is so central to e-commerce, ICT utilization, globalization, and achieving productivity and efficiency gains from technology. If a country scores high on the Internet logical group containing connectivity, cost, quality, and access considerations, it logically follows that its telephone factors (teledensity, quality, cost, and speed) are keeping pace because the Internet is so dependent upon telephony. Likewise, if a country scores high on the secondary logical group of “Telephone,” it has a ready foundation for Internet growth and e-government applications. “Government Use of Technology” is a tertiary logical group because it can jumpstart development of information infrastructure and drive usage of ICTs and e-commerce.

There are dependencies between these logical groups, both from the primary to the tertiary and vice versa.

Internet – demand can spur action in telephone factors



Internet – often lags behind due to telephone factors



Telephone – good telephone factors sets stage for use of technology



Telephone – better, cheaper telephony government increases Internet activity



Gov't Use of Technology – Internet use & teledensity can spur e-gov't initiatives

Gov't Use of Technology – can jumpstart build-out of infrastructure, improve telephone & Internet access

The remaining logical groups in Category A (“Mobile,” “Satellite & Broadcast,” and “Cable”) are important, but grouped together as fourth place considerations. They have important synergy with the primary, secondary, and tertiary logical groups and, depending on a country’s ranking on these groups, can be used to boost activities in other areas. For example, strength in satellite and broadcast indicates a country could take

advantage of this infrastructure for distance learning and wireless infrastructure build-out. High rankings for mobile use indicate an increased desire for connectivity, the potential for use of more advanced wireless technologies, and the ability to introduce mobile-commerce (m-commerce). Strong rankings in cable indicate an alternative to voice telephony and Internet access. Some countries have allowed cable providers to service areas that the monopoly provider was not active, and the development of cable infrastructure in these areas paved the way for telecom competition and rapid growth in connectivity. By themselves, however, mobile, satellite and broadcast, and cable do not have the ability to drive e-commerce and ICT deployment the way the “Internet,” “Telephony,” and “Government Use of Technology” groups can.

Category B: Legal, Regulatory, and Policy Environment

The primary, secondary, and tertiary logical groups for this Category are “ICT Policy/Legal,” “Telecom Regulatory Structure,” and “Business Laws & Regulatory Compliance Costs,” respectively. ICT Policy/Legal is the primary logical group in this Category because a legal and policy framework that supports the use of ICTs will fuel e-commerce activities and business use of technology and attract offshore ICT operations and investment. The resulting demand for ICTs will increase pressure for telecommunications reform. A good telecom regulatory structure will, in turn, create avenues for a more favorable business environment, including small- and medium-sized enterprise (SME) support.

There are dependencies between these logical groups, both from the primary to the tertiary and vice versa.

ICT Policy/Legal – fuels business use of technology,
 adds pressures for telecom reform,
 attracts offshore opps, investment



ICT Policy/Legal – to be used, needs
 good telecom structure
 and business environment



Telecom Reg. Structure – lower prices, new services,
 increases business use of
 ICTs, opens avenue for
 streamlined bus. processes



Telecom Reg. Structure – liberalized, privatized
 telecom will create
 demand for ICT
 Policy/Legal



Bus. Laws & Compliance \$ – favorable bus. environment
 frees up \$\$ for ICTs,
 facilitates e-commerce

Bus. Laws & Compliance \$ – SME support and
 non-burdensome laws
 will drive business
 use of ICTs, add
 pressure for telecom
 reform. Enforcement
 of laws, favorable
 financial environment
 will promote e-
 commerce, FDI, and
 ICT industry.

The fourth place consideration in Category B is “ICT Investment/Incentives.” If a country ranks high for the investment/incentive logical group, it can more easily realize gains in the primary, secondary, and tertiary logical groups, but incentives alone (without action in “ICT Policy/Legal,” “Telecom Regulatory

Structure,” and “Business Laws and Compliance Costs”) will not result in significant growth in e-commerce or ICTs.

Category C: Private Sector & NGO Activity

The primary, secondary, and tertiary logical groups for Category C are “Private Sector Use of Technology,” “ICT Industry Sector,” and “Private Sector Environment,” respectively. “Private Sector Use of Technology” is the primary logical group because if a country scores high on this factor it logically follows that there is an ICT industry sector to support the hardware and software. An active ICT industry sector is the secondary logical group because it will push the country’s government and traditional industry sectors to improve the private sector environment and increase competitiveness through the use of technology.

There are dependencies between these logical groups, both from the primary to tertiary and vice versa.

