

Methodology for e-Government Readiness Assessment – Models, Instruments, Implementation

Zamira DZHUSUPOVA, Mohamed SHAREEF, Adegboyega OJO, Tomasz JANOWSKI

Center for Electronic Governance, United Nations University IIST
P.O. Box 3058, Macau SAR

ABSTRACT

e-Government Readiness Assessment is a vital step in developing effective e-Government strategies which provides important knowledge for policy- and decision-makers. Particularly for developing countries, it is imperative to analyse the conditions, opportunities and challenges of an existing environment to ensure that the resulting e-Government strategy is realistic and workable, whilst enabling public administration reform in support of a sustainable development agenda. While there are different approaches to e-Government Readiness Assessment, the review of existing literature reveals a general lack of focus on methodology and survey design for e-Government Readiness Assessment applicable to developing countries. In this paper, we present the key elements of a holistic e-Government Readiness Assessment methodology, considering national- and agency-level survey model and instrument design. In addition, we discuss implementation issues and present recommendations for future research including the validation of the proposed methodology.

Keywords: E-Government, Public Administration, Strategy Development, Readiness Assessment, Survey Design

1. INTRODUCTION

e-Government planning involves assessing e-Government readiness from different perspectives, elaborating a long-term vision, formulating strategic goals and objectives, aligning them with national development strategies and public administration reforms, and defining priorities and concrete implementation programmes. The assessment stage is particularly important as it provides inputs to the later stages, thus supporting both strategic and implementation planning. It can also provide a valuable exercise for assessing the motivations and capacity to commence and sustain e-Government programmes.

As a foundation for developing e-Government strategies, e-Government Readiness Assessment provides important knowledge for policy- and decision-makers. The developing country context makes it particularly important to analyse the conditions, opportunities and obstacles of an existing environment, to obtain a realistic and workable e-Government strategy that supports public administration reform and sustainable national development. It can also help identify the driving forces for government modernisation, and prioritise e-services that address essential needs of the stakeholders.

Given a short lifecycle of e-Government Readiness Assessment due to rapidly changing environments, the need for building national capacities for regular assessment as part of strategy

development processes is emphasised [1]. In this context, the aim of e-Government Readiness Assessment for developing countries is to provide continued baseline data and all necessary information for e-Government strategy development that addresses national development needs, and to establish a sustainable implementation and monitoring system.

While there are different approaches to e-Government Readiness Assessment, each providing inputs to e-Government development, a review of the literature on the topic revealed lack of work on methodologies for e-Government Readiness Assessment applicable for different levels of government, and focused on the needs of developing countries. This paper aims to present a methodology for e-Government Readiness Assessment and the design of a survey to carry out the assessment for strategic planning in developing countries.

The rest of the paper is organized as follows. Section 2 presents the background, followed by e-Government Readiness Assessment methodology in Section 3. The survey model and the instruments for national- and agency-level assessment are presented in Section 4. The implementation issues are discussed in Section 5, and Section 6 provides conclusions.

2. BACKGROUND

A number of readiness assessments focused on electronic government development have been conducted over the last decade. These include the United Nations e-Government Survey reports by UNDESA [2], Global e-Government reports by the Centre for Public Policy, Brown University (CPP-BU) [3], the e-Government Leadership reports by Accenture [4], and e-Government Rankings by Waseda University [5]. A review of these assessments shows that the majority of the approaches to e-Government Readiness Assessment concentrate on ranking countries. The UNDESA series on e-Government [2] and the Brown University rankings [3] cover over 190 countries each. The UNDESA surveys use a composite index based on ICT infrastructure development, human development and maturity of online presence of governments, whilst CPP-BU focuses primarily on the development and maturity of online presence of governments in the ranked countries. On the other hand, Accenture [4] and Waseda University [5] focus on customer services, and e-Government promotion and management respectively, and assess a relatively few countries as compared to UNDESA or CPP-BU. In contrast to UNDESA, CPP-BU, Accenture or Waseda University, the eMacao e-Government Readiness Assessment [6] was designed to provide detailed information for strategic planning at the agency level. The survey, conducted by the UNU-IIST Center for Electronic Governance across the Macao SAR Government, provided

information about different aspects of individual agencies and the relationships between the agencies and the services they produce or receive to/from the environment or other agencies.

