

Chapter 6

Measuring e-government

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Reliable and relevant e-government measurement can offer crucial signposts to point policy makers and practitioners in the right direction. Yet, how does one go about measuring e-government given the diversity of approaches? Some important common threads include a country's economic strength, technological development and aggregate level of education. All three of these factors pertain to capacity, and two of them – technology and education – are combined with a direct assessment of the state of national online services to produce the United Nations e-government development index.

Although methodological work on the United Nations e-government survey has helped elucidate some of the issues in e-government measurement, there is no formal agreement on a common international framework. There is also no single view of how such indicators should be designed so that they remain relevant and practical over time.

6.1 Towards consensus on indicators

The United Nations e-government development index is widely recognized as an authoritative measure of public sector capacity to provide electronic and mobile services. It is nonetheless one of several measurement instruments developed by public and private sector organizations to meet their own needs for assessing the state of e-government development.¹ Many of these assessments include a scan of governmental online services in combination with data from national statistical offices, information on e-government policy and indicators of administrative efficiency. The measurement techniques are diverse, yet some common threads emerge. All of these efforts reflect an increasing focus on the user dimension and the demand side of e-government, on outcome and impact measurement, and on connection with national policy objectives.

What's needed is international consensus about how to assess e-government performance. An international task force on e-government indicators was established in 2006 through the

Partnership on Measuring ICT for Development, of which the United Nations Department of Economic and Social Affairs is a member.² The task force will recommend a core set of measures to be collected by governments. The aim is to root out inconsistency in definitions, methodology, reporting and monitoring of e-government development across countries and levels of government, while supporting international benchmarking efforts. A draft list of core indicators under consideration by the task force is shown in table 6.1.

There are substantial challenges to monitoring the efficacy of e-government development. Most of the statistics are derived from supply side indicators and often by website assessments alone. Little information is yet available on the demand side of e-government. Few surveys exist that would indicate 'how' citizens use these services and 'what' they see as maximizing public value.

Other significant questions for measurement experts are how to define the scope of governmental agencies, how to handle the issue of outsourced government functions, and how to accommodate heterogeneity among national and local institutions. Collecting internationally comparable data at the local level – where it even exists – is especially difficult due to differences in political and economic systems. A public function that is highly centralized in one country may be highly decentralized in another.

Another challenge relates to the pace of technological innovation, which needs to be taken into consideration when designing a framework for measuring e-government and monitoring its effects. Information technology continues to evolve rapidly. Five years ago, there were about 150 million fixed broadband subscribers in the world, mostly in developed regions; in 2009, there are some 500 million. The number of mobile cellular subscribers worldwide jumped from 1.3 billion in 2003 to 4.1 billion only five years later, with exponential growth in development countries. Governments trying to keep pace with technology may find themselves having to reconfigure services for emerging media. To get a clear picture of e-government development, international standards will also need to keep pace.

Table 6.1 Task Group on E-Government of the Partnership on Measuring ICT for Development – draft list of core e-government indicators

Capacity indicators	
EG1	Percent of staff in government institutions with a computer, disaggregated by gender
EG2	Percent of staff in government institutions with Internet access at the office, disaggregated by gender
EG3	Percent of government institutions with websites and/or databases
EG4	Percent of government institutions with corporate networks (LAN, intranet, extranet)
EG5	Percent of government institutions offering mobile phone technology accessible platforms
EG6	Percent of ICT personnel in government institutions, disaggregated by gender
EG7	Number of intrusions and hacking of networks and websites of government institutions
EG8	Percent of spam messages per total email messages received
EG9	Percent of expenditure on ICT per total expenditure of government institutions
EG10	Percent of ICT budget spent on institutional capacity-building and human resource development
EG11	Percent of government institutions with access to the Internet by type of access (narrowband, fixed broadband, mobile broadband)
Usage indicators	
EG12	Percent of open source software vis-à-vis proprietary
EG13	Percent and type of applications used, e.g. word processing, accounting, data base, website
EG14	Percent of staff in government institutions who are trained on use of ICTs, disaggregated by gender
Transformation indicators	
EG15	Percent of government institutions providing services online and type of services; e.g. retrieval and printing of online forms, use of interactive online forms, online bids, payment of bills, tax filing applications, company registration, car registration, voting, public grievance systems, online feedback
EG16	Percent of requests processed using ICTs vis-à-vis overall number of requests
EG17	Percent of requests processed online vis-à-vis overall number of requests processed using ICTs
EG18	Degree of satisfaction of e-government service users, disaggregated by gender

Source: Partnership on Measuring ICT for Development (2009)

Ultimately, the challenge is to assess impact. A few studies exist about the utility citizens derive from e-government, mostly relating to the performance of government in developed countries, but even less is known about the impact of e-government programmes on national development goals. E-government can serve as a conduit to strengthen the relationship between government and society, but in what way and why?