Priv. Sector Use of Tech – requires an ICT industry to support hardware, software & favorable business environment



Priv. Sector Use of Tech – will increase traditional industry competitiveness, productivity



ICT Industry Sector – will push for reforms to private sector business environment



ICT Industry Sector – will push private to use ICTs



Priv. Sector Envir. – will support increased use of ICTs and e-commerce and ICT entrepreneurs

Priv. Sector Envir. – will foster development of ICT industry sector

The fourth place logical groups in Category C are “Trade Indicators,” “Desired ICT Industry Sector Opportunities,” and “Non-Governmental Organization Activities.” A target country can exploit a favorable ranking on trade indicators to attract FDI and ICT companies and services. The technical answers for “Desired ICT Industry Sector Opportunities” are useful indicators to (1) determine if expectations are realistic against other technical and index data, (2) help a country define how it believes ICTs can best benefit the population and boost the economy, and (3) assist in determining priorities for government action. For example, if a country has a high interest in hardware assembly and manufacturing, the trade indicators are important, as are ICT/investment incentives, while the ICT legal framework is less important. Non-governmental organization activities are important indicators of the ability to influence the legal/regulatory/policy framework and business environment. The technical data derived for this logical group is very important in pinpointing areas that could achieve the most rapid reform.

Category D: Human Capital

The primary, secondary, and tertiary logical groups for Category D are “ICT Education,” “Schools’ Use of Technology,” and “Basic Education,” respectively. ICT education constitutes the primary logical group because if a country scores high in this area, it logically follows that schools are using technology and it is woven into the basic education. “Schools’ Use of Technology” is the secondary logical group because it is often the precursor to development of an ICT curriculum and improvements to the basic education system.

Basic education is the tertiary logical group because it feeds the workforce and is the underpinning to ICT education.

There are dependencies between these logical groups, both from the primary to tertiary and vice versa.

ICT Education – requires a good basic education program and usually is preceded by schools’ use of technology



Schools’ Use of Tech. – will drive reforms in basic education



Basic Education – serves as foundation for ICT education, requires increased of technology by schools to stay current

ICT Education – determines level of ICT opportunities, high-tech worker capabilities



Schools’ Use of Tech. – is often precursor to ICT education curricula



Basic Education – workforce skills dependent upon basic education, reforms can drive ICT education

There are no fourth place considerations for this Category.

Method for Initial Selection of Priority Policy Areas

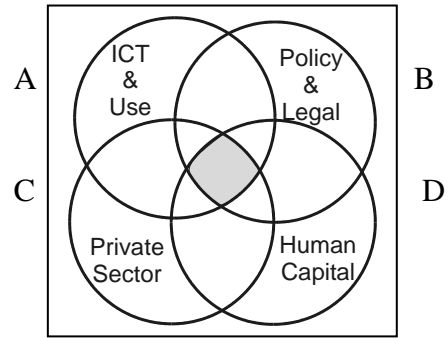
The next step involves the identification of priority action items in the four categories. To that effect, the primary, secondary, and tertiary logical groups of each Category are ranked and applied to a Venn diagram, as described below. As a reminder, the primary, secondary, and tertiary logical groups for each Category are:

Category	Primary Logical Groups	Secondary Logical Groups	Tertiary Logical Groups
A: ICT Infrastructure and Technology in Use	Internet	Telephone	Government Use of Technology
B: Legal/Regulatory/Policy Environment	ICT Policy/Legal	Telecom Regulatory Structure	Business Laws & Compliance Costs
C: Private Sector and NGOs	Private Sector Use of Technology	ICT Industry Sector	Private Sector Environment
D: Human Capital	ICT Education	Schools’ Use of Technology	Basic Education

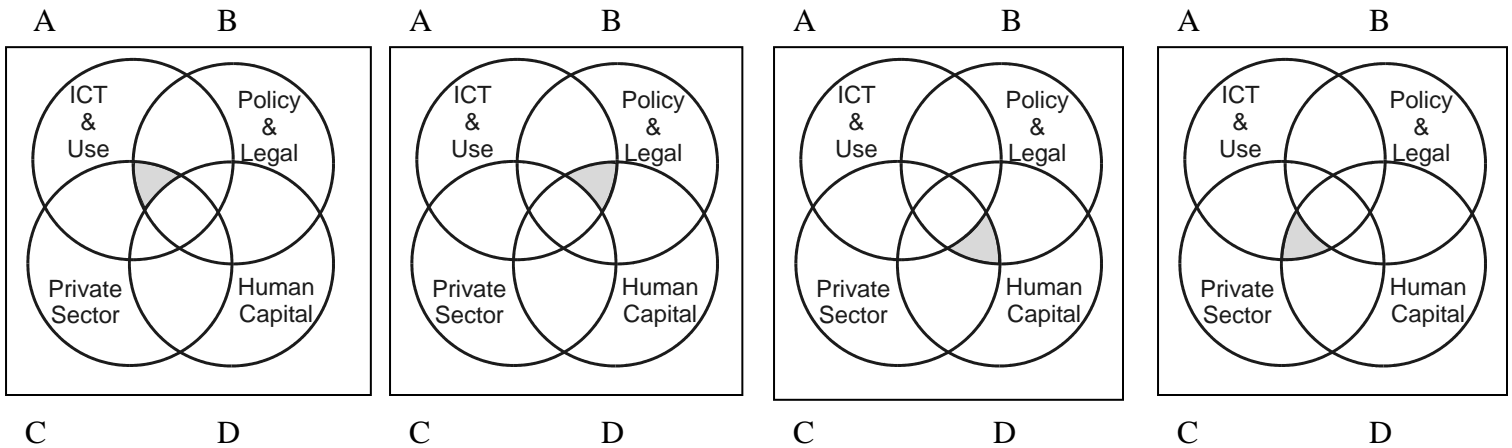
In the Venn diagrams on this page and the following ones, “ICT Infrastructure & Technology in Use” is designated as circle A, “Legal, Regulatory, and Policy Environment” as circle B, “Private Sector & NGO Activities” as circle C, and “Human Capital” as circle D.