However, the comparative analysis of the measures, strengths and weaknesses of the five well known e-Government readiness assessment approaches revealed that existing frameworks do not scale up to cover different levels of government [8][9]. Furthermore, they are not sensitive to the overall country context. This however is crucial particularly for developing countries with weak public administrations, lack of resources and low human and institutional capacities. In addition, these frameworks do not cover various types of e-Government stakeholders at different levels of government.

Taking these issues and requirements for strategic planning for e-Government into consideration, a component-based e-Government readiness assessment framework was proposed as a basis for strategic e-Government planning [8]. This framework was adapted to satisfy the information requirements for demand and supply components of e-Government at different levels of government, and to assess technology, resources, online services, national and local contexts, and perceptions and challenges for e-Government development. In order to ascertain the enabling environment for e-Government development, the framework adapted the Waseda University e-Government readiness assessment which puts an emphasis on the existence of an enabling environment including back-office integration, IT management in the public sector, legal and regulatory environments, and public sector reform. The framework covers seven perspectives – stakeholders; demand; supply; technology; national, federal, local, community and international contexts; enabling environment; and perceptions, willingness and challenges. Within these, it supports the development of specific assessment instruments at different levels of government.

In this paper, we apply the component-based framework for e-Government Readiness Assessment as a basis for survey design and instrument development. The framework is applicable to developing countries due to its flexibility and adaptability to different government levels, and focus on national contexts, enabling environments and various stakeholders underpinning realistic and effective e-Government strategic planning.

3. E-GOVERNMENT READINESS ASSESSMENT METHODOLOGY

The methodology for e-Government Readiness Assessment proposed in this paper aims to address information requirements for strategic planning by assessing e-Government demand and capabilities within national and international contexts, as well as the enabling environment and ICT infrastructure. The proposed methodology has been developed based on the component-based e-Government Readiness Assessment framework, with assessment elements taken from the UNDESA approach. Key amongst e-Government readiness assessment factors are human, financial, technological, regulatory and organizational factors, all covered by the component-based model.

The methodology defines the model, scope and process for the survey and instrument design, as well as data collection and data analysis to address information requirements for e-Government strategic planning. It allows developing concrete national- and agency-level assessment instruments.

As shown in Figure 1, the methodology contains: Assessment Model, Assessment Scope, Assessment Process, Assessment Instruments, Sources, Stakeholders and the Assessment Team. They are described in detail in the following sections.