6.2 Assessing online services and e-participation

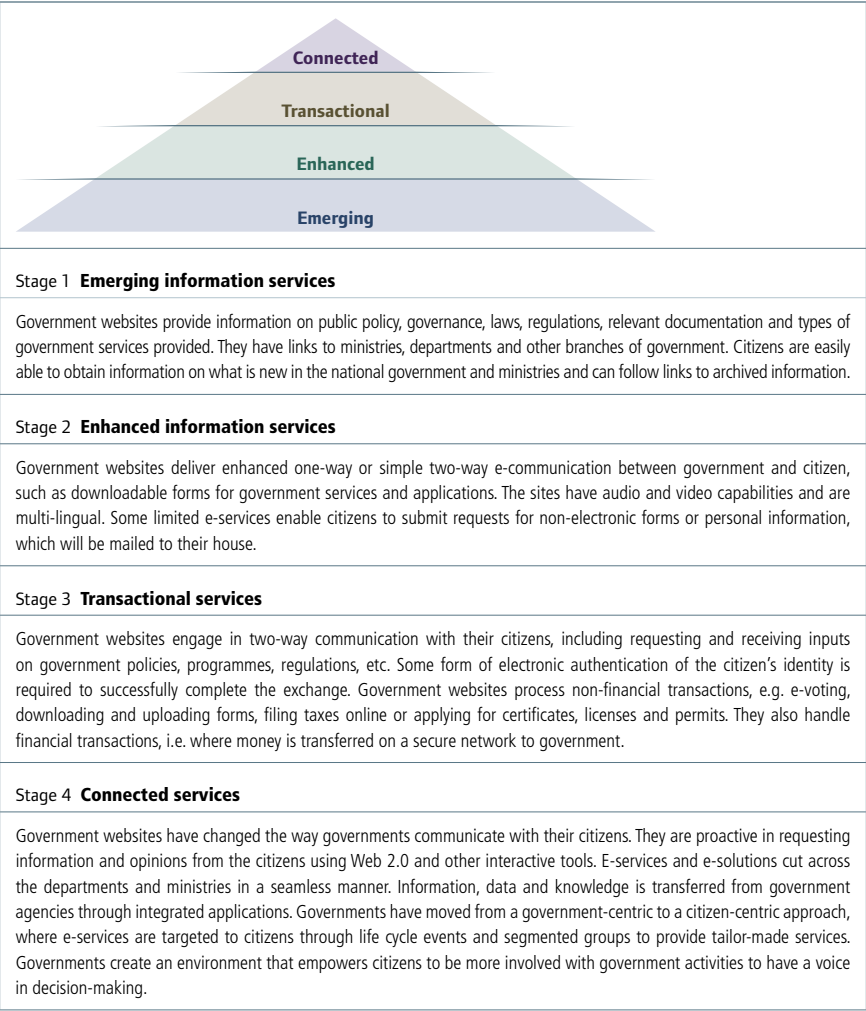
Online services

Evaluation of the quality, scope and utility of online services is one of the more straightforward aspects of e-government performance measurement. On the surface, indicators of electronic and mobile service delivery are conceptually easy. Does the government provide information on essential services? Is there a search feature and a site map available on every website? Can public services be accessed online? Are these e-services integrated with one another?

In practice, evaluation of online services is never that simple. Just as there is tremendous complexity in public performance measurement in general, so too are there substantial definitional and methodological challenges in monitoring and evaluating the efficiency and effectiveness of public service delivery through online media. Even an innocent-sounding question about the presence of a site map requires a considered response. After all the boundaries of a website are not always clear, nor is there any standard of what a site map is, where it should appear and how it should be labelled.

Any serious effort at understanding the state of governmental online services calls for (1) careful consideration of the types of interaction expected among citizens, businesses and governmental actors and (2) some assumptions about minimally acceptable interface design across a range of technologies. Evaluation methods need structure, simplification and flexibility in evaluation methods, given the diversity of contexts and options for service provision.

Box 6.1 The four stages of online service development



The online services index is one of three components of the United Nations e-government development index. It attempts to capture a country's performance in a single internationally-comparable value using a four-stage model of online service maturity. The model assumes, based on extensive observation and reflection among experts, that countries typically begin with an emerging online presence with simple websites, progress to an enhanced state with deployment of multimedia content and two-way interaction, advance to a transactional level with many services provided online and governments' soliciting citizen input on matters of public policy, and finally to a connected web of integrated functions, widespread data sharing, and routine consultation with citizens using social networking and related tools.

E-participation

Assessment of e-participation is an area that requires particular attention. It is less well-defined than the quality, scope and utility of online service delivery but no less important to the realization of citizen-centric governance. This is particularly relevant at the local level where individuals are most likely to come into contact with public agencies. To what degree are governments providing supporting information, actively consulting with citizens through online channels, and involving them in decision-making as a matter of course? Each of these aspects of citizen-centric governance must be defined in concrete, measurable terms, and corresponding data collected, in order to monitor the relationship between online services and citizen empowerment.