The **primary** logical groups comprise the inner core (shaded area) of the overlapping circles representing Categories A-D. In the Venn diagram, the shaded area is included in all four category circles, indicating no immediate policy priority area. Indeed, countries that rank first in any of these logical groups have key underpinnings for widespread deployment of ICTs, e-commerce, and a knowledge economy. Those countries that rank first in all are ideally situated to exploit and leverage e-commerce and ICTs.

Internet (Primary group for Category A)
 ICT Policy/Legal (Primary group for Category B)
 Private Sector Use of Technology (Primary group for Category C)
 ICT Education (Primary group for Category D)



The **secondary** logical groups applied against the Venn diagram, produce four possible outcomes. The circle(s) that do not include the shaded part of the intersection among them indicate that the relevant logical group(s) in that category is (are) considered a priority policy item(s).

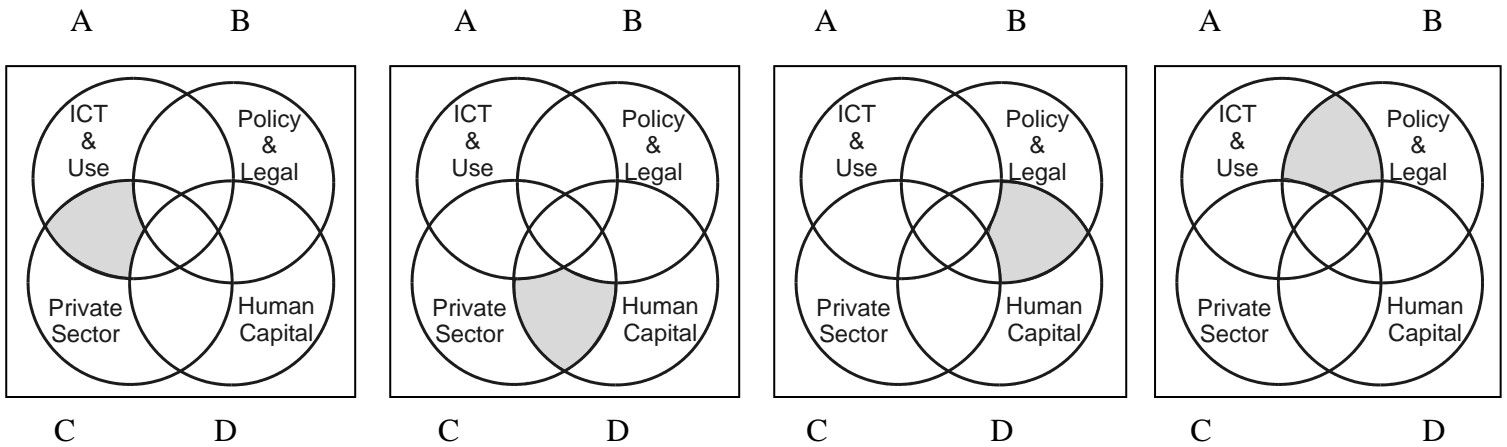


The three circles (categories) which include the shaded zone indicate policy areas of relative strength. Their secondary subsets are:

Telephone (Category A)	Telephone (Category A)	Telecom Reg. Structure (Category B)	Telephone (Category A)
Telecom Reg. Structure (Category B)	Telecom Reg. Structure (Category B)	ICT Industry Sector (Category C)	ICT Industry Sector (Category C)
ICT Industry Sector (Category C)	Schools' Use of Tech. (Category D)	Schools' Use of Tech. (Category D)	Schools' Use of Tech. (Category D)

The missing secondary logical group in each of these diagrams is automatically tagged as a priority action item:
 Schools' Use of Tech ICT Industry Sector Telephone Telecom Reg. Structure

The **tertiary** logical groups also produce four possible outcomes against the Venn diagram. The circle(s) that do not include the shaded part of the intersection among them indicate that the relevant logical group(s) in that category is/are considered a priority policy item(s).