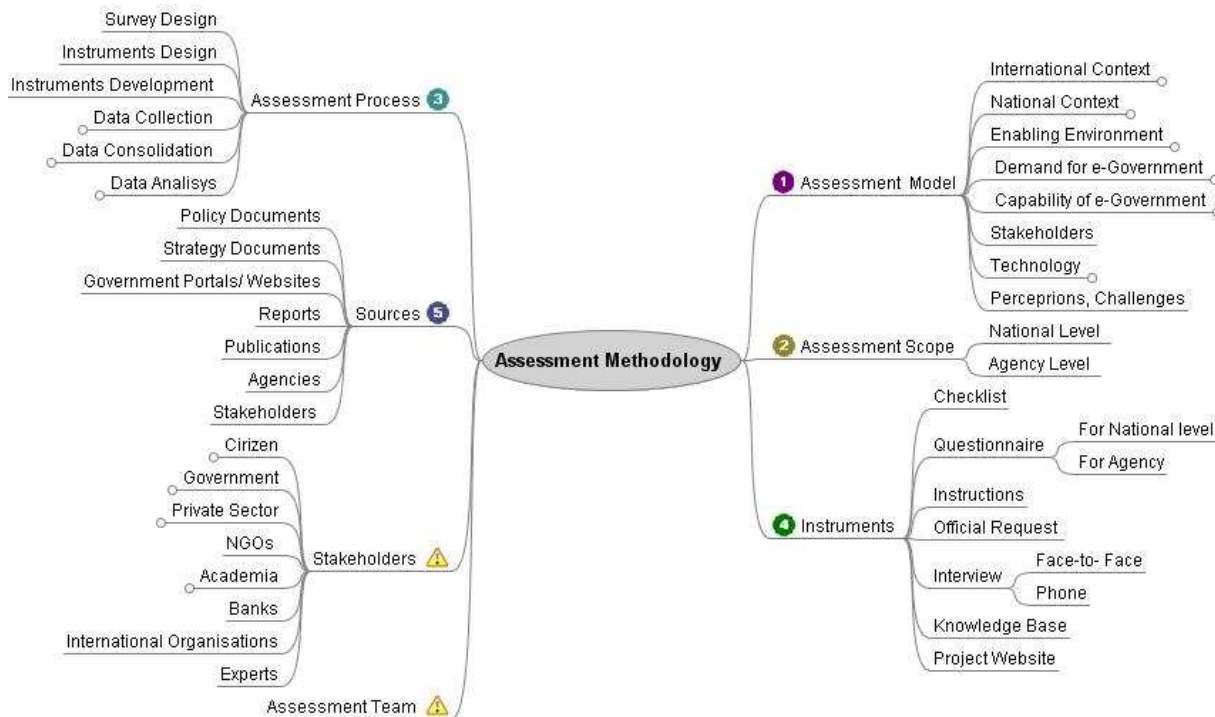


Figure 1: Key Elements of e-Government Readiness Assessment Methodology

3.1. Assessment Model

The proposed assessment model for e-Government Readiness Assessment has been designed by applying the component-based framework [8] with some assessment components partly obtained from the UN e-Government Readiness Assessment Survey [2], Brown University Global e-Government Survey [3], and Accenture e-Government Leadership Survey [4].

The component-based model provides significant flexibility in developing concrete assessment instruments from existing components and customizing these components to fulfil concrete requirements. It determines the information required for each component during survey design, and helps develop the instruments to gather data from different sources.

The model is organized into 8 perspectives, see Figure 2:

- C1) *International Context* – to determine the relationships of a given country with its international development partners.
- C2) *National Context* – to capture the main development features of the country at the national level.
- C3) *Enabling Environment* - to assess environmental conditions for the development of e-Government in the country.
- C4) *e-Government Demand* – to estimate the needs and interests, attitudes and perceptions, preferences of delivery channels, and ICT skills of different users in the country.
- C5) *e-Government Capability* – to acquire information on the practices of using ICT by government for administrative and service delivery purposes; human, technical and financial resources available for ICT; and on-going projects initiated by different stakeholders.
- C6) *Stakeholders* - to understand and engage the stakeholders in e-Government planning for successful implementation. The stakeholders are required to participate in e-Government Readiness Assessment to supply critical information for strategy development including specific business requirements and drivers for IT, and expectations regarding e-services.
- C7) *Technology* – to assess ICT penetration in the country, hardware, software platform, and network and security infrastructure, availability of public access to information and services, and ICT applications.
- C8) *Perceptions and Challenges* - to identify the perceptions with respect to e-Government in the country and the challenges faced by different stakeholders.

Thus, the model provides a set of assessment perspectives including the strategic context for e-Government – national development, policy goals, supply, demand, perceptions, etc. Given specific assessment scenarios, different perspectives are selected and the corresponding components specialized to address the resulting information needs.

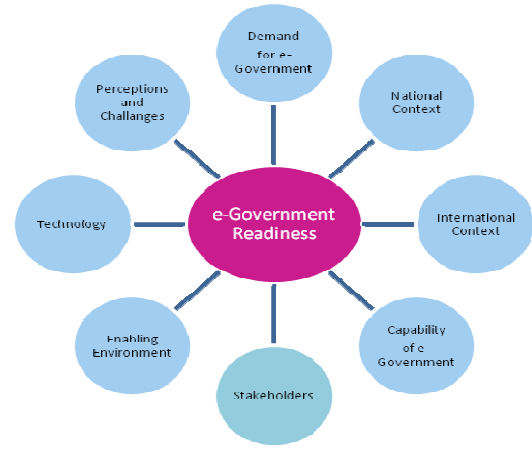


Figure 2: e-Readiness Assessment Model

3.2. Assessment Scope

The scope of e-Government Readiness Assessment defines the levels of government covered by the assessment, helping to estimate the human resources and the time-frame required for the survey exercise and to ensure proper survey and instruments design. Although this methodology can be adapted for different levels of government, national- and agency-level surveys are recommended for developing countries, taking into account lack of resources and low human and institutional capacity.