The e-government development index is complemented by an e-participation index. This index attempts to bring some order to measurement of e-governance by positing the relevance of three factors in citizen engagement: electronic information dissemination, electronic consultation and electronic participation in decision-making.

Electronic information dissemination entails communication among government, citizens and businesses that supports policy-making. For citizens to become engaged in public policy, laws and regulations must be readily accessible, strategies and policies explained, and options under consideration clearly presented. This must be done with regard for inclusion of all segments of society, including rural or isolated areas. This information could be distributed via online newsletters, forums, blogs, community networks, text messaging, email, open data or other services.

Electronic consultation entails communication between government, citizens and businesses at the initiative of the government itself. For consultation to be effective, and for citizens to trust the outcome, feedback from citizens needs to be acknowledged with an appropriate response. For example, policy makers may report on the outcome of dialogue with citizens by summarizing the positions of various stakeholders and announcing a way forward. Relevant e-government tools include polls, surveys, chat rooms, blogs, social networks,

newsgroups and other interactive services that facilitate engagement. Online consultation might also be initiated by citizen groups as in the case of electronic petitions.

Electronic participation in decision-making entails communication between citizens and government that results in direct citizen input into public policy. Governments elicit feedback from citizens and businesses on government proposals. Alternatively, citizen's groups might introduce their own proposals for creating or amending public policies or programmes to be taken up by political representatives and government officials.

6.3 Accounting for capacity constraints

E-government development is often impeded by constraints in public sector capacity. Such limitations often originate in the fragmented information systems that often accompany organizational complexity and, to a lesser degree, in deficiencies in ICT skills in the public sector work force. These problems are by no means the exclusive domain of developing countries. Indeed, early adopters of information technology in regions with expansive public institutions and programmes may find themselves called upon to integrate back office systems for improved e-government performance in the face of entrenched organizational structures designed with precisely the opposite purpose in mind, to delegate and decentralize administrative authority. Another common constraint in the public sector is the need to change mindset and behaviour, a process that can be enabled by appropriate skills development and institutional incentives to address some of the risk associated with implementing individual e-government initiatives.

Recognizing the importance of a supportive institutional framework, the United Nations E-Government Survey includes an indicator in its development index to capture the existence of a government-wide chief information officer or equivalent post for coordinating national e-government policy. This is a start. Future work on measuring e-government capacity within the public sector might usefully expand beyond ICT infrastructure

and human resource issues to cover, where feasible, adherence to recommended practice in design of institutional machinery, laws, regulations, policies and standards.

Constraints in public sector capacity extend to work processes and the need to measure the connectedness of public agencies behind the scenes. This would be a way of gauging a government's capacity to respond to citizen preferences for simplified access to online services. Despite the association between efficient administration and public satisfaction levels, work on measurement of ICT within the public sector has so far been quite limited. A newly developed set of indicators should assess the internal processes, systems and organizational arrangements required to support efficient e-government functions and better service delivery.

Capacity constraints are very much present on the demand side of the e-government equation as well. Here questions of national ICT development, human capital and service delivery preferences come into play. A general picture of a population's ability to access and take advantage of online services is provided by telecommunication infrastructure indicators that cover Internet usage, diffusion of personal computers, main telephone lines, and number of mobile cellular and fixed broadband subscribers – along with literacy and education levels.

Two factors are missing from the analysis in the Survey and its indexes. First, the national capacity indicators do not provide breakdowns by population segment. This makes it difficult to assess whether certain groups are at a particular disadvantage when it comes to accessing public services over the Internet. Telecommunication infrastructure data disaggregated by sex is unavailable in most countries, for example, and is not part of the official statistics collected by the International Telecommunication Union. The same is true for different age, language, cultural and income groups, though some of this information might be derived from geo-referencing data at the sub-national level.

Second, usage of e-government services by citizens is absent from most e-government measurement frameworks. The importance of accounting for demand is well-understood by e-government experts, especially when discussing global or regional aggregates. Ways to capture demand for e-government have been suggested by the task force of the Partnership on Measuring ICT for Development. This could be accomplished by measuring the percent of requests processed using ICT as a function of the overall number of requests, the percent of requests processed online as a function of the overall number of requests processing using ICT, and the degree of satisfaction of e-government service users. None of this data would be easy to collect without a concerted effort on the part of governments.

6.4 Conclusions

A global agreement on a consistent framework for measuring e-government development is called for. Such a platform will likely avoid inconsistent meanings and interpretation by national and local governments, allow for the more effective adoption of best practice solutions from around the world and advance the international comparison of e-government usage and development.

Stakeholders, particularly at the global level, need to continue to support e-government capacity-building at the national and local levels. At the same time, model surveys should continue to be followed since they form an important source of international comparability in e-government development. Surveys such as this one by the United Nations Department of Economic and Social Affairs provide a comparative global picture of ICT in the public sector. Ongoing cooperation in performance measurement could take many forms, from articulation of e-government principles, adoption of open standards and elaboration of indicators, to information sharing, development of interoperable systems, and multilateral technical assistance. ■