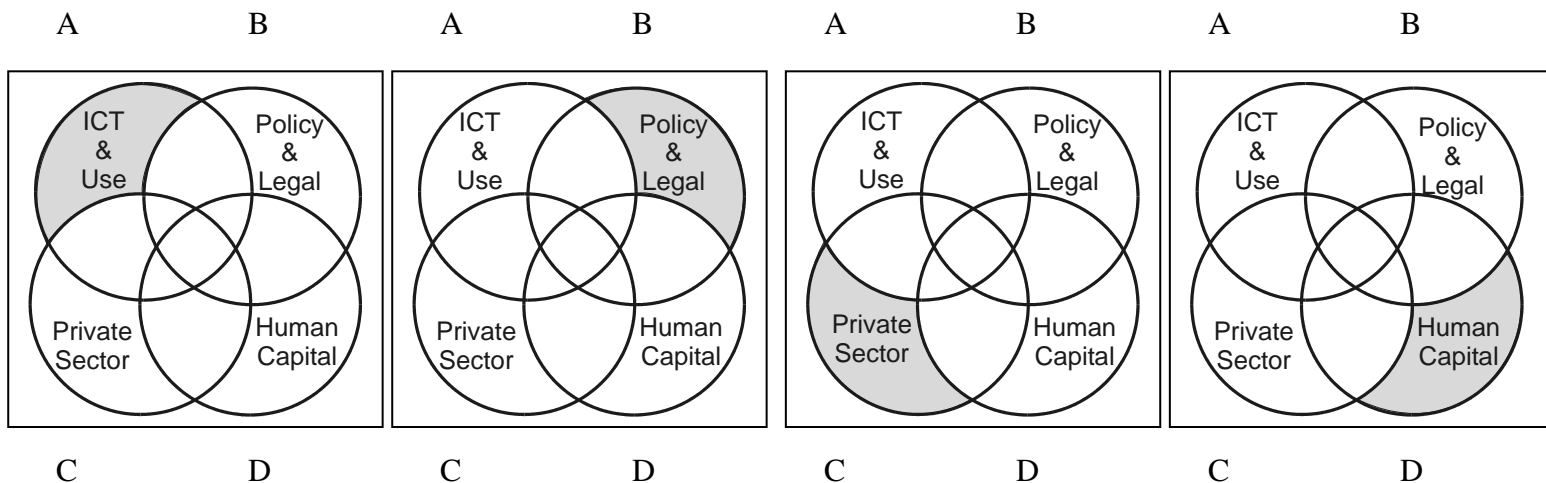
The two circles (categories) which include the shaded zone indicate policy areas of relative strength. Their tertiary subsets are:

Government Use of Tech. (Category A)	Priv. Sector Environment (Category C)	Bus. Laws & Compliance (Category B)	Government Use of Tech. (Category A)
Priv. Sector Environment (Category C)	Basic Education (Category D)	Basic Education (Category D)	Bus. Laws & Compliance (Category B)

The missing two tertiary logical groups in each of these diagrams are automatically tagged as a priority action items:

Bus. Laws & Compliance (Category B)	Gov't Use of Tech. (Category A)	Gov't Use of Tech. (Category A)	Pvt. Sector Environment (Category C)
Basic Education (Category D)	Bus. Laws & Compliance (Category B)	Pvt. Sector Environment (Category C)	Basic Education (Category D)

The remaining factors, while important, do not intersect with factors from other Categories:



<u>Category A</u>	<u>Category B</u>	<u>Category C</u>	<u>Category D</u>
Mobile Satellite & Broadcast Cable	ICT/Investment Incentives Desired ICT Opportunities Trade Indicators	NGO Activities	None

Selection of Priority Policy Areas

The four basic steps in using target country data to identify policy areas are:

1. Examine Part II and III rankings of primary, secondary, and tertiary logical groupings for Categories A, B, C, and D for the target and comparator countries.
2. Determine whether it is necessary to modify the above rankings on the basis of technical data from Part II.
3. Determine if donor or multinational activities suggest that priority action items be put on hold.
4. Analyze country goals to reach final prioritization of action items.

Each of these steps is examined in turn in the remainder of this document.