The National e-Government Readiness Survey is to determine the overall country development context from the national and international perspectives, the enabling environment, the ICT infrastructure capacity and access to information, on-going e-Government related initiatives of different actors within and outside the government, as well as ICT literacy in the country.

The Agency e-Government Readiness Survey is to determine the state of e-Government capability in key government agencies, and on this basis formulate the “big picture” of the state of e-Government for the government as a whole, taking into account the findings of the survey at the national level.

3.3. Assessment Process

The proposed e-Government Readiness Assessment process comprises six major steps:

- S1) Survey Design
- S2) Instrument Design
- S3) Instrument Development
- S4) Data Collection
- S5) Data Consolidation
- S6) Data Analysis

4. SURVEY AND INSTRUMENT DESIGN

4.1. Survey Design

Survey design is an important step in e-Government Readiness Assessment as it allows defining assessment implementation scenario from the component-based model. After determining

the categories of information to be collected within each component, the level of the survey and possible sources for gathering related data are identified.

As shown in Table 1, components C1 - International Context, C2 - National Context and C3 - Enabling Environment require gathering data at the national level only. The main sources for acquiring information are: policy documents (PD), reports (R), publications (P), and portals and websites (P/W). All other components: C4 - Demand, C5 - Capability, C6 - Stakeholders, C7 - Technology, and C8 - Perceptions and Expectations require gathering data at both national and agency levels from different sources including Stakeholders (S) and Agencies (A).

According to the component-based approach, the surveys at the national and agency levels can be carried out simultaneously by using specific instruments for each level.

C1 - International Context	National Level	Agency Level	Source
C1-1 Millennium Development Goals	✓		P/W, P
C1-2 Development Partner Assistance Strategies	✓		PD, P
C1-3 International Treaties, Conventions, Agreements	✓		R/P
C2 - National Context	National Level	Agency Level	Source
C2-1 Political Development	✓		P/W, P, R
C2-2 Geographic, Demographic and Cultural requirements	✓		P/W, P, R
C2-3 Socio-Economic Trends	✓		P/W, P, R
C2-4 Environmental Factors	✓		P/W, P, R
C3 - Enabling Environment	National Level	Agency Level	Source
C3-1 Policy and Strategic Direction	✓		P/W, PD, P
C3-2 Public Sector Reform	✓		P/W, PD, R, P
C3-3 Legislation, Regulation	✓		P/W, PD, R
C3-4 Leadership and Coordination	✓		P/W, PD, R
C3-5 Financial Infrastructure	✓		P/W, PD, R
C3-6 Partnership	✓		P/W, PD, R, S
C4 - Demand for e-Government	National Level	Agency Level	Source
C4-1 Public Services	✓	✓	P/W, R,P, A
C4-2 ICT Usage	✓	✓	P/W, R,P, A
C4-3 ICT Literacy	✓	✓	P/W, R,P, A
C4-4 ICT Education	✓		P/W, R, P
C5 - Capability of e-Government	National Level	Agency Level	Source
C5-1 Front -Office Systems	✓	✓	P/W, PD,R, P,A

C5-2 Back-Office Systems	✓	✓	P/W, PD,R,P,A
C5-3 Databases	✓	✓	P/W, PD,R,A
C5-4 Data Sharing	✓	✓	P/W, PD,R, A
C5-5 Document Exchange	✓	✓	P/W, PD,R, A
C5-6 E- Document	✓	✓	P/W, PD,R, A
C5-7 Resources	✓	✓	P/W,PD, R, A
C5-8 On-Going Initiatives, Projects	✓	✓	P/W, PD,R,A,S
C6- Stakeholders	National Level	Agency Level	Source
C6-1 Government	✓	✓	P/W, PD,R,P,A,S
C6-2 Citizens	✓	✓	P/W, PD,R,P,A,S
C6-3 Private Sector	✓		P/W, PD,R,P,S
C6-4 NGOs	✓		P/W, PD,R,P,,S
C6-5 Academia	✓		P/W, PD,R,P, S
C6-7 Banks	✓		P/W, PD,R,P, S
C6-8 International Organization	✓	✓	P/W, PD,R,P,A,S
C6-9 Experts	✓	✓	P/W, PD,R,P,A,S
C7 - Technology	National Level	Agency Level	Source
C7-1 ICT Infrastructure	✓	✓	P/W, PD,R,P,A,S
C7-2 Access to Information and e- Services	✓	✓	P/W, PD,R,P,A,S
C7-3 ICT Applications	✓	✓	P/W, PD,R,P,A,S
C8 - Perceptions and Challenges	National Level	Agency Level	Source
C8-1 Perceptions with respect to e-Government	✓	✓	P/W, PD,R,P,A,S
C8-2 Challenges	✓	✓	P/W, PD,R,P,A,S