Examination of Part II and III Rankings of Primary, Secondary, and Tertiary Logical Groups

The examination of the target country's ranking against its comparator countries (derived from the index data and graphs/charts in Part III) and the technical data (derived from Part II) determines whether a given logical group for the target country qualifies to be included on the Venn diagram for determining policy reform priorities. First consideration is given to the target country ranking for the primary, secondary, and tertiary logical groups in Part III. *If the target country ranks first in Part III for any of the primary, secondary, and tertiary logical groups, it can automatically apply those logical groups to the Venn diagram.*

For example, if a target country ranks higher than its comparator countries in the areas of ICT Policy/legal, internet, telephone, telecom regulatory structure, and government use of technology, it has met two of the primary logical groups (“ICT Policy/Legal” for Category B and “Internet” for Category A), two of the secondary logical groups (“Telephone” for Category A and “Telecom Regulatory Structure” for Category B), and one of the tertiary logical groups (“Government Use of Technology” for Category A). As a result, in this example, the primary, secondary, and tertiary logical groups that are *not* met are automatically considered priority action items:

Primary Logical Groups Not Met: Private Sector Use of Technology
ICT Education

Secondary Logical Groups Not Met: ICT Industry Sector
School Use of Technology

Tertiary Logical Groups Not Met: Business Laws & Compliance Costs
Private Sector Environment
Basic Education

Technical data from Part II is considered for setting priorities if the target country ranks second or third on logical groups in Part III. The answers from Part II are considered against the Part III ranking to determine a final ranking for the target country for each logical grouping. Thus, a country that ranks second or third for primary, secondary, and tertiary logical groups against its comparator countries in Part III, may still qualify for application of some of these logical groups on the Venn diagram, depending upon its technical data answers. The criteria for this exercise is set forth below.

Modification of Rankings on the Basis of Technical Data from Part II

Technical data answers from the Part II Worksheet are then examined to determine if they can help upgrade the target country’s ranking second or third place ranking for a logical group to a first or second place, respectively. The criteria for upgrading a target country’s ranking for a logical grouping up to the immediately higher level is based on an analysis of factors in ICT assessment methodologies, experience in the ICT industry sector, in-country experience in ICT project work, and extensive experience in and analysis of donor use of ICTs for development. The criterion for raising a target country’s ranking indicates the level at which significant synergies can be realized, as described on the next two pages. For example, for the Internet logical group, if a target country ranks second and has *either* 41-75 Internet cafes or 6-15 Internet Service Providers, that indicates the target country has reached a high enough level of Internet activity that it can be leveraged. This process enables a target country to get “credit” for actual steps that have been taken, but that may not have been included in the Part III index data. Therefore, it is necessary that every effort be made to ensure the technical data answers are as accurate as possible. For example, for the Internet logical group (see first entry below), Mexico was ranked second in Part III, but if the technical data from Part II indicates Mexico has 41-75 Internet cafes *or* 6-15 Internet Service Providers, it will qualify for inclusion of this primary logical group on the Venn diagram.⁸

⁸ The collection of Part II data in Mexico was not part of the present exercise, hence hypothetical values of this data are used to demonstrate the methodology.

Target Country Qualifies for Primary Logical Groups if:

- Internet (Category A): Target country ranks first OR Ranks second and has either of the following criteria:
 - 41-75 Internet cafes OR
 - 6-15 Internet Service Providers

- ICT Policy/Legal (Category B): Ranks first OR Ranks second or third and meets the following four criteria:
 - Has Government Office in charge of ICTs
 - Has E-transaction, e-signature & e-payment laws
 - Has 2 out of 4 e-security laws AND
 - Does not filter content/communications

- Private Sector Use of Tech. (Cat. C): Ranks first OR Ranks second and has:
 - 26-50% of businesses use 3 out of 6 listed software applications

- ICT Education (Category D): Ranks first OR Ranks second or third and meets the following four criteria:
 - Has ICTs in 26-50% of primary schools WITH Basic curriculum
 - Has ICTs in 50-75% of secondary schools WITH Intermediate curriculum
 - Has 4 year computer science degree in tertiary schools AND
 - Has ICT graduates with international certificates (Microsoft, Cisco, etc.)

Target Country Qualifies for Secondary Logical Groups if:

- Telephone (Category A): Ranks first OR Ranks second and meets the following two criteria:
 - Has 2-5 International gateways
 - Has data transmission & Internet access speeds up to 1.5 Mbps

- Telecom Reg. Structure (Cat. B): Ranks first OR Ranks second or third and meets the following four criteria:
 - Has 50-75% of telephony privatized
 - Has 50-75% of ISPs privatized
 - Has regulatory telecom body AND
 - Has 2 out of 4 regulatory controls

- ICT Industry Sector (Cat. C): Ranks first OR Ranks second and has either of the following criteria:
 - Advanced consulting & systems integration OR
 - Offshore services

- Schools' Use of Technology (Cat. D): Ranks first OR Ranks second or third and meets the following four criteria:
 - 26-50% school computers are up-to-date technology
 - 26-50% school computers have up-to-date software
 - 26-50% of primary schools have Networked PCs AND
 - 51-75% of secondary schools have Networked PCs

Target Country Qualifies for Tertiary Logical Groups if:

- Gov't Use of Technology (Cat. A): one
 - Ranks first OR Ranks second or third and meets at least of the following criteria:
 - Government email for majority of employees
 - Government Intranet for majority of ministries OR
 - Government-wide ICT strategy