Table 1: Components Implementation

4.2. Instruments Design

e-Government Readiness Assessment requires various types of instruments for specific purposes at different assessment stages. We suggest the following list of instruments:

- 11) *Stakeholder Analysis Tool* – to support identification of major stakeholders, documentation of their roles, profiles and interests, and development of communication plans.
- 12) *Survey Instruments* – to collect information required for strategic e-Government planning at the national and agency levels. Several types of instruments are required to collect specific information for different components:
 - ✓ Questionnaires
 - ✓ Instructions
 - ✓ Official Requests
 - ✓ Interviews – face-to- face or phone
- 13) *Knowledge Base* – to capture collected data and use it for data consolidation and analysis.
- 14) *Project Website* – to disseminate the assessment findings.

4.3. Survey Instruments

The survey and instrument design provide a basis for the development of specific survey instruments for strategic e-Government planning in a country. The component-based model allows developing instruments by re-using existing tools following e.g. eMacao, UNDESA or Waseda approaches. As eMacao e-Government Readiness Assessment framework covers e-Government demand and capabilities at the organizational level, the instruments for Demand and Capability components have been chosen from this tool for adaptation and extension. They can be also extended to support the information requirements for the Technology, National Context and Challenges perspectives of the proposed model. As the UNDESA and Waseda University rankings pay particular attention to the existence of an Enabling Environment and e-Government Capabilities including back-office integration, IT management in the public sector, the legal environment and the public sector reform, the UNDESA and Waseda University instruments are adapted for the national-level survey.

Thus, we recommend the following survey instruments to be developed for e-Government Readiness Assessment taking into account the governance structure and public administration:

- S11) Questionnaires for National-Level Survey* – questions related to information requirements to ascertain National and International Contexts, Enabling Environment, and Demand and Capability Components, aimed at the central government departments and key external stakeholders including NGOs, academia, the private sector and international organizations.
- S12) Questionnaire for Agency-Level Survey* – questions related to public services including supply and capability sides.
- S13) Interview Questions* - questions for e-Government stakeholders related to their profiles, interests, capacities, perceptions, willingness to participate in e-Government strategic planning, and challenges.
- S14) Official Requests* – official requests to the Agencies and Stakeholders used for collecting information not available from other sources.
- S15) Instructions* – guiding materials for the Assessment Team with detailed process on data gathering to ensure completeness, integrity and accuracy.

Questionnaire for the National Survey - The main requirement of the survey at the national level is to ascertain perceptions, national drivers, persistent inhibitors, overall attitudes, and technological and human capacity development at the national level. The questionnaires are aimed at different stakeholders including central government, non-governmental organizations, academia and international development partners. The demand and capability perceptions and what are believed to be the key drivers and expectations of the public sector reform and e-Government are assessed. This gives a clear picture of the stakeholder perspective at the national level and can be compared and contrasted against the information gathered through the agency-level assessments in order to: determine the gaps and alignment issues, help identify key strategies to be developed, and define key thrust areas aligned with the national perceptions, expectations and development demands.

Questionnaire for the Agency Survey - The approach for the Agency Survey is based on the provision of services by the agencies. Since the agencies participating in the survey are

different from one another, we recommend a service-oriented perspective, as opposed to the organizational structure. The questions should collect information on public services; on-going projects; back-office and front-office IT systems; technical, human and financial resources; and determine the perceptions and challenges faced by agencies. They should not be limited to the provision of electronic information/services or even to the technical aspects of the agencies, but focus instead on three kinds of services: (1) services provided by the agency to other entities; (2) services received by the agency from other entities; and (3) services provided and received within the agency. In addition, questions related to the function, structure, operations, services and resources of the agencies should be captured, including technical (software, hardware, networking and telecommunication), human and financial resources, as well as capacity, perceptions and expectations of the agencies.