- Bus. Laws & Compliance (Cat. B):
 - Ranks first OR Ranks second and meets at least two out of four of the following criteria:
 - 2 out of 4 transparency/adm. procedures
 - Corporate tax rate is 11-25% OR pension amounts paid by employer <26%
 - Has 3 out of 5 SME laws
 - Has most judgments enforced by courts AND time to trial is 6 months to 1 year

- Private Sector Environment (Cat. C):
 - Ranks first OR Ranks second and has:
 - Willingness to finance ICT companies

- Basic Education (Cat. D):
 - Ranks first OR Ranks second and has:
 - Distance learning via video in some secondary and tertiary schools

The following Country Scorecard can be used to identify priority action items for the rest of the exercise.

Logical Groups	A: ICT & Use	B: Policy & Legal	C: Private Sector	D: Human Capital
Primary	Internet	ICT Policy/Legal	Private Sector Use of Technology	ICT Education
Secondary	Telephone	Telecom Reg. Structure	ICT Industry Sector	Schools' Use of Technology
Tertiary	Government Use of Technology	Business Laws & Compliance Costs	Private Sector Environment	Basic Education
-----	-----	-----	-----	-----
Fourth	<ul style="list-style-type: none"> - Mobile - Satellite & Broadcast - Cable 	ICT Investment or Incentives	<ul style="list-style-type: none"> - NGO Activities - Desired ICT Opportunities - Trade Indicators 	

The use of this scorecard can be illustrated with data collected for Mexico. The data presented in Part III for Mexico indicates it was ranked first among its comparators for “Telephone” and “Government Use of Technology” (Category A), so those two areas are not priority items and can be indicated as such in the scorecard by crossing them off. This leaves only Internet as a priority action item in Category A. Mexico was ranked fourth and fifth for every primary, secondary, and tertiary logical group in Category B, so no areas in this category can be removed from the list of policy priorities. In Category C, Mexico ranked fourth for “Private Sector Environment” and sixth for “ICT Industry Sector,” but was second for “Private Sector Use of Technology.” Assuming the data from Part II met the qualifying criteria for this logical group (26-50% of businesses use 3 out of 6 listed software applications, as indicated on page 21), the ranking for this policy area would be upgraded to first place, and therefore removed from the list of immediate priorities. In Category D, Mexico ranked fifth in “Basic Education,” third in “Schools’ Use of Technology,” and sixth in “ICT Education,” so no logical groups can be removed from the list of priorities for this Category.

Thus, the second step in the prioritization process results in the removal of three areas from Mexico’s policy priorities list:

- Telephone;
- Government Use of Technology;
- Private Sector Use of Technology.

The scorecard for Mexico is therefore modified as follows:

Logical Groups/Categories	A: ICT & Use	B: Policy & Legal	C: Private Sector	D: Human Capital
Primary	Internet	ICT Policy/Legal	Private Sector Use of Technology	ICT Education
Secondary	Telephone	Telecom Reg. Structure	ICT Industry Sector	Schools' Use of Technology
Tertiary	Government Use of Technology	Business Laws & Compliance Costs	Private Sector Environment	Basic Education
-----	-----	-----	-----	-----
Fourth	<ul style="list-style-type: none"> - Mobile - Satellite & Broadcast - Cable 	ICT Investment or Incentives	<ul style="list-style-type: none"> - NGO Activities - Desired ICT Opportunities - Trade Indicators 	

All remaining *primary, secondary, and tertiary logical groups* (not fourth logical groups) are considered potential priority action items and are carried over to the next step, which takes into consideration existing or planned donor and multinational initiatives in these areas.

Determination of Items to Put on Hold because of Pre-existing Donor and Multinational Initiatives

Before assigning the identified action items a priority, they are compared against technical data answers from Category E introduced in Part II (see table below) pertaining to donor and multinational initiatives.

Many developing countries and donor/multinational organizations launch initiatives that may be planned or underway in the target country. The third step of the methodology considers a list of potential ICT projects, business initiatives (competitiveness, privatization, improving business environment, financial reform, etc.), NGO and civil society development projects, and initiatives to improve basic education. These potential projects, if planned or underway, would (absent other considerations) reduce the need for immediate action on a priority action item.

Consideration is also given to whether the target country is a member of the World Trade Organization (WTO) or a member of a free trade bloc or in line for accession to one. These factors may indicate activities already underway in either the public or private sectors and may also influence priorities.