5. IMPLEMENTATION ISSUES

The proposed methodology and survey design are currently applied for the development of the national strategy for e-Government in Afghanistan within a joint project between the Afghan Ministry of Communication and Information Technologies (MCIT) and the UNU-IIST Center for Electronic Governance. The implementation process and the issues and challenges arising during implementation are discussed below.

5.1. Assessment Process

As the first step, an assessment team was established. The leader of the team from the MCIT e-Government department was engaged in the process of adapting the proposed assessment model for the conditions in Afghanistan, and developing concrete survey instruments applicable for the country. The number and profiles of the members of assessment team were defined according to the scope of the exercise, to ensure simultaneous conduct of national- and agency-level surveys. The team was established from MCIT e-Government specialists and representatives of the Kabul University, by assigning concrete roles to the team members in order to facilitate concurrent surveys at the national and agency levels.

The training for the team was provided by the UNU-IIST Center for Electronic Governance to explain the methodology, objectives, expected results and outcomes, framework, scope, model, sources and survey instruments for Afghanistan, and to present best practices. The training also included the process for administering the surveys and highlighted the important role of the stakeholders. In addition, practical exercises were conducted with assessment team in applying the instruments.

The main responsibilities of the assessment team were:

- 1) Questionnaire distribution to identified organizations
- 2) Gathering data from identified sources by administering prepared instruments
- 3) Interviewing officials and other stakeholders
- 4) Reviewing related documents and reports
- 5) Collecting missing data or information
- 6) Capturing data into the knowledge base

The data collection process included the following steps:

- 1) Collect required data from official publications, reports and other documents related to e-Government and Public Administration in Afghanistan;

- 2) Review official portals and web-sites related to e-Government and Public Administration in Afghanistan;
- 3) Meet the key stakeholders to learn their interests, concerns and capacity related to e-Government in Afghanistan;
- 4) Send questionnaires specially designed to find out and document the agency's missions, structures, services, resources and e-Government efforts;
- 5) Review agencies' websites by the assessment team; and
- 6) Visit agencies to meet and discuss the issues arising from the questionnaires such as the missing or inconsistent information, and the follow-up discussing the concerns of the agencies as regards e-Government projects.

In order to facilitate data collection, every agency assigned the Primary Coordinator – Director or Deputy Director, and the Secondary Coordinator – Head of Information Technology Division or the individual responsible for e-Government development in the agency. With such senior management and technical staff involved, it should be possible to coordinate through various units of the agency the work required to fill and revise the questionnaire, organize onsite visits, and review and approve the findings and reports.

The data collected during the survey is currently being captured in a Knowledge Base developed as an instrument for data consolidation and analysis for strategic planning: statistical analysis of the variables collected and social network analysis of the agencies' service provision. At the same time, the process includes concrete measures to ensure quality, integrity and confidentiality of information gathered. A help desk is also established for the assessment team to reply to questions and make the necessary changes in the process, ensuring a degree of flexibility when facing the realities of the environment in Afghanistan.

5.2. Issues and Challenges

A number of issues and challenges are being faced in applying the proposed methodology for assessing e-Government readiness in Afghanistan. These include:

- 1) Lack of understanding of the importance of e-Government in general and particularly readiness assessment by the public sector agencies;
- 2) Lack of capacity in the agencies to fill the assessment questionnaires;
- 3) Lack of resources for the assessment team;
- 4) Translation of the survey instruments from English to two local languages and translation of data collected from the agencies from two local languages to English;
- 5) Lack of available statistical data related to Afghanistan;
- 6) Lack of research capacity in e-Government domain in Afghanistan; and
- 7) Political instability including presidential elections, renewing the Cabinet of Ministers, etc.

6. CONCLUSIONS

This paper presented a comprehensive assessment methodology for e-Government, applicable for developing countries, and discussed implementation issues. The methodology comprises a component-based model and national- and agency-level survey instruments that address information requirements underpinning strategic e-Government planning. Key amongst e-Government

readiness assessment are human, financial, technological, regulatory and organizational factors, all covered by the component-based model. The model allows systematic adaptation of the methodology to the local needs and its application to different levels of government. The components are derived from existing e-Government readiness assessment frameworks and are designed to allow re-use in developing specific instruments for particular purposes. The proposed methodology is currently applied in Afghanistan and will be revised and updated in view of this experience.

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