Logical Groups and Subsets for Category E

E. Donor Projects, Multinational Initiatives

ICT Donor Projects

Business Donor Projects

NGO Donor Projects

Education Donor Projects

Multinational Considerations

Other

If a donor or multinational initiative that matches one of the priority action items is planned or underway, that item is moved to a “Hold” list and removed from the scorecard. For the Mexico example, if there were donor initiatives planned or underway to (1) develop the ICT policy/legal framework and (b) improve the country’s business climate and streamline administrative burdens and compliance costs, the primary logical group “ICT Policy/Legal” and the tertiary logical group “Business Laws & Compliance Costs” would move off the action item list and onto a Hold list, as indicated in the revised scorecard:

Logical Groups/Categories	A: ICT & Use	B: Policy & Legal	C: Private Sector	D: Human Capital
Primary	Internet	ICT Policy/Legal	Private Sector Use of Technology	ICT Education
Secondary	Telephone	Telecom Reg. Structure	ICT Industry Sector	Schools’ Use of Technology
Tertiary	Government Use of Technology	Business Laws & Compliance Costs	Private Sector Environment	Basic Education
-----	-----	-----	-----	-----
Fourth	- Mobile - Satellite & Broadcast - Cable	ICT Investment or Incentives	- NGO Activities - Desired ICT Opportunities - Trade Indicators	

Thus, the following areas would remain on Mexico's action item list:

- Category A: Internet
- Category B: Telecom Regulatory Structure
- Category C: - ICT Industry Sector
- Private Sector Environment
- Category D: - ICT Education
- Schools' Use of Technology
- Basic Education

Analysis and Consideration of Country Goals

The final step is to reach a prioritization of action items, taking into account (1) an order of priority among the primary, secondary, and tertiary logical groups, and (2) the goals of the target country for its ICT industry.

If the target country has multiple priority action items within a logical group (primary, secondary, and/or tertiary), it must next consider the order of importance accorded by this methodology to each item within a logical group. For example, the primary priority action items will consist of the primary logical groups for Categories A, B, C, and/or D (unless the target country qualified to apply each of these logical groups on the Venn diagram). Since up to this point, these primary, secondary, and tertiary logical groups have been treated equally across each Category (i.e., "Internet" for Category A has been equal in importance to "ICT Policy/Legal" for Category B, "Private Sector Use of Technology" for Category C, and "ICT Education" for Category D), *it is important in this step to understand in what order the primary action items in each logical group should be approached.*⁹ Looking at the Scorecard above, Mexico, for example, has two action items from primary logical groups: "Internet" and "ICT Education." To which of these should priority be given? Mexico also has three secondary logical groups as priority action items: "Telecom Regulatory Structure," "ICT Industry Sector," and "Schools' Use of Technology." In what order should these be approached? And the exercise had identified two tertiary priority action items: "Private Sector Environment" and "Basic Education." Which one is more important?

As shown in the following table, an order of importance has been assigned to each of the primary, secondary, and tertiary logical groups for the four Categories based on (1) the synergies between the logical groups and (2) the authors' experience in promoting ICTs for development. The numbers indicate the order of priority assigned to policy areas within logical groups.

⁹ In other words, the exercise to this point has focused on identifying priorities *within* the four A-D categories (or vertically in the scorecard). The next step requires that priorities be identified *across* categories (or horizontally in the scorecard).

Logical Groups/Categories	A: ICT & Use	B: Policy & Legal	C: Private Sector	D: Human Capital
Primary	1 Internet	2 ICT Policy/Legal	3 Private Sector Use of Technology	4 ICT Education
Secondary	3 Telephone	4 Telecom Reg. Structure	1 ICT Industry Sector	2 Schools' Use of Technology
Tertiary	1 Government Use of Technology	2 Business Laws & Compliance Costs	3 Private Sector Environment	4 Basic Education

An example will help underline the logic of these orderings. In the primary logical group, giving first priority to the “Use of the Internet” area will establish the requisite need for reform in the ICT policy and legal area, private sector use of technology, and ICT education. Next, if the ICT policy/legal framework is in place, the private sector will have the certainty it desires for ICT business operations and will utilize more ICTs in conducting business, which will, in turn, fuel the need for ICT education to ensure a trained workforce.

For secondary logical groups, the ICT industry sector is given first priority because a thriving ICT sector will push the educational system to incorporate ICTs and provide the needed support for installation, maintenance, and system development. They will also set the floor for ICT workforce skills. Developing countries understand that ICT industry sectors can help drive their economies and create knowledge societies. It is much easier to get a developing country to put computers in schools than to undertake infrastructure build-out and telecom regulatory reform. Once schools get a taste of ICTs, they start demanding more and better connectivity and lower costs, paving the way for increased teledensity and telecom regulatory reform.

For the tertiary logical group, government use of technology is given top priority because it will expose the majority of the workforce to ICTs and, through government information and procurements, will force the private sector to utilize more ICTs. The private sector will seek ways to free up funds to purchase ICTs and will pressure the government to improve the business environment and to use ICTs to streamline administrative procedures and filings and lower compliance costs. In turn, the private sector will see how ICTs can improve transparency, reduce corruption, and make the business environment fairer and more competitive. As business operations, through the use of technology, become more sophisticated, the private sector will put increased pressure on the education system to improve its basic education system to produce skilled workers.

Thus, based on the final scorecard and the table above, Mexico’s action item list would be ordered as:

Primary Logical Groups

- Internet (1)
- ICT Education (4)

Secondary Logical Groups

- ICT Industry Sector (1)
- Schools’ Use of Technology (2)
- Telecom Regulatory Structure (4)

Tertiary Logical Groups

Private Sector Environment (3)

Basic Education (4)

The factors in the fourth logical group of the scorecard (“Mobile,” “Satellite & Broadcast,” “Cable,” “ICT/Investment Incentives,” “NGO Activities,” “Desired ICT Opportunities,” and “Trade Indicators”) are set aside for later consideration on how to maximize the synergy they can create or how they could boost priority action items.

As a final step, it is necessary to consider how the target country wants to utilize ICTs, as country goals can impact the prioritization process. Some likely country goals are offered below.

Broader use of e-commerce applications is dependent upon a supportive ICT legal/regulatory/policy framework, especially the e-payment, electronic transaction, digital signature, and cybercrime laws. Government Use of Technology is also an important e-commerce catalyst. For example, business use of technology will increase in e-commerce areas if the government streamlines business requirements through online, e-commerce procedures, makes government information available online (whether for a fee or free), and purchases simple procurements online.

Offshore software development and “back room” data processing opportunities depend more on the primary and secondary logical groups of “ICT Policy/Legal,” “ICT Education,” and “ICT Industry Sector.” Call centers and data bank development also requires emphasis on telephone and the telecom regulatory structure.

Attracting foreign direct investment (FDI) in ICT or traditional enterprises will necessarily focus more on the primary and tertiary logical groups. The tertiary logical groups pertaining to “Business Laws & Compliance Costs” and “Private Sector Environment” are critical in attracting FDI.

Widespread use of ICTs requires more emphasis on primary (all) and secondary logical groups (especially “Telephone” and “Telecom Regulatory Structure”). The tertiary logical group “Government Use of Technology” is also very important in advancing deployment of ICTs in developing countries.

Development of a knowledge economy requires more emphasis on primary and secondary logical groups, although “Government Use of Technology” in the tertiary category can also play an important role.

Improving the educational system will necessarily focus more on primary and secondary logical groups.

If no country goals are known, it is suggested that, as a general rule, the most important logical group of *each* Category on the action item list is given a top priority, followed by the second most important in each Category, and so on. If choices need to be made, the action items in each priority level should be approached as listed (primary, secondary, tertiary), however, it is also useful to consider the target country’s ranking for each logical group listed as an action item. Using the Mexico example, this would place the action items in the following order of priority:

First Priority Level (in this order of primary, secondary, tertiary):

Internet

ICT Industry Sector

Private Sector Environment

(The two hypothesized donor activities (ICT Legal/Policy and Business Laws & Compliance Costs) would complement initiatives in these areas.)

Second Priority Level (in this order of primary, secondary, tertiary):

ICT Education

Schools' Use of Technology

Basic Education

(Mexico ranked high on “Private Sector Use of Technology,” indicating it needs a strong ICT industry sector to enable it to maintain its systems and upgrade its use of ICTs for more advanced tasks and core business functions. In addition, these activities are complementary: schools will have to use more technology for ICT Education and they will have to improve basic education to feed talent into an ICT industry sector and to provide business with needed high-tech workers.)

Third Priority Level (in this order of primary, secondary, tertiary):

Telecom Regulatory Structure

(Telecom regulatory reforms are likely to be driven by developments in the first and second levels of action items before reaching the third level of priorities.)

Each of the above action items itself includes a number of policy areas. For example, the action item “ICT Policy/Legal” encompasses specific elements such as:

- the level of priority assigned to ICTs by the government;
- the government's effectiveness in promoting ICTs;
- the presence of tariffs on online transactions; and
- the existence of laws relating to ICT use, digital signature, E-payment, or intellectual property.

While it may be possible to develop procedures to prioritize among these interventions, it may not necessarily be advisable. The goal of this Toolkit is to facilitate—rather than replace—informed policymaking, and we believe that strategy decisions at the “policy grassroots” may need to be guided by local goals and conditions.

CONCLUSION

The methodology presented here is intended to assist experts, donor organizations, and developing countries to determine the areas of action across four main areas that will help spur e-commerce and the utilization of ICTs. It is not intended to be a scientific methodology, but one steeped in real, in-country experience and donor organization project implementation. It guides the user (a) to better understand how the target country compares against selected comparator countries, (b) to more accurately assess the country's ICT strengths and weaknesses, (c) to take into account donor and multinational organization activities, and (d) to consider priorities in terms of country goals, interdependencies of logical groups, and comparative rankings. A follow-up project could support a number of refinements to the methodology and data collection presented